



J. J. STROSSMAYER  
UNIVERSITY  
OF OSIJEK



UNIVERSITY  
IN MARIBOR  
Faculty of  
Economics  
and Business



FACULTY OF  
ECONOMICS  
IN OSIJEK



UNIVERSITY IN  
TUZLA  
Faculty of  
Economics in Tuzla



CROATIAN  
ACADEMY OF  
ARTS AND SCIENCES  
The Institute for  
scientific and art research  
work in Osijek

# RED 2022

11<sup>th</sup> International Scientific Symposium  
**REGION  
ENTREPRENEURSHIP  
DEVELOPMENT**

ISSN 1848-9559



9 771848 955005



SVEUČILIŠTE J. J.  
STROSSMAYERA  
U OSIJEKU

JOSIP JURAJ  
STROSSMAYER  
UNIVERSITY OF  
OSIJEK



EKONOMSKI  
FAKULTET  
U OSIJEKU

FACULTY  
OF  
ECONOMICS  
IN OSIJEK



HRVATSKA  
AKADEMIJA  
ZNANOSTI I  
UMJETNOSTI  
Zavod za  
znanstveni i  
umjetnički rad u  
Osijeku

CROATIAN  
ACADEMY OF  
ARTS AND  
SCIENCES  
The Institute for  
scientific and art  
research work in  
Osijek



UNIVERZA  
V  
MARIBORU  
Ekonomsko-  
poslovna  
fakulteta

UNIVERSITY  
IN MARIBOR  
Faculty of  
Economics  
and Business



UNIVERZITET  
U  
TUZLI  
Ekonomski  
fakultet u Tuzli

UNIVERSITY  
IN  
TUZLA  
Faculty of  
Economics in  
Tuzla

**11<sup>th</sup>**  
**INTERNATIONAL SCIENTIFIC SYMPOSIUM**  
**REGION, ENTREPRENEURSHIP, DEVELOPMENT**

Under the auspices of:

**REPUBLIC OF CROATIA**  
**MINISTRY OF SCIENCE AND EDUCATION**

Osijek, June 2022

**Publisher**

Josip Juraj Strossmayer University of Osijek,  
Faculty of Economics in Osijek, Croatia

**For the publishers**

Boris Crnković, Ph.D., Faculty of Economics  
in Osijek, Croatia

**Programme committee**

Sunčica Oberman Peterka, Ph.D., Chairperson,  
Josip Juraj Strossmayer University of Osijek,  
Faculty of Economics in Osijek, Croatia

Ekaterina A. Blinova, Ph.D., Russia

Marko Backović, Ph.D., Serbia

Samo Bobek, Ph.D., Slovenia

Saša Bošnjak, Ph.D., Serbia

Thomas Cleff, Ph.D., Germany

Ida Erscaj, Ph.D., Hungary

Ulla Hytti, Ph.D., Finland

Safet Kozarević, Ph.D., Bosnia and  
Herzegovina

Dražen Kušen, Ph.D., Croatia

Dragan Milanović, Ph.D., Croatia

Chris Pentz, Ph.D., South Africa

Academician Vlasta Piližota, Ph.D., Croatia

Miroslav Rebernik, Ph.D., Slovenia

Bodo Runzheimer, Ph.D., Germany

Joaquina Sarrion Esteve, Ph.D., Spain

Oleg Sidorkin, Ph.D., Germany

Slavica Singer, Ph.D., Professor emeritus,  
Croatia

Tatiana Skryl, Ph.D., Russia

Ermina Smajlović, Ph.D., Bosnia and  
Herzegovina

Karin Širec, Ph.D., Slovenia

Željko Turkalj, Ph.D., Croatia

Bahrija Umihanić, Ph.D., Bosnia and  
Herzegovina

**Organizing Committee**

Mirna Leko Šimić, Ph.D., Chairperson,  
Josip Juraj Strossmayer University of Osijek,  
Faculty of Economics in Osijek, Croatia

Katica Križanović, Ec.S., Coordinator, Croatia

Mirela Alpeza, Ph.D., Croatia

Zsolt Bedo, Ph.D., Hungary

Barbara Bradač Hojnik, Ph.D., Slovenia

Katja Crnogaj, Ph.D., Slovenia

Dražen Čučić, Ph.D., Croatia

Adisa Delić, Ph.D., Bosnia and Herzegovina

Anamarija Delić, Ph.D., Croatia

Nataša Drvenkar, Ph.D., Croatia

Sabina Djonlagić Alibegović, Ph.D., Bosnia  
and Herzegovina

Zijad Džafić, Ph.D., Bosnia and Herzegovina

Aleksandar Erceg, Ph.D., Croatia

Ivana Fosić, Ph.D., Croatia

Marina Gregorić, Ph.D., Croatia

Martina Harc, Ph.D., Croatia

Adela Has, Ph.D., Croatia

Tihana Koprivnjak, Ph.D., Croatia

Romana Korez Vide, Ph.D., Slovenia

Petra Mezulić Juric, Ph.D., Croatia

Ivo Mijoč, Ph.D., Croatia

Ana Pap Vorkapić, Ph.D., Croatia

Julia Perić, Ph.D., Croatia

Tunjica Petrašević, Ph.D., Croatia

Ljerka Sedlan König, Ph.D., Croatia

Marina Stanić, Ph.D., Croatia

Ružica Stanić, mag. oec.

Ivana Unukić, Ec.S., Croatia

Ana Zrnić, Ec.S., Croatia

**Editor**

Mirna Leko Šimić, Ph.D., Faculty of  
Economics in Osijek, Croatia

**Print**

Studio HS internet d.o.o., Osijek

ISSN 1848 – 9559

Previous editions of the Proceedings published under the title  
*Economy of eastern Croatia – Vision and Growth*

*Proceedings indexed in:*



Web of Science®

**11<sup>th</sup> INTERNATIONAL SCIENTIFIC SYMPOSIUM  
REGION, ENTREPRENEURSHIP, DEVELOPMENT**

# Content

<b>Foreword.....</b>	<b>9</b>
Marijana Baršić Barun, Barbara Bradač Hojnik: THE ROLE OF GUARANTEE INSTITUTIONS IN SUPPORTING SMEs IN EU COUNTRIES.....	13
Mato Bartoluci, Marija Nakić, Alen Jerkunica: IMPLEMENTATION OF PUBLIC RELATIONS IN SUSTAINABLE DEVELOPMENT OF A TOURIST DESTINATION.....	27
Goran Becker: THE ANALYSIS OF ACTIVATED CREDIT GUARANTEES IN EASTERN CROATIA .....	43
Vlatka Bilas, Vedran Kulić: SIGNALS APPROACH TO CRISIS PREDICTION: THE CASE OF THE UNITED STATES OF AMERICA.....	59
Ante Bingula, Sandra Pepur, Marija Šimić Šarić: PRIVATE EQUITY DETERMINANTS – EVIDENCE FROM SELECTED CEE COUNTRIES.....	73
Domagoja Buljan Barbača, Gina Lugović, Ivana Beljo: INSURANCE LITERACY AND RISK PERCEPTION .....	86
Tihana Cegur Radović, Petra Pušić, Robert Svetlačić: THE SUSTAINABLE TOURISM DEVELOPMENT OF THE SAVA RIVER IN THE CITY OF ZAGREB .....	98
Marija Čutura, Anela Čolak, Ivan Kožul: COMMUNICATION COMMITMENT AND STAKEHOLDER POWER: CASE OF BUSINESS SECTOR IN THE FEDERATION OF BOSNIA AND HERZEGOVINA .....	113
Tomislav Dagen, Marijana Majnarić: VERTICAL SEPARATION OF POWERS AND THE PRINCIPLE OF SUBSIDIARITY AS <i>condicio sine qua non</i> OF REGIONAL DEVELOPMENT OF THE REPUBLIC OF CROATIA.....	126
Teresa Dieguez, Paula Loureiro, Isabel Ferreira, Mario Basto: DIGITAL & ENTREPRENEURIAL MINDSET TRANSFORMATION .....	141
Jelena Dujmović Bocka, Danijela Romić: ROLE OF YOUTH COUNCILS IN LOCAL GOVERNANCE .....	157
Darko Dukić, Bojan Bodražić: ICT USE BY SPORT MANAGERS IN CROATIA .....	174

Gordana Dukić: MANAGERS' INFORMATION LITERACY AND THEIR DECISION-MAKING ABILITY .....	186
Barbara Fajdetić, Mejra Festić: THE ROLE OF SOLAR ENERGY IN DECARBONIZATION – EVIDENCE OF THE EUROPEAN UNION.....	198
Katerina Fotova Čiković, Joško Lozić, Mirko Smoljić: EFFICIENCY OF COUNTIES IN EASTERN CROATIA: APPLICATIONS OF DATA ENVELOPMENT ANALYSIS.....	212
Marina Gregorić, Martina Kovačević, Dejan Tubić: CHALLENGES AND SOURCES OF ADVERTISING IN AGRITOURISM DURING THE COVID-19 PANDEMIC.....	226
Sanja Gutić Martinčić: ABSENTEEISM AND STRESS OF EMPLOYEES IN THE CONDITIONS OF THE COVID-19 PANDEMIC .....	241
Zsuzsanna Győri, Sára Csillag, Carmen Svastics, Anna Laura Hidegh, Edit Kóródi: EXAMINING THE ENTREPRENEURIAL ECOSYSTEM AND THE ENTREPRENEURIAL LIFE CYCLE IN ENTERPRISES OF PEOPLE WITH DISABILITIES.....	252
Kristina Hodak, Adela Has, Marinela Mokriš: CLUSTER ANALYSIS FOR PROFILING PUBLIC SECTOR BUILDINGS OF CONTINENTAL CROATIA AS A SUPPORT FOR REGIONAL DEVELOPMENT .....	271
Larisa Hrustek, Ana Kutnjak, Lucija Tomašek: CONTRIBUTION OF DIGITAL MARKETING ACTIVITIES TO THE SUSTAINABILITY OF SMART PRODUCTS AND SERVICES.....	281
Auwal Isah, Mirna Leko Šimić: WOMEN ENTREPRENEURSHIP IN NIGERIA – A NATIONAL CULTURE PERSPECTIVE .....	299
Hatidža Jahić, Alka Obadić: INVESTIGATION OF SOCIAL AND EMOTIONAL LIFE AND GENDER DIFFERENCES OF UNIVERSITY STUDENTS IN BOSNIA AND HERZEGOVINA AND CROATIA DURING THE COVID-19 PANDEMIC.....	313
Željka Kadlec, Tony Dvoržak, Marijana Lovrenović: SUSTAINABLE DEVELOPMENT OF SMALL TOWNS IN THE REPUBLIC OF CROATIA.....	327
Domagoj Karačić, Mladena Bedeković, Marija Ileš: REGIONAL INEQUALITIES AND NON-TAX REVENUES IN THE REPUBLIC OF CROATIA.....	345

Andreja Katolik Kovačević, Željko Požega, Boris Crnković: SUSTAINABLE DEVELOPMENT THROUGH BETTER FOOD WASTE MANAGEMENT FROM STUDENT PERSPECTIVE .....	359
Anita Kulaš Miroslavljević: THE IMPACT OF EMOTIONAL INTELLIGENCE ON THE SUCCESS OF COMMUNICATION .....	375
Ana Kutnjak, Iva Gregurec, Lucija Tomašek: HOW DIGITAL TECHNOLOGIES INFLUENCES CONSUMER DECISION MAKING PROCESS – LITERATURE REVIEW .....	387
Višnja Lachner, Jelena Kasap: LEGAL AND SOCIAL POSITION OF CITY OF OSIJEK AT THE TIME OF 6TH JANUARY DICTATORSHIP .....	403
Biljana Lončarić: FAMILY ACCOMMODATION AS A SOURCE OF TOURIST DEVELOPMENT OF THE CITY OF SLAVONSKI BROD .....	416
Suzana Marković, Matina Gjurašić, Vedran Zubović: FROM REALITY TO VIRTUALITY EXPERIENCE: CONCEPT AND APPLICATION IN HOTEL INDUSTRY .....	431
Biljana Marković: THE ROLE OF COMPUTER AND INFORMATION LITERACY IN THE NURSING PROFESSION IN INCREASING THE EFFICIENCY AND EFFECTIVENESS OF THEIR WORK IN GENERAL HOSPITALS IN THE REPUBLIC OF CROATIA .....	448
Robert Martić, Vedrana Ajanović: LEADERSHIP STYLES OF ENTREPRENEURIAL SUPPORT INSTITUTIONS .....	462
Bianca Matković, Marijana Cesarec, Željko Požega: RELATION BETWEEN INVESTMENTS AND THE NUMBERS OF VISITORS IN NATIONAL PARKS AND NATURE PARKS .....	479
Marija Mesić Škorić, Ivana Franjić: THE IMPORTANCE OF LIFELONG LEARNING FOR DEVELOPING FARMERS' ENTREPRENEURIAL WAY OF THINKING .....	492
Ines Milohnić, Danijel Drpić: INTERRELATIONS BETWEEN THE QUALITY OF FACILITIES AND VISITOR SATISFACTION: EVIDENCE FROM HERITAGE BASED EVENT – RIJEKA CARNIVAL .....	504
Ines Milohnić, Ana-Marija Vrtodušić Hrgović, Ema Petaković: IMPORTANCE OF ADDITIONAL FACILITIES IN TOURIST ACCOMMODATION IN HOUSEHOLDS: THE GUEST PERSPECTIVE .....	519

Marija Opačak: A REVIEW OF THEORETICAL AND CONCEPTUAL FOUNDATIONS FOR CONSOLIDATED ANALYSIS OF CVM AND CBA FOR NATURAL AND ENVIRONMENTAL RESOURCES.....	531
Ana Pap Vorkapić, Dario Šebalj, Ana Živković: POLITICAL MARKETING AS A KEY ACTIVITY FOR REDUCING POLITICAL CYNICISM .....	549
Anita Papić, Katarina Knol Radoja, Donata Szombathelyi: CYBER SECURITY AWARENESS OF CROATIAN STUDENTS AND THE PERSONAL DATA PROTECTION .....	563
Ena Pecina, Irena Raguž Krištić, Andrija Sabol: DRIVERS OF FINANCIAL BEHAVIOUR: ARE THERE DIFFERENCES BETWEEN THE EU COUNTRIES.....	575
Hrvoje Perčević, Marina Ercegović: HAVE BANKS RECOGNIZED AN INCREASE IN EXPECTED CREDIT LOSSES ON FINANCIAL INSTRUMENTS IN THE PANDEMIC YEAR? – EVIDENCE FROM CROATIAN BANKS .....	596
Ivana Perica, Branka Ramljak, Ivana Dropulić: THE ROLE OF MANAGERIAL ACCOUNTING TECHNIQUES IN NON- PROFIT ORGANIZATIONS: THE IMPACT ON EU FUNDING .....	611
Renata Perić, Emina Jerković: FINANCIAL AND LEGAL ASPECTS OF THE ORGANIZATION OF LOCAL AND REGIONAL SELF-GOVERNMENT UNITS .....	624
Anita Peša, Berislav Bolfek, Martina Maté: BEHAVIOUR MODEL ‘NUDGEU’ IN THE LIGHT OF CROATIAN ENTRY TO EUROZONE.....	647
Sunčana Piri Rajh, Edo Rajh, Sandra Horvat: EXTENDED MODEL OF INTENTION TO VISIT CULTURAL HERITAGE SITE .....	659
Marko Primorac, Jakša Puljiz, Vladimir Arčabić: APPLICATION OF ALTERNATIVE INDICATORS IN THE CALCULATION OF THE DEVELOPMENT INDEX IN CROATIA .....	673
Mirjana Radman-Funarić, Barbara Pisker: DIGITAL GENDER GAP IN THE EUROPEAN UNION ICT EMPLOYMENT .....	693
Tamara Slišković, Tomislav Sekur, Marija Beg: THE COVID-19 PANDEMIC EFFECTS ON THE HOUSING MARKET OF THE NORTHERN AND PANNONIAN CROATIA .....	708



Iva Sundji, Filip Bartoluci, Dino Bartoluci: CHALLENGES AND OPPORTUNITIES FOR THE DEVELOPMENT OF MEDICAL TOURISM IN CONTINENTAL CROATIA.....	728
Marija Šimić Šarić, Sandra Pepur, Mateo Šetka: CROWDFUNDING SUCCESS DETERMINANTS – STUDY OF CROATIAN CROWDFUNDING CAMPAIGNS .....	736
Zvonimira Šverko Grdić, Aleksandar Racz, Renata Belas: TOWARDS CIRCULAR ECONOMY - A COMPARATIVE ANALYSIS OF THE COUNTRIES OF THE EUROPEAN UNION .....	751
Marko Tomljanović, Igor Cvečić, Tomislav Franc: IMPLEMENTATION OF THE SUSTAINABLE DEVELOPMENT CONCEPT IN THE EU – PROGRESS AND PERSPECTIVES .....	766
Danijela Vakanjac, Monika Uher, Mladena Bedeković: THE MAASTRICHT CRITERIA - INTRODUCTION OF THE EURO IN THE REPUBLIC OF CROATIA .....	783
Aleksandra Vasilj, Biljana Činčurak Erceg: THROUGH CHANGES TO LEGISLATION TO MODERN URBAN MOBILITY .....	801
Vesna Vašiček, Martina Dragija Kostić, Ivana Pajković: EDUCATION OF PUBLIC ACCOUNTANTS IN CROATIA IN THE CONTEXT OF REFORM PROCESSES IN THE PUBLIC SECTOR.....	820
Tihomir Vranešević, Miroslav Mandić, Mijo Renić: TESTING THE MODEL OF THE CONNECTION BETWEEN PERCEIVED SERVICE QUALITY, CUSTOMER SATISFACTION, CUSTOMER LOYALTY AND CUSTOMIZATION .....	834
Maja Vretenar Cobović, Mirko Cobović, Ivana Miklošević: PERSONAL FINANCE MANAGEMENT - STUDENT POPULATION INVOLVEMENT INTO THE FINANCIAL SYSTEM IN EASTERN CROATIA.....	854
Martina Vukašina, Ines Kersan-Škabić: EUROPEAN STRUCTURAL AND INVESTMENT FUNDS (ESIFs) AND REGIONAL DEVELOPMENT IN CROATIA .....	870
Iva Zdrilić, Danijela Sokolić: MIGRATION INTENTIONS OF CROATIAN STUDENTS.....	885
Nikol Žiha, Marko Sukačić: ANCIENT ROOTS OF WINE TRADE IN SLAVONIA AND BARANJA COUNTY – THE LEGAL HISTORIANS APPROACH.....	900
<b>Gratitude to sponsors .....</b>	<b>915</b>

## FOREWORD

The 11th RED conference is back again live. After two years of virtual conferencing experience we are glad to host another RED conference at Faculty of Economics in Osijek. We hope that live meeting, networking, our panel and workshop on scientific publishing, as well as the social activities will provide a value added experience to all the conference participants and bring us all one step closer to the „old normal“ that both we as organizers and our guests have enjoyed in the past.

Toghether with our partnering institutions: University of Tuzla, Faculty of Economics in Tuzla Croatian Academy of Sciences and Arts, The Institute for Scientific and Artistic work in Osijek and University of Maribor, Faculty of Economics and Business, we gave our best to once again provide a memorable conference to all our participants. This year we have focused on papers, i.e. scientific input quality.

This proceedings include altogether 60 papers in the three areas that we try to cover: region, entrepreneurship and development. Our studies come mainly from Croatia, but they also include a few cases of international collaboration (Slovenia, Nigeria, Bosnia and Hercegovina), which is warmly welcomed. Additionally, some studies come from Portugal and Hungary.

Since this is a first live meeting after two years, we have provided few interesting events: keynote speaker, prof. Zsolt Bedő, from Faculty of Business and Economics, University of Pécs, Hungary how will present his study and experience on university as the platform of entrepreneurial activity; secondly we have organized a workshop on publishing in good scientific journals, which will be led by Dino Krupić, assistant professor from Faculty of Humanities and Social Sciences of JJ Strossmayer University of Osijek. Our third event is the panel on CROVIZONE (EU project: Adaptation of vineyard zones to climate change in the Republic of Croatia). Finally, our social event includes trip to Baranja, with wine tasting in tradional wine cellar (gator), visit to Street of forgotten times and conference dinner.

As we have introduced during past few conferences, this year we also announce the best paper award. The best paper award for RED 2022 goes to the paper entitled: CLUSTER ANALYSIS FOR PROFILING PUBLIC SECTOR BUILDINGS OF CONTINENTAL CROATIA AS A SUPPORT FOR REGIONAL DEVELOPMENT, co-authored by Kristina Hodak, Adela Has and Marinela Mokriš, from Faculty of Economcs in Osijek. This article deals with a problem that is significant for the public sector (energy efficiency of buildings) and makes up a huge share of total costs and energy consumption. The problem is approached from different aspects and complex methodology is extremely well-described and conducted. Congratulations to the authors and we hope to have them next year with similarly good input.

We hope to have interesting sessions, fruitful discussion and that all our participants will enjoy all the conference events...and, of course, join us next year.

Finally, I would personally like to express my gratitude to all the partners in the RED project – Organizing and Program committee members, our reviewers, keynote speaker, workshop leader and authors for continuous support. You all made this event best possible.



Mirna Leko Šimić

RED 2022 Organizing Committee Chair





**RED  
2022**



*A scientific paper*

**Marijana Baršić Barun, M. Sc.**

Croatian Agency for SMEs, Innovations and Investments

E-mail address: marijana.barsicbarun@hamagbicro.hr

**Barbara Bradač Hojnik, Ph. D., Full Professor**

University of Maribor, Faculty of Economics and Business

E-mail address: barbara.bradac@um.si

## **THE ROLE OF GUARANTEE INSTITUTIONS IN SUPPORTING SMEs IN EU COUNTRIES**

### **ABSTRACT**

*The objective of this paper is to provide insight into the increasing role of guarantee institutions in selected EU countries in supporting micro, small and medium-sized enterprises (SMEs) to access finance and to analyse their activities during the COVID-19 pandemic. Guarantee institutions offer programmes that are an important part of government policies in most countries (especially in times of crisis such as COVID-19). Guarantee institutions provide guarantees (e.g., individual, portfolio, and counter-guarantees) to SMEs through commercial banks, which use them as risk insurance in case SMEs default. On the other hand, SMEs have several advantages when using guarantees, especially if they do not have a credit history or track record with the bank if they do not have sufficient or adequate collateral. This is the reason why guarantees are becoming more popular in the financial market. During the COVID-19 pandemic, most commercial banks cut back on lending and approved mainly working capital financing, turning to guarantee institutions for fear of higher defaults and uncertainty in the financial market. At the same time, since SMEs are the most vulnerable part of the economy, they are crucial for a healthy recovery from the pandemic.*

*The empirical part of the paper is based on the Scoreboard survey data provided by the members of the European Association of Guarantee Institutions (AECM), and the results provide an analysis of guarantees from certain points of view in comparison with the EU Member States. The results show that the COVID-19 pandemic had a strong impact on the results. While more than two-thirds of respondents observed an increase in guarantee activity in 2020, the expected demand for 2021 is significantly lower than what members expected in 2020. In addition, the survey results show that while expectations for improved access to bank financing remain stable, many more members expect it to stabilise, and many fewer members expect it to worsen.*

**Key words:** *guarantee institutions, bank financing, SMEs, COVID-19, EU countries.*

### **1. Introduction**

Small and medium-sized enterprises account for more than 99% of all businesses in the EU and create more than 85% of all new jobs (EU Commission, 2019). One of their biggest challenges is their access to finance in "normal times" and also in "new normal times". When a micro, small or medium enterprise wants to make an investment or simply needs working capital financing, they usually turn to the commercial bank where they opened their account and apply

for a loan. Often, SMEs and especially start-ups have trouble accessing funding because lenders require collateral. Most SMEs are newly established or young companies that have only a short credit history and track record. This information is important to banks when conducting financial and risk analyses. It also includes information about the experience and competence of the company's management. If the business is a start-up or young company, approving a loan is a high risk for the bank and often such applications are rejected, or loans are approved with conditions that customers cannot meet. Without the help of guarantee institutions, many good, viable projects would not be supported, and this is the gap that guarantee institutions fill throughout Europe and the world.

On the other hand, guarantee institutions are important to banks because of the loan provisions (in case of default) when customers have problems meeting their obligations to the bank. Guarantor institutions usually receive a fee for approving a guarantee for a customer and are obligated to pay a defaulted loan (up to a certain percentage) to a lender if the customer defaults. This means that the guarantor and the bank share the risk. It's a cycle where banks will not lend to SMEs if they do not have sufficient or adequate collateral, and the companies then never have a chance to prove themselves to the banks and build their credit reputation with the bank. This is a gap that guarantee institutions fill, especially in times of crisis such as COVID-19 pandemic.

During the pandemic, there was (and still is) a lot of uncertainty in the financial market and governments had to take the first step to stimulate or encourage banks to help SMEs and provide the working capital financing they need along with the help of guarantee institutions. Collateral is used to reduce the risk of default and limit the loss to the lender. Bank guarantees are used to overcome credit constraints for SMEs (Haag and Henschel, 2016). When SMEs do not have sufficient or adequate collateral, guarantee institutions are there to help SMEs and facilitate their access to finance in such difficult times, "new normal times". Also, in times of crisis such as COVID-19, many banks, even if they had a good relationship with their customers, resorted to guarantees much more often than in previous times due to the uncertainty in the market, as we will show later in the tables. One of the advantages of using guarantees is also the lower interest rates that guarantee institutions charge banks (e.g., a higher percentage of guarantees usually means a lower interest rate on the investment loan).

There is an observation that the financing gap for SMEs is larger in developing countries where financial markets are relatively underdeveloped (EIF Research & Market Analysis, 2017). Financial institutions are generally reluctant to lend to uncollateralized credit to SMEs even at high interest rates (EIF Research & Market Analysis, 2017). Many companies do not have assets that can serve as adequate collateral to lenders, or they do not have enough assets that can serve as collateral for the loan they are requesting (especially startups or microenterprises). For this reason, many companies cannot obtain financing even if they have good projects. This problem is called the SME financing gap, i.e. an insufficient supply of credit for SMEs (OECD, 2016.).

In most EU countries and countries around the world, governments have usually established agencies, organizations, institutions or companies whose main objective is to support SMEs directly (e.g. direct financing with loans) or through banks with various guarantee programs (individual guarantees, portfolio guarantees). These institutions usually offer public support to entrepreneurs at the national or regional level. Loan guarantees are used in both high-income and low-income countries to encourage lenders to extend credit to customers they would not otherwise accept as customers (Vogel and Adams, 1996). Most often, credit guarantees are supported by public funds and are used as government interventions, especially in times of

crisis, such as COVID-19. Their aim is usually to promote employment and encourage banks to lower interest rates and fees, which ultimately has a positive impact on the economy. An EIB/EIF survey of 18 Credit Guarantee Schemes in Western Europe in 2015-2016 found that guarantee institutions are typically publicly owned, non-profit, and operate only in their home country. They may also provide other services (e.g., advisory services to SMEs). One of the guarantee institutions that can serve as an example is HAMAG-BICRO - Croatian Agency for SMEs, Innovations and Investments. The Agency provides individual and portfolio guarantees only for companies registered in Croatia, and HAMAG-BICRO cooperates only with banks and leasing companies operating in Croatia (business cooperation starts with an open tender and is concluded with a contract for each different programme that the Agency offers on the market). The goal of guarantee institutions is to mitigate collateral restrictions, provide guarantees to banks and non-bank intermediaries, and manage their risk through government and EU counter-guarantees (EIF Research & Market Analysis, 2017, p. 16). The European Investment Fund is increasingly using new risk-sharing products/models and is very active in providing funding to guarantee institutions. During the COVID-19 pandemic, the EIB Group responded very quickly with emergency measures for SMEs and EU-based companies. These include guarantee schemes for banks and guarantee institutions, liquidity lines for banks to provide additional working capital financing for SMEs and mid-sized companies, and programmes to purchase asset-backed securities, which banks use to transfer risk for their SME portfolios. The name of the fund established is Pan European Guarantee Fund (EGF). It is part of the overall package of measures agreed by the Eurogroup in April 2020 and also endorsed by the European Council. The aim of the EGF is to respond to the economic impact of the pandemic and to ensure that companies in the member states have short-term liquidity. The total volume of the fund is EUR 25 billion. The Figure 1 shows that the largest support from the EGF fund goes to small and medium-sized enterprises.

**Figure 1:** European Guarantee Fund support



Source: [https://www.eif.org/news\\_centre/publications/eib-group-corporate-governance-report-2020-en.pdf](https://www.eif.org/news_centre/publications/eib-group-corporate-governance-report-2020-en.pdf)

The European Commission, together with the European Central Bank, monitors the development of SMEs' access to finance by conducting an annual survey on business access to finance (SAFE). The survey covers all EU countries with more than 17,000 companies. The survey showed that access to finance is the biggest problem for an average of 7% of SMEs in the EU. Debt is the preferred type of financing, as market-based instruments such as equity are mainly used by companies with high growth potential. The three main sources of financing are credit lines and overdrafts, leasing and bank loans. In 2018, the data collected shows that 18% of SMEs were not able to obtain the full amount of bank loan they had planned to apply for.



## 2. Literature review

The guarantee schemes represent a modern instrument and therefore they are becoming more and more interesting (especially in times of crisis). There are a large number of authors researching and conducting studies on this subject. There are also important stakeholders, namely SMEs as one of the main drivers of the economy, commercial banks/lenders and guarantee institutions. The guarantee institutions have developed their activities in a very stable way over the last two decades, but have increased sharply and probably reached their highest level during the COVID-19 pandemic. They are accountable to their shareholders and to the providers of counter guarantees or other support they use. For this reason, they invest more in evaluating their activities, but also to show their positive impact on the economy (AECM Statistical Yearbook 2020, 2021). There is also the guarantee association AECM, which monitors the activity of guarantee institutions at EU level, represents the policy interests of its members to institutions such as the European Commission, the European Parliament, the EIB, the EIF, the World Bank, etc., collects data, supports its members, organizes working groups and conferences, exchanges best practices and promotes guarantee instruments. There are also several other associations such as GNGI (Global Network of Guarantee Institutions) with the aim of improving credit access for SMEs worldwide, REGAR (Ibero-American Guarantee Network), EMGN (Euro-Mediterranean Guarantee Network), which shows that guarantee institutions are becoming a very important part of the financial market. Guarantee schemes are backed by government guarantees and receive a 0% risk weighting, which significantly reduces regulatory capital costs for financial institutions. In times of crisis, such as the COVID-19 pandemic, guarantee schemes are usually the first to respond and play a crucial countercyclical role by supporting SMEs even when uncertainty increases lenders' risk aversion. CGSs are one of the most successful government interventions in times of crisis. They allow banks to lend larger amounts with longer tenors, charge lower interest rates, and improve the risk profile (Kim, Lee, Kessler, Khan; 2021).

For example, Biernat-Jarka, Planutius (2013) note that CGSs in the EU are at different stages of development and that many improvements can be made by drawing on the experience and best practices of EU countries (they compared them to Polish guarantee systems). They conclude that standards for the implementation of guarantee activities should be introduced and that the rating method for funds would allow to increase their reliability vis-à-vis cooperating banks. Additionally, Riding, Madil and Haines (2006) analyse the incrementality of SME loans and describe a new approach to measuring incrementality. They used a two-step procedure to estimate the incrementality of loans under the Canada Small Business Program. First, a logistic regression model is estimated based on a large sample of SMEs. The model was then used to classify a sample of firms that had received loans with the subsidy guarantees. The hypothesis that it is not possible to measure incrementality was rejected, and the assumption that there is no incrementality associated with the CSB program was also rejected. Incrementality was estimated with 95% confidence for the program.

Vogel and Adams (1997) argue that without more careful evaluations, it is impossible to draw conclusions about the effectiveness of loan guarantee programs or to determine benefits. For them, it is difficult to determine the costs and benefits of guarantee programs, but they believe that they do less harm than providing cheap funds to lenders. However, Kim, Lee, Kessler, Khan (2021) state that loan guarantees are the most successful intervention to facilitate access to finance for SMEs, with success stories in Japan, Malaysia, and the Republic of Korea. They have been around since the early 20th century and are present in almost every country. They point out all the advantages that CGSs offer, such as leverage effect, regulatory capital relief,

countercyclical relief in times of crisis, and that they usually play a crucial role in times of crisis by supporting SMEs even when uncertainty increases risk aversion among lenders. They also discuss that during the crisis, policymakers aim to reach target groups with policies at a high pace, and that many unfair actors gain undue advantages in the process. For this reason, it is necessary to mitigate the most common risk of CGSs—moral hazard and adverse selection.

Haag and Henschel (2016) illustrate the importance of German CGSs. They show that guarantees promote learning by creating credit relationships and enabling the reduction of information asymmetries. Interviews with bank managers indicate that profits decline when guarantees are included. However, respondents indicate that profits tend to decline when guarantees are included. However, the inclusion of, for example, cross-selling and other support to the region has a positive effect on overall profitability, so there is a willingness to include guarantees that make loans available to SMEs.

For example, the EIB Group provides counter-guarantees and conducts numerous studies related to guarantee institutions, and a large number of guarantee institutions use EIB Group counter-guarantees. The EIB Group also responded very quickly with measures during the COVID-19 pandemic described earlier in this article.

The OECD publishes a series of papers on SMEs and guarantee schemes, stating that they are a widely used policy tool to facilitate access to finance for SMEs. The OECD conducts studies with the aim of improving the understanding of the role, impact and sustainability of guarantee schemes.

Based on the stated aim of the paper, the literature review provided, and the insight into the topic provided in the introduction, we state several hypotheses to be tested:

*H1: Guarantee institutions have adopted new measures to combat the COVID -19 crisis and support SMEs.*

*H2: The volume of guarantees increased during the COVID -19 crisis due to strong support measures for SMEs.*

*H3: The structure of guarantees has changed during the COVID -19 crisis compared to the period before COVID-19.*

*H4: The number of SMEs supported by guarantee institutions increased during the COVID -19 crisis compared to the period before COVID-19.*

*H5: The average size of approved guarantees increased during the period 2016-2020.*

All hypotheses are tested in the following section of the paper.

### **3. Methodology**

In this article, we use data from the AECM Survey and Statistical Yearbook for 2019 and 2020, including the publication on SME support in the COVID-19 crisis. We analyse data from 2016 to 2020, with the emphasis on 2020 and the activity of guarantee institutions during the COVID-19 pandemic. The data presented refer to guarantees implemented by AECM members. AECM is the European Association of Guarantee Institutions and is based in Brussels. AECM operates in 30 countries and has 47 members. Most members are guarantee institutions from EU member states, but there are some outside the EU (Turkey, Russia, Bosnia and Herzegovina, Serbia, Kosovo, etc.). Members receive the survey by e-mail in written form and are asked to repeat the collected data within a certain period of time (the survey is usually conducted twice a year,

as AECM compares the data from one semester to another; and sometimes during the year, if there is an interesting topic for the members).

Members are private/mutual sector guarantee schemes or public development institutions and banks whose objective is to facilitate access to finance for SMEs when they do not have sufficient collateral required by the bank (either for investment or for working capital financing). According to the AECM, guarantee institutions seek through their activities to influence job creation, innovation and competition, the structure and risk diversification of the European economy, regional development, and the countercyclical role in times of crisis such as COVID-19 pandemic crisis.

#### 4. Empirical analysis results

The year 2020 has begun with the pandemic COVID-19 spreading throughout Europe and the world. Governments in most EU countries have reacted in such a way that they have closed public life (stores, restaurants, schools, most companies have started to work from home) to slow down the spread of the virus - lockdown and social distancing affected SMEs. The recession started and the financial situation worsened. Banks were reluctant to lend to SMEs and as a result guarantee institution across Europe reacted immediately and launched programmes/measures to support SMEs. Micro and small enterprises are the first to be affected by the economic consequences of the pandemic. This is very similar to the crisis between 2008 and 2010 when guarantee institutions supported by governments and EU funds also supported SMEs when banks were reluctant to take risks and lend to SMEs.

We provide an overview of the support measures for SMEs affected by the crisis and taken by guarantee institutions, focusing on AECM members. AECM is an association where guarantee institutions share best practises and are in close dialogue with policy makers at EU level, EIB, OECD, etc. The response of guarantee institutions has prevented the wave of insolvencies in EU countries and the credit crunch (AECM, 2020). In most EU countries, the actions of guarantee institutions have been supported by governments at the national or local level or by EU funds:

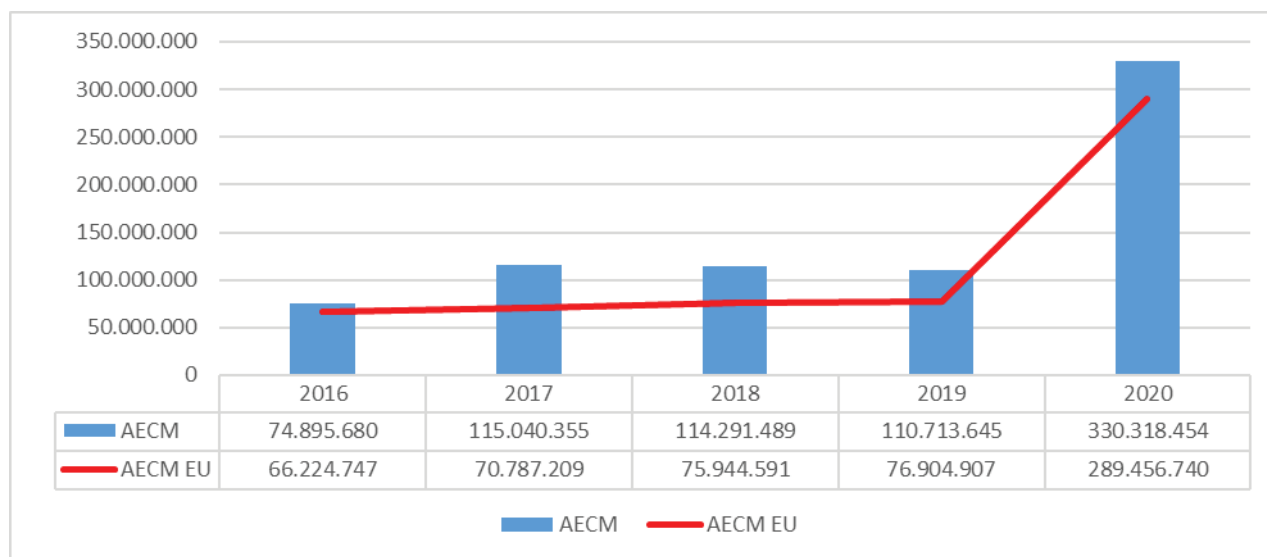
- Increasing guarantee capacity (many guarantee institutions received additional funds or benefited from counter-guarantees from government or EU programmes; this helped them to provide more guarantees in favour of SMEs).
- Increase in maximum and decrease in minimum guarantee amounts (higher guarantee amounts than in normal times to meet banks' higher collateral needs; some lowered the amounts to allow access to collateral for very small loan amounts and to make them accessible to the smallest microentrepreneurs).
- Increasing the coverage rate (most AECM members have used this measure. Prior to the pandemic, the weighted average coverage rate in 2019 was 56%. Many institutions have increased the coverage rate to 75 or 90% and some have increased it to 100% for small amounts. This was possible because the European Commission adopted the "Temporary Community Framework for State Aid to Support the Economy in the Current COVID-19 Pandemic". The increase in coverage was also possible because of counter-guarantees granted to guarantee institutions by their governments or through EU programmes).
- Reduction or waiver of fees and interest (some institutions have reduced regular or one-time fees, while others have waived them altogether. Also, some AECM members limit the interest rates on loans with guarantees that can be charged by lenders or subsidise loans. The goal is to make guarantees more affordable).

- Fast-track procedures and reduced documentation requirements (at the beginning of the pandemic, this was critical, including for bridge financing. Some institutions, due to intense pressure and high numbers of applications, had to allow lenders to make decisions and reduce the documentation required. For example, the European Commission approved that under the Temporary Framework, only the viability of the company must be demonstrated by the end of 2019).
- Relaxation of payment schemes (extension of the repayment period for guaranteed loans, granting amortisation-free period. This was important to allow a large part of SMEs to survive while losing most of their income due to the lockdown).
- Expanding the scope of guarantees (some institutions allowed guarantees for sectors/industries that were not covered before the pandemic, including further development stages of companies that were not covered before. This was important to allow access to a larger number of companies that needed assistance).
- Reduction in collateral requirements (guarantee institutions reduced the collateral required or capped that of lenders providing guarantees).
- Equity and quasi-equity measures (to avoid the risk of over-indebtedness of SMEs, some institutions introduced new products - equity or quasi-equity guarantees or direct equity participation).
- Offering advisory services (starting information campaigns by introducing hotlines, setting up F&Q, publishing special information websites, organising webinars on the topic of emergency financial assistance options).

Not all guarantee institutions have taken new measures to combat the pandemic crisis, but they have used their regular programmes to support SMEs, as have members from Hungary, Luxembourg, Romania, and Bulgaria.

The guarantee activities of AECM members have experienced a dramatic increase in 2020; at the end of the year, the increase is almost 200% compared to the previous year 2019 (slight decrease compared to 2018). The outstanding volume of guarantees has reached more than EUR 330 billion (EUR 289 billion for EU countries). This is the highest level of outstanding volume ever registered by AECM members. According to the collected data from the survey, AECM members have produced EUR 279.2 billion in new guarantees issued, of which EUR 236.6 billion (84.7%) are classified as COVID-19 measures with an average maturity of 39 months.

**Figure 2:** Volume of outstanding guarantees in the portfolio of AECM members for the period 2016-2020 (in 000 EUR)



Source: author's construction based on the data from AECM Facts and Figures (2017,2018) and AECM Statistical Yearbook (2019,2020,2021)

New guarantees granted in 2020 reached EUR 279.2 billion, the highest level ever recorded, and 61% of guarantees were approved immediately after the start of the pandemic. There are several reasons for this, e.g., banks are willing to take the risk and then apply for government guarantees, more and more companies need financial support, higher guarantee rates (e.g., 100%), state support for the guarantee fee under the Temporary Framework for State Aid to Support the Economy during the Pandemic, etc.

AECM members have experienced an overall explosion in guarantee volumes as a result of strong SME support policies and programmes. AECM member organisations supported SMEs with guarantees totalling EUR 330.3 billion in 2020. Compared to 2019, this is an increase of 199.5%. Figure 2 shows the volume of outstanding guarantees in the total portfolio for the period 2016-2020 for AECM members. The majority of members reported an increase in their portfolio, with the largest increase in France (more than half of the increase thanks to Bpifrance) and the United Kingdom (more than a quarter thanks to BBB, which implemented the support measures set up by HMT). The largest increase in guarantee activity took place in the first half of 2020 (+135.2%). Most members registered an increase (35) due to large government programmes, while some saw a decrease (7).

It is important to note that the structure of volume changed significantly during the COVID-19 pandemic. The volume for investments and working capital loans has changed significantly. In 2020, it is noted that guarantee activity has shifted from covering investments to covering working capital loans. In 2020, investment loans accounted for 53.1% of the volume and working capital loans accounted for 46.9%, while in 2019 investment loans accounted for 86.3% and working capital loans accounted for only 13.7%. This also indicates the liquidity problems faced by SMEs with the onset of the COVID-19 pandemic.

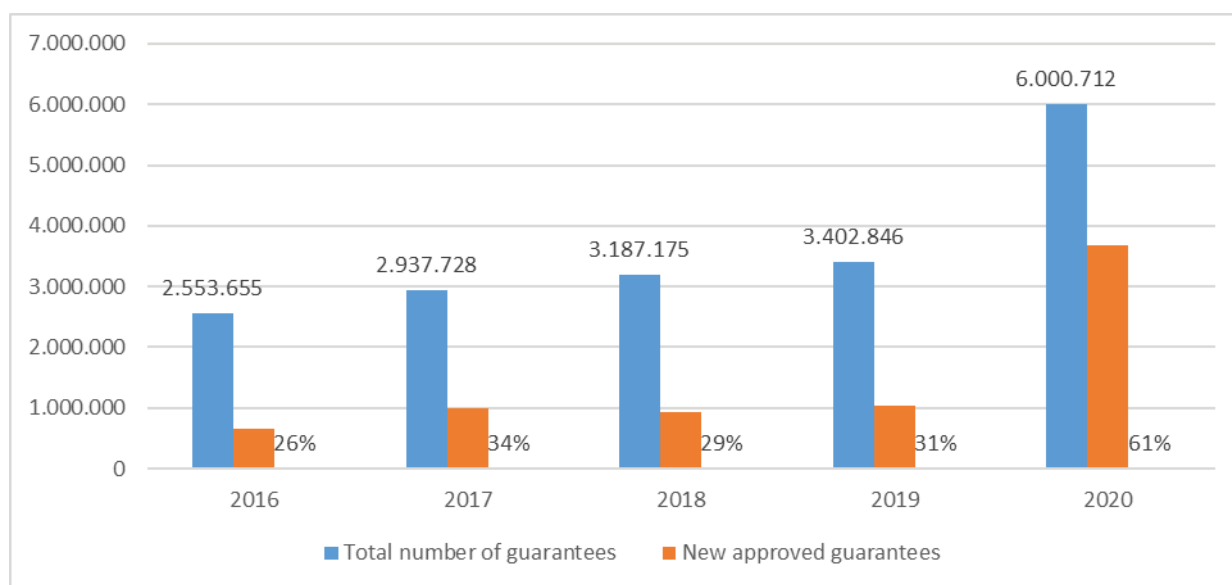
Every guarantee institution had different set of programmes and measures (we will give several examples):

- Austria (awt) - COVID-19 bridge funding represents 68.8% of outstanding programme.
- Croatia (HAMAG-BICRO) - significant increase in the share for working capital; also gave direct COVID loans up to 100 tEUR at a time when banks in Croatia had practically stopped financing SMEs; introduced a new programme and increased the coverage of the principal up to 100% for certain industries, e.g. tourism, culture

- Hungary (Garantiqa) - strong increase in the outstanding volume of guarantees due to the introduction of Crisis Credit Guarantee Programme with very favourable conditions, which was launched in May 2020. They also improved and automated their processes.
- Poland (BGK) - increased demand for guarantees as a measure to contain the COVID-19 pandemic, more attractive terms for existing guarantee programmes and new guarantee programmes for response to COVID-19 crisis.
- Portugal (PT) - increase is due to COVID-19 response of the economy; they have introduced COVID-19 credit lines.
- Slovenia (SEF) - confirms that the increase is due to the issuance of COVID-19 guarantees.

The number of guarantees in AECM member states has increased significantly, but less than the volume. In 2020, AECM members had a total of more than 6 million guarantees in their portfolios, 76.3% more than in 2019, with the largest increase recorded by guarantee institutions in the United Kingdom and France. New guarantees issued in 2020 totalled nearly 3.7 million units. Looking at the collected data, it can be concluded that the very strong expansion of approved guarantees in 2020 was due to the introduction of support measures for SMEs that faced major problems in their business due to the COVID-19 pandemic. In 2020, AECM members approved more guarantees than ever before.

**Figure 3:** Number of guarantees in units for the period 2016-2020



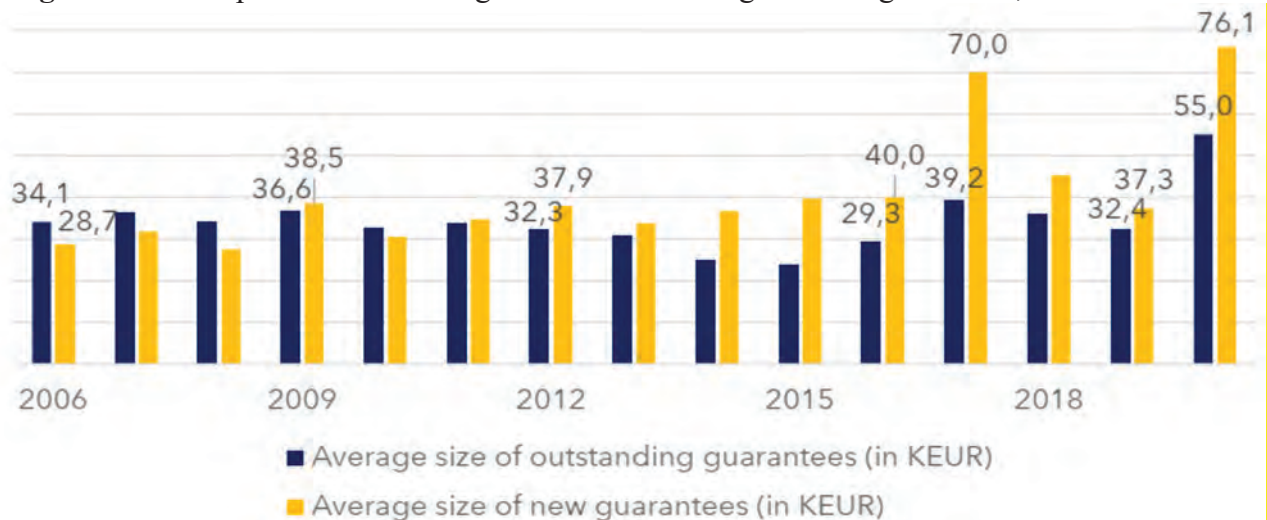
Source: author's construction based on the data from AECM Facts and Figures (2017, 2018) and AECM Statistical Yearbook (2019, 2020, 2021)

The number of SMEs supported by guarantee institutions during the 2016-2020 observation period is increasing, but the table shows that the introduction of measures during the pandemic had a very strong effect. The number of SMEs supported doubled in 2018-2020 and increased by 81% in 2020. The highest increase was seen in France and the UK, which also have the highest portfolios. According to the AECM data, the number of supported SMEs shows the countercyclical role of guarantee institutions. During the global financial crisis in 2008, the number of supported SMEs increased by 100% (from 2 to 4 million) and between these two crises, the development of SMEs was stable.

**Figure 4:** Number of supported SMEs for the period 2016-2020 (in 000)

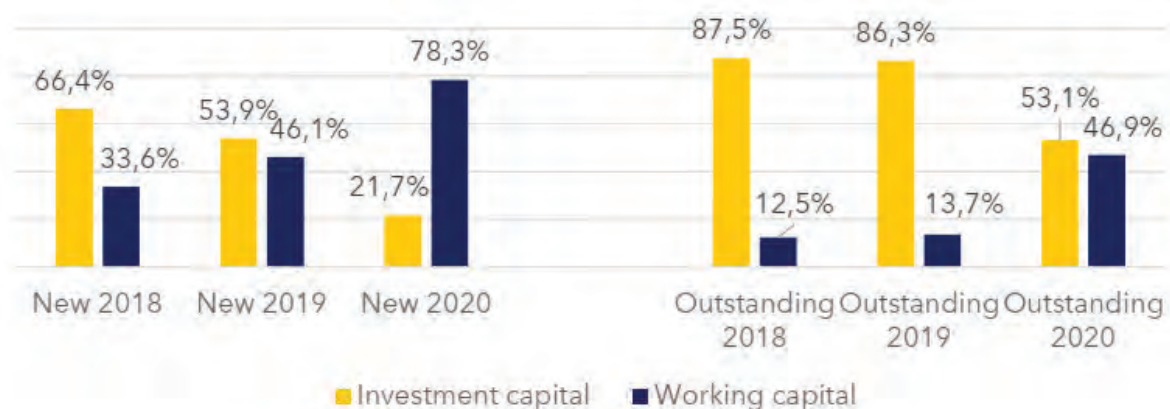
Source: author's construction based on the data from AECM Facts and Figures (2017, 2018) and AECM Statistical Yearbook (2019, 2020, 2021)

The average size of approved guarantees has also increased, from EUR 40 thousand in 2016 (average size of outstanding guarantees EUR 29.3 thousand) to EUR 76.1 thousand in 2020 (average size of outstanding guarantees EUR 55 thousand). Due to the high proportion of new guarantees in the portfolio, this has been reflected in an increase in the average volume of outstanding guarantees. In the survey conducted by AECM, members expect the volume of guarantees to decrease as SMEs recover from the crisis.

**Figure 5:** Development of the average size of outstanding and new guarantees, 2006-2020

Source: AECM Statistical Yearbook 2020, page 18

Figure 5 shows that in 2020, the average size of new guarantees increased by 70% and the average size of new guarantees increased by more than 100%. Only in 2017 the average size of new guarantees was very close to 2020 because one of the members with a high-volume share had an unexpected expansion of the policy (member outside the EU, KGF /Turkey). Also, the highest guarantee amount was EUR 327.3 thousand and the lowest average amount was EUR 8.2 thousand.

**Figure 6:** Development of the share of working capital and investment guarantees, 2018-2020

Source: AECM Statistical Yearbook 2020, page 12

Further major uncertainties are expected in 2021 due to the pandemic. According to the AECM survey, although more than 2/3 of members observed an increase in guarantee activity in 2020, the expected demand for 2021 is significantly lower than what members expected in 2020.

In 2020, guarantee institutions that saw increased demand for their products increased their activity from 60% to 78.9%, which is the highest result to date. This is due to the difficult situation in the financial market for SMEs due to the COVID-19 pandemic. Significantly fewer members expect an increase in demand in 2021 (60.5%) than in 2020 (74.3%). One of the main reasons for this is the avoidance of additional debt (bank loans), which has a direct impact on lower guarantee activity by guarantee institutions.

The guarantee institutions do not expect a further increase in guarantee activity. It appears that guarantee activity is approaching its highest level. AECM members are more optimistic about access to bank finance in 2021 than in 2020, expecting improved access to bank credit to stabilise.

In 2021, guarantee institution will focus primarily on continuing current business, new guarantee products, new other financing products, and new guarantee procedures. Compared to 2020, there are several topics in their business that have become less important due to the COVID 19 pandemic, namely new guarantee procedures (from 54.3% to 28.2%), change in current business model (from 20% to 7.7%), new customers / target groups (from 48.6% to 38.5%), and new pricing/fee models (from 22.9% to 12.8%). From these results, it can be concluded that guarantee institutions are refocusing on their core business due to the pandemic. Due to the increase in guarantee activity, AECM members expect a 69.2% increase in default rates in 2021. 20.5% of members believe default rates will remain stable and only 2.6% expect an increase.

## 5. Conclusions

The guarantee instruments provided by guarantee institutions have many advantages and added value for several stakeholders. First, there are the micro, small and medium-sized entrepreneurs, for whom guarantees provide easier access to finance for good projects, but also for riskier projects with lower collateral requirements and lower risk premiums. For banks, guarantees mean a reduction in their risk exposure, an increase in lending activity, a positive impact on capital requirements and a high level of liquidity in case of default by their customers. For the public sector, guarantees mean an efficient way to implement policy objectives (public support) for certain sectors when banks have an aversion to riskier projects, when banks have high collateral requirements, and when banks have high requirements for lending conditions due to



regulatory pressure. And the most important advantage is in times of crisis, such as the current COVID-19 pandemic, where the help of guarantee institutions was/is crucial for the authorities, as guarantees can be part of a counter-cyclical public policy toolkit to support SMEs lending (AECM: Representative of Guarantee institutions in Europe: Fostering SMEs' growth, 2021). Micro, small and medium-sized enterprises have difficult and limited access to finance in "normal" times, but these difficulties become even more pronounced in times of financial crisis (such as COVID-19 pandemic). We stated several hypotheses, all of which were confirmed in the empirical part of the analysis.

Analysing all the data from the AECM Statistical Yearbooks and Facts and Figures for the period 2016 to 2020, we can conclude that the COVID-19 pandemic had a great impact on SMEs' access to finance (bank loans). Before the pandemic, guarantee institutions helped SMEs obtain bank loans when they did not have sufficient collateral, but during the pandemic period, the help of guarantee institutions was crucial as SMEs experienced one of the most uncertain and difficult times. From the analysed data, it can be concluded that the guarantee activities reached their highest level in the analysed period from 2016, but also compared to the last financial crisis after the year 2008. The guarantee activities of AECM members have experienced a dramatic increase of 200% in 2020, reaching their highest level ever. The outstanding volume of guarantees in the portfolio exceeds EUR 330 billion.

The structure of the volume has changed significantly during the COVID-19 pandemic. The volume covering investments and working capital loans has changed significantly, so that in 2020 the guarantee activity has shifted from covering investments to covering working capital loans. In 2020, investment loans accounted for 53.1% of the volume and working capital loans accounted for 46.9% (in 2019, the figure was 13.7%).

The number of guarantees almost doubled in 2020 to 6 million, an increase of 76.3%. The number of supported SMEs has increased from 2.8 to 5.1 thousand. Compared to the last financial crisis in 2008, the number of guarantees has doubled from 2 to 4 million. The average amount of new guarantees has also increased from 37.3 to 76.9 thousand. All the analysed parameters have increased, but have also reached their highest level, and all this as a result of the unstable financial situation and the very slow support and response of the banks, but the very good measures and support programmes of the governments in cooperation with the guarantee institutions.

## References

AECM (2017), "Facts and Figures 2016", Secretariat General AECM Brussels, available at: [https://aecm.eu/wp-content/uploads/2017/05/aecm\\_facts\\_figures\\_2016.pdf](https://aecm.eu/wp-content/uploads/2017/05/aecm_facts_figures_2016.pdf) (accessed 13th September 2021)

AECM (2018), "Facts and Figures 2017", Secretariat General AECM Brussels, available at: <https://aecm.eu/wp-content/uploads/2018/06/Facts-and-Figures-2017-for-web.pdf> (accessed 13<sup>th</sup> September 2021)

AECM (2019), "Statistical Yearbook 2018", Secretariat General AECM Antwerp, available at: <https://aecm.eu/wp-content/uploads/2019/06/Statistical-yearbook-2019.pdf> (accessed 14th September 2021)

AECM (2020), "Statistical Yearbook 2019", Secretariat General AECM Brussels, available at: <https://aecm.eu/wp-content/uploads/2020/07/AECM-Statistical-Yearbook-2019.pdf> (accessed 15<sup>th</sup> September 2021)

AECM (2021), “Representative of Guarantee Institutions in Europe – fostering SMEs’ growth”, available at: [https://aecm.eu/wp-content/uploads/2021/10/6332-AECM\\_Brochure2021\\_V481.pdf](https://aecm.eu/wp-content/uploads/2021/10/6332-AECM_Brochure2021_V481.pdf) (accessed 5<sup>th</sup> January 2022)

AECM (2021), “SME support in the covid crisis”, The role of Guarantee Institutions”, Secretariat General AECM Brussels, available at: <https://www.flipsnack.com/aecmeurope/aecm-covid-brochure/full-view.html> (accessed 25<sup>th</sup> September 2021)

AECM (2021), “Statistical Yearbook 2020”, Secretariat General AECM Brussels, available at: <https://aecm.eu/wp-content/uploads/2020/07/AECM-Statistical-Yearbook-2019.pdf> (accessed 20<sup>th</sup> September 2021)

AECM (2021), Internal financial data from AECM Survey

Asdrubali P., Signore S., (2015), *The Economic Impact of EU Guarantees on Credit to SMEs, Evidence from CESEE Countries*, EIF Research & Market Analysis, Working Paper 2015/29, available at: [https://ec.europa.eu/info/sites/default/files/file\\_import/dp002\\_en\\_2.pdf](https://ec.europa.eu/info/sites/default/files/file_import/dp002_en_2.pdf) (accessed 11<sup>th</sup> of April 2021)

Biernat-Jarka A., Planutius e. (2013), “*Credit Guarantee Scheme for the SME Sector in Poland Against the Background of the Selected EU Member States*”, Economic Science for Rural Development, No 30 2013, available at: [https://llufb.llu.lv/conference/economic\\_science\\_rural/2013/Latvia\\_ESR\\_30\\_2013-32-37.pdf](https://llufb.llu.lv/conference/economic_science_rural/2013/Latvia_ESR_30_2013-32-37.pdf), (accessed 16<sup>th</sup> October 2020)

Chatzouz M., Gereben A., Lang F., Torfs W. (2017), “*Credit Guarantee Schemes for SME lending in Western Europe*”, EIF Research & Market Analysis, Working Paper 2017/42, available at: [https://www.eif.org/news\\_centre/publications/eif\\_wp\\_42.pdf](https://www.eif.org/news_centre/publications/eif_wp_42.pdf) (accessed 15<sup>th</sup> October 2020)

Craig B.R., Jackson W.E., Thomson J.B. (2008), “*Credit market failure intervention: Do government sponsored small business credit programs enrich poorer areas?*”, Small Business Economics, Vol. 30, No 4, pages 345-360

European Commission, Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (2019), “*EU financing for small and medium-sized enterprises: real benefit for businesses: case studies*”, Publications Office, available at: <https://data.europa.eu/doi/10.2873/294494> (accessed 5<sup>th</sup> November 2021)

Gai L., Ielasi F., Rossolini M. (2016), “*SMEs, public credit guarantees and mutual guarantee institutions*”, Journal of Small Business and Enterprise Development, Vol. 23 Iss 4 pp. 1208 – 1228

Garbacz W., D. Vilalta and L.Moller (2021), “*The role of guarantees in blended finance*”, OECD Development Co-operation Working Papers, No 97 OECD Publishing, Paris, available at: [https://www.oecd-ilibrary.org/development/the-role-of-guarantees-in-blended-finance\\_730e1498-en](https://www.oecd-ilibrary.org/development/the-role-of-guarantees-in-blended-finance_730e1498-en) (accessed 30<sup>th</sup> September 2021)

Haag A., Henschel T. (2016), “*SME lending relationships: A learning perspectives*”, The International Journal of Entrepreneurship and Innovation, Vol. 17(3), pages 184-193

Kim S.S, Lee K., Kessler T., Khan M.S. (2021), “*Policies to Optimize the Performance of Credit Guarantee Schemes During Financial Crises*”, ADB Briefs, No 167, March 2021, available at: <https://www.adb.org/publications/policies-credit-guarantee-schemes-financial-crises> (accessed: 25<sup>th</sup> January 2022)

Menkoff L., Neuberger D., Rungruxsirivorn O. (2012), “***Collateral and its substitutes in emerging markets lending***”, *Journal of Banking & Finance*, Volume 36, Issue 3, pp. 817-834

OECD (2012), “***SME and Entrepreneurship Financing: The Role of Credit Guarantee Schemes and Mutual Guarantee Societies in supporting finance for small and medium-sized enterprises***”, OECD SME and Entrepreneurship Papers No 1, available at: [https://www.oecd-ilibrary.org/economics/sme-and-entrepreneurship-financing\\_35b8fece-en](https://www.oecd-ilibrary.org/economics/sme-and-entrepreneurship-financing_35b8fece-en), (accessed 10<sup>th</sup> September 2020)

Riding A., Madill J., Haines G. Jr. (2007), “***Incrementality of SME Loan Guarantess***”, *Small Business Economics*, Vol. 29, No ½, pp. 47-61

Vogel R.C., Adams D.W. (1996), “***The Benefits and Costs of Loan Guarantee Programs***”, *The Financier*, Vol. 4, No 1&2, pp. 22-29

*A scientific paper*

**Mato Bartoluci, Ph. D., Full Professor**

Faculty of Economics in Zagreb

E-mail address: mbartoluci@efzg.hr

**Marija Nakić, Ph. D.**

City administration of the city of Zagreb

E-mail address: marija.nakic@zagreb.hr

**Alen Jerkunica, univ.spec.oec.**

ASPIRA university college,

E-mail address: alen.jerkunica@aspira.hr

## **IMPLEMENTATION OF PUBLIC RELATIONS IN SUSTAINABLE DEVELOPMENT OF A TOURIST DESTINATION**

### ***ABSTRACT***

*The subject of this paper is the research of the role of public relations in the sustainable development of a tourist destination. The paper studies the tourist destination as a business system at the regional level. The starting point is the realization that the sustainable development of a tourist destination is based on the implementation of various principles of sustainable development: environmental, socio-cultural, economic, technological and political principles. The aim of the paper is to study the impact of public relations on the sustainable development of a tourist destination, as well as its implementation of it, on the example of Zadar County. A primary research was conducted on the example of a tourist destination in Zadar County, in which an expert group and various stakeholders from the public and private sectors as providers of tourist offer in tourism were examined using a questionnaire. The impact of various stakeholders from the public and private sectors on the sustainability of the destination was also examined. The research methods used in this paper are the desk research, the survey questionnaire, Delphi method, focus group and SWOT analysis. Descriptive statistics, inferential statistics and the Delphi method were used to process the research results. The results of the research confirm the hypothesis of this paper, which indicates the special role of public relations in the sustainable development of a tourist destination. This is a new scientific contribution to the role and importance of public relations in the sustainable development of tourism.*

**Key words:** *public relations, tourist destination, sustainable development of a tourist destination.*

### **1. Introduction**

Tourism has become one of the world's largest industries and one of the fastest growing economic and social phenomena and it is of great importance for the economy of many countries. The unprecedented expansion of tourism has created a multitude of economic, environmental and social impacts especially in the receptive areas. The rapid growth of tourism and other activities generates many positive and negative effects that significantly affect the

environment and sustainable development of a destination. Sustainable development is based on the paradigm that today's generations can use resources in tourism in a way that preserves them for future generations (Bartoluci, 2013, 131). Respect for the principles of sustainable development (environmental, socio-cultural, economic and technological) is necessary to ensure quality tourism development with the protection and sustainable use of resources. This is especially important for those types and forms of tourism that are very sensitive to various influences in the ecological and socio-cultural sphere. These types and forms of tourism include rural, health, nautical, cultural and other forms of active tourism. The impact of the development of specific forms of tourism on the destination through the principles of sustainable development ultimately also has an impact on economic sustainability. Public relations in tourism, adapted to the conditions and tendencies of the tourism industry of each destination, enables the destination tourism to become a productive, culturally profitable and socially useful activity. This paper aims to show that public relations can play an important role in promoting the tourism activity of a tourist destination. The results of this paper indicate that public relations can be used to effectively promote the sustainable development of destination tourism, especially today when destinations, especially those in the coastal zone, are faced with the massive and seasonal nature of tourism and its negative consequences.

## 2. Conceptual framework

### 2.1. Public relations in tourism

Zoran Tomić (2016, 99) defines public relations as follows: "Public relations is the process, in which an organization communicates with its internal and external public in order to achieve mutual understanding, build social responsibility and pursue common interests". Accordingly, the purpose of public relations is to cooperate with all stakeholders included in the process in order to maintain positive publicity of the company. Tomić's definition (2016, 99) contains five interrelated elements: (1) *communication*; (2) *mutual communication*; (3) *two-way symmetric communication*; (4) *planning and decision-making* and (5) *legitimacy*. Both the public and the entire public communication system benefit from public relations. Public relations and the activities in which they are engaged and the areas in which they operate, contribute to the professionalization and democratization of the process of public communication. They help fill the information gap and can compensate for structural deficits in communication or media reporting (Skoko, 2004, 97).

In the modern socio-economic context, public relations is considered an imperative for the evolution and development of tourism. Public relations are crucial in the promotional activities and communication of companies and tourism organizations. Nevertheless, there is a lack of connection between theory and practice in public relations in tourism. Therefore, it is necessary to develop a theoretical framework for public relations that will focus on different public sectors and the relationships established with them. It is also necessary to have tourists share their experiences, as well as their views and opinions on the overall tourism process. What tourism needs in an approach to public relations which creates the basis for different programs and focuses on the goals of two-way communication, responsibility and mutual understanding (Huertas, 2008, 408). Public relations include a series of activities designed to create and build good relationships with the organization's various publics (Kotler et al., 2020, 469). They actually have five main functions (Heath, Commb, 2006, 8-10):

- (1) *Strategic planning* refers to the positioning of the organization that best suits the target groups, in order to respond to their needs, wants and opinions. In this regard, it is also used to build, repair, or maintain an organization's strategic relationships.

(2) *The research function* can help managers know what to say in response to public criticism, research can determine whether costumers are aware of products and service.

(3) *Publicity* employs includes attracting attention and supplying information about a specific activity or attribute of an organization. It employs media coverage in order to inform the target public about an organization, product, service, needs, etc.

(4) *Promotion* includes a series of publicity events (of various durations), used to attract the target group and supply them with specific information for the purpose of being publicly recognised.

(5) *Collaborative decision making* includes counselling managers within the organisation and fostering a decision-making style that respects the concerns of the publics which would be affected by the decision.

By implementing these five functions of public relations, especially promotion and publicity, it is possible to achieve a positive image of the destination through sustainability.

## 2.2. Promoting the sustainable development of a tourist destination

In today's environment, the challenge of managing a destination in a sustainable way is getting bigger. Tourism experts in the 1980s were already pointing to the problem of sustainability. The concept of sustainable tourism development arose as a reaction to the increasingly pronounced environmental and socio-cultural problems that humanity was facing, especially in urban areas (Bartoluci, 2013, 131). Sustainable tourism can be the most effective approach, a real opportunity to exploit and promote local products and services, tourism potential that can be developed in order to maximize the positive impact on tourist destinations (Petrovici, 2014, 72). The implementation of the concept of sustainable development makes sure that uncontrolled development does not destroy all resources, and assumes that natural, cultural and other tourist resources are preserved for future generations, while at the same time being used by current generations (Magaš, Zadel, 2018, 97). Sustainable development accepts the fact that the economy must develop, but only with the necessary conservation and redistribution of the country's resources (Dujmović, 2014, 32). Sustainable tourism is suitable for all types and forms of tourism that contribute to the sustainable use of resources and the environment.

Problems of sustainable tourism development are found in all areas of human activities: environmental, cultural, social, economic and technological. There is almost no human activity that does not directly or indirectly affect sustainable development (Bartoluci, 2013, 130). Sustainable tourism development requires informed participation of all relevant stakeholders such as local population, tourists, tourism providers and the public sector (Križman Pavlović, 2008, 2005) and strong political leadership to ensure broad participation and consensus building (UNWTO, 2021). More than anything, the development phase of this tourism raises concerns about the bearing of the natural and cultural environment as well as the well-being of local communities. Destinations are asked to assess the bearing capacity of the natural and cultural environment in order to meet the expectations of tourists not limiting themselves only to the physical products offered but including the quality of innovative services as well (Amerta et al., 2018, 251). It is a tourism form that contributes to optimal socio-economic transformations by preventing the deterioration of social, cultural and ecological tourism systems (Choi, 2016, 916). Such tourism is aimed at increasing the living standards of the local population while respecting the principles of sustainable development.

The goals of sustainable tourism development derive from the general goals of sustainable development, i.e. from their adaptation to the specifics of tourism (Bartoluci, 2013, 131). Its successful implementation requires integrated policies, planning, management, monitoring and social learning processes; its political sustainability depends on the active engagement of

community residents influenced by their governments, social institutions, well-managed communication among all stakeholders, and private activities (Choi, 2016, 916). Guidelines and practices for the management of sustainable tourism development are applicable to all forms of tourism in all types of destinations, including mass tourism, as well as various segments of tourism niches. The principles of sustainability refer to the environmental, socio-cultural, economic (UNWTO, 2021) and technological aspects of tourism development (Vukonić, Keča, 2001, 190; Bartoluci, 2013, 133). A balance needs to be struck when applying the principle in order to achieve its long-term sustainability. All principles of sustainability should be equally respected in sustainable development policy, because they are interdependent and synergistically affect the sustainable development of tourism (Bartoluci, 2013, 138). Sustainable tourism can be achieved if natural, cultural and human resources are used responsibly with economic efficiency. Sustainable tourism development can provide an opportunity for all tourism stakeholders to make the destination's tourism sector long-term, time-oriented and beneficial to the local community while applying the principles of sustainable development, and still maintaining the quality of life and resources for future generations. Therefore, in order to ensure long-term sustainable development of a tourist destination, it is necessary to respect all principles. However, in practice this is often difficult to implement due to the different interests of private and public sector stakeholders. Therefore, in a certain destination, it is necessary to reach a compromise between different stakeholders and interests when it comes to public goods, maritime good, sea, islands, lakes, rivers, mountains and other natural resources. Sustainable tourism is useful for locals and tourists because it is informative (tourists learn more about the destination and its conservation), preserves resources, respects local culture and tradition, creates new and positive experiences and experiences (Dujmović, 2014, 32). Tourist satisfaction is also a crucial element of sustainable tourism as a high level of tourism satisfaction needs to be maintained while raising their awareness of tourism sustainability issues (Choi, 2016, 916). It is important to inform tourists who come from different cultural backgrounds about the customs of the local population, religion, rules of conduct and other important so they would be able to show respect for the local population (Bartoluci, 2013, 142). In terms of public relations, sustainable tourism includes those strategies that will promote destinations whose main attraction is flora, fauna or cultural heritage. This means increased visibility of destinations with tourist potential, high quality of services and careful segmentation of the target public (Petrovici, 2014, 71). In the field of sustainable development partnerships, communication is the main tool that creates sustainable development partnerships and keeps them active and effective, and communication is their main driver, ingredient, effect and process, and sometimes their main goal (Tafra-Vlahović, 2007, 2). The best-known model of organizational communication is two-way symmetric model of public relations.

The aim of this paper is to investigate the impact and implementation of public relations on the sustainable development of a tourist destination on the example of Zadar County. On the example of a tourist destination in Zadar County, a primary research was conducted, in which a questionnaire was used to question various stakeholders from the public and private sectors who are providers of tourism and expert groups on the sustainability of the destination. Based on the aim of the research, the following hypothesis was set:

H1: Long-term sustainable development of tourism in Zadar County can be ensured by implementing public relations among key stakeholders.

### 2.2.1. Specific forms of tourism as an added value of a tourist destination

Competitiveness of tourism is closely related to solving the goals of sustainable development of tourist destinations and providing green tourism services that do not have a negative impact

on the environment, but ensure resource savings, protection of the natural environment (Streimikiene et al, 2020, 8). Specific forms of tourism have an emphasis on market segmentation, encouraging learning about different communities, acquiring new knowledge and adopting cultural values and the desire to satisfy certain interests focused on activity (Dujmović, 2014, 102). Tourists are currently looking for sustainable tourism services and enjoy responsible spending practices, so they are eager to choose sustainable tourism service packages proposed by various tourism organizations (Streimikiene et al, 2020, 10). Such tourists seek not only “value for money” but also “value for time” because their goal is to experience a unique tourism product that is different from a conventional mass tourism product (Bartoluci, 2013, 185). Tourism of specific interests is much more sustainable and ethical than mass tourism, primarily due to smaller groups of tourists, whose main reason for traveling is the search for authentic natural or cultural experiences and adventures (Douglas et al., 2001 in Dujmović 2014, 106). The main goal of Croatian tourism development is to increase attractiveness and competitiveness, build a new identity, apply new technologies and environmental standards in environmental protection and rapidly develop a range of products in the field of nautical, health, cycling, adventure, sports, cultural and business tourism (Tourism Development Strategy until 2020). Specific forms of tourism offer an opportunity for expanding the season and generating new income through a specific offer (Gavranović, 2015, 89). For example, the development of wine tourism through sustainable rural development which can extend the tourist season and promote Croatia as an eno-gastro destination. As an authentic offer that keeps pace with the culture, traditions and customs of the local, rural population. We need to work on the promotion of the specifics of autochthonous grape varieties, in Croatia there are over 125 grape varieties, four wine-growing and wine regions with their climatic, varietal and positional specifics (<https://www.hgk.hr/vinski-turizam-pokretac-odrzivog-ruralnog-razvoja>). Also, development of specific forms of tourism is based on the concept of sustainable development (Bartoluci, 2013, 186) and is individually oriented (Dujmović, 2014, 107). It is necessary to raise awareness of the fact that the added value in tourism cannot be achieved only by a certain number of nights or the arrival of domestic and foreign guests, but that the financial result of the season depends on quality and diversity (Gavranović, 2015, 91). The tourist season in Croatia is still very short, a large number of hotels are closed from November to April, and Croatian entrepreneurs still do not have long-term economic interest in investing in tourism or tourism-related activities. Specific forms of tourism such as health, cultural, sports and recreational, nautical, etc. can collectively or separately influence the primary tourist offer in a particular destination. For example, wellness offer, offer of cultural contents, excursions and the like. In such a situation, specific forms of tourism generate added tourist value and achieve additional economic effects. Both forms can be found in the Croatian market, and the model of added tourist offer is represented both during the season and in the off- season.

### 2.2.2. The role of media in tourism

The media have a significant role in the promotion of a tourist destination, as they emphasize certain values and attractions that could make it stand out as a leading destination. In the tourism industry, it is important to have a good relationship with the media in order to generate successful publicity (Gavranović, 2015, 15). The assumption is that in the future the level of development of a tourist destination will be significantly more related to the media involvement in its quality promotion (Lekić et al., 2015, 147). In order to gain free publicity in the media and establish a relationship with the target group, various tactics are used such as press clipping, interviews on radio and TV stations and in travel magazines, organizing conferences for domestic and foreign journalists and bloggers, creating a database with the journalists' names,



contacting relevant people in tourism. A good example of a well-prepared PR strategy is the promotion of the Stellenbosch South African wine region in 2014. Stellenbosch wine routes were considered a key factor in the overall strategy. The PR strategy is "sustainable tourism" and in addition to their online presence, maps and brochures have been placed on the wine route in all important places, including farms, restaurants, hotels and bed and breakfasts. Also, the media coverage of the website was exploited with articles and photos about visits by food writers, bloggers, adventurers and cookbook authors, many of these articles stemming from visits by journalists. Considering public relations in hotel accommodation, a discount was offered to media visitors, as well as publishing promotions via social networks (Hudson, S., Hudson, L., 2017, 260).

The media should play a critical role in turning society towards the concept of sustainability, because the role of the media is to emphasize and promote true social values and to influence them. It is the media that are the fastest to notice numerous events in the process of globalization (Gavranović, 2015, 51). Furthermore, the media should include a higher level of awareness and be more ethical (Lekić et al., 2015, 147). Many even believe that the media has failed to show the progressive highlights of the global ecosystem with clear economic and social consequences (Gavranović, 2015, 47). Tourism journalists and editors who are able use digital media and storytelling can have a significant impact on positive attitudes towards the affirmation of the idea and practice of sustainable, year-round tourism and tourism of special interest in Croatia (Lekić et al. 2015, 147).

### 3. Research methodology

The research included a sample in Zadar County, the public and private sector in tourism and an expert group. The survey questionnaire was forwarded by e-mail to all 31 tourist boards of Zadar County. The methodology of scientific research, which is carried out for the purpose of this paper, is based on quantitative and qualitative scientific research methods, namely: the questionnaire method, the Delphi method and focus groups.

To test the hypothesis, a non-probabilistic random sample survey was conducted in the private sector and an intentional one in the public sector. The sample size is 195 respondents from the public and private sectors. The results of the research were processed by descriptive and inferential statistics. The measuring instruments used in the closed-ended questionnaire, in addition to the nominal scale used to categorize the respondents, are the Ordinary and Likert scales so that the obtained results can be analysed, synthesized and evaluated. Public sector survey questionnaires cover practically the entire population and the calculated proportions of the analysed answers are also the proportions of the basic sets. Given that the total number of private sector units in that county, the  $n / N$  selection fraction is greater than 5%, was considered when calculating the standard error for estimating the proportion. The questionnaire was completed by 30 tourist boards, i.e. 29 out of 30 directors of local tourist boards of Zadar County and the regional tourist board, which was 97% of respondents. Then, the questionnaire was filled out by 30 out of a total of 35 heads/employees of administrative departments of Zadar County, which amounted to 86%. A total of 60 public sector entities completed the questionnaire.

The questionnaire was also forwarded by e-mail to relevant private entities in the tourism of Zadar County, i.e. hoteliers, nautical marinas, tourist and charter agencies and restaurants and museums as providers of tourist offer. According to the Zadar County Tourist Board, there are a total of 66 hotels, 135 tourist agencies, 8 nautical marinas and 15 museums in the County. Then, according to the Zadar County Administrative Office, there are 33 active TSOs and 164

restaurants, which is a total of 406 entities. Namely, as a relevant sample for this research, the survey questionnaire included 30% of private sector entities and was completed by 123 entities and 12 museums. In the private sector, a total of 135 subjects completed the questionnaire. In order to achieve the goal of the research, a qualitative method was chosen, megaDelphi research, which focuses on the experience and knowledge of the respondents and provides insight into more detailed and richer data. Through the conducted qualitative research, a deliberate, appropriate sample was selected from 40 respondents from the field of tourism, entrepreneurs, directors of public institutions, lecturers in tourism and public relations, and journalists from tourism. Given the same, a survey was conducted, respondents completed the survey questionnaire in this study via e-mail, and the results of the expert group's research were processed using the Delphi method. The basic premise of the Delphi method assumes and necessity of applying interdisciplinary sciences in the process of strategic decision-making and based on the opinion of reputable experts gives a reliable projection of the future (Zelenika, 2014: 299). Since the Delphi method deals with the observation of a particular problem, it has proven to be appropriate in qualitative research in public relations (Wakefield, Watson, 2013) as well as in this research. Since Watson's study (2008), there has been a boom in the implementation of the Delphi method via e-mail and Internet communication, which speeds up the research process, and respondents completed the questionnaire in this study via e-mail. Other scientists who have implemented the Delphi method in this way are Duke (2009), Kerr (2009), Wehmeier (2009), Tkalac Verčić et al. (2012), Zeffass et al. (2012), Wakefield, Watson, (2013) et al.

For the purposes of this research, a SWOT analysis was conducted. SWOT analysis is an assessment of key factors that characterize the attractiveness and attractiveness of the Zadar County as a tourist destination, as well as those factors that may affect sustainable development. The focus group method as a qualitative form of research was conducted for the research. The focus group usually consists of 6-12 participants, the ratio of 8 participants / experts is considered the optimal group, and the sample consisted of two focus groups: 8 directors of Zadar County Tourist Boards and 8 lecturers in communication and tourism from Zadar University. After receiving the results of the SWOT analysis and the statements of two focus groups, the strengths, weaknesses, opportunities and threats to the development of tourism in Zadar County were assessed using a scale of 1-10 and the results of the evaluation of SWOT elements were combined in the form of an average score.

The survey was conducted during, January-March 2021.

## **4. Results of the research and discussion**

### **4.1. Survey results based on SWOT analyses**

The main inputs for the SWOT analysis were obtained by thorough analysis of existing documentation (Zadar County Tourism Development Master Plan 2013-2023, Statistical Analysis of Tourist Traffic in 2019 in Zadar County, Zadar County Branding Strategy, TOMAS 2019 (Institute of Tourism, 2020) research on the attitudes and consumption of tourists in Croatia) and the following strengths, weaknesses, opportunities and threats to the tourist offer of Zadar County were identified. SWOT analysis is an assessment of key factors that characterize the attractiveness of the Zadar County as a tourist destination, as well as the factors that may affect the sustainable development of tourism in the region. After the SWOT analysis and focus group statements, the results were summarized, the shortcomings and strengths were identified, and what can be concluded is that strengths and threats prevail over opportunities and weaknesses. The results of the SWOT analysis indicate that, as a tourist destination, Zadar

County draws its greatest strength from its favourable geographical position, proximity to national parks, sun, sea and beaches, good transport links and natural and cultural resources, which is a good prerequisite for sustainable development and development of various specific forms of tourism, which can be seen in Table 1.

**Table 1:** Findings of SWOT analysis by relevance

STRENGTHS OF A DESTINATION	Relevance	WEAKNESSES OF A DESTINATION	Relevance
	Average		Average
Favourable geographical location	S1 (9.25)	Insufficient investment in tourism	S1 (8.42)
Good transport links (motorway, Gaženica port, airport)	S2 (8.86)	Short tourist season	S2 (8.36)
Sun, sea, beach	S3 (8.75)	Poor beach infrastructure, access roads and signalization	S3 (8.21)
Proximity to national parks	S4 (8.75)	Poor structure of accommodation capacities	S4 (8.06)
Favourable climatic conditions	S5 (8.50)	Shortage of souvenirs	S5 (7.86)
The hospitality of the hosts	S6 (8.44)	Shortage of sandy beaches	S6 (7.80)
Natural resources (beauty and preservation of nature, peace, quiet, clear sea)	S7 (8.31)	Shortage of hiking and biking trails	S7 (7.67)
Rich gastronomy	S8 (8.06)	Shortage of events and manifestations	S8 (7.62)
<i>Total</i>	<i>8.61</i>	<i>Total</i>	<i>8.00</i>
OPPORTUNITIES OF A DESTINATION	Relevance	THREATS OF A DESTINATION	Relevance
	Average		Average
Natural attractions	S1 (8.81)	Outbreak of epidemics / pandemics	S1 (8.94)
A destination that is different from others (sea, mountains, national parks)	S2 (8.75)	Possibility of war conflicts	S2 (8.81)
Extension of the tourist season	S3 (8.36)	Natural disasters	S3 (8.69)
Existence of a destination branding strategy	S4 (8.06)	Insufficient support of relevant institutions for tourism improvement	S4 (8.44)
The use of "stories" for tourism purposes	S5 (7.88)	World economic crisis	S5 (8.37)
Sustainable tourism development	S6 (7.83)	Devastation of the environment for the needs of mass tourism	S6 (8.25)
Existence of a regional development strategy	S7 (7.81)	Shortage of financial resources for investment	S7 (8.25)
Creating an autochthonous product	S8 (7.67)	Political turmoil at the level of state and local government	S8 (8.16)
<i>Total</i>	<i>8.14</i>	<i>Total</i>	<i>8.49</i>

Source: Authors

#### 4.2. Survey results obtained by a questionnaire

In order to gain knowledge about the opinions and attitudes of the respondents, a research was conducted by a quantitative method using a questionnaire. The questionnaire was completed by 195 respondents from the public and private sectors. Of these, 57% were women and 43% were men. Most of the respondents, more than 50%, were aged between 30 and 50, while 60% of respondents were highly educated.

**Table 2:** Number and proportions of "quite strong" and "very strong" answers to questions about the impact of public relations on sustainable tourism development

The impact of public relations on sustainable tourism development	Public sector		Private sector
	Tourist boards	Administrative departments	Number of answers
	Number of answers Proportion	Number of answers Proportion	Proportion 95% interval estimation of proportion
Ecological sustainability of the destination (preservation of the environment, tidiness of beaches, preservation of the sea...)	20 0.67	18 0.60	75 0.56 0.49<p<0.63
Socio-cultural sustainability of the destination [Tangible cultural heritage (sacral buildings, museums...)]	24 0.80	21 0.70	75 0.56 0.49<p<0.63
Socio-cultural sustainability of the destination [Intangible cultural heritage (relationship between locals and tourists)]	23 0.77	18 0.60	83 0.61 0.55<p<0.68
Technological sustainability of the destination (use of renewable energy sources, green technology, "green" marketing)	21 0.70	10 0.33	64 0.47 0.40<p<0.54
Informing tourists about the local environment and ecology, important to encourage tourists to "sustainable" behaviour	28 0.93	22 0.73	101 0.75 0.69<p<0.81
Informing tourists about local customs, important to encourage tourists to "sustainable" behaviour	28 0.93	24 0.80	107 0.79 0.74<p<0.85
Reduction of illegal construction	10 0.34	13 0.43	58 0.43 0.36<p<0.50

(1-very weak, 2-weak, 3-partial, 4-quite strong, 5-very strong)

Source: Authors

Public relations activities in the sustainable development of tourism are of great importance for the respondents. Respondents of tourist boards largely (93%) said that informing tourists about local customs, ecology and the environment is very or very important to encourage tourists to behave sustainably. Respondents from all surveyed groups believe that the activities of public relations can affect the technological, socio-cultural (tangible and intangible socio-cultural heritage) and ecological sustainability of a destination. Respondents are of the opinion that the impact of the implementation of public relations on the sustainability of tangible and intangible

cultural heritage is quite strong. Based on the results from the sample for the private sector, it is estimated that the proportion of all members of the private sector who believe that the impact of public relations on the sustainability of tangible and intangible cultural heritage is "quite strong" and "very strong" is within the  $0.74 < p < 0.85$  interval. For example, with a probability of 95%, between 69% and 81% of the private sector believes that the impact of informing tourists to encourage them to "sustainable" behaviour is quite strong or very strong. In fact, the interval estimates of proportions for all questions in Table 3 have a large lower and upper limit. The proportion of answers from administrative departments to questions 01, 03, 05 and 06 is quite high, i.e. respondents believe that public relations activities can have a very or a very strong impact on the development of the destination in accordance with the principles of sustainable development. Only 33% of respondents say that the impact of public relations on the technological sustainability of the destination is quite strong or very strong, and the proportion of such answers to the question on the impact of public relations on reducing illegal construction is similar (43%).

**Table 3:** Number and proportions of answers "often" and "extremely often" to questions about the development of specific forms of tourism in the destination

Specific forms of tourism	Public sector		Private sector
	Tourist boards	Administrative departments	Number of answers
	Number of answers Proportion	Number of answers Proportion	Proportion 95% interval estimation of proportion
The impact of the development and improvement of specific forms of tourism on the reduction of seasonality in your destination	21 0.70	14 0.47	66 0.51 $0.46 < p < 0.60$
The impact of the number of organized cultural and entertainment events on the reduction of seasonality	15 0.50	12 0.40	61 0.44 $0.46 < p < 0.54$

(1-very weak, 2-weak, 3-partial, 4-quite strong, 5-very strong)

Source: Authors

The results of the survey show that 70% of respondents from tourist boards believe that more specific forms of tourism can reduce the seasonality of Zadar County, while respondents from administrative departments and the private sector do not see opportunities to reduce seasonality in the county through experiential, nautical, rural or cultural tourism.

#### 4.3. Delphi research results

The results of the research conducted among the expert group are shown in the table 4 and 5 show the results of the Delphi method with descriptive statistics - median, mode, lower and upper quartile, interquartile range and quartile deviation coefficient for a group of questions related to public relations activity indicators in sustainable tourism development and on specific forms of tourism.

**Table 4:** Statistical presentation of public relations activities in sustainable tourism development

Public relations in the sustainable development of tourism	Median	Mode	Freq. of mode	Min	Max	Quartile		Interquartile range	Quartile deviation coeff.
						Lower	Upper		
Ecological sustainability of the destination	4	3	16	2	5	3	4	1	0.14
Socio-cultural sustainability of the destination (tangible)	4	4	22	2	5	3	4	1	0.14
Socio-cultural sustainability of the destination (intangible)	4	4	24	1	5	3	4	1	0.14
Technological sustainability	4	4	17	1	5	3	4	1	0.14
Development of a system of tourist information centres	3	3	18	1	5	3	4	1	0.14
Informing tourists about the local environment and ecology	4	4	22	3	5	4	5	1	0.11
Informing tourists about local customs	4	4	22	3	5	4	5	1	0.11
Reduction of illegal construction	3	3	17	1	5	2	4	2	0.33

Source: Authors

Public relations activities in the sustainable development of tourism are of great importance for the respondents. It is informing tourists about local customs, ecology and the environment that can encourage tourists to behave sustainably. According to the respondents, public relations activities can affect the technological, socio-cultural and ecological sustainability of a destination. Respondents are of the opinion that the impact of the implementation of public relations on the sustainability of tangible and intangible cultural heritage is quite, i.e. very strong. They also believe that public relations activities such as informing tourists about local customs and the local environment and technology are very important in order to encourage tourists to behave "sustainably". About 50% of respondents are of the opinion that the implementation of public relations has a quite, i.e. a very strong impact on the ecological sustainability of the destination. The dispersion of the central 50% values measured by the interquartile and the quartile deviation coefficient is small, except for the question of whether public relations activities can reduce illegal construction, where the experts could not agree. As only 12 out of a total of forty respondents believe that public relations techniques as well as public relations activities can have an impact on reducing illegal construction, it is believed that there was no basis for another iteration.

**Table 5:** Statistical presentation of the perception of the impact of specific forms of tourism on seasonality

Specific forms of tourism	Median	Mode	Freq. of mode	Min	Max	Quartile		Interquartile range	Quartile deviation coeff.
						Lower	Upper		
The impact of the development and improvement of specific forms of tourism on the reduction of seasonality in your destination	4	3	16	2	5	3	4	1	0.14
The impact of the number of organized cultural and entertainment events on the reduction of seasonality	4	4	18	2	5	3	4	1	0.14

Source: Authors

A group of experts is of the opinion that the impact of nautical, rural cultural and experienced tourism on the reduction of seasonality in the destination is quite, i.e. very strong. The dispersion of the central 50% values measured by the interquartile and the coefficient of quartile deviation is small.

## 5. Discussion

The largest share of respondents from all surveyed groups, almost two thirds of them, believes that public relations activities can affect the environmental sustainability of the destination. Since tourists gave a low rating to the ecological preservation of the Zadar County as well as a low rating to the cleanliness of beaches (Institute for Tourism, 2020), public relations of the tourist boards should focus on the local population and the private sector on the sustainability of the destination's natural resources, environmental protection, beaches, sea, rivers and the like in their campaigns. This approach will respect the paradigm of sustainable development, so that natural, cultural and other tourist resources are preserved for future generations, while at the same time being used by current generations.

Also, more than 70% of public sector respondents and more than 50% of private sector respondents and the population believe that public relations have a quite or very strong impact on the socio-cultural material sustainability of the destination. When asked to rate the development of the system of tourist information centres, only 43% of respondents thought it was satisfactory. This means that the system of information centres at all levels and through various channels should raise awareness among all stakeholders about the responsible use of cultural and historical heritage as well as other resources.

On average, 55% of respondents believe that the impact of public relations on the intangible cultural heritage (the relationship between the local population and tourists) is quite or very strong. Furthermore, the results of the research indicate that almost 70% of respondents see a significant contribution of public relations in informing tourists about the local environment and ecology as well as local customs. Lack of information on the needs and desires and customs of the local population could have negative effects on the sustainable development of tourism.

Consequently, the establishment of better and more complete information providing becomes a fundamental task of destination management because the reduced quality of life of the local population can result in a decrease in their kindness to tourists.

A small number of respondents from the public and private sectors do not see the possibility of the impact of public relations on illegal construction. The expert group respondents did not show a common or unique position on the impact of public relations on the reduction of illegal construction. It is through techniques such as lobbying that public relations can influence illegal construction. Namely, the purpose of lobbying is to regulate relations with the legislature and the government in order to support or communicate with political structures. Unfortunately, respondents are either not aware of the long-term negative consequences of illegal construction or it is contrary to their individual interests. Turning agricultural land into construction, construction in forbidden areas and the like, can bring some benefits and rents to individuals, but in the long run it affects the devastation of the environment and reduces living space, both for the locals and the tourists. Therefore, it is necessary to use public relations to inform and connect the private and public sectors in order to protect and use the space responsibly.

A small number of respondents see specific forms of tourism as an opportunity to reduce seasonality. Following the above, it should be said that rural tourism represents an untapped potential in the tourist offer of the Zadar County, especially in the continental part. This type of tourism can contribute to expanding the offer and prolonging the tourist season, and the Zadar County can be developed as a tourist destination which visitors want to visit throughout the year. In addition, rural tourism can create additional opportunities for the development of a tourist destination and increase the quality of life of the local population. For example, nautical tourism in Zadar County is possible from March to November, which can prolong the season and contribute to the development of the islands in the county. Specific forms and types of tourism, such as rural and nautical, can significantly affect the improvement, diversity and quality of the tourist offer, which will increase competitiveness in the tourist market. They can influence the prolonging of the tourist season in those areas of the tourist destination that are not exclusively focused on sea leisure tourism by introducing special content in the pre- and post-season. If the tourist season is extended, the local population will be more involved in tourist activities, which will encourage them to return to rural and island areas of the destination. Through promotion and publicity and using two-way communication tools, public relations can promote specific forms and types of tourism as an added value of the destination. It is clear that today the Internet has a significant role in initiating public relations activities. As part of the Internet, social media serves to develop and promote a particular area. Blogs, social networks and websites are a great way to collect news or information. Following the results of the research, a small number of respondents believe that *cultural and entertainment events can have an impact on reducing seasonality*. It is experiential tourism that can strengthen competitiveness and increase the quality of the offer. The events are held to promote the tourist destination, and spectacular events are important to increase its tourist attraction. Public relations campaigns ensure the creation of publicity in order to inform the target audience about certain events. Public relations can also be involved in organizing events. The role of public relations is to achieve positive media coverage of an event. In order to spread the message, public relations experts use communication tools such as press releases, press maps, the Internet and social networks to promote cultural and entertainment events, and their messages must reflect the nature of the events. By communicating and distributing information to target audiences through advertising, publicity, event creation and theme management, public relations can increase the quality of the tourist offer and reduce seasonality. Such an approach



can be a future guide in the sustainable development of this area of tourism as well as the development of a tourist destination, and therefore the formed hypothesis is confirmed.

## 6. Conclusion

Research has shown that public relations have an irreplaceable role in the sustainable development of a tourist destination, which has also been confirmed in this paper. Taking into account the SWOT analysis, only proper managing of the Zadar County as a tourist destination can increase its economic, environmental and socio-cultural value, which will provide long-term benefits at the local, regional and national levels. In order to improve the potential for tourism development in Zadar County and the opportunity to become a more recognizable and attractive tourist destination, the necessary elements to focus on are: (1) sustainable tourism development, (2) improving the tourist offer and preserving indigenous elements, (3) more comprehensive public relations based on the five functions of public relations (strategic planning, research, promotion, publicity and collaborative decision-making), and (4) cooperation among stakeholders.

Hypothesis H1: Long-term sustainable development of tourism in Zadar County can be ensured by applying public relations among key stakeholders from the results of the research is accepted. Based on the research and attitudes of respondents, it can be concluded that the development of a tourist destination should be directed towards sustainable tourism development, which would reduce the negative effects of tourism on the environment, cultural and historical heritage and increase the quality of life of the local population, and ultimately, the satisfaction of tourists. Based on the research and the Delphi method implemented, the expert group also recognizes the future development of the tourist destination through the sustainable development of tourism. According to the principles of sustainable development, in terms of public relations, sustainable tourism development implies a strategy to promote a destination whose main attraction is flora, fauna or cultural heritage. In the Zadar County, sustainable tourism development in the ecological, socio-cultural and economic spheres should become sustainable in the long run. The public relations strategy in a tourist destination should ensure better connectivity among all relevant stakeholders, by raising awareness in the public and private sectors, i.e. those who create a tourism product. In addition to communication with potential and current guests, public relations in the tourist destination should emphasize communication subordinated to the interests of environmental protection, preservation of cultural and historical heritage of the destination, and should encourage the preservation and protection of all entities in the destination. In order to permanently influence the "sustainable" behaviour of all stakeholders, but also that of tourists, it is necessary to constantly introduce as many specialized tourism products that can enrich the tourist offer, especially during the off season, thus reducing seasonality. Most destinations see a potential solution in the dispersion of tourist traffic, related to time and space, as well as product diversification and market segmentation. Public relations activities should be aimed at promoting the sustainable development of tourism through the media and be the social responsibility of all subjects related to the destination.

The limitation of this research stems from the fact that it was conducted on internal stakeholders on the tourism supply side while on the tourism demand side tourists are not included because they as stakeholders in tourism do not directly participate in creating a strategy for sustainable tourism development. The findings can help to establish communication between stakeholders whose common goal is a vision of tourism development on the principles of sustainable development in the management of tourism destination development.

## REFERENCES

- Amerta, I. M. S., Sara, I. M., & Bagiada, K., (2018), *Sustainable tourism development. International Research Journal of Management, IT and Social Sciences*, 5(2), pp. 248-254.
- Bartoluci, M., (2013), *Upravljanje razvojem turizma i poduzetništvo*, Školska knjiga, Zagreb.
- Choi, H.C., (2016), *Sustainable tourism*, u: Jafar, Xiao, (ur.), *Encyclopedia of Tourism*, Springer International Publishing, AG Switzerland.
- Dujmović, M., (2014), *Kultura turizma*, Sveučilište Jurja Dobrile u Puli, Pula.
- Gavranović, A., (2015), *Mediji, turizam, javnost, uvijek nedovršena, nanovo ispričana priča*, VPŠ Libertas, Zagreb.
- Heath, R., Combs, T., (2006), *Today's Public Relations – An Introduction*, Sage Publications, Thousand Oaks.
- HGK, 2020, <https://www.hgk.hr/vinski-turizam-pokretac-odrzivog-ruralnog-razvoja>
- Huertas, A., (2008), *Public relations and tourism: Fighting for the role of public relations in tourism*, Public Relations Review 34 (2008) pp 406–408.
- Hudson, S., Hudson, L., (2017), *Marketing For Tourism, Hospitality & Events, A Global & Digital Approach*, SAGE Publications Ltd, London.
- Jafari, J., Xiao, H., (2016), *Editors Encyclopedia of Tourism*, Springer International Publishing, AG Switzerland.
- Kotler, P., Armstrong, G., Harris, L.C., He, H., (2020), *Principle of Marketing*, 8. izd., Pearson, Harlow.
- Lekić, R., Franjić, T., Mencer Salluzzo, M., (2015), *Relation between media and tourism, example of Croatia as tourist destination*, ToSEE – Tourism in Southern and Eastern Europe, Vol. 3, pp. 145-158.
- Magaš, D., Vodeb, K. Zadel, Z., (2018), *Management turističke organizacije i destinacije*, Sveučilište u Rijeci – Fakultet za turistički i hotelski menadžment Opatija, Rijeka.
- Petrovici, A., (2014), *Public Relations in Tourism. A Research on The Perception of The Romanian Public Upon Responsible Tourism*, *Procedia - Social and Behavioral Sciences* 163 ( 2014 ) 67 – 72
- Skoko, B., (2004), *Odnosi s javnošću kao doprinos demokratizaciji, Politička misao*, Vol XLI, (2004), br. 1, str. 92–101.
- Streimikiene, D., Svagzdienė, B., Jasinskas, E., Simanavicius, A., (2020), *Sustainable tourism development and competitiveness: The systematic literature review*; Sustainable Development. 2020; 1–13.

Tafra-Vlahović, M., (2007), ***Komunikacijski čimbenici u međusektorskim partnerstvima za održiv razvoj***, Tema Broja, Javno mnijenje, odnosi s javnostima i novinarstvo, Medianali, God 1, br. 2; str.1-12.

Tomić Z., (2016), ***Odnosi s javnošću, teorija i praksa***, Synopsis, Zagreb-Sarajevo.

TOMAS 2019., (2020), ***Stavovi i potrošnja turista u Hrvatskoj***, Institut za turizam, Zagreb.

UNWTO (2021), <https://www.unwto.org/sustainable-development>

Wakefield, R., Watson, T., (2013), ***The Delphi: An Underutilized Method of Scholarly and Practical Research for a Public Relations Field in Transition***, 16th International Public relations research conference, Ji, Y.G., Li, C.Z., (ur.), Holiday Inn University of Miami Coral Gables, Florida, pp. 559-574.

**Goran Becker, M. Sc.**

IMPULS savjetovanje d.o.o.

E-mail address: goran.becker@impulsconsulting.eu

## THE ANALYSIS OF ACTIVATED CREDIT GUARANTEES IN EASTERN CROATIA

### *ABSTRACT*

*This paper aims to analyze the issued and activated public credit guarantees in Croatia with special emphasis on Eastern Croatia. Previous research shows that companies that have received guarantees, including those from Eastern Croatia, have better results than the Croatian average in terms of employment and growth in total revenues (Becker, Broz, Ridzak, 2016). This analysis goes a step further and analyses issued and activated public guarantees in each individual county of Eastern Croatia. The analysis is not only focused on total issued and activated guarantees, but also on individual guarantee programs. In this article, analysis is performed using data on credit guarantees that HAMAG grants to small and medium businesses, within the period of ten years.*

*The research showed that the counties of Eastern Croatia do not use credit guarantees equally. Some counties use very few public collaterals with small number of activations. Agriculture is the most dominant guarantee program in Eastern Croatia with the highest number of activated guarantees. Although this program has the highest number of issued guarantees at the Croatian level, this is not the case with activated guarantees. At the level of Croatia, most guarantees are activated from the liquidity program.*

**Key words:** *guarantee schemes, SMEs, activation of guarantees, facilitated access to finance, Eastern Croatia.*

### **1. Introduction**

The importance of small and medium-sized enterprises (SME) is significant in the world, and especially in Europe. SMEs are the basis for economic growth, new employment and strengthening internationalization. They account for almost two-thirds of all private sector jobs in Europe and 99% of the businesses. Still, most small and medium businesses are micro firms with less than 10 employees (Udell, 2020). The importance of SME sector is also high in Croatia. Small and medium-sized enterprises account for 68.9 percent of jobs in Croatia and for 99.7 percent of enterprises (SBA Fact Sheet, 2019).

Many small and medium-sized enterprises are unable to meet banks' strict requirements for collateral when it comes to lending. Therefore, these companies cannot meet their financial obligations, not even for commercially viable and sustainable investments. Public credit guarantees reduce credit risk and support the financing of commercially viable companies with limited funding. This form of government intervention has been used around the world for years, especially during financial crises (EIF, 2019).

Research has shown that banks are the main source of external financing for SMEs in all countries (Beck, Klapper, Mendoza, 2008). More than half of all European small and medium-sized enterprises use bank credit to finance their business activities (Udell, 2020). But although

small and medium-sized enterprises make up the majority of all enterprises as well as jobs in developed and developing countries, they use a relatively small amount of credit because unfortunately a large number of credit applications are rejected. The key problem is the lack of security instruments, i.e. the problem of information asymmetry (OECD, 2006). One way to solve the problem of information asymmetry is to introduce government credit guarantees as a first-class instrument for securing SMEs loans. In other words, this problem can be solved by state intervention that allows public authorities to enter the market as a credit guarantor to small and medium enterprises (Dvouletý, Čadil, Mirošník, 2018). Public credit guarantees are, in this way, an instrument of the risk-sharing model between the company, the bank and the guarantee institution. The debtor is often a small company with non-transparent operations and therefore it cannot provide the bank with useful information needed to assess creditworthiness of repaying the requested loan (Cowling, Clay, 2018).

So far little is known about the effectiveness of government credit guarantees and even less about activation of credit guarantees.

More than half of all countries have some form of government credit guarantee program that typically supports a particular sector, region, or type of enterprise that does not have sufficient funding opportunities in the credit market (Honohan, 2010). Developing countries usually have public credit guarantee schemes, while more developed countries have mutual guarantee funds, which are financed by private and public capital. Credit guarantee programs are not new, the oldest schemes were put in place two centuries ago. Still, those policy instruments gained massive attention at the end of last century and then expanded worldwide (Abraham, Schmukler, 2017).

The effectiveness of public credit guarantee schemes is based on the development of a company that has facilitated access to finance through credit guarantees. Such a benefit is reflected in the increase in employment, but also in the improved financial variables of the company. However, the question remains if public credit guarantee schemes are justified given the serious cost impact on the state budget and tax payers in the form of activation of issued guarantees. Therefore, are there any good arguments for using the public?

There are several arguments for government intervention through government credit guarantees in the SME sector. First of all, it is the imperfection of the market that creates a gap in lending to small and medium-sized enterprises, which government credit guarantees can fill; and encouraging high-tech companies that, if successful, will make a significant contribution to the economy (Udell, 2015). Without the existence of public credit guarantee schemes, banks will place all their credit potential to less risky larger companies, to the detriment of smaller companies that will lack funding. Also, public credit guarantee schemes address the problem of information asymmetry faced by new or high-tech companies. Therefore, public credit guarantee schemes are suitable as premium collaterals in public risk sharing policy that enable small and medium enterprises to get funded. Indeed, one of the most used indirect interventions are public credit guarantees, where a financial institution issues and supervises the credits, and the government institution guarantees the repayment to the lender if borrower defaults (Cowan, 2015).

Besides reducing the risk, public credit guarantees significantly facilitate access to finance. An interesting piece of data on the coverage of the loan principal rate with a credit guarantee was presented by the OECD paper (2010). Namely, according to this analysis in as many as 76 guarantee programs in the world, the average guarantee rate is 80 percent of the loan principal. Furthermore, strong collateral instruments, such as first call credit guarantee, significantly reduce the risk of non-repayment of a business loan, and thus reduce the price of the loan in interest rate. Furthermore, public credit guarantee schemes often have less costs in fees comparing to the commercial guarantees.

Public credit guarantee schemes improve liquidity in the credit market, as they accelerate the financing of small and medium-sized enterprises on more favorable terms than market ones. They are also considered a quality security instrument for business loans, which banks require, because they are supported by the state budget and its country credit rating.

Effective public credit guarantee schemes require precise and clearly defined rules when evaluating a project, issuing a guarantee and activating a guarantee. This process involves three stakeholders: a small and medium-sized enterprise, a bank and a guarantee agency. Banks must have an interest and at the same time security in the payment of the guarantee in case of its activation, which is carried out by introducing a first-class collateral instrument, a guarantee on the first call. In addition, public credit guarantee schemes must be implemented in such a way as to prevent moral hazard, i.e. to minimize the possibility of misuse of taxpayers' money.

Clear rules and procedures are key to building mutual trust between banks and guarantee institutions. Therefore, the guarantee institution must have a sufficient cash deposit available for the potential activation of the issued guarantees. The payment process for activated guarantees should be precise, transparent and fast. In the case of Croatia, resources for loan default payments are allocated to the state budget, in the Ministry of Economy and Sustainable Development. Resources for loan default payments can be strengthened by counter-guarantees from the European Investment Fund, which will cover a larger number of small and medium-sized enterprises.

Public credit guarantees are granted to cover the principal of business loans to financial institutions within Croatia on the basis of the Law on Credit Institutions. Such guarantees include state aid (GBER) or de-minimis aid. Most credit guarantees are issued using the ex-post method, where the bank first evaluates the loan application and finally approves the loan in principle, with the recommendation to apply for a credit guarantee. Some guarantee programs, such as those encouraging start-ups, have the option of being issued on an ex-ante basis, where the guarantee institution first evaluates the guarantee application and finally approves the guarantee in principle, with the recommendation to apply for a loan. This way of issuing guarantees is suitable for companies considerably affected by information asymmetry.

Public credit guarantees are one of the most common instruments for encouraging small and medium-sized enterprises, both worldwide and in Croatia. In spite of that, there is no much evidence about the activated guarantees in Croatia. Hence this research aims at shedding light on the costs of credit guarantee schemes in Croatia, with special emphasis on Eastern Croatia. The remainder of the article is organized as follows. Next section briefly discusses the literature on the credit guarantee schemes, third section describes data and empirical strategy, while fourth and fifth sections bring the results of the analysis. Finally, last section concludes.

## **2. Brief literature survey**

The challenge of financing SMEs is not new. The lack of adequate collateral is a significant barrier to SME financing (Udell, 2020; Cowling, Clay, 2018; Kirschenmann, 2016). Therefore, state guarantee schemes continue to be a widely used instrument to facilitate financing of SMEs. Namely, credit markets are very structured and therefore comprehensive information is required for small business credit agreements, which they cannot provide (Berger, Udell, 1998). A key argument by lenders to limit SME borrowing, as Stiglitz and Weiss (1981) point out, is the problem of information imperfections in financial markets, which are needed to assess the likelihood of loan repayment. One of the instruments for estimating the probability of repaying a loan can be the interest rate, since riskier clients pay more for a loan than less risky clients through a higher interest rate. The imperfection of the information follows from the inability of creditors to make a credit risk analysis of small and medium-sized enterprises, as they do not have reliable information. This makes the evaluation of loan applications more difficult, as well

as the supervision of approved cases. Both problems significantly increase the cost of lending to such companies, for relatively less debt, than large companies, which do not have such challenges. Therefore, public credit guarantees, while facilitating access to finance, provide more favorable financing conditions, i.e. a more favorable interest rate, longer loan maturities and loan grace periods. Public credit guarantees are, in this way, a form of state intervention on the present market errors in lending to small and medium-sized enterprises, that arise due to two requirements by creditors that such enterprises cannot meet well. These are financial and non-financial reporting and adequate security instruments.

The justification for state intervention in SMEs through public credit guarantees follows from the theoretical assumption that in the case of a perfect exchange of information between companies and creditors on the project for which financing is requested, there is no need for intervention such as public credit guarantees (Stiglitz and Weiss, 1981). However, in practice there is a problem of information asymmetry between small and medium enterprises and the bank, and then collateral instruments such as government credit guarantees are certainly necessary and justified. This view is shared by many authors (Udell, 2015; Porreta and Leo, 2013; Uesugi, 2010; Cowling, 2010).

SME financing has become a significant topic especially in times of crisis, such as recession and stagnation. However, public credit guarantees are also necessary for certain groups of companies in times of economic growth, such as start-up entrepreneurs, innovative and high-tech companies. Furthermore, in the cycle of economic expansion, public credit guarantees are needed for certain sectors, such as manufacturing, whether it is necessary to secure placements for new investments or for permanent working capital. It is therefore common for the demand for government credit guarantees to increase as economic growth slows, while in the time of strengthening the investment cycle it falls because financing is more accessible and more favorable.

Because the public credit guarantee typically covers 50 to 80 percent of the principal of an entrepreneurial loan, the risk of loan default is reduced and therefore lenders can also reduce the interest rate. The importance of government credit guarantees is indisputable and they even play the role in the regulation of the banking sector known under the acronym Basel II, which provides specific regulations for such secured loans (Calcagnini, Farabullini, Giombini, 2009). Guarantee rate is an important factor in programming public credit guarantee schemes because it directly affects the motivation of companies and banks to use them. However, it also affects moral hazard and therefore the guarantee rate must be well balanced. Namely, covering the loan principal with less than 50 percent of the guarantee reduces the risk of abuse, but at the same time reduces the initiatives of creditors to participate in such a program. Previous research supports the thesis that the amount of the guarantee should be from 60 percent to 80 percent (Levitsky 1997). Rare examples of public credit guarantee schemes in the world fully guarantee the principal of the loan. Such initiatives have negatively affected the state budget as they have caused a significant increase in protested guarantees due to moral hazard or various abuses by entrepreneurs.

Even though there is research covering public credit guarantees, especially those related to functioning and effectiveness of public credit guarantees, the research related to activated credit guarantees is much less common. Hence, the aim of this paper is to investigate issued and activated guarantees at the level of Croatia and Eastern Croatia under all guarantee programs in order to get insight into this important topic.

### **3. Data and empirical strategy**

Analysis in this article is conducted using data on credit guarantees that HAMAG grants to SME sector, using data from 2005 until 2014. The dataset consists of 1233 credit guarantees

issued to small and medium entrepreneurs. Out of them, 116 guarantees were activated. This data include specific records on the guarantee amount, loan amount, guarantee program, year of activation and county of the company. The analysis of all issued and activated guarantees is made for individual guarantee programs at the level of Croatia, as well as for Eastern Croatia. In this way, the share of activated guarantees in all issued guarantees under an individual guarantee program will be investigated at the level of Croatia and at the level of Eastern Croatia. The share of activated guarantees issued in Eastern Croatia in the total amount of activated guarantees in Croatia will be investigated too. Furthermore, within each individual county of Eastern Croatia, an analysis of issued guarantees and activated guarantees for each individual guarantee program will be conducted. Eastern Croatia includes counties of Brod-Posavina, Osijek-Baranja, Požega-Slavonia and Vukovar-Srijem.

#### **4. Issued and activated guarantees in Croatia and Eastern Croatia**

The analysis was carried out for different programs of issued guarantees in order to see which guarantee programs have the highest protest rate.

Table 1 gives information about the total amount of credit guarantees issued and activated in Croatia and in Eastern Croatia. Formally, there are many credit guarantees programs, but Table 1 aggregates them in main categories.

Table 2 gives information about the share of activated guarantees in total in Croatia and in Eastern Croatia. It also gives information about the share of activated guarantees issued in Eastern Croatia in relation to the total amount of the activated guarantees issued in Croatia.

At the level of Croatia in the period from 2005 to 2014, most guarantees were issued under the guarantee program "Agriculture" in the total amount of HRK 457.3 million, and HRK 27.3 million were activated. At the level of Eastern Croatia, HRK 178.7 million of guarantees were issued in the "Agriculture" guarantee program, which is also the first program in terms of issued guarantees in this area. However, the guarantee program "Agriculture" is also the first in terms of activated guarantees at the level of Eastern Croatia with a total of HRK 14.6 million of activated guarantees (Graph 1). The share of activated guarantees in the issued guarantees of the "Agriculture" program at the Croatian level is 6.0%. The share of activated guarantees in issued guarantees of the same program at the level of Eastern Croatia is higher and amounts to 8.2%. The share of activated guarantees of Eastern Croatia in activated guarantees of Croatia under the "Agriculture" guarantee program is significant and amounts to as much as 53.5%. However, slightly less than half of all issued guarantees of Croatia fall on Eastern Croatia, so this factor should certainly be taken into account in further considerations.

At the level of Croatia, the second largest program of issued guarantees is the guarantee program "Growth and development" with a total of HRK 358.7 million of issued guarantees, of which HRK 19.6 million of guarantees were activated. At the level of Eastern Croatia, HRK 53.1 million of guarantees were issued in this guarantee program, of which HRK 5.8 million of guarantees were activated. The share of activated guarantees in the issued guarantees of the Growth and development program at the Croatian level is 5.5%, while at the level of Eastern Croatia it is 10.8%, which indicates that guarantees in Eastern Croatia in this program are much riskier than on average in Croatia. Hence, it is not a surprise that the share of activated guarantees of Eastern Croatia in activated guarantees of Croatia under the guarantee program "Growth and development" is relatively high, 29.4%. Obviously, in Eastern Croatia the risks for capital investments are higher than the Croatian average, which are encouraged by this guarantee program.



**Table 1:** Activated guarantees in HRK in total in Croatia and in Eastern Croatia (2005-2014)

Guarantee program	Issued Credit Guarantee (HRK)		Activated credit guarantees (HRK)	
	Croatia total	Eastern Croatia	Croatia total	Eastern Croatia
Agriculture	457.292.338	178.685.026	27.267.340	14.589.680
Agriculture IPARD	127.592.546	28.058.015	0	0
Growth and development	358.697.028	53.090.576	19.570.438	5.754.416
Liquidity and working capital	183.143.217	24.500.208	36.493.547	7.063.979
New entrepreneurs	169.072.881	15.592.421	10.752.657	1.547.655
Investments	148.384.594	11.629.902	941.016	0
Innovations	60.730.723	10.289.213	7.488.728	0
Areas of special state interest	57.875.220	18.660.735	5.026.396	2.261.396
Leasing	14.003.696	668.576	0	0
Other	122.723.784	23.851.451	9.727.199	0
<b>Total</b>	<b>1.699.516.027</b>	<b>365.026.123</b>	<b>117.267.321</b>	<b>31.217.126</b>

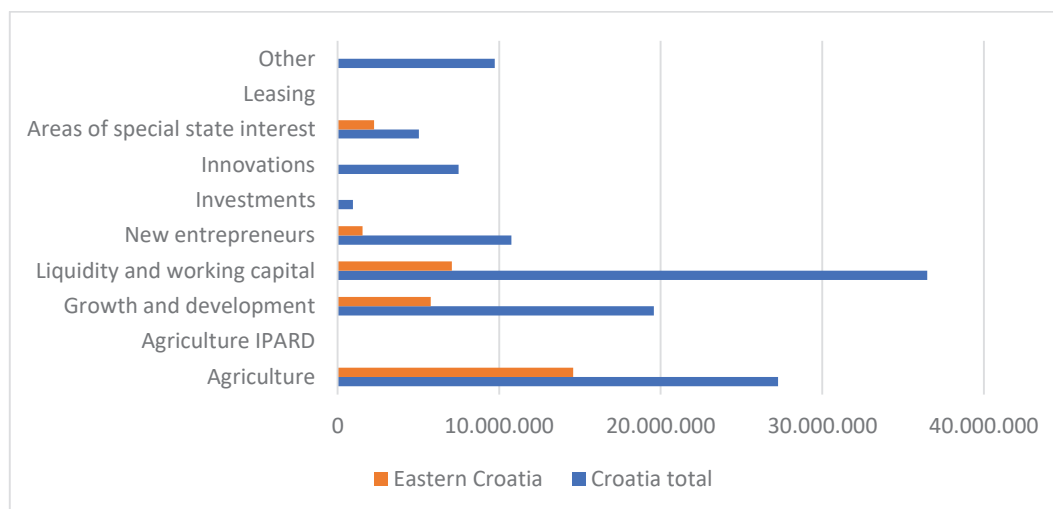
Source: HAMAG

**Table 2:** The share of activated guarantees in HRK in total issued guarantees in Croatia and in Eastern Croatia (2005-2014)

Guarantee program	The share of activated guarantees in total issued guarantees (in %)		The share of activated guarantees issued in Eastern Croatia in total amount of the activated guarantees issued in Croatia (in %)
	Croatia total	Eastern Croatia	
Agriculture	6,0%	8,2%	53,5%
Agriculture IPARD	0	0	0
Growth and development	5,5%	10,8%	29,4%
Liquidity and working capital	19,9%	28,8%	19,4%
New entrepreneurs	6,4%	9,9%	14,4%
Investments	0,6%	0	0
Innovations	12,3%	0	0
Areas of special state interest	8,7%	12,1%	45,0%
Leasing	0	0	0
Other	7,9%	0	0
<b>Total</b>	<b>6,9%</b>	<b>8,6%</b>	<b>26,6%</b>

Source: HAMAG

**Graph 1:** Activated guarantees and guarantee programs in HRK at the level of Croatia and Eastern Croatia (2005-2014)



Source: HAMAG

The third program in terms of issued guarantees at the Croatian level is the guarantee program "Liquidity and working capital" with a total of HRK 183.1 million of issued guarantees, of which HRK 36.5 million were activated. At the level of Eastern Croatia, HRK 24.5 million of guarantees were issued in this guarantee program, of which HRK 7.1 million of guarantees for approved business loans were activated. The share of activated guarantees in the issued guarantees of the "Liquidity and working capital" program at the level of Croatia is 19.9%, while at the level of Eastern Croatia it is 28.8%. The share of activated guarantees of Eastern Croatia in activated guarantees of Croatia under the guarantee program "Liquidity and working capital" is 19.4%.

The fourth program in terms of issued guarantees at the Croatian level is the "New entrepreneurs" guarantee program with a total of HRK 169.1 million of issued guarantees, of which HRK 10.8 million was activated. At the level of Eastern Croatia, HRK 15.6 million of guarantees were issued in this guarantee program, of which HRK 1.5 million of guarantees were activated. The share of activated guarantees in the issued guarantees of the "New entrepreneurs" program at the level of Croatia is 6.4%, while at the level of Eastern Croatia it is 9.9%. The share of activated guarantees of Eastern Croatia in activated guarantees of Croatia under the guarantee program "New entrepreneurs" is 14.4%.

The fifth program in terms of issued guarantees at the Croatian level is the "Investments" guarantee program with a total of HRK 148.4 million of issued guarantees, of which HRK 0.9 million was activated. The "Investments" guarantee program encourages more mature companies with better financial reports and better creditworthiness, compared to the liquidity or agriculture guarantee program. Small and medium-sized enterprises, beneficiaries of the program, are better capitalized, and they are more resistant to unfavorable market trends. That is why there are so few activated guarantees under the "Investments" guarantee program. Eastern Croatia uses significantly fewer guarantees as instruments for securing investment loans, a total of HRK 11.6 million in guarantees, of which no guarantees were activated in the observed ten-year period. At the level of this program, the share of activated guarantees in issued guarantees at the Croatian level is 0.6%, while at the level of Eastern Croatia the share cannot be calculated, as there are no activated guarantees in the "Investments" guarantee program. It is also not possible to calculate the share of activated guarantees of Eastern Croatia in activated guarantees of Croatia under the "Investments" guarantee program.

"Agriculture IPARD" is the sixth program under issued guarantees in the total amount of HRK 127.6 million at the level of Croatia, or HRK 28.1 million at the level of Eastern Croatia. At the level of Croatia and at the level of Eastern Croatia, there are no activated guarantees. The guarantee program "Agriculture IPARD" has no activated guarantees because the beneficiaries of this measure had a low own contribution in the loan, which significantly increases the likelihood of loan repayment. Also, the evaluation criteria for approving such projects were stricter than similar measures and purposes from the state budget.

Under the Innovations guarantee program, a total of HRK 60.7 million in guarantees were issued at the Croatian level, and HRK 7.5 million were activated under that program. At the level of Eastern Croatia, HRK 10.3 million of guarantees were issued under this program and in the observed period there were no requests for activations of issued guarantees. The share of activated guarantees in the issued guarantees of the "Innovations" program at the Croatian level is 12.3%, while at the level of Eastern Croatia the share cannot be calculated. The share of activated guarantees of Eastern Croatia in activated guarantees of Croatia under the guarantee program "Innovations" cannot be calculated.

The "Areas of special state interest" guarantee program at the Croatian level has a total of HRK 57.9 million in issued guarantees, of which HRK 5 million have been activated. Small and medium-sized enterprises from Eastern Croatia received HRK 18.7 million in guarantees for their entrepreneurial loans under the same program, of which HRK 2.3 million were activated. The share of activated guarantees in the issued guarantees of the "Areas of special state interest" program at the level of Croatia is 8.7%, while at the level of Eastern Croatia it is 12.1%. The share of activated guarantees of Eastern Croatia in activated guarantees of Croatia under the "Areas of special state interest" guarantee program is significant and amounts to 45%. Although the share is relatively high, activation at the level of the cumulative amount of activated guarantees of all guarantee programs is not significant.

Under the "Leasing" guarantee program, HRK 14 million in guarantees were issued at the Croatian level, while HRK 0.7 million in guarantees were issued at the Eastern Croatia level. In this guarantee program, in the observed period, there are no activated guarantees at the level of Croatia, as well as at the level of Eastern Croatia. The "Leasing" guarantee program served as insurance for the purchase of new machinery, equipment and commercial vehicles through financial leasing. As it was adopted towards the end of the observed period, consequently there are no activated guarantees. Therefore, the shares activated in issued guarantees at the level of Croatia as well as Eastern Croatia cannot be calculated.

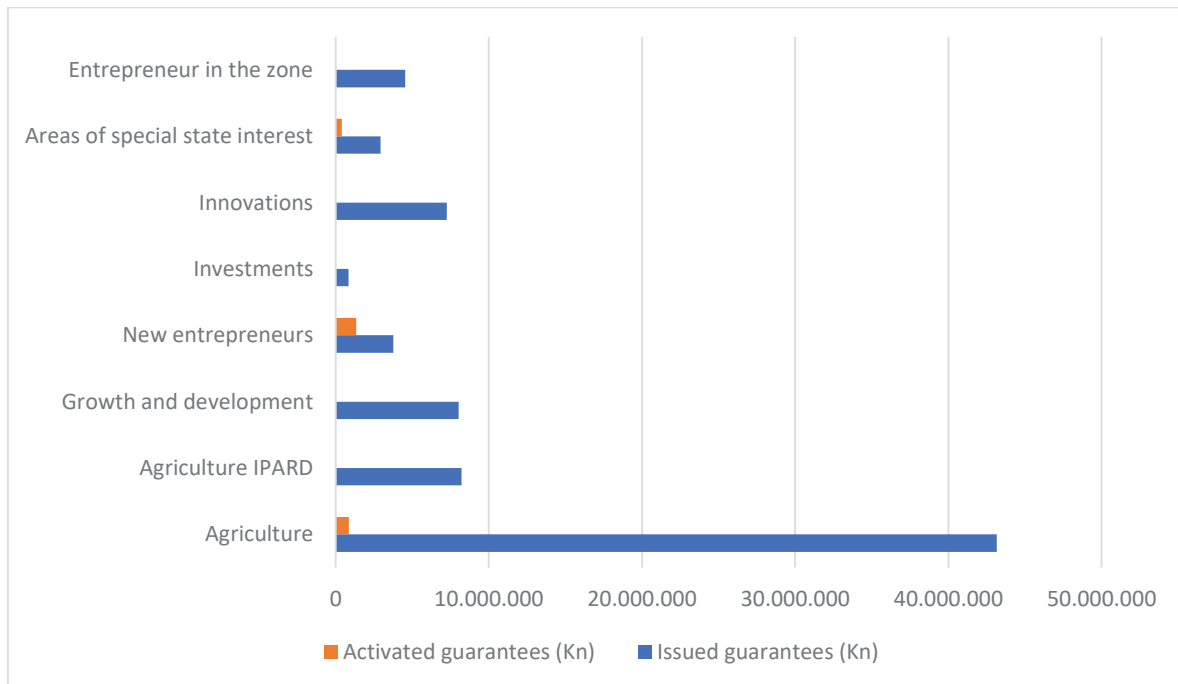
The "Others" guarantee program consists of the "Entrepreneur in the Zone", "Microcredit" and "Women Entrepreneurs" guarantee programs. At the Croatian level, a total of HRK 122.7 million of guarantees were issued under this guarantee program, of which HRK 9.7 million was activated. Therefore, the share of those activated in guarantees issued under this program is 7.9%. At the level of Eastern Croatia, a total of HRK 23.9 million in guarantees were issued, and in the observed ten-year period there was no activation under this program. Therefore, the share of those activated in the issued guarantees cannot be calculated.

It can be concluded that guarantees are more often activated in Eastern Croatia than on average in Croatia, which implies that public credit guarantees are riskier in this part of country. The reason for that could be that Eastern Croatia is relatively underdeveloped in comparison to the Croatian average and for that reason approved loans could be riskier. However, precisely because of that and in the spirit of public guarantees, it is necessary to continue with public credit guarantees programs in Eastern Croatia.

## 5. Issued and activated guarantees by each Eastern Croatia County

In this chapter, an analysis of credit guarantees by counties in Eastern Croatia will be conducted. The analysis will include issued and activated guarantees under the guarantee program and by each Eastern Croatia county. The aim of the analysis is to determine which guarantee program is most important for each county. Additionally, the counties participating the most in activated guarantees will be considered as well as their potential specialties.

**Graph 2:** Issued and activated guarantees in HRK in Brod-Posavina County (2005-2014)



Source: HAMAG

In Brod-Posavina County (Table 3), a total of HRK 78.7 million in guarantees was issued in 8 guarantee programs, while a total of HRK 2.6 million guarantees was activated. Most guarantees were issued in the guarantee program "Agriculture", a total of HRK 43.1 million of guarantees, of which HRK 0.9 million was activated. "Agriculture" is the most important guarantee program of Brod-Posavina County with a small cost to the state budget.

It is followed by the guarantee program "Agriculture IPARD" with a total of HRK 8.2 million issued guarantees and without activated guarantees. The third program under issued guarantees is the "Growth and development" guarantee program with a total of HRK 8 million of issued guarantees and also without activated guarantees. It is followed by guarantee programs "Innovations" with HRK 7.2 million issued guarantees and "Entrepreneur in the zone" with HRK 4.5 million issued guarantees.

Within the guarantee program "New entrepreneurs", a total of HRK 3.8 million of guarantees were issued, of which HRK 1.3 million of guarantees were activated. This guarantee program, intended for young companies, mostly participates in activated guarantees Brod-Posavina County.

Within the guarantee program stimulating areas of special state interest, a total of HRK 2.9 million in guarantees were issued, of which HRK 0.4 million of guarantees were activated.

**Table 3:** Issued and activated guarantees in HRK in Brod-Posavina County (2005-2014)

Guarantee program	Issued guarantees (Kn)	Activated guarantees (Kn)
Agriculture	43.166.763	856.625
Agriculture IPARD	8.219.007	0
Growth and development	8.024.8	0
New entrepreneurs	3.766.206	1.348.059
Investments	830.800	0
Innovations	7.247.000	0
Areas of special state interest	2.926.487	407.400
Entrepreneur in the zone	4.543.600	0
<b>Total</b>	<b>78.724.684</b>	<b>2.612.084</b>

Source: HAMAG

In Osijek-Baranja County (Table 4), a total of HRK 156.9 million in guarantees was issued in 9 guarantee programs, of which HRK 19 million of guarantees were activated. Most guarantees, as much as HRK 84 million in that county, were issued under the "Agriculture" guarantee program, and HRK 6.7 million of guarantees were activated. Therefore, this guarantee program is also the most important for Osijek-Baranja County.

The second program in terms of the amount of issued guarantees is the guarantee program "Liquidity and working capital" with a total of HRK 20.5 million of issued guarantees. With HRK 7.1 million of activated guarantees and one third of activation, within the guarantee program "Liquidity and working capital", this program participates the most in all activated guarantees in Osijek-Baranja County.

The third program under issued guarantees is "Growth and development" with a total of HRK 19.9 million of issued guarantees, of which HRK 3.3 million of guarantees were activated.

It is followed by the "Agriculture IPARD" program with a total of HRK 11.8 million of issued guarantees, then the "Entrepreneur in the zone" program with a total of HRK 8.3 million of issued guarantees, and the "Investments" program with a total of HRK 4.3 million of issued guarantees. There are no activated guarantees in the mentioned three guarantee programs. The guarantee program "Areas of special state interest" follows with a total of HRK 3.3 million in issued guarantees and HRK 1.9 million in activated guarantees. The least used program is the guarantee program "Financial leasing", within which 445 thousand HRK guarantees were issued, while there were no activated guarantees in the observed period.

**Graph 3:** Issued and activated guarantees in HRK in Osijek-Baranja County (2005-2014)

Source: HAMAG

**Table 4:** Issued and activated guarantees in HRK in Osijek-Baranja County (2005-2014)

Guarantee program	Issued guarantees (Kn)	Activated guarantees (Kn)
Agriculture	84.247.066	6.743.735
Agriculture IPARD	11.840.839	0
Growth and development	19.935.727	3.254.416
Liquidity and working capital	20.451.876	7.063.979
New entrepreneurs	4.023.914	0
Investments	4.349.063	0
Areas of special state interest	3.297.208	1.853.996
Financial leasing	445.269	0
Entrepreneur in the zone	8.272.000	0
<b>Total</b>	<b>156.862.962</b>	<b>18.916.126</b>

Source: HAMAG

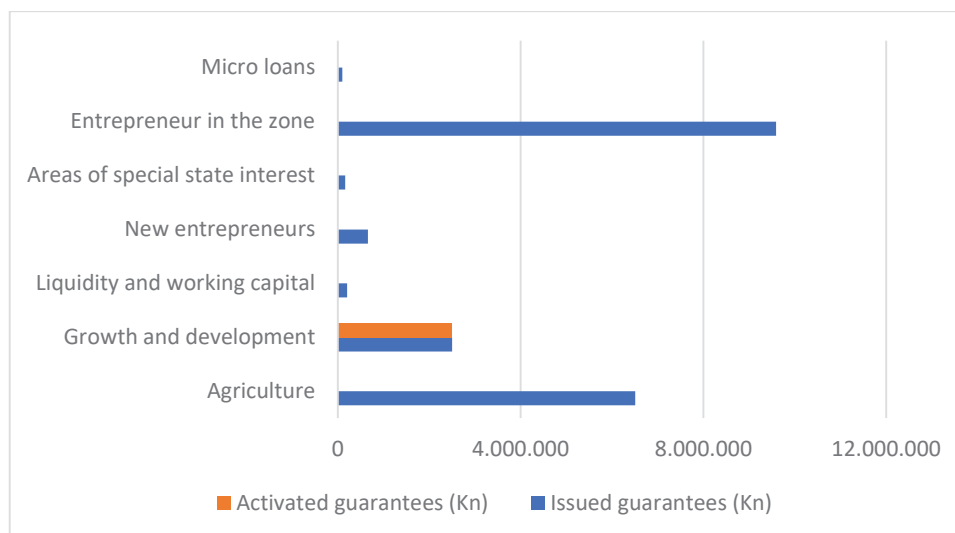
In Pozega-Slavonia County (Table 5), a total of HRK 19.7 million in guarantees was issued in 7 guarantee programs, of which HRK 2.5 million of guarantees were activated. The most used guarantee program is "Entrepreneur in the zone" with a total of HRK 9.6 million in issued guarantees and without activated guarantees.

It is followed by the guarantee program "Agriculture" with a total of HRK 6.5 million issued guarantees and without activated guarantees.

The third program under the issued guarantees is the guarantee program "Growth and development" in which a total of HRK 2.5 million of guarantees were issued, and the same number of them were activated.

This is followed by the guarantee program "New entrepreneurs" with a total of 664 thousand HRK issued guarantees, the program "Liquidity and working capital" with a total of 208 thousand HRK issued guarantees, the program "Areas of special state interest" with 165 thousand HRK issued guarantees and finally guarantee program "Micro loans" with 98 thousand HRK issued guarantees. There are no activated guarantees in the mentioned four guarantee programs.

**Graph 4:** Issued and activated guarantees in HRK in Pozega-Slavonia County (2005-2014)



Source: HAMAG

**Table 5:** Issued and activated guarantees in HRK in Pozega-Slavonia County (2005-2014)

Guarantee program	Issued guarantees (Kn)	Activated guarantees (Kn)
Agriculture	6.509.723	0
Growth and development	2.500.000	2.500.000
Liquidity and working capital	208.592	0
New entrepreneurs	664.000	0
Areas of special state interest	165.157	0
Entrepreneur in the zone	9.589.371	0
Micro loans	98.000	0
<b>Total</b>	<b>19.734.843</b>	<b>2.500.000</b>

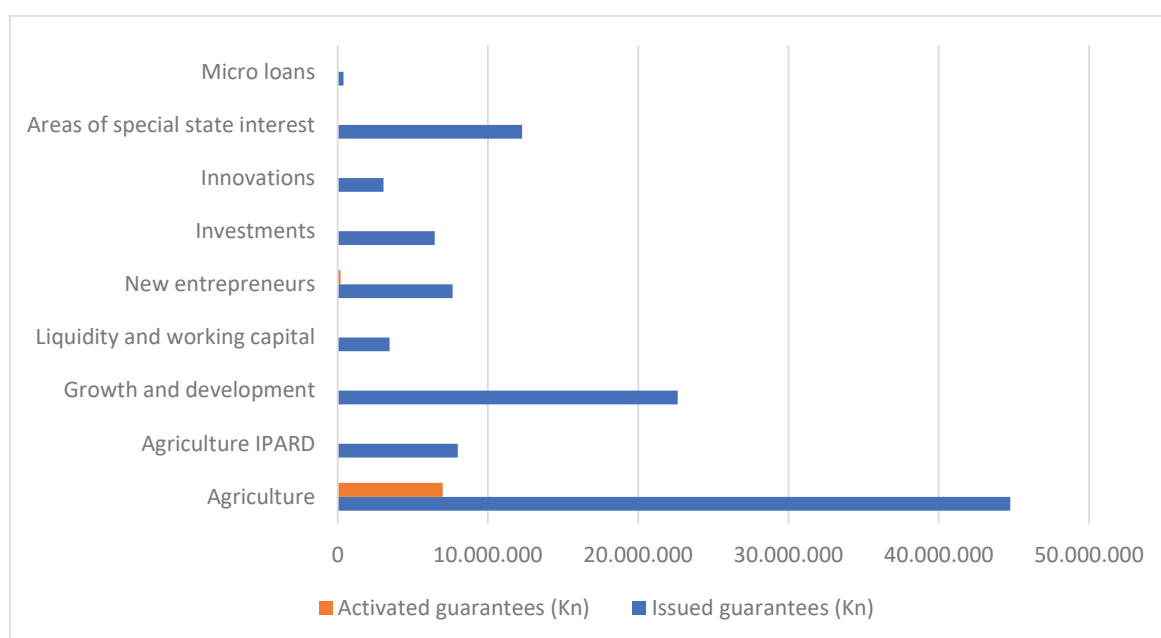
Source: HAMAG

The guarantee program "Agriculture" according to the issued guarantees in Vukovar-Srijem County (Table 6) differs significantly from all other guarantee programs. Under this guarantee program, a total of HRK 44.8 million in guarantees was issued and HRK 7 million in guarantees



were activated. Therefore, the guarantee program "Agriculture" program is the most important for this county. At the same time, this guarantee program participates the most in the guarantee's activation of all programs in this county. The second guarantee program according to issued guarantees is the "Growth and development" program with a total of HRK 22.6 million of issued guarantees and without activated guarantees in the observed period. The third guarantee program according to issued guarantees is the "Areas of special state interest" program with a total of HRK 12.3 million issued guarantees and without activated guarantees. The guarantee program "Agriculture IPARD" has HRK 8 million of issued guarantees and no activated guarantees. The guarantee program "New entrepreneurs" follows with HRK 7.6 million of issued guarantees and HRK 0.2 million activated guarantees. This is followed by the guarantee program "Investments" with HRK 6.5 million issued guarantees, the guarantee program "Innovations" with HRK 3 million issued guarantees and finally the guarantee program "micro loans" with HRK 0.4 million issued guarantees. There are no activated guarantees within all three programs.

**Graph 5:** Issued and activated guarantees in HRK in Vukovar-Srijem County (2005-2014)



Source: HAMAG

**Table 6:** Issued and activated guarantees in HRK in Vukovar-Srijem County (2005-2014)

Guarantee program	Issued guarantees (Kn)	Activated guarantees (Kn)
Agriculture	44.761.472	6.989.320
Agriculture IPARD	7.998.167	0
Growth and development	22.630.026	0
Liquidity and working capital	3.460.450	0
New entrepreneurs	7.647.063	199.596
Investments	6.450.038	0

Guarantee program	Issued guarantees (Kn)	Activated guarantees (Kn)
Innovations	3.042.212	0
Areas of special state interest	12.271.881	0
Micro loans	385.000	0
Total	108.646.309	7.188.916

Source: HAMAG

## 6. Conclusion

This paper examines the issued and activated public credit guarantees of small and medium-sized firms in Croatia, in Eastern Croatia, as well as in each county of that region. The efficiency of the state guarantee system cannot be viewed separately from its costs. Therefore, issued public credit guarantees cannot be analyzed separately from activated guarantees.

Empirical research has shown that guarantees are more often activated in Eastern Croatia than on average in Croatia, which implies that public credit guarantees are riskier in this part of country. More precisely, the share of activated guarantees in the issued guarantees of all guarantee programs at the Croatian level is 6.9 percent, while the share of activated guarantees in the issued guarantees of all guarantee programs at the level of Eastern Croatia is 8.6 percent. The share of activated guarantees issued in Eastern Croatia in total amount of the activated guarantees issued in Croatia is 26.6 percent. Expectedly, "Agriculture" program is the most important program in Eastern Croatia. At the same time, more than half of all activated guarantees for agricultural investments at the Croatian level come from Eastern Croatia. As explained, this information is not surprising, since the program for agriculture is the most represented guarantee program in Eastern Croatia in terms of issued guarantees. Most guarantees at the Croatian level were activated under the liquidity program, while in Eastern Croatia, surprisingly, only a fifth of that amount was activated.

In Eastern Croatia, Osijek-Baranja County has the highest number of issued credit guarantees. This county is also in the lead in terms of activated guarantees. The largest guarantee program under the issued guarantees is the "Agriculture" program, while the most activated guarantees are also under that program.

Pozega-Slavonia County has by far the least used credit guarantees compared to the other three counties of Eastern Croatia. That county used four times less public guarantees than Brod-Posavina County, five times less than Vukovar-Srijem County and eight times less than Osijek-Baranja County. However, Pozega-Slavonia County has also by far the lowest number of activated guarantees, compared to three comparable counties in Eastern Croatia.

However, further research is needed to include the paid fee of each issued guarantee in the impact of public credit guarantees on the state budget. It consists of a one-time guarantee fee and annual premiums paid quarterly. These inflows paid into the state budget by entrepreneurs will directly or indirectly reduce the cost of paying out for each activated credit guarantee and thus reduce the negative impact on the state budget.

## REFERENCES

Abraham, F., & Schmukler, S. L (2017): *Are public credit guarantees worth the hype?. World Bank Research and Policy Briefs*, pp. 1-4

- Beck, T, Demirguc-Kunt, A, Peria M. S. M. (2011): *Bank financing for SMEs: Evidence Across Countries and Bank Ownership Types*, pp. 36
- Becker, G, Broz, T, Ridzak, T. (2016): *The impact of state guarantees on trends in small and medium-sized enterprises in eastern Croatia*, pp. 6-9
- Berger, A. N, Udell, G. F. (1998): *The Economics of Small Business Finance: The Roles of Private Equity and Debt Markets in the Financial Growth Cycle*, pp. 8-10
- Brault, J., & Signore, S. (2019): *The real effects of EU loan guarantee schemes for SMEs: A pan-European assessment* (No. 2019/56). EIF Working Paper
- Calcagnini G, Farabullini F, Giombini G. (2009): *Loans, Interest Rates and Guarantees: Is There a Link?* pp. 3
- Cowan, K., A. Drexler, and A. Yañez (2015): *The Effect of Credit Guarantees on Credit Availability and Delinquency Rates* Journal of Banking and Finance, Vol. 59, pp. 98–110.
- Cowling M. (2010): *The Role of Loan Guarantee Schemes in Alleviating Credit Rationing in the UK*, pp. 5-6
- Cowling, M, Clay, N. (2018): *The innovation debt penalty: Cost of debt, loan default, and the effects of a public loan guarantee on high-tech firms*, pp. 2-5
- Dvouletý, O, Čadil, J, Mirošník K. (2019): *Do Firms Supported by Credit Guarantee Schemes Report Better Financial Results 2 Years After the End of Intervention?* The BE Journal of Economic Analysis & Policy, Vol. 19, No. 1, str. 2-12
- Honohan, P. (2010): *Partial Credit Guarantees: principles and practice*, pp. 3-14
- Kirschenmann, K. (2016): *Credit rationing in small firm-bank relationships*, pp. 2-6
- Levitsky J. (1997): *Credit guarantee schemes for SMEs-an international review*, pp. 12
- OECD. (2006): *The SME Financing Gap: Theory and Evidence*, pp. 4
- OECD. (2010): *Discussion Paper on Credit Guarantee Schemes*, pp. 12
- Uesugi I, Sakai K, Yamashiro G. M. (2010): *The Effectiveness of public Credit Guarantees in the Japanese Loan Market*, pp. 3-6
- SBA Fact Sheet (2019): *European Commission*, pp. 2
- Stiglitz, J. E, Weiss, A. (1981): *Credit Rationing in Markets with Imperfect Information*, pp. 393-409
- Udell, G. F. (2015): *SME Access to intermediated credit: What do we know and what don't we know*, pp. 97
- Udell, G. F. (2020): *SME access to finance and the global financial crisis. Journal of Financial Management, Markets and Institutions*, pp. 2-25

*A scientific paper*

**Vlatka Bilas, Ph. D., Full Professor**

Faculty of Economics and Business, University of Zagreb

E-mail address: vbilas@efzg.hr

**Vedran Kulić**

Apsolon d.o.o.

E-mail address: kulicv@gmail.com

## **SIGNALS APPROACH TO CRISIS PREDICTION: THE CASE OF THE UNITED STATES OF AMERICA**

### **ABSTRACT**

*The main goal of this paper is to present a signals approach to crisis forecasting and apply it to the economy of the United States of America. The signals approach takes into account the historical movement of key variables, determines potential predictors which enables a relevant comparison of significant variables before and after the global COVID-19 pandemic. Variables that have proven to be significant in the historical period have been used to create composite indices for the entire economy, but also each of the individual sectors identified as a possible source of the crisis, according to different types of crises. A total of 32 variables were selected from the relevant literature and analysed, from January 1, 1971, until the latest available data, as follows: variables related to currency or balance of payments (7 variables), banking or financial sector (10 variables), public sector (5 variables) and the wider economy (10 variables). The conducted analysis shows that a total of 19 variables recorded significantly different trends in pre-crisis times than the originally selected 32. Pre-crisis times are defined as 12 months before each peak of the economic cycle. The analysis shows that the USA economy was ready for the crisis, i.e., that significant variables did not indicate a reversal of the business cycle before the external shock. Furthermore, the results for 12 months after the shock indicate that significant variables still do not indicate a future crisis, with an important note that all composite indices increased, i.e., significantly approached the threshold which has in the past pointed to an impending disruption in the economy.*

**Key words:** *signals approach, crisis, COVID-19, USA.*

### **1. Introduction**

Crises have always been associated with negative consequences for all economic entities, so predicting economic disruptions presents a huge research challenge for a considerable amount of time. Financial crises have large economic and social costs (Bluwstein et al., 2021), they impose large fiscal costs, driving up public debt and disrupting societies (Fouliard et al., 2021). Greenwood et al. (2020) showed that crises are substantially predictable. The main purpose of predicting disorders is to mitigate or completely prevent consequences that have been recorded an exceptional number of times during historical development. In order to do so, great emphasis should be put in exploring the possibilities of crisis prediction. Negative economic and social consequences could be avoided, or at least decreased or shortened. The

paper contributes particularly in this area of prediction and defining potential signals of crisis occurrence.

There is a vast literature on crisis episodes that have had a significant impact on income, total production, GDP, employment and other indicators including declining quality of life, resilience of the economic system and overall prosperity of a nation. For example, Kaminsky and Reinhart (1999) were motivated by the Mexican and Asian currency crises of the 1990s, while Alessi and Detken (2011), as well as Frankel and Saravelos (2012) were motivated to predict future crisis from the experience of the great economic crisis in 2008. Since the whole economy is a complex system composed of separate but highly interconnected units, when forecasting, for example, currency disturbances, it is not enough to observe only variables directly related to the balance of payments with the expectation that the causes will be fully identified. As noted later, Kaminsky et al. (1998) also take into account variables from other sectors of the economy such as GDP growth, fiscal deficit, changes in securities prices and regulatory policy while forecasting currency disruptions. On the other hand, Knedlik and von Schweinitz (2011) use variables such as inflation, unemployment rate, labor productivity, etc., when creating an early warning system to predict the debt crisis.

Two fundamental approaches to crisis prediction as presented by the academic literature include the traditional and signals approach. The traditional approach is mainly focused on qualitative descriptions and the identification of individual feedbacks with the assumption that the same mechanisms will be able to identify a future crisis. On the other hand, the signals approach, which was chosen for analysis in this paper, takes into account qualitative descriptions only when selecting variables whose significance will be tested. The signals approach does not require precise knowledge of all potential mechanisms through which variables interact, but assumes that some variables exhibit different behaviour in pre-crisis times, which can be quantified and used to predict future economic disturbances. The value of the signals approach is also evident in the formation of early warning systems.

Although the paper analyses the case of the United States of America, results of the analysis are inevitably important and have broader applicability.

The paper consists of five parts. After the introductory part, a short literature review on the use of signals approach is presented. The third part of the paper refers to the applied methodology, and fourth on the results of the conducted research. Conclusion represents the fifth part of the paper.

## **2. Literature review: signals approach**

Kaminsky et al. (1998) by developing their KLR approach were first who attempted to form a signals approach to predict financial and economic disturbances (primarily currency crisis) and their contribution is a breakthrough in the literature of leading indicators and early warning systems (Ahec-Šonje and Babić, 2002; Bussiere and Fratzsher, 2002; Berg et al., 2004; Allesi and Detken, 2009). Later research focused on all types of financial crises: Aldasoro et al. (2018) for banking crises; Knedlik and von Schweinitz (2011.) for debt crisis; Babecky et al. (2014) for economic crises in a broader sense. Despite certain methodological changes such as the modality of the disorder that is classified as a crisis, a different signal period, etc., the basic goal of all these authors is to identify relevant and significant variables worth monitoring or variables that behaved differently in pre-crisis times. The KLR approach is based on the assumption that the movement of some variables in pre-crisis times differs

significantly from the movement in non-crisis times. According to the above assumption, it is possible to determine a threshold for each selected variable by observing the movement of values in the periods before previous crises. In the case of crossing a certain variable over (or below) a defined threshold, the variable gives a signal of potential disruption in the near future. Despite the fact that the signals approach takes into account the qualitative characteristics of individual variables and thus creates a list of potentially significant variables, it does not assume a certain explanation of the causal relationship, but tries to find variables that express different behaviour in pre-crisis times. In the previous statement it is possible to identify the biggest difference between the traditional and signals approach and the biggest advantage of the signals approach over the traditional approach: it is not necessary to define how and by what mechanics a change in a variable affects an economy. According to El-Shagi et al. (2012), the signals approach is based on the observation that strong deviations from the long-term equilibrium (average) often indicate an impending crisis.

Before analysing the probability of disturbances in the economy, it is necessary to define potential types of disturbances, select an appropriate methodology for forecasting and make the necessary preparatory actions in accordance with the chosen method. In the case of a signals approach, this involves selecting variables that could indicate an impending crisis, determine which variables have been successful in the past, and analyze significant variables in the recent past. Kaminsky et al. (1998) chose as relevant: international reserves, imports, exports, trade conditions (export-import ratio), deviations of the real exchange rate from the trend, the difference between foreign and domestic real interest rates on deposits, "surplus" M1, money supply M2, credit-to-GDP ratio, real interest rate on deposits, the ratio of loans to interest rates on deposits, the balance of deposits of commercial banks, the ratio of broad money to gross international reserves, production index and stock index. The selected variables show that some of them are not directly related to currency or balance of payments, and the authors considered them potentially useful for predicting currency crises, which is a direct consequence of extremely connected and complex economic and financial system.

When selecting variables to be tested, it is important to have a clear and logical channel of influence for each of the variables, in order to ensure reliable and meaningful test results. During testing, it is important to cover as many crisis episodes of varying intensity, modality and duration as possible. Given that changes in the economy are frequent and rapid, it is necessary to use the distribution of historical data that have a monthly frequency. The limitation in the relevant use of signal access is manifested in the fact that part of the data is available only at a lower frequency than monthly, for example quarterly, and if it is an important and established indicator, quarterly frequency can be linearly interpolated or transformed into monthly frequency (Kaminsky et al., 1998).

After selecting the variables whose behaviour will be tested in pre-crisis times, it is necessary to select the appropriate signal period. The signal period is the period within which variables are expected to have the ability to predict a crisis. This is defined a priori, and given the objectives of the analysis. For example, the original KLR approach defines the signal period of 24 months. Kaminsky and Reinhart (1999) use an 18-month signal period when trying to form an early warning system for double crises, and Ahec-Šonje (2002) uses a 9-month signal period. Furthermore, von Hagen and Ho (2003) use a signal period of 12 months, in order to avoid overlapping individual signals periods and to ensure that the signal period covers the period before a crisis episode.

Continuing the KLR approach, it can be concluded that the variable gives a signal whenever it deviates from its average value above a given threshold level. Threshold levels were chosen in such a way as to achieve the best possible balance between the risk of a lot of false signals and the risk of signals leakage. Since the goal of the signals approach is to observe when a specific variable behaves differently, thresholds are defined with respect to the percentiles of the distribution of indicator observations. Using percentiles between 10 and 20 percent, unusual values of an individual variable are extracted for the purpose of identifying the optimal threshold, which allows minimizing the Noise-to-Signal ratio (NSR) or maximizing the efficiency of an individual variable.

El-Shagi et al. (2012) analyzed the “real predictive power of the signals approach” by examining the correlation of variables and crises for three different modalities of the signals approach to predict different types of disturbances. Various papers using the signals approach were used as the data source. These include Kaminsky and Reinhart (1999) for currency and banking crises, Allesi and Detken (2011) for asset bubbles, and Kndelik and von Schweinitz (2011) for debt crises. As part of this analysis, these authors found "economically important and statistically significant" results of the application of the signals approach while achieving the best results when using composite indices. All of the above papers were used as sources of variables during the formation of the signals approach for the USA economy in this paper. El-Shagi et al. (2012) also emphasize the high statistical significance of prediction in the case of using composite indices.

### 3. Methodology

The signals approach is based on the assumption that movement of variables in pre-crisis times differs significantly from the movement in tranquil times. According to the above assumption, it is possible to determine a threshold for each selected variable by observing the movement of observations during periods before previous crises. In the case of crossing a certain variable over (or below) a defined threshold, the variable gives a signal of potential disruption in the future. Threshold levels were chosen in such a way as to achieve the best possible balance between the risk of a lot of false signals and the risk of signal leakage. Since the goal of the signals approach is to observe when a specific variable behaves differently, thresholds are defined with respect to the percentiles of the distribution of indicator observations. Using a percentile network between 10 and 20 percent, unusual values of an individual variable are extracted for the purpose of identifying the optimal threshold, which minimises the noise-to-signal ratio and therefore maximises the efficiency of an individual variable. The table below contains a matrix designed for the purpose of determining the reliability of an individual variable, ie the formation of the ratio of noise and signal, as presented in Kaminsky et al. (1998).

**Table 1:** Signals approach matrix

	<b>Crisis</b>	<b>Not a crisis</b>
<b>Signal</b>	A	B
<b>Not a signal</b>	C	D

*Source: Kaminsky et al. (1998)*

A variable that works perfectly in crisis prediction would produce only A and D types of signals, ie it would record signals in each month after which a crisis should follow (within the signal period) and would not record signals during months without a crisis (within the signal

period). Using the matrix above, it is possible to choose the optimal threshold in terms of efficiency, ie to determine which variables are statistically significant in terms of giving more correct signals than noise. For the purposes of calculating good and bad signals, the ratio of noise and signals, the formulas in the table below were used.

**Table 2:** Signals approach formulas

Description	Formula
Good signals as a percentage of possible good signals	$A/(A+C)$
Invalid signals as a percentage of possible bad signals	$B/(B+D)$
Noise to signal ratio	$B/(B+D) / (A/(A+C))$

*Source: Kaminsky et al. (1998)*

The noise-to-signal ratio is used as a criterion for deciding which indicators should be excluded from the list of relevant or statistically significant variables. An indicator that emits signals at random would get a noise-to-signal ratio equal to one or more. Therefore, indicators with a noise-to-signal ratio equal to or greater than one introduce excessive noise and cannot be considered relevant for crisis prediction.

Since the USA has a number of specifics, and considering the purposes of this paper, it is necessary to adjust the signals approach to better meet the needs of assessing the likelihood of disturbances.

In this paper, four groups of indicators were used: (1) balance of payments indicators, (2) financial indicators, (3) economic indicators and (4) fiscal indicators. In addition to the above division, and following relevant literature, composite indices have been developed. The above-mentioned procedure for each of the mentioned sectors yields a percentage amount that has indicated the impending crisis over the last 50 years. Given the recent outbreak of a global COVID-19 pandemic that has significantly affected daily life, and thus the economy, a comparison of the number of signals given by individual variables, as well as composites, before and after (more precisely during) the COVID-19 pandemic will provide relevant measurements of the pandemic impact on the USA economy. Variables which are tested were selected from relevant literature, as stated in the Table 1.

**Table 3:** Literature list

Authors	Statistical method	Area of interest	Sample countries
Kaminsky et al. (1998)	Signals approach	Currency crisis	Developed and developing
Aldasoro et al. (2018)	Modified signaling approach (ROC and AUC curves)	Banking crisis	Developed
Knedlik & von Schweinitz (2011)	Signals approach	Debt crisis	Developed (EU)
Dawoo et al. (2017)	Dynamic signal extraction, binary logit regressions	Public debt	Developed and developing



<b>Authors</b>	<b>Statistical method</b>	<b>Area of interest</b>	<b>Sample countries</b>
Alessi & Detken (2011)	Signals approach	Debt crisis	Developed
Frankel & Saravelos (2012)	Bivariate and multivariate regressions	Causes of the 2008 global crisis	Developed and developing
Babecky et al. (2014)	BMA & PVAR	Economic crisis	Developed

*Source: Authors*

In addition to statistically significant variables from papers stated in the Table 1, for the purpose of testing significant variables for the USA economy, several additional variables were considered: ratio of money supply to M2 and GDP, the price of gold, the price of oil, initial claims for unemployment benefits, newly issued building permits, the ratio of public debt to GDP, and the share of interest in government spending. Comparability and availability of data were taken into account when selecting variables for testing. Given the duration of the 50-year time series, the analysis of trends included percentage changes from the previous year, wherever possible (Kaminsky et al., 1998; Babecky, et al., 2014; and others).

For the purpose of identifying crises with a dedicated beginning and end, the definition of NBER was used, similarly to Aldasoro et al. (2018) who used data from the European Systemic Risk Board. The definition of crisis according to NBER emphasizes that the recession involves a significant decline in economic activity that has spread throughout the economy and lasts for several months (NBER.org, October 2021). In this interpretation, three criteria - depth, distribution and duration are treated as intertwined, which means that the period of contraction marks the fulfilment of each of these criteria individually, noting that the extreme frequency of one criterion may partially compensate for the lower intensity of the other criterion. For example, in the case of the peak of economic activity in February 2020, the committee concluded that the subsequent decline in activity was so large and so widespread throughout the economy that, even if it proved rather short, the decline should be classified as a recession. It is important to note that the NBER does not have a set of given variables whose significant decrease or increase is a definite sign that it is the end of the expansion period and the beginning of the contraction, but relevant variables are taken into account depending on the specific circumstances of the economy. With the eventual announcement of the end of the expansion period, enough data are always waited for, in order to avoid the need to change the chronology of the business cycle. As a result, peaks are identified until a few months after it actually happened (NBER.org, October 2021).

For the signal period, periods of 12 months before each individual peak of the business cycle were selected, in accordance with the official data of the NBER. The purpose of this signal period is the same as in von Hagen and Ho (2003), to ensure that one signal period covers the time before a single crisis episode. In addition, when selecting variables, the necessary condition is monthly availability, as well as the recording of individual variables according to the same methodology from the beginning of the time series, from the 1<sup>st</sup> of January of 1971 to present day. Some variables that are available exclusively in the quarterly frequency, and which have proven successful in predicting disturbances in the economy, have been taken into account despite the unavailability of the monthly frequency. In order to maintain comparability and consistency, linear interpolation was performed for these variables so that the relevant monthly frequencies recorded the same value in one quarter, following the example of Kaminsky et al. (1998). Table 2 lists the variables for which significance testing was performed specifically for the USA economy.

**Table 4:** List of selected variables

<b>Balance of payments indicators</b>	<b>Financial indicators</b>	<b>Economic indicators</b>	<b>Fiscal indicators</b>
Real narrower effective exchange rate	Difference between nominal (3 months and 10 years) bond yields	Real GDP	Federal government surplus
Total reserves without gold	Difference between real (3 months and 10 years) bond yields	Exports of goods and services	Public debt
Balance of payments balance	NASDAQ stock index	Labor force participation rate	Government spending
M2 / GDP	West Texas Intermediate oil price	New building permits issued	Total public debt as a share of GDP
Consumer price index: all items	Federal fund rate	Net profit of companies	Share of interest in government spending
Producer Price Index	Moody's Seasonal Yield on Baa Corporate Bonds	Consumer Sentiment Index	
Monetary aggregate M2	Loans and leasing in all commercial banks	Unit labor costs: Business sector	
	Loans to nonfinancial sector / GDP	Unemployment rate	
	The price of gold in the London market levers	Initial claims for the unemployed	
	Borrowing of depository institutions with the FED	Ratio of houses for sale and houses sold	

*Source: Authors*

All of the above variables were downloaded using the FRED database add-in for Microsoft Excel. The entire analysis was performed using Microsoft Excel. In order to identify the sources of potential problems in the US economy, all of these variables are divided into already mentioned four groups of indicators. The implemented distribution can be found in the Table 2, modelled on Christofides et al. (2015). The purpose of this comparison is to specify which sector of the economy needs the most attention, given the number of signals for the impending disruption before or after the COVID-19 pandemic.

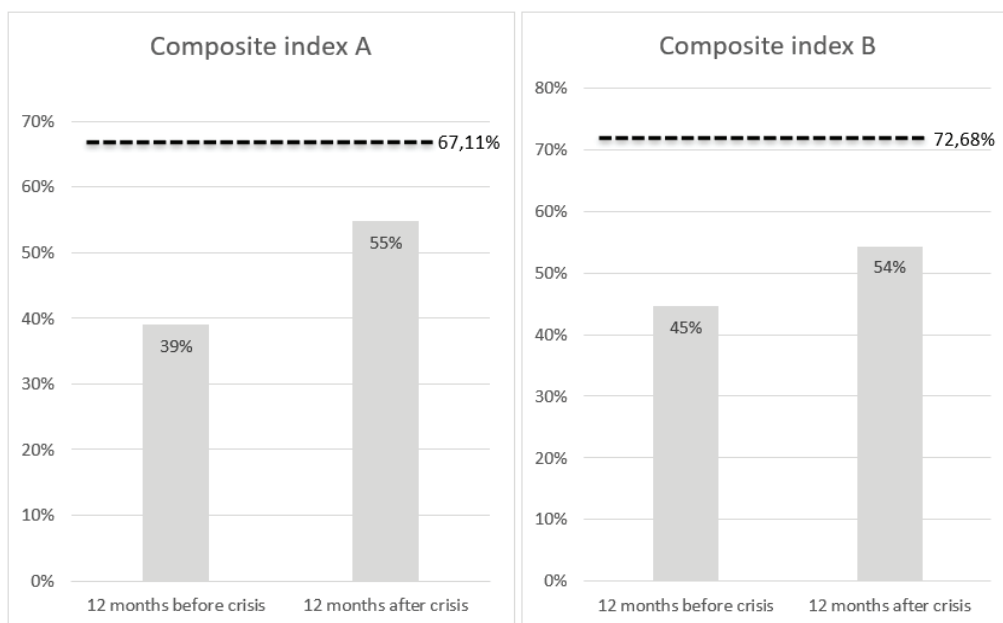
Since a large number of variables were selected for testing, two different composite indices were created for the purposes of a simple and concise overview of the results. Composite index A includes equal weights to all significant variables, while composite index B uses inverse Noise-to-Signal ratios in weighting, taking into account how accurate each of the significant variables has been in predicting impending disturbance throughout history. The critical value above which each of the two composites indicates a crisis was calculated based on the average number of signals during pre-crisis times in the sample, i.e., by dividing the recorded number of signals by the maximum possible number of signals (12 observations before 6 crisis episodes or 72 possible). Following the division of variables into sectors, the two composite indices were calculated within each of the individual sectors for the period of 12 months before the COVID-19 pandemic crisis (period from February 2019 to January

2020), as well as for 12 months after the COVID-19 pandemic from July 2020 to June 2021). These results, expressed as a percentage (number of received signals divided by the number of possible signals) represent an overview of the state of the economy.

#### 4. Results

The results based on the overall economy indicate a considerable amount of signals given in the period of 12 months before the crisis caused by the COVID-19 pandemic that, according to the NBER, lasted during February and March 2020. Furthermore, the negative impact of the COVID-19 pandemic on indicators related to 12 months after the disorder is visible, which is reflected in the increase of both composite indices and the convergence of both composite indices to values that throughout history indicated an impending crisis. It is important to note that the composite index B, which includes the predictive power of each individual variable, showed a slightly smaller increase, but also that it showed a higher initial value in the pre-crisis period. Figure 1 presents the values of composite indices at the level of the entire economy, i.e. the ratio of given signals and the number of possible signals (composite A), as well as the same values weighted by the inverse of the Noise-to-Signal ratio (composite B), and only for 19 variables significantly different behaviour in pre-crisis times.

**Figure 1:** Composite indices A and B at the level of the total economy



Source: Authors

The elaboration of the results by individual sectors of the economy is given in the continuation of this chapter.

**Table 5:** Variables by sector with corresponding sign, threshold and minimum Noise-to-Signal (NSR) ratio

Sector	Variable	+/-	Threshold	NSR
Balance of payments indicators	Real narrow effective exchange rate	-	106.50	0.76
	Total reserves without gold	-	2.23	1.09
	Balance of payments balance	-	-246.48	1.04
	M2 / GDP	+	0.53	1.13
	Consumer price index: all items	+	0.35	0.60
	Producer Price Index	+	4.07	0.48
	Monetary aggregate M2	+	5.83	0.66
Financial indicators	Difference between nominal (3 months and 10 years) bond yields	-	1.21	0.23
	Difference between real (3 months and 10 years) bond yields	-	1.21	0.23
	NASDAQ stock index	-	9.21	1.29
	West Texas Intermediate oil price	-	6.83	1.19
	Federal funds rate	-	-0.45	1.96
	Moody's Seasonal Yield on Baa Corporate Bonds	+	8.23	0.69
	Loans and leases in all commercial banks	+	218.53	0.97
	Loans to nonfinancial sector / GDP	+	0.23	0.74
	The price of gold in the London market levers	+	13.26	0.63
	Borrowing of depository institutions with the FED	+	0.97	0.54
Economic indicators	Real GDP	-	0.83	0.86
	Exports of goods and services	-	2.56	7.41
	Labour force participation rate	-	64.00	0.82
	New building permits issued	-	1,339.40	1.52
	Net profit of companies	-	2.04	0.60
	Consumer Sentiment Index	-	79.15	0.64
	Unit labor costs: Business sector	+	1.07	0.46
	Unemployment rate	+	5.65	1.96
	Initial claims for unemployment	+	335,285.37	1.14
	Ratio of houses for sale and houses sold	+	6.36	0.42
Fiscal indicators	Federal government surplus	+	849.00	1.11
	Public debt	+	3.08	1.25
	Government spending	+	2.04	0.55
	Total public debt as a share of GDP	+	0.34	1.90
	Share of interest in government spending	+	0.10	0.66

Source: Authors

Out of the total of 7 selected variables for testing within balance of payment indicators, 4 proved to be significant in predicting crisis disturbances within the signal period, i.e. out of the tested variables, 4 recorded a Noise-to-Signal ratio of less than unity. The above criteria were met by the real narrower effective exchange rate, the consumer price index for all items, the producer price index for all goods and the M2 aggregate. Of all the significant variables

within the balance of payments indicators, only the real narrower effective exchange rate did not issue a single signal in the 12 months before and after the crisis. Other variables in the post-crisis period showed a higher number of signals than in the period of 12 months before February 2020. The largest increase in the number of signals issued was recorded by the monetary aggregate M2, which issued signals during the entire signal period in the post-crisis period. The increase in the number of signals for this variable, as well as for the variables consumer price index and producer price index can be explained by the strong expansionary monetary policy established in response to the global COVID-19 pandemic. Both composite indicators related to balance of payments indicators recorded a strong increase or approach to the historical limit of just over 70% for both types of composite indices. The results of composite indices show the impact of expansionary monetary policy on balance of payments indicators that show unusual behavior. It should be noted that, despite the fact that the historical limit has not been reached, it would be useful to try to influence this part of the US economy in order to prevent a crisis that could arise from this sector. This primarily refers to undesirably high inflation, which is especially evident in the maximum possible number of signals issued by the variable monetary aggregate M2 in the post-crisis period caused by the COVID-19 pandemic.

Out of a total of 10 selected variables for testing within financial indicators, 7 of them proved to be significant in predicting crisis disturbances within the signal period, i.e. 7 of the tested variables recorded a Noise-to-Signal ratio of less than unity. The mentioned criteria are met by the difference (nominal and real) yields on quarterly and ten-year government bonds, Moody's seasonal yield on corporate bonds, total loans and leasing in all commercial banks, the ratio of total loans to the private nonfinancial sector and GDP, gold prices and total borrowing of depository institutions from the Federal Reserve. It should be noted that the difference (nominal and real) yields on quarterly and ten-year government bonds achieved the best result in terms of the lowest Noise-to-Signal ratio of all analyzed variables in all sectors of the USA economy. During the two observed signal periods, significant variables issued a large number of signals. Prior to the COVID-19 pandemic, the most significant part of the signals issued was the difference between (real and nominal) quarterly and ten-year yields on government bonds, loans and leases in all commercial banks and the price of gold on the London gold market. Despite the lower number of issued signals for these variables, in the post-crisis period a higher number of issued signals was recorded, which indicates the negative impact of the crisis on the financial system. This increase can be mostly attributed to a significant increase in the number of signals for the variables total loans to the private non-financial sector / GDP and total borrowing by depository institutions from the Federal Reserve, which did not issue almost a single signal before the crisis. Seasonal yield on Baa corporate bonds during both signal periods did not issue a single signal. Composite indices related to financial indicators in the period of 12 months before the crisis recorded a significant number of issued signals, i.e. both composite indices were relatively close to the historical level that indicated the crisis. Composite index A increased from 52% to 64%, bringing it closer to the historical limit of a few percentage points. On the other hand, when the predictive power of each of the individual variables is taken into account, which is reflected in the composite index B, a decrease in the index in the post-crisis period is visible. It should be noted that the mentioned indicator, despite the mentioned decrease, is extremely close to the historical limit, which indicates potential difficulties in the financial and banking sector.

Out of a total of 10 selected variables for testing within the sector of economic indicators, 6 of them proved to be significant in predicting crisis disturbances within the signal period, i.e. 6

of the tested variables recorded a Noise-to-Signal ratio of less than unity. These criteria were met by real GDP, labor force participation rate, net profit of companies, consumer sentiment index, unit labor costs and the ratio of houses for sale and houses sold. It is possible to see a decrease in economic activity even before the external shock or global COVID-19 pandemic, which was reflected in the maximum number of signals issued for variables real GDP, labor force participation rate and net profit of companies. In the post-crisis period, the same number of signals were issued as before the crisis, a total of 37, but with a slightly different structure of signals issued. The largest number of signals issued in the post-crisis period relate to the labor force participation rate, real GDP and unit labor costs in the business sector. A significant number of signals were issued by two variables that did not issue a single signal in the pre-crisis period, namely the Consumer Sentiment Index and the unit labor cost for the business sector. Since the same number of signals was recorded in both signal periods, composite index A recorded the same value before and after the crisis. Composite index B recorded a slight increase as it takes into account the predictive ability of each individual variable. Both variations of composite indices are extremely close to the historical line pointing to a potential crisis.

Out of a total of 5 selected variables for testing within fiscal indicators, 2 of them proved to be significant in predicting crisis disturbances within the signal period, i.e. out of the tested variables, 2 recorded a Noise-to-Signal ratio of less than unity. The mentioned condition was met by total government expenditures and the share of interest in government spending. In the period of 12 months before the crisis, none of the significant variables issued a signal that would indicate an impending crisis disorder. In the post-crisis period, the variable total government expenditure recorded 9 signals, which can probably be attributed to increased government spending in the post-crisis period, which was aimed at neutralizing the impact of the COVID-19 pandemic. Since no signals were issued in the period before the crisis, the values of composite indices for this period are 0%. In the post-crisis period, both composite indices increased, but it should be noted that these indices are composed of a small number of variables, so a small increase in the number of issued signals leads to a significant increase in the composite index. Despite the mentioned significant increase, composite indices are still far enough away from the historical level of composite, which could indicate a sound fiscal policy.

## 5. Conclusion

For the purposes of this paper, which analyzed the state of the USA economy before and after an external shock in the form of a global COVID-19 pandemic, the signals approach was tailored to all the specifics of the USA economy. A total of 32 variables were analyzed, of which 19 turned out to exhibit significantly different behaviour in pre-crisis times, satisfying the criterion for a Noise-to-Signal ratio of less than unity. All of the selected variables were observed in the period from the 1<sup>st</sup> of January 1971 to present day and distributed in four sectors of the economy: balance of payments indicators, financial indicators, economic indicators and fiscal indicators. For the purpose of identifying the occurrences of crisis, the dates of the beginning of the crisis as defined by the NBER were used. According to NBER data, 7 crisis episodes occurred in the USA during the mentioned period, the last of which refers to the crisis caused by the global COVID-19 pandemic. Results indicated that the most useful leading indicators were: difference between real and nominal quarterly and ten-year yields on government bonds, the ratio of houses for sale and houses sold, unit labor costs and producer price index. For all significant variables (whose Noise-to-Signal ratio is less than unity), composite indices with equal weights (composite index A) and composite index in

which the inverse of Noise-to-Signal ratio served as a weight (composite index B) were made. The results indicate an increase in all variations of composite indices, and in all sectors of the economy except composite index B for financial indicators in the post-crisis period. The results of the composite indices point to the negative impact of the COVID-19 pandemic on the US economy. Almost the entire deterioration or increase in the number of issued signals can be attributed to balance of payments indicators and economic indicators. The most significant increase in the number of signals issued in the post-crisis period was recorded by: the ratio of loans to the nonfinancial sector and GDP, total borrowing by depository institutions from the Federal Reserve, consumer price index, producer price index and unit labor costs. All these variables are more or less related to the current expansionary monetary policy of the FED, which is aimed at significantly increasing the overall liquidity of the financial system and the economy. Given the importance of inflation expectations on the real incidence of inflation and difficulties in supply chains currently under strong pressure, as well as the already recorded rise in energy prices, the question of the US economic situation after stopping or slowing expansionary monetary policy arises. Finally, paper contributes in establishing a multi-researched and confirmed crisis signal menu, and further research directions should be creating an algorithm based on a series of similar researches, which would provide an excellent basis for making decisions in the direction of crisis prevention. Expanding the scope of research could be aimed at continuously updating the number of issued signals in accordance with newly available data, as well as testing the significance of a number of variables taking into account a number of relevant sources and specific causes of the crisis. Since a shorter frequency than the monthly, daily or weekly frequency is also available for certain variables, the potential subject of additional research could be focused on measuring the performance of crisis disturbance prediction systems at a lower frequency of variables. This would mean more opportunities for variables to emit a signal or refrain from emitting a signal within the same period of time, which means a better assessment of the effectiveness of these variables. Future research could try to incorporate the impact of external shocks, such as global pandemics, climate change, etc., on the likelihood of a crisis in the economy. Since external shocks involve a large number of different possibilities, a potential way to incorporate external shocks could be to analyze different scenarios involving different types of external shocks.

## REFERENCES

- Ahec-Šonje, A. (1996): *Navješćujući indikatori hrvatskog gospodarstva*, Privredna kretanja i ekonomska politika, Vol. 6, No. 46, pp. 43-70.
- Ahec-Šonje, A., Babić, A. (2002): *Pokazatelji međunarodne likvidnosti i sustav ranog upozoravanja financijskih kriza*, Zagreb: Ekonomski institut, [https://www.researchgate.net/publication/321017010\\_Pokazatelji\\_medunarodne\\_likvidnosti\\_i\\_sustav\\_ranog\\_upozoravanja\\_financijskih\\_kriza](https://www.researchgate.net/publication/321017010_Pokazatelji_medunarodne_likvidnosti_i_sustav_ranog_upozoravanja_financijskih_kriza) (accessed 2 January 2022)
- Aldasoro, I., Borio, C., Drehmann, M. (2018): *Early warning indicators of banking crises: expanding the family*, BIS Quarterly Review, March, pp. 29-45.
- Alessi, L., Detken, C. (2011): *Quasi real time early warning indicators for costly asset price boom/bust cycles: A role for global liquidity*, European Journal of Political Economy, Vol. 27, No. 3, pp. 520-533.

Babecky, J., Havranek, T., Mateju, J., Rusnak, M., Šmidkova, K., Vašiček, B. (2014): *Banking, debt, and currency crises: Early warning indicators for developed countries*, Journal of Financial Stability, Vol. 15, pp. 1-17.

Babić, M. (2007): *Makroekonomija*, Mate, Zagreb.

Berg, A., Borensztein, E., Pattillo, C. (2004): *Assessing Early Warning Systems: How have they worked in Practice?*, IMF Working Paper WP/04/52.

Bluwstein, K., Buckmann, M., Joseph, A., Kapadia, S., Şimşek, O. (2021): *Credit growth, the yield curve and financial crisis prediction: evidence from a machine learning approach*, European Central Bank, Working Paper Series, No 2614 / November 2021.

Bussiere, M., Fratzscher, M. (2002): *Towards a new early warning system of financial crises*, ECB, Working paper no 145.

Christofides, C., Eicher, T., Papageorgiou, C. (2016): *Did established Early Warning Signals predict the 2008 crises?*, European Economic Review, Vol. 81(C), pp. 103-114.

Dawood, M., Horsewood, N., Strobel, F. (2017): *Predicting sovereign debt crises: An Early Warning System approach*, Journal of Financial Stability, Vol. 28, pp. 16-28.

El-Shagi, M., Knedlik, T., Schweinitz, G. (2012): *Predicting Financial Crises: The (Statistical), Significance of the Signals Approach*, Halle Institute for Economic Research, IWH Discussion Papers No. 3/2012.

Federal bank of St. Louis, Federal Reserve History, Launch of the Bretton Woods System, preuzeto 18.10.2021, <https://www.federalreservehistory.org/essays/bretton-woods-launched> (accessed 2 January 2022)

Fouliard, J., Howell, M., Rey, H. (2021): *Answering the Queen: Machine learning and financial crises*, BIS Working Papers, No 926.

Frankel, J., Saravelos, G. (2012): *Can leading indicators assess country vulnerability? Evidence from the 2008–09 global financial crisis*, Journal of International Economics Vol. 87, Issue 2, pp. 216-231.

Fratzcher, M., Lo Duca, M., Straub, R. (2012): *A Global Monetary Tsunami? On the Spillovers of US Quantitative Easing*, Frankfurt: ECB, <https://ssrn.com/abstract=2164261> (accessed 2 January 2022)

Greenwood, R., Hanson, S. G., Shleifer, A., Sørensen, A. A. (2020): *Predictable Financial Crises*, Harvard Business School, Working Paper 20-130.

Kaminsky G., Lizondo S., Reinhart, C. (1998): *Leading indicators of currency crises*, IMF, Staff Papers Vol. 45, No. 1.

Kaminsky, G., Reinhart, C. (1999): *The Twin Crises: The Causes of Banking and Balance-of-Payments Problems*, American Economic Review, Vol. 89, No. 3, pp. 473–500.



Knedlik, T., von Schweintz, G. (2011): *Macroeconomic Imbalances as Indicators for Debt Crises in Europe*, Halle Institute for Economic Research, IWH Discussion Papers, No. 12/2011.

National Bureau of Economic Research, Business Cycle Dating, <https://www.nber.org/research/data/us-business-cycle-expansions-and-contractions> (16 September 2021)

National Bureau of Economic Research, Business Cycle Dating, <https://www.nber.org/research/business-cycle-dating> (accessed 4 October 2021)

Von Hagen, J., Ho, T. (2003): *Twin Crises: A Reexamination of Empirical Links*, Center for European Integration Studies, <https://www.gtap.agecon.purdue.edu/resources/download/1386.pdf> (accessed 2 January 2022)

*A scientific paper*

**Ante Bingula, mag.oec.**

University of Split, Faculty of Economics, Business and Tourism

E-mail address: ante.bingula@gmail.com

**Sandra Pepur, Ph. D., Associate Professor**

University of Split, Faculty of Economics, Business and Tourism

E-mail address: sandra.pepur@efst.hr

**Marija Šimić Šarić, Ph. D., Associate Professor**

University of Split, Faculty of Economics, Business and Tourism

E-mail address: msimic@efst.hr

## **PRIVATE EQUITY DETERMINANTS – EVIDENCE FROM SELECTED CEE COUNTRIES**

### ***ABSTRACT***

*Private equity is one of the alternatives to bank financing and has become increasingly important and present in the global financial markets. However, the level of private equity in European countries is still much lower than in the US. To identify the main barriers to the success of private equity, it is necessary to identify the key drivers and how they affect collection funds through this source. As European countries are heterogeneous, it is expected that there are differences between main private equity determinants and their respective influence. This research aims to study which determinants and to what extent affect the level of private equity investment in three selected countries - Poland, the Czech Republic, and Croatia from 2009 to 2019. Multiple linear regression was carried out to examine the impact of economic activity, unemployment, interest rates, market capitalization, corruption, and economic freedom on the level of private equity investment. The results indicate that interest rates, unemployment, and corruption index affect private equity investments in Poland, while the GDP growth rate, inflation, corruption, and economic freedoms affect private equity investments in the Czech Republic, and only GDP per capita has a statistically significant impact on private equity investments in Croatia.*

**Key words:** *private equity, determinants, Poland, Czech Republic, Croatia.*

### **1. Introduction**

Private equity activities began to develop in the US and the UK to provide adequate resources to fund promising ventures set up by young and fast-growing businesses in times of economic recession. Although the private equity industry has been concentrated in these countries for most of its history, over the past decade this form of financing has become global and has evolved into an inevitable form of financial mediation. Not only has it expanded to continental Europe and Asia, but it has also become essential for the markets in transition countries (e.g., those in Central and Eastern Europe - CEE) and emerging markets (Invest Europe, 2021; Vidučić, Pepur and Šimić Šarić, 2018). Although the volume of investments in these areas is rapidly increasing since 2000, it still remains significantly lower in comparison to developed

markets. Additionally, the significant diversity of private equity activity amongst European countries is evident.

Private equity is a form of equity investment in a company that is not listed on the capital market (stock exchange) with active participation in the entity's business in which the investment was made. Venture capital is a subtype of private equity that invests in start-ups with innovative ideas for products or services. In addition to funding, the company also needs professional help during its growth. Private equity strategies, in addition to venture capital, include leverage, expansion/growing capital, mezzanine financing, investing in companies in difficulty, and investing in real estate and infrastructure. Apart from economic factors, country's political and legal characteristics (non-economic factors) are gaining more importance in explaining and understating the level of private equity investments. According to some research, with the exception of United Kingdom as Europe's most advanced equity market, other EU countries are considerably less attractive to private equity investors and no significant improvements in key policy areas have been evident, i.e. in corporate governance practices (Raposo and Lehman, 2019). Additionally, legal requirements and regulations, as in an example of Croatia, did not follow the development of the industry from the start and are still inconsistent and unadjusted. Legal obstacles that the Croatian legislative framework poses to the efficient and effective functioning of private equity industry are still present (Derenčinović Ruk, 2020). All the mention makes the research of this area even more complex.

The literature documents the positive impact of private equity and venture capital investments on entrepreneurship, innovation potential, creation of new companies, corporate governance, economic growth, etc. (Šimić Šarić, 2017). Although a growing body of research focuses on investigating alternative financing sources in CEE countries (Bernoth and Colavecchio, 2014; Štofa and Šoltés, 2020a; Štofa and Šoltés, 2020b), the results and conclusions on private equity determinants and their impact are mixed and there are no conclusive results. Given the importance of this alternative financing source for the company's prospect and overall country's economic growth and development, it is crucial to reveal the primary influential factors and investigate how they influence and determine private equity investments. Improvement of the within-country status of the identified driving forces could contribute to stimulating domestic private equity investments as well as increasing private equity inflows. The motivation of our research additionally originates from the fact that Croatia is rarely included among the studied EU countries, primarily due to a lack of data. Our contribution is thus visible in combining multiple sources of data to create a larger, eleven-year data set.

This paper is organized as follows. After the introduction, the second section gives a brief overview of the main private equity determinants. In the third section, the data, variables and methodology are described. The fourth section presents the results of the empirical research, and the paper ends with concluding remarks.

## 2. Literature review

In the related literature, different variables that have been suggested to be potential determinants of private equity activity can be grouped into economic and non-economic factors. However, there is no broad consensus on the direction and intensity of their influence on private equity investments in different countries, which gives an argument for this research. Additionally, Croatia is relatively rarely included due to the unavailability of data for smaller and less developed countries. To our knowledge, the exception for Croatia is the research of Šimić Šarić and Marić (2021). Therefore, our paper focuses on investigating the influence of a set of

economic (economic activity, inflation, interest rates, unemployment, and market capitalization) and non-economic factors (corruption and economic freedom). Their selection was based on a detailed analysis of the relevant literature and their impact will be compared in order to reveal differences in the driving forces of private equity investments in observed countries.

Gross domestic product (GDP) measures a country's economic activity. A country with higher economic growth can attract more private equity investments because higher growth implies more valuable opportunities for entrepreneurs (Gompers and Lerner, 1998). Romain and Potterie (2004) proved a positive relationship between risk capital and GDP growth but also concluded, based on the empirical results, that the positive effect of GDP on risk capital intensity is reduced in countries with high labour market rigidities. For economic growth to be sustainable, it is necessary to continuously acquire new technical knowledge to create new products, business processes and open new markets. Such growth is accompanied by the development of private equity investment in a particular country, as confirmed by Gatauwa and Mwithiga (2014). Gudiškis and Urbšienė (2015) also support the thesis of the positive impact of GDP growth on private equity investments.

Inflation represents a general increase in the prices of goods and services. As inflation rises, money loses its value. An increase in inflation also leads to a decrease in purchasing power and an increase in the costs of legal entities and individuals. Central banks pursue certain monetary policies to keep inflation between 2% and 3% (ECB, 2020). Costamagna (2015) concluded in their study that high inflation rates negatively affect market prices and interest rates for project financing, indicating that investors are reluctant to invest in private equity firms in countries where high inflation rates are present.

Interest rate is the price of borrowing money, and it also includes the risk of non-fulfilment of the obligation to repay the borrowed funds. The impact of interest rates on private equity investments is twofold. In their strategy, investors compare potential returns with investment costs and are willing to invest in private equity companies from which they expect high returns. They prefer to invest in private equity at low-interest rates because investing in other types of assets does not provide a high return. This thesis is confirmed by Bellavitis and Matanova (2017) in their research. When interest rates are rising, investors search for investments with lower but less risky returns. This could negatively affect the supply of equity capital (Bonini and Alkan, 2012). On the other hand, higher interest rates lead to higher costs of bank funds which could increase the demand for private equity as an alternative source.

Unemployment is expected to have a negative impact on private equity investment. On one hand, high unemployment may reflect labour market rigidities through barriers to hiring and firing employees. Also, this variable may represent the effect of the economic cycle. During a recession, unemployment rises, savings decline, which consequently leads to decrease in private equity investment (Štofa and Šoltés, 2020).

Market capitalization, as a measure of the level of capital market development, represents the total value of all outstanding shares at current market prices. Higher market capitalization in relation to GDP indicates a deeper and more liquid stock market which is attractive to investors because divestments can be carried out using the stock market. Additionally, it reduces information asymmetry and creates a stimulating environment (Šimić Šarić and Marić, 2021). According to some research, market capitalization is a major driver of private equity (Precup, 2015).

Non-economic factors capture the country's institutional features, political and legal. For example, the quality of a country's legal environment, which includes investors' protection, shareholders' rights and contract enforceability, can affect the size of the capital market and the extent of the role it plays in providing outside financing to the companies. Improvements in the legal environment can diminish barriers to entrepreneurial activity and/or private equity inflows to the country. The research of Bonini and Alkan (2012) has shown that venture capital investments are positively correlated with the quality of business environment and that a favourable socio-economic and investment environment has a strong and positive impact on the emergence and development of venture capital investment activity. According to some authors, the level of corruption is the most important determinant of investment growth for countries in transition (Šimić Šarić and Marić, 2021).

### **3. Data, variables and methodology**

For the research, secondary data from different sources will be used. The private equity investment in nominal terms and as a percentage of GDP, as a dependent variable, will be collected from the Invest Europe database. The growth rate of GDP and inflation will be collected from the national statistical offices of selected countries. In contrast, data on GDP per capita will be collected from the official website of the World Bank. Unemployment data will be collected from the individual countries' employment offices. Data on market capitalization will be collected from the official websites of the Warsaw, Prague, and Zagreb Stock Exchanges. The Corruption Index, which measures the level of corruption, will be collected from the Transparency International website and the Economic Freedom Index from the Index of Economic Freedom website.

To examine the impact of selected factors on private equity investments of the observed countries, multiple linear regression will be performed separately for Poland, the Czech Republic, and Croatia. CEE investment activity in 2020 was concentrated in a few countries, as in prior years. Poland was the leading destination by value (with 26% of the region's total), followed by Estonia (21%) and the Czech Republic (17%) (Invest Europe, 2021). In contrast, private equity investments by value in Croatia were much lower (9%) which gives an argument to investigate which of the common factors and in what way affect private equity investments.

The aim of the analysis is to determine the impact of economic activity, unemployment, interest rates, market capitalization, corruption, and economic freedom (as independent variables) on the level of private equity investment (dependent variable). Based on the obtained results, conclusions will be drawn and a comparison will be made between the selected countries of Central and Eastern Europe.

## **4. Research results and discussion**

### **4.1. Multivariate analysis – Poland**

The table of descriptive statistics shows parameters such as mean value, standard deviation, variance, asymmetry, and roundness of economic and non-economic determinants that affect private equity investments.

**Table 1:** Descriptive statistics – Poland

	<b>BDP per capita (EUR)</b>	<b>Inflation (%)</b>	<b>Interest rate (%)</b>	<b>Unemployment (%)</b>	<b>Market capitalization (% of GDP)</b>	<b>Index of corruption</b>	<b>Index of economic freedom</b>
N Valid	11	11	6	11	11	11	11
Missing	0	0	5	0	0	0	0
Mean	10743.64	1.921	3.8933	7.518	55.4955	55.73	66.4
Median	10440	2.2	4.17	8.1	53.351	60	67
Mode	9070	-0.7	2.56	9.7	41.03	60	66
Std. Deviation	125.335	1.6580	0.92606	2.5678	9.97742	8.150	2.8632
Variance	1575865.455	2.749	0.858	6.594	99.549	66.418	8.198
Skewness	0.55	-0.339	-0.601	-0.575	0.584	-1.277	-1.047
Kurtosis	-0.672	-1.308	-1.406	-1.246	-0.234	-0.085	0.464
Range	3930	4.6	2.35	7	31.8	22	9
Minimum	9070	-0.7	2.56	3.3	41.03	41	60.3
Maximum	13000	3.9	4.91	10.3	72.83	63	69.3

*Source: Authors' calculations using SPSS statistics programme*

Table 1 shows that the average value of the GDP per capita rate was €10,743 while the median was €10,440. The standard deviation, which represents the average deviation of the value of the numerical feature from the arithmetic mean, was 1255.335. The skewness of distribution is 0.550, which indicates a positive and right-sided asymmetry. Distribution roundness (kurtosis) represents the roundness of the peak of the frequency distribution curve and is -0.672, which means that the distribution has a blunt shape to normal roundness.

The average inflation rate was 1.92%, while the median was 2.2% and the mode was -0.7%. The standard deviation was 1.6580. The distribution asymmetry is negative or left-handedly asymmetric (-0.339). The measure of roundness is -1.308, which is a blunt form of distribution. Data on the variable short-term interest rate for the last five years in the observed period were unavailable and are therefore missing,

The lowest interest rate was 2.56%, while the highest was 4.91%. The average value was 3.89%, and the average deviation from the mean value was 0.92606. The most common value was 2.56%, while the median was 4.17%. The distribution is left-handedly asymmetrical and obtuse in shape, as indicated by the negative sign of asymmetry and roundness indicators.

The minimum unemployment rate was 3.3%, while the maximum unemployment rate in the observed period was 10.3%. The average unemployment rate was 7.52% and the standard deviation was 2.5678. As with the variable interest rate (%), the asymmetry and roundness of the negative sign are signs that represents the left-handed asymmetric distribution of the blunt shape.

Market capitalization is expressed as a percentage of GDP and its average value was 55.49% in the observed period. The asymmetry is positive or right-handed, which means that the arithmetic mean is larger than the median, which is, in turn, larger than the mode. The result of roundness is less than zero, which indicates a blunt shape of the distribution.

The characteristics of the country's institutional environment are captured with Corruption Index and the Economic Freedom Index as non-economic determinants. The average value of the corruption index was 55.73, while the standard deviation was 8.150. The arithmetic mean of the variable index of economic freedom was 66.4, and the average deviation was 2.8632. From the table, it can be concluded that both variables have a left-handed asymmetric distribution. Both variables have a sharper tip than the normally rounded distribution.

After the analysis of correlations, we addressed the main influential factors on private equity investment conducting regression. The ENTER method, in which all variables enter the model at once (forced input), was used in this multiple regression model. Thus, the regression analysis was performed in more than one step because some variables should be excluded due to statistically significant correlations and/or multicollinearity problems that were identified with suitable statistical tests.

In the initial model, the analysed independent variables are gross domestic product, inflation, interest rate, unemployment, market capitalization, level of corruption and level of economic freedom. The following tables present results for the final estimated regression model.

**Table 2:** Basic data on the estimated model (Model Summary)

Model	R	R Square	Adjusted R Square	Std. Error of Estimate	Durbin-Watson
1	0.997	0.995	0.986	0.005763	3.493

*Source: Authors' calculations using SPSS statistics programme*

The value of the correlation coefficient is  $R = 0.997$ , which indicates a strong and positive linear relationship between the variables. The coefficient of multiple determination (R Square) is 0.995, which means that the model interpreted 99.5% of the sum of the squares of the deviation of the dependent variable from its arithmetic mean. The corrected coefficient of determination (Adjusted R square) is 0.986, and the standard error of the estimated regression is 0.005763. The Durbin-Watson coefficient is 3.493, and no judgment can be made (inclusiveness) on the existence of autocorrelation of residual deviations at a significance of 5%.

**Table 3:** ANOVA table of the estimated regression model

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	0.012	3	0.004	122.020	0.008
Residual	0.000	2	0.000		
Total	0.012	5			

*Source: Authors' calculations using SPSS statistics programme*

Table 3 shows that the significance is 0.008, so it can be concluded that the regression model is statistically significant at a significance level of 1%.

**Table 4:** Estimated regression model (Coefficients)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	-0.561	0.037		-	0.004					
Interest rate (%)	0.019	0.003	0.353	15.083	0.028	-0.112	0.972	0.303	1.360	0.735
Unemployment (%)	0.031	0.003	0.507	5.805	0.011	0.630	0.989	0.500	1.026	0.975
Index of corruption	0.005	0.000	0.902	9.599	0.005	0.793	0.995	0.766	1.387	0.721

*Source: Authors' calculations using SPSS statistics programme*

In Table 4, it can be seen that interest rate, unemployment and corruption index have statistically significant and positive influences on private equity. All variables' VIF values are lower than 5, indicating that there is no problem of multicollinearity in the observed model.

#### 4.2. Multivariate analysis – Czech Republic

The analysis for the Czech Republic was performed in the same manner as for Poland. The following tables present descriptive statistics and the data for the final estimated model.

**Table 5:** Descriptive statistics of determinants affecting private equity investments in the Czech Republic

	GDP growth rate	Inflation (%)	Interest rate (%)	Unemployment (%)	Market capitalization (% of GDP)	Index of corruption	Index of economic freedom
N Valid	11	11	6	11	11	11	11
Missing	0	0	5	0	0	0	0
Mean	1.636	1.582	1.0850	5.182	93.9937	53.91	71.873
Median	2.3	1.4	1.0950	6.1	26.6830	55.00	72.2
Mode	2.3	0.6	0.36	6.7	21.91	56	69.4
Std. Deviation	2.7771	1.0741	0.66425	2.0537	148.90862	3.562	1.8895
Variance	7.713	1.154	0.441	4.218	22173.777	12.691	3.570
Skewness	-1.236	0.396	0.753	-0.606	1.920	-0.396	0.134
Kurtosis	2.043	-1.013	0.663	-1.447	2.036	-1.003	-1.480
Range	10.1	3.2	1.83	5.3	377.49	11	5.4
Minimum	-4.8	0.3	0.36	2.0	21.91	48	69.4
Maximum	5.3	3.5	2.19	7.3	399.39	59	74.8

Source: Authors' calculations using SPSS statistics programme

Table 5 shows that the lowest GDP growth rate was -4.8%, while the highest was 5.3% and the mean was 1.63%. The distribution is left-handed or negatively asymmetric and more pointed in shape than the normal distribution. The average inflation rate in the period from 2009 to 2019 was 1.58%, while the average deviation in the same period was 1.0741. The mode was 0.6%, while the median was 1.4%. The distribution is right-handedly asymmetric and a blunt form of distribution.

Data on the short-term interest rate for the observed period are also missing for the last five years, as was the case in Poland. The minimum interest rate was 0.36%, while the maximum was 2.19%. The results of asymmetry and roundness have a positive sign, which indicates a right-sided roundness and a more pointed shape than the normal distribution.

In the observed eleven-year period, the average unemployment rate in the Czech Republic was 5.18%. The highest unemployment rate was 7.3% and the lowest 2%. Unlike the variable *Interest rate (%)*, the distribution of the variable *Unemployment (%)* has a blunt shape and is asymmetric on the left.

The lowest value of market capitalization as a percentage of GDP was 21.91%, and the highest as much as 399.39%, which is the result of a significant increase in market capitalization in the last two years of the observed period. The distribution is right-sided asymmetric and has a more pointed shape due to its normal roundness.

Table 5 shows that the average value of the corruption index was 53.91, and the average deviation from the arithmetic mean was 3.562. The average value of the index of economic freedom was 71.87, while the standard deviation was 1.8895. Both non-economic determinants have a



blunt form of distribution, while the corruption index has an asymmetric distribution on the left and an index of economic freedom on the right.

In the model for the Czech Republic, the independent variables are GDP, inflation, interest rate, unemployment, market capitalization, Corruption Index and Economic Freedom Index. In this multiple regression model, the ENTER method was also used, in which all the variables enter the model at once (forced input).

**Table 6:** Basic data of the evaluated model (Model Summary)

Model	R	R Square	Adjusted R Square	Std. Error of Estimate	Durbin-Watson
1	0.902	0.814	0.690	225641.217	2.576

Source: Authors' calculations using SPSS statistics programme

Table 6 shows the value of the correlation coefficient  $R = 0.902$ , which represents a positive and strong relationship between the regression variables. The regression model interpreted 81.4% of the sum of the squares of the deviation of the dependent variable from the arithmetic mean. The Durbin-Watson coefficient is 2,576, which suggests that the autocorrelation problem is not present.

Several regression models were performed until the final model was estimated (Table 7).

**Table 7:** ANOVA table of the estimated regression model

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.336E+12	4	3.339E+11	6.559	0.022
	Residual	3.055E+11	6	5.091E+10		
	Total	1.641E+12	10			

Source: Authors' calculations using SPSS statistics programme

Table 7 shows that the significance is 0.022, which means that the model is statistically significant at a significance level of 5%.

**Table 8:** Estimated regression model (Coefficients)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		Collinearity Statistics		
	B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	-4653745.45	3527921.49		-1.319	0.235					
GDP growth rate	-161758.668	35662.08	-1.109	-4.536	0.004	-0.663	-0.880	-0.799	0.519	1.927
Inflation (%)	-146260.45	67513.856	-0.388	-2.166	0.073	-0.284	-0.662	-0.382	0.968	1.033
Index of corruption	68692.224	26948.75	0.604	2.549	0.044	-0.004	0.721	0.449	0.552	1.810
Index of economic freedom	24371.74	53805.526	0.114	0.453	0.666	-0.258	0.182	0.080	0.493	2.030

Source: Authors' calculations using SPSS statistics programme

In Table 8, it can be seen that variables GDP, inflation and index of corruption have a statistically significant and positive influence on private equity investment in Czech Republic. For all variables, VIF value is less than 5, which means that there is no problem of multicollinearity.

### 4.3. Multivariate analysis – Croatia

Following the analysis of the influential factors on private equity investments in Poland and the Czech Republic, an analysis for Croatia is performed.

**Table 9:** Descriptive statistics of determinants affecting private equity investments in Croatia

	<b>BDP per capita (EUR)</b>	<b>Inflation (%)</b>	<b>Interest rate (%)</b>	<b>Unemployment (%)</b>	<b>Market capitalization (% of GDP)</b>	<b>Index of corruption</b>	<b>Index of economic freedom</b>
N Valid	11	11	6	11	11	11	11
Missing	0	0	5	0	0	0	0
Mean	10948.18	1.191	2.9967	12.791	38.6231	46.18	60.036
Median	10630.00	0.800	2.4950	13.400	38.0920	48.00	60.900
Mode	10310	0.8	0.96	6.6	34.66	48	55.1
Std. Deviation	753.960	1.4714	2.50399	3.6860	2.39680	3.763	1.8678
Variance	568456.364	2.165	6.270	13.587	5.745	14.164	3.489
Skewness	1.130	1.340	1.933	-0.300	0.106	-0.778	-2.091
Kurtosis	-0.036	2.452	4.174	-1.155	-0.414	-0.876	5.000
Range	2150	5.3	6.90	10.8	8.17	11	6.4
Minimum	10300	-0.6	0.96	6.6	34.66	40	55.1
Maximum	12450	4.7	7.86	17.4	42.84	51	61.5

*Source: Authors' calculations using SPSS statistics programme*

Table 9 shows that the lowest value of GDP per capita was €10,300 and the highest was €12,450. The distribution of the variable is positively or right-handedly asymmetric and is obtuse to the normal distribution.

The average inflation rate was 1.19%, while the median was 0.8%, and the most common value (mod) was also 0.8%. The standard deviation was 1.4714. Indicators of asymmetry and roundness of the distribution are positive, which indicates right-handed asymmetry and a more pointed shape than the normal distribution.

As with data on short-term interest rates for Poland and the Czech Republic, data for the last five years lacks for Croatia. The highest interest rate was 7.86% in 2009, which is the result of the risk caused by the economic crisis. The lowest interest rate was 0.96%, while the average was 3%. As with inflation, the interest rate distribution also has a more pointed shape and is asymmetric on the right.

The average unemployment rate in the Republic of Croatia in the observed period was 12.8%. The median was 13.4%, which means that half of the value in distribution is less than or equal to, and half is greater than or equal to that value.

Table 9 shows that the average value of market capitalization as a percentage of GDP in the observed period was 38.62%, while the average deviation from the arithmetic mean was 2.3968. The variable has a right-sided asymmetry and a blunt shape of the distribution.

The average value of the variable Corruption Index was 46.18, while the index of economic freedom had an average value of 60.04. Both variables are left-sided asymmetric and have a more pointed shape distribution than the normal distribution.

As in the models for previous countries, the initial models for Croatia includes as independent variables gross domestic product, inflation, interest rate, unemployment, market capitalization and two non-economic variables – indexes of corruption and economic freedom. The ENTER method was used, in which all variables enter the model at once (forced input).

The regression was conducted in several steps and table 10 shows a summary of the final estimated model.

**Table 10:** Basic data of the evaluated model (Model Summary)

Model	R	R Square	Adjusted R Square	Std. Error of Estimate	Durbin-Watson
1	0.600	0.360	0.289	0.044770	2.543

*Source: Authors' calculations using SPSS statistics programme*

The value of the correlation coefficient  $R = 0.6$  is positive, which means that there is a relationship between the regression variables. The regression model interpreted 36% of the sum of the squares of the deviation of the dependent variable from the arithmetic mean of the same. The Durbin-Watson coefficient is 2,543, which suggests that the autocorrelation problem is not present.

**Table 11:** ANOVA table of the estimated regression model

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	0.010	1	0.010	5.058	0.051
Residual	0.018	9	0.002		
Total	0.028	10			

*Source: Authors' calculations using SPSS statistics programme*

Table 11 shows that the significance of the model is 0.051, which means that the model is statistically significant at a significance level of 5%.

**Table 12:** Estimated regression model (Coefficients)

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error				Beta	Zero-order	Partial	Part	Tolerance
1 (Constant)	-0.389	0.206		-1.886	0.092					
BDP per capita (EUR)	4.223E-5	0.000	0.600	2.249	0.051	0.600	0.600	0.600	1.000	1.000

*Source: Authors' calculations using SPSS statistics programme*

Table 12 shows that there is no problem of multicollinearity in the regression model, and only variable that has a statistically significant and positive influence on private equity investment in Croatia is the level of GDP per capita.

## 5. Concluding remarks

Private equity investments have an important role for innovation and economic development across Central and Eastern Europe and encouraging investment trends have shown that private equity is a positive force in the region's progress. However, heterogeneity is evident between western and CEE countries as well as between CEE countries. The main goal of this paper was to identify which determinants and in what way they affect private equity investments in selected countries - Poland, the Czech Republic, and Croatia. In addition to Croatia, for which the research gap was evidenced regarding the private equity determinants, Poland and the Czech Republic were chosen for comparison because they share with Croatia similar transition history. In contrast to Croatia, they are the leading destination by the value of private equity investments in Central and Eastern Europe in the last several years.

The empirical research examined the impact of economic (economic activity, inflation, interest rates, unemployment, market capitalization) and non-economic (corruption, economic freedom) factors on private equity investments in selected European countries in the period from 2009 to 2019. The level of economic development and positive growth opportunities, in terms of GDP p/c and GDP growth, positively influence private equity investments because such an environment attracts investments and provides more opportunities for the realization of entrepreneurs' projects and ideas. The positive and significant influence of inflation is somewhat unexpected. These results suggest that low inflation could be favourable in the way that it motivates people to save and invest (Štofa and Šoltés, 2020). The positive influence of interest rates on private equity investments can be explained by higher costs of bank financing which can subsequently increase the demand for private equity as an alternative financing source. The unemployment rate positively influences private equity investment, which is to a certain extent unexpected and needs further investigation. According to the theoretical expectations, the country's favourable institutional environment (political and legal) would support private equity investments. The confirmed positive influence of the corruption perception is rather puzzling. An explanation might be that in a politically unstable environment and unfavourable business conditions PE investment is the best strategy to enter and invest (Bernoth and Colavecchio, 2014). Yet, this needs to be investigated in more details. These results in general are in line with previous studies. However, our results suggest that there are different significant determinants of private equity investments in each of the analysed countries. The multiple linear regression showed that interest rates, unemployment, and the corruption level affect private equity investments in Poland. In the Czech Republic, private equity determinants are the GDP growth rate, inflation, the corruption index, and the degree of economic freedom. In the case of Croatia, only the GDP per capita has a statistically significant effect on private equity investments.

Based on the analysis results, the proposal for future research is to consider other potential determinants following the specifics of individual economies. An individual approach, in the case of heterogeneous countries and with diverse levels of private capital investment, could better reflect the changes that countries need to make in order to transform and attract investment. This primarily refers to a deeper investigation of the quality of the institutional environment (legal, regulatory and political) of a country, the improvement of which could contribute to increasing investment attractiveness.

## REFERENCES

- Bellavitis, C., Matanova N. (2017): *Do Interest Rates Affect VC Fundraising and Investments?*, [https://efmaefm.org/0EFMAMEETINGS/EFMA%20ANNUAL%20MEETINGS/2017-Athens/papers/EFMA2017\\_0125\\_fullpaper.pdf](https://efmaefm.org/0EFMAMEETINGS/EFMA%20ANNUAL%20MEETINGS/2017-Athens/papers/EFMA2017_0125_fullpaper.pdf), (accessed 12 June 2021)
- Bernoeth, K., Colavecchio, R. (2014): *The macroeconomic determinants of private equity investment: a European comparison*, Applied Economics, Vol. 46, No. 11, pp. 1170-1183.
- Bonini, S., Alkan, S. (2012): *The political and legal determinants of venture capital investments around the world*, Small Business Economics, Vol. 39, No. 4, pp. 997-1016.
- Cherif M., Gazdar K. (2011): *What Drives Venture Capital Investments in Europe? New Results from a Panel Data Analysis*, Journal of Applied Business and Economics, Vol. 12, No. 3, pp. 122-139.
- Costamagna, R. (2015): *Inflation and R&D Investment*, Journal of Innovation Economics & Management, Vol. 0, No. 2, pp. 143-163.
- Derenčinović Ruk, M. (2020): *Private equity fondovi i hrvatsko iskustvo*. Zbornik Pravnog fakulteta u Zagrebu, Vol. 70, No. 6, pp. 783-824.
- Gatauwa, J. M., Mwithiga, A. S. (2014): *Private equity and economic growth: a critical review of the literature*, European Journal of Business and Innovation Research Vol.2, No.3, pp. 1-10.
- Gompers, P. A., Lerner, J. (1998): *What drives Venture Capital Fundraising?*, NBER Working paper 6906, <https://www.nber.org/papers/w6906.pdf>, (accessed 12 June 2021)
- Gudiškis K., Urbšienė L. (2015) *The relationship between private equity and economic growth*, Ekonomika, Vol. 94, No. (1), pp. 79-96.
- Invest Europe (2021), 2020 Central and Eastern Europe Private Equity Statistics, <https://www.investeurope.eu/research/activity-data/> (accessed 20 January 2022)
- Jeng, L. A., Wels, P. C. (2000): *The Determinants of Venture Capital Funding: Evidence Across Countries*, Journal of Corporate Finance, Vol. 6, No. 3, pp. 241-289.
- Mo P. H. (2001): *Corruption and Economic Growth*, Journal of Comparative Economics, Vol. 29, pp 66-79.
- Precup, M. (2015): *The Future of Private Equity in Europe – the Determinants Across Countries*, Romanian Journal of European Affairs, Vol. 15, No. 4, pp. 72-92.
- Raposo, I. G., Lehmann, A. (2019): *Equity finance and capital market integration in Europe*, Bruegel Policy Contribution, No. 2019/3, Bruegel, Brussels
- Schachtner, P., Jacobus van Nes, H. (2016): *Corruption and private equity activity: fear and loathing in emerging markets*, Stockholm School of Economics, Stockholm, <http://arc.hhs.se/download.aspx?MediumId=2893>, (accessed 12 June 2021)

Šimić M. (2015): *Atraktivnost Hrvatske u privlačenju ulagača rizičnog kapitala*, Ekonomska misao i praksa, Vol. 1, pp. 267-294.

Šimić Šarić, M., Marić, Lj. (2021): *Impact of macroeconomic variables on Private equity investments in Croatia* // Book of proceedings 7th ITEM Conference - "Innovation, Technology, Education and Management" and 67th International Scientific Conference on Economic and Social Development / Djukec, D., Klopota, I., Burilovic, L. (ed.). pp. 164-170.

Štofa, T., Šoltés, M. (2020a): *Private Equity Determinants in European Union*, Montenegrin Journal of Economics, Vol. 16, No. 2., pp. 131-141.

Štofa, T., Šoltés, M. (2020b): *Differences of Private Equity Determinants: Country-level Evidence from Europe*, Ekonomický časopis/Journal of Economics, Vol. 68, No. 8, pp. 827-845.

Ullah, A., Anees, M., Ali, Z., Khan, M. A. (2018): *Economic Freedom and Private Capital Inflows in Selected South Asian Economies: A Dynamic Panel Data Evidence*, South Asian Journal of Business and Management Cases, Vol. 7, No. 1, pp. 41-52.

Vidučić Lj., Pepur S., Šimić Šarić M. (2018): *Financijski menadžment*, Sveučilište u Splitu, Split, pp. 509-514.

Wang L., Wang S. (2011): *Economic freedom and Cross-Border Venture Capital Performance*, Journal of Empirical Finance, Elsevier, Vol. 19, No. 1, pp. 26-50.

*A scientific paper*

**Domagoja Buljan Barbača, Ph. D., Tenured College Professor**

University of Split, Department for Professional Studies

E-mail address: [dobuljan@oss.unist.hr](mailto:dobuljan@oss.unist.hr)

**Gina Lugović, MA., Senior Lecturer**

Polytechnic of Šibenik

E-mail address: [gina@vus.hr](mailto:gina@vus.hr)

**Ivana Beljo, mag. math., Senior Lecturer**

Polytechnic of Šibenik

E-mail address: [ibeljo@vus.hr](mailto:ibeljo@vus.hr)

## INSURANCE LITERACY AND RISK PERCEPTION

### *ABSTRACT*

*Insurance products are one of the solutions for decreasing and absorption of personal financial risks. Insurance literacy as a component of financial literacy plays a very important role in purchasing decisions of the consumers of insurance products. Another factor that influences consumption is perception and attitudes toward a risk that individuals have. This study aims to investigate the strength of the influence of insurance literacy and risk perception on the frequency of consumption of insurance products. Targeted groups are employees of University of Split and Polytechnic of Šibenik. The research was supported by the Perception Formation Model and the results of previous research. Primary data has been collected from targeted respondents and analysed by use of adequate statistical methods. Results, as expected, show a correlation between attitudes toward risk and consumption of personal insurance products. Also, analysed results, suggest a direct correlation between insurance literacy level and frequency of usage of personal insurance products. This study is a pioneer study in Croatia, and findings will be of great interest to academicians and policymakers to encourage personal insurance as a tool in achieving financial security and well-being for citizens of Croatia. Recommendations and suggestions for improvement are provided based on obtained results.*

**Key words:** *insurance literacy, personal insurance, trustfulness on insurance, perceived risk, insurance education.*

### **1. Introduction**

Financial literacy of the population is a problem that became globally relevant at the beginning of the century. This is a consequence of the recognized global changes in financial markets (Lusardi and Mitchell, 2011:498) whose basic characteristics are the constantly growing diversity and rapid transformations of financial products. This situation requires an increased level of financial knowledge and skills of individuals. Financial literacy is the totality of consumers' knowledge of finance, while financial behaviour is the ability to apply knowledge of finance in everyday life, in situations where there is a need to adopt and implement financial decisions that are important for consumer financial development. (Buljan

Barbača et al., 2020:917). When defining financial literacy, we encounter various uses of the term from the OECD, which uses the term financial literacy, without a clear definition of the term (OECD, 2005), by emphasizing financial literacy as an individual's ability to manage money. (Remund, 2010:279). Financial literacy can also be seen as a combination of awareness, knowledge, skills, attitudes, and behaviours necessary to create a sound financial decision that ultimately seeks to achieve individual financial well-being. (Atkinson and Messy, 2012).

In its report for the Republic of Croatia, the World Bank (World Bank, 2010) calls for a need to revise the policy of providing information on financial services and sales practices better tailored to consumers, which stems from the knowledge of insufficient financial literacy of citizens. Over the past ten years, the problem of low literacy levels, which various authors point out, has already become a burning interest of domestic authors and institutions, both in the domestic and foreign markets. (Ipsos, 2015; Vehovec et al., 2015; Buljan Barbača, 2017; Buljan Barbača & Čobanov, 2018; Erceg et al., 2020). Back in 2009, the Croatian Insurance Bureau initiated cooperation with the Ministry of Finance on an initiative related to the "Financial Literacy" project. The Government of the Republic of Croatia has adopted the first National Strategic Framework for Consumer Financial Literacy for the period 2015-2020. (OG 11/15), and in June 2021 a new document was adopted for the new period, National Strategic Framework for Consumer Financial Literacy 2021-2026 (OG 65/21). Several commendable initiatives have been launched following the strategic document, such as the small school of financial literacy available to the Croatian Insurance Bureau on its website (HUO, 2021), Štedopis - Institute for Financial Education. a series of activities that he wants to contribute to raising the level of financial literacy of the population (Štedopis, 2021), but also many others who deal with this issue in the Republic of Croatia. Although the activities undertaken are also aimed at raising insurance literacy, one fact should be considered, but when measuring financial literacy according to the OECD methodology, which has the widest application globally, insurance literacy is not considered. However, the need to link insurance literacy with the level of financial literacy has been recognized in recent times. (Lin, 2019; Ćurak et al., 2020).

Recent data presented in the Sigma report (Swiss Re Institute, 2021) confirmed that the insurance market in Croatia, evaluated by the two most important measurements: insurance density and insurance penetration is still among countries with less developed insurance markets. Taking into consideration that Croatian citizens are faced with many uncertainties and risks from which they can be financially protected, but still, they don't use all the possibilities they have, we must try to find a response to the question of why is so. Following the analysed problem, it is necessary to find the optimal way to measure insurance literacy because, as in the case of financial literacy, initially by measuring and then improving it, we can achieve greater interest in insurance protection. Given the unfavourable trends in the context of the total number of inhabitants in the Republic of Croatia (we can alternatively call them the number of potential insured persons), this is a topic that deserves maximum attention. (Croatian Bureau of Statistics, 2020, 2021).

In this survey, it will be established how insurance literacy, perception of risk, attitudes and beliefs influence the consumption habits of insurance products in Croatia.

### **1.1. Insurance Literacy**

Individuals and households are always exposed to different risks, and it is up to them to decide whether to use or not insurance coverage provided by insurance companies. Knowledge of the possibilities of transfer of the risk represents a prerequisite for the consumption of insurance products. Insurance literacy could be defined as a three-



dimensional construct that includes the following: 1. knowledge on insurance: understand and use insurance concepts and be aware of and informed about the insurance products used and considered; 2. an understanding of insurance: have a comprehensive understanding of the risks covered by the insurance policy under consideration and an understanding of insurance products in their various forms, usability and functionality; 3. skills and attitudes towards insurance: apply knowledge and understanding to assess possible insurance choices and make decisions under the identified risks, to meet their own needs. (Allodi et al., 2020:28). Insurance literacy encompasses the knowledge and cognitive skills with a set of desirable attitudes, behaviours, and certain external enabling factors. (Waheeda et al., 2020:2).

## **1.2. Trustfulness on insurance and perceived risk**

Many people show positive attitudes towards insurance, but these attitudes do not necessarily grow into an intention to buy insurance. To analyse the relationship between attitude and intention of purchasing, that is, differences in behaviour, we can apply Aizen's theory of planned behaviour by including specific reasons as possible factors of intention and behaviour (TPB). (Ajzen, 1991). Planned Behavior Theory (TPB) is one of the socio-cognitive models most used to understand people's behaviours, which has proven appropriate in explaining and predicting different consumption decisions. (Ajzen, 2015; McDermott et al., 2015). The theory contains three constructs: attitudes, subjective norms and perceived behavioural control that affect the intent of the individual, and the intention consequently affects behaviour. In addition to past behaviour towards buying insurance, they have significant positive effects on purchasing and buying intentions. Ajzen (2020) states that if some other variables could cover a certain proportion of variations of intent, after considering existing variables, then TPB is open to adding other predictive variables. Our research has developed and expanded the TPB model to better explore factors that influence insurance purchase intentions, with a focus on insurance confidence and perceived risk that influence purchasing intentions. The extended TPB model was developed by including several variables - such as consumer insurance literacy, insurance attitudes, insurance trust, risk tolerance, product benefits and personal insurance purchase intentions into the original TPB model. The theory allows us to predict intentions and behaviour concerning the purchase or use of a single brand or product as well as to choose among different brands or products (Ajzen, 2015). In this way, the process of making user decisions when purchasing different insurance products can be better considered in the future. In TPB, positive attitudes and supportive subjective norms motivate individuals to choose a particular behaviour, but only when the perceived control of an individual over behaviour is strong enough, a specific intention of a particular behaviour is formed. (Ajzen, 2020).

Perception is a mental phenomenon that interpolates external stimuli. Risk perception plays a subjective role in finding the best alternative among investment decisions. (Rubaltelli et al., 2010). The perception of financial risk is a variable that intertwines in the relationship between investment decisions and financial literacy. Risk perception also influences the investment decision. (Waheed, et al., 2020). Risk perception is an important element in behavioural choice. (Pennings & Wansink, 2004). Sjöberg (1999) found the level of perceived risk to be related to the probability of harm or injury, whilst demand for risk reduction was related mostly to the expected severity of "consequences", should harm occur.

Risk perception is a highly personal process of decision making, based on an individual's frame of reference developed over a lifetime, among many other factors. (Brown, 2014). Attitudes to risk range from extreme risk aversion (i.e., refusal of any risk under any condition) to exceptional risk-seeking (i.e., always preferring a risk-bearing outcome). Risk perception, on the other hand, ranges from risk observations to high-risk observations.

(Pennings & Wansink, 2004). The widespread definition of tolerance for financial risk is that this is the maximum uncertainty that a person is willing to endure when making financial decisions. (Grable, 2000, according to Wahl and Kirchler 2020). Risk appetite is influenced by risk attitude and risk knowledge and is interrelated with risk capacity. Furthermore, the attitude towards risk is influenced by risk capacity and risk knowledge. Research (Croy et al., 2010; Grable, 2000; Grable & Joo, 1999, 2004, according to Wahl and Kirchler 2020) show that financial literacy, such as investment knowledge, affects financial risk tolerance. Thus, if the risk is lower, the customer's purchase intention will increase. (Nursiana et al., 2021). Authors Wahl and Kirchler have created a risk tolerance assessment questionnaire (RISC-FM meaning RISK SCReening in the financial market) driven by legislation that in some countries (Australia, United Kingdom, USA) requires financial advisers to assess their clients' risk tolerance to advise them accordingly. (Wahl & Kirchler, 2020).

Attitudes are considered an important element of financial literacy and if people have a negative attitude towards saving for their future, they are likely to be less inclined to save. There is also a positive correlation between attitudes and behaviour. People with a positive attitude towards the longer term are more likely to choose this type of financial behaviour than those with a penchant for the short term. The relationship between attitudes and behaviours also requires further research. (Atkinson & Messy, 2012). For example, financial literacy has proven to be linked to more positive attitudes towards pension planning and a higher likelihood of retirement savings. (Barbic et al., 2016, according to Erceg et al., 2019). In addition, perceived personal control over behaviour as well as attitudes plays an important role in responsible financial behaviour. (Lucic et al., 2019, according to Erceg et al., 2019). Attitude is an acquired, relatively permanent, and stable structure of positive or negative emotions, evaluation, and behaviour towards an object (person, group, appearance, idea). The psychological structure of the attitude consists of knowledge about the object of attitude (the cognitive component), feelings (emotional component) and willingness to act according to the object of attitude (conative or action component). (Hrvatska enciklopedija/Croatian Encyclopedia, 2021). In addition to being informed (knowledge) (Ajzen et al., 2011) people must also be motivated for a specific behaviour (Fisher & Fisher, 1992; Fisher et al., 1994, according to Ajzen et al., 2011) and it is, therefore, important to explore attitudes towards insurance.

## 2. Research methodology

This study aims to investigate the strength of the influence of insurance literacy and risk perception on the frequency of consumption of insurance products. The primary study was conducted during January and February 2022 at the University of Split and the Polytechnic of Šibenik. Respondents are employees of these higher education institutions. The questionnaire was published online (Google Form) and distributed by e-mail. The data were collected through the questionnaire survey. The research tool consisted of a total of 40 statements, all tailored to meet the requirements of the research objectives.

The questionnaire has been divided into seven groups of questions:

- data on the sociodemographic profile of respondents were collected (7 items),
- insurance literacy (12 items),
- attitudes (7 items),
- trust (4 items),
- perceived benefits (4 items),
- perceived risk (6 items); and
- behavioural intention (4 items). (Weedige et al., 2019:2)

In all groups except socio-demographic profile and insurance literacy we used 5-point Likert-type scales ranging from 1 (“I don't agree at all”) to 5 (“I completely agree”) except for the question about trust which used a 5-point Likert scale ranging from “I agree” to “I disagree”.

## 2.1. Statistical data processing

A total of 79 survey questionnaires were processed. In the group of socio-demographic profile questions, respondents were asked about age, gender, education, income, number of household members, and number of dependent household members. The answers to the socio-demographic profile of the respondents are given in Table 1.

**Table 1:** Socio-demographic profile

Socio-demographic	Percentage (%)
Employee	
University of Split	82%
Polytechnic of Šibenik	18%
Age	
27-35	28%
36-43	29%
44-51	23%
52-59	13%
59-67	8%
Gender	
F	82%
M	18%
Level of the education	
Undergraduate education and less	6%
Graduate education	53%
Above graduate education	41%
Income	
below 5.000,00 HRK	4%
5.000,00 HRK - 8.000,00 HRK	46%
8.000,00 HRK - 11.000,00 HRK	38%
above 11.000,00 HRK	12%
Number of household members	
1	8%
2	31%
3	21%
4	33%
5 and more	8%
Number of dependent household members	
0	32%
1	22%
2	37%
3	6%
4	3%

Source: Authors` calculation

Most respondents are female, employed at the University of Split, and highly educated. 50% of respondents are younger than 42 years. 46% of employees have a monthly income in the range of 5.000 HRK to 8.000 HRK. The share of respondents living in a two-member and four-member household is equal (31% and 33%). Most of the respondents have households with two dependent members.

Out of 79 respondents 86% possess supplemental health insurance. Other answers related to insurance literacy are shown in Table 2. Most respondents have a basic knowledge of insurance literacy according to the share of correct answers. Almost the same share of respondents perceives life insurance as both a savings and an insurance product. In addition, only 60% of respondents believe that the sum insured represents the maximum amount of compensation you will receive from the insurer after the occurrence of the adverse event, and 65% of them believe that life insurance is more valuable for persons who have dependents than those who do not.

**Table 2:** Insurance literacy

Question	Yes	No
The main purpose of insurance is to reduce the financial burden of risk faced by the consumer in the event of an adverse event	94%	6%
Insurance is the best risk management tool when the probability of damage is low but possible damages are of extremely high value	79%	21%
Failure to disclose or misrepresent information relating to the subject of the insurance may result in the rejection of the insurance application	95%	5%
Life insurance is more valuable for people who have dependent members than for those who do not	65%	35%
Buying an insurance policy directly without the involvement of an agent or broker is always cheap and beneficial	30%	70%
Is comprehensive insurance more worthwhile for insuring an older car?	10%	90%
Life insurance is more important as a savings product than as insurance.	49%	51%
The sum insured represents the maximum amount of compensation you will receive from the insurer upon the occurrence of the adverse event.	60%	40%
I am not exposed to any risks for which I need to use insurance products.	19%	81%
<b>Do you have supplemental health insurance?</b>		
	86%	14%
<b>Which of the following insurances is obligatory in the Republic of Croatia?</b>		
life insurance - 4%		
motor third party liability insurance - 94%		
comprehensive insurance - 2%		
<b>When I retire, I assume that my pension will be:</b>		
less than 50% of salary - 67.5%		
50% salary - 20%		
more than 50% of salary - 12.5%		

Source: Authors` calculation

Responses related to attitudes, trust, benefits, risk, behavioural intention according to the ratio of grades 4 and 5, are assigned to ranks of agreement - from very low to a very high agreement. (Buljan Barbača et al, 2020:923)

**Table 3:** Ranks of agreement

Above 80%	70% to 80%	60% to 70%	50% to 60%	Under 50%
Very high	High	Medium	Low	Very low

Source: Authors` calculation

Respondents expressed a low degree of agreement on issues related to the insurance position. Respondents have very low confidence in insurance but also a very low opinion of the perceived benefits of insurance products. Respondents also believe that investing in insurance products is not high risk. Given the average score of 3.22, it is divisive that most respondents are indifferent in perceived risk. Only 33% of respondents intend to buy personal insurance. According to the average assessment of the answers to the questions related to the intention to purchase personal insurance, it can be concluded that the respondents are on average indecisive about buying the same.

**Table 4:** Average grade and rank of agreement

	Average	Rank
Attitude	3,64	59%
Trust	3,34	39%
Benefits	3,08	35%
Risk	3,22	36%
Intention	3,07	33%

Source: Authors` calculation

## 2.2. Analyses of obtained results

The interrelations between attitudes, trust, benefits, risk, behavioural intention were examined with the Pearson correlation coefficient. The coefficients are shown in table 5 and table 6, as well as the corresponding p-value given in parentheses. Answers related to trust questions (insurance is fair and reliable, well regulated, predictably covers costs, and insurance companies care about customers) are not statistically significantly correlated with other groups of questions, so their correlation coefficients are not shown in the tables. In addition, the tables do not show the correlation coefficients associated with insurance literacy as they didn't prove to be statistically significant. At the significance level of 5%, a statistically significant positive relationship was shown between the intention to purchase property insurance products and the knowledge that life insurance is more an insurance product than savings ( $\rho = 0.2750$ , p-value = 0.0142) and between the intention to purchase property insurance products and the knowledge that non-disclosure or misrepresentation of information related to the subject of insurance may cause rejection of the insurance application ( $\rho = 0.2566$ , p-value = 0.0224). A negative and statistically significant correlation ( $\rho = -0.2371$ , p-value = 0.0354) is between the intention to purchase insurance products to cover possible future risks and the knowledge that insurance is the best risk management tool when the probability of damage is low but possible damages are of extremely high value.

**Table 5:** Correlations – attitude, intention vs. benefits, risk

	B1	B2	B3	B4	R1	R2	R3	R4	R5	R6
A1	0.4468* (0.0000)	0.4158* (0.0001)	0.4168* (0.0001)	0.4050* (0.0002)	0.3114* (0.0052)	-0.0624 (0.5847)	-0.2135 (0.0589)	-0.1129 (0.3218)	-0.0237 (0.8356)	-0.0657 (0.5651)
A2	0.4325* (0.0001)	0.4598* (0.0000)	0.3628* (0.0010)	0.3816* (0.0005)	0.3192* (0.0041)	-0.1560 (0.1698)	-0.1936 (0.0874)	-0.0955 (0.4022)	-0.0441 (0.6995)	-0.0983 (0.3886)
A3	0.4240* (0.0001)	0.4215* (0.0001)	0.3050* (0.0063)	0.3551* (0.0013)	0.2052 (0.0697)	-0.1601 (0.1586)	-0.1494 (0.1889)	-0.1162 (0.3080)	-0.0589 (0.6059)	-0.0751 (0.5106)
A4	0.5287* (0.0000)	0.4130* (0.0002)	0.4280* (0.0001)	0.4831* (0.0000)	0.2307* (0.0408)	-0.0724 (0.5261)	-0.0389 (0.7338)	0.0217 (0.8496)	-0.1231 (0.2796)	0.0197 (0.8633)
A5	0.5432* (0.0000)	0.5481* (0.0000)	0.3145* (0.0048)	0.4463* (0.0000)	0.1837 (0.1051)	-0.0420 (0.7132)	-0.0245 (0.8306)	0.0379 (0.7402)	-0.0728 (0.5236)	0.0741 (0.5166)
A6	0.5495* (0.0000)	0.4451* (0.0001)	0.5029* (0.0001)	0.4266* (0.0001)	0.2167 (0.1051)	-0.1481 (0.7132)	-0.0608 (0.8306)	0.0466 (0.7402)	-0.0851 (0.5236)	-0.0472 (0.5166)

	B1	B2	B3	B4	R1	R2	R3	R4	R5	R6
	(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0551)	(0.1926)	(0.5943)	(0.6832)	(0.4560)	(0.6794)
I1	0.2714* (0.0155)	0.2786* (0.0129)	0.4038* (0.0002)	0.2988* (0.0075)	0.1388 (0.2226)	0.0199 (0.8618)	-0.0143 (0.9003)	-0.0048 (0.9663)	-0.0919 (0.4204)	0.0086 (0.9403)
I2	0.2557* (0.0229)	0.3623* (0.0010)	0.2996* (0.0073)	0.3514* (0.0015)	0.3037* (0.0065)	0.1038 (0.3628)	-0.1677 (0.1397)	-0.0699 (0.5403)	-0.0121 (0.9160)	0.0396 (0.7291)
I3	0.4428* (0.0000)	0.4064* (0.0002)	0.2868* (0.0104)	0.4840* (0.0000)	0.1683 (0.1382)	-0.0352 (0.7583)	-0.1264 (0.2669)	-0.0464 (0.6849)	0.0200 (0.8614)	-0.0097 (0.9325)
I4	0.4699* (0.0000)	0.5042* (0.0000)	0.3301* (0.0030)	0.4823* (0.0000)	0.5341* (0.0000)	-0.0880 (0.4406)	-0.2542* (0.0238)	-0.2009 (0.0758)	-0.2223* (0.0490)	0.1315 (0.2478)

\*. Correlation is significant at the 0.05 level

Source: Authors` calculation

Observing the correlation between the attitude on insurance and the observed advantages of insurance, table 5 shows a positive and statistically significant correlation between the attitude and benefits elements. Namely, respondents who have a positive attitude about insurance noticed the benefits of insurance. In addition, the risk of covering the damage is positively and statistically significantly correlated to purchasing life insurance and the intention to cover the risk by purchasing an appropriate insurance product. Furthermore, the intention to cover the risk by purchasing an appropriate insurance product is negatively and statistically significantly related to the risk that the insurance company will create unnecessary problems at the time of the claim and will not receive the desired protection from the insurance company.

**Table 6:** Correlations – attitude, benefits vs. intention, risk

	I1	I2	I3	I4	R1	R2	R3	R4	R5	R6
A1	0.4246* (0.0001)	0.5506* (0.0000)	0.5005* (0.0000)	0.4424* (0.0000)	0.3114* (0.0052)	-0.0624 (0.5847)	-0.2135 (0.0589)	-0.1129 (0.3218)	-0.0237 (0.8356)	-0.0657 (0.5651)
A2	0.4635* (0.0000)	0.5188* (0.0000)	0.4432* (0.0000)	0.4266* (0.0001)	0.3192* (0.0041)	-0.1560 (0.1698)	-0.1936 (0.0874)	-0.0955 (0.4022)	-0.0441 (0.6995)	-0.0983 (0.3886)
A3	0.4344* (0.0001)	0.4889* (0.0000)	0.4208* (0.0001)	0.4613* (0.0000)	0.2052 (0.0697)	-0.1601 (0.1586)	-0.1494 (0.1889)	-0.1162 (0.3080)	-0.0589 (0.6059)	-0.0751 (0.5106)
A4	0.3673* (0.0009)	0.3900* (0.0004)	0.4155* (0.0001)	0.4160* (0.0001)	0.2307* (0.0408)	-0.0724 (0.5261)	-0.0389 (0.7338)	0.0217 (0.8496)	-0.1231 (0.2796)	0.0197 (0.8633)
A5	0.3749* (0.0007)	0.4355* (0.0001)	0.4613* (0.0000)	0.4760* (0.0000)	0.1837 (0.1051)	-0.0420 (0.7132)	-0.0245 (0.8306)	0.0379 (0.7402)	-0.0728 (0.5236)	0.0741 (0.5166)
A6	0.4196* (0.0001)	0.4215* (0.0001)	0.4016* (0.0002)	0.4084* (0.0002)	0.2167 (0.0551)	-0.1481 (0.1926)	-0.0608 (0.5943)	0.0466 (0.6832)	-0.0851 (0.4560)	-0.0472 (0.6794)
B1	0.2714* (0.0155)	0.2786* (0.0129)	0.4038* (0.0002)	0.2988* (0.0075)	0.4309* (0.0001)	-0.2015 (0.0749)	-0.1857 (0.1013)	-0.1346 (0.2369)	-0.1435 (0.2071)	0.0538 (0.6379)
B2	0.2557* (0.0229)	0.3623* (0.0010)	0.2996* (0.0073)	0.3514* (0.0015)	0.5284* (0.0000)	-0.0053 (0.9631)	-0.1883 (0.0966)	-0.1155 (0.3109)	-0.1563 (0.1690)	0.0220 (0.8472)
B3	0.4428* (0.0000)	0.4064* (0.0002)	0.2868* (0.0104)	0.4840* (0.0000)	0.2471* (0.0281)	0.0627 (0.5829)	-0.2031 (0.0726)	-0.0845 (0.4593)	-0.2445* (0.0299)	-0.0572 (0.6168)
B4	0.4699* (0.0000)	0.5042* (0.0000)	0.3301* (0.0030)	0.4823* (0.0000)	0.4285* (0.0001)	-0.0773 (0.4981)	-0.1774 (0.1178)	-0.0927 (0.4165)	-0.1563 (0.1690)	0.0347 (0.7612)

\*. Correlation is significant at the 0.05 level

Source: Authors` calculation

According to the results in table 6, there is a statistically significant and positive correlation between observed insurance attitudes and intention to purchase personal insurance. A significant correlation is also evident between perceived benefits and intention of purchasing personal insurance. Thus, respondents who have a positive attitude about insurance and have noticed the benefits of insurance have expressed an intention of purchasing personal insurance. In addition, a positive and statistically significant correlation has been noticed between all elements of benefits and risks of damage coverage. The correlation between the risk that the insurance company will create unnecessary problems at the time of the claim and

that the insurance serves as an accumulation of capital or wealth is negative and statistically significant.

### 3. Conclusions and recommendations

Observing the correlation between the surveyed attitudes and opinions on insurance, there has been a statistically significant negative relationship between the intention to buy the appropriate insurance product and the risk that it will not receive the desired protection from the insurance company and that the insurance company will create unnecessary problems at the time of claim. Also, there is a negative and significant connection between the opinion expressed on the advantage of insurance as an accumulation of capital or wealth and the risk that the insurance company will create unnecessary problems at the time of claim. Furthermore, as expected, respondents with a positive attitude and intention to buy insurance products are those who have noticed the benefits of insurance and have shown a low level of risk.

Lack of insurance literacy and lack of trust in insurance companies, when it comes to correctness in solving claims, can be and should be treated with an increase of educational activities. Understanding of insurance products is already imperative in Croatian Law on Insurance and Croatian Financial Services Supervisory Agency (Agency) engages a lot of effort to secure that consumers of insurance products are supplied with sufficient information regarding the products they are about to consume. On the other hand, Agency and Croatian Insurance Bureau have developed very substantial educational materials for the general public and made them permanently available on their web pages. They also organize different events to promote knowledge on insurance products as necessary tools for appropriate consumer choice. But still, there is more work to be done. Insurance literacy should be increased by a more systematic approach and education on insurance should become a part of at least higher education study programs. (Buljan Barbača et al, 2021:104)

In a contemporary world full of uncertainties insurance products could play a more important role in everyday life and individuals and households could feel more secure which is essential for the development of personal plans and achievement of personal goals.

The founding of the proposed research is limited with low number of examinees and limitations coming from the fact that they all come from higher education institutions and as such don't give as a possibility to extend conclusion to a segment of the general public. For future research, the plan is to extend the research to a larger number of respondents to increase the reliability of the tests. Extending the research to respondents from other higher education institutions in Croatia as well as to respondents who are employed in other activities will provide more relevant results.

### REFERENCES

Ajzen, I. (1991): *The theory of planned behavior*. Organizational Behavior and Human Decision Processes, 50, 179–211.

Ajzen, I. (2011): *The theory of planned behaviour: Reactions and reflections*, Psychology & Health, 26:9, 1113-1127, DOI: 10.1080/08870446.2011.613995

Ajzen, I. (2015): *Consumer attitudes and behavior: the theory of planned behavior applied to food consumption decisions*. Italian Review of Agricultural Economics, 70(2), 121-138.

Ajzen, I., Joyce, N., Sheikh, S. & Cote, N. G. (2011): *Knowledge and the Prediction of Behavior: The Role of Information Accuracy in the Theory of Planned Behavior*. Basic and applied social psychology. 33. 101-117. 10.1080/01973533.2011.568834.

Allodi, E., Cervellati, E. M. & Stella, G. P. (2020): *A new proposal to define insurance literacy: Paving the path ahead. Risk Governance and Control*, Financial Markets & Institutions, 10(4), 22-32. <http://doi.org/10.22495/rgcv10i4p2> (accessed 13.01.2022.)

Atkinson, A. & Messy F. (2012): *Measuring Financial Literacy: Results of the OECD*. International Network on Financial Education (INFE) Pilot Study, OECD Working Papers on Finance, Insurance and Private Pensions, No. 15, OECD Publishing. <http://dx.doi.org/10.1787/5k9csfs90fr4-en> (accessed 09.10.2021.)

Atkinson, A., Messy, F., Rabinovich, L. & Yoongii, J. (2015): *Financial Education for Long-term Savings and Investments: Review of Research and Literature*. OECD Working Papers on Finance, Insurance and Private Pensions, No. 39, OECD Publishing, Paris. <http://dx.doi.org/10.1787/5jrtgzfl6g9w-en> (accessed 12.09.2021.)

Brown, V. J. (2014): *Risk perception: It's personal*. Environmental Health Perspectives, 122(10), 276-279, <http://dx.doi.org/10.1289/ehp.122-A276>

Buljan Barbača D. (2017): *Financial behaviour of citizens of the Republic of Croatia*, Proceedings of the 6th International Scientific Symposium Economy of Eastern Croatia – Vision and Growth, Osijek 25.-27. 05. 2017., p. 1023-1030, ISSN 1848-9559

Buljan Barbača D., Čobanov A. (2018): *Financial literacy increase of the targeted groups*, Proceedings of the 7th International Scientific Symposium Economy of Eastern Croatia-Vision and Growth, Osijek, 24.-26. 05. 2018., p. 943-951, ISSN 1848-9559

Buljan Barbača, D., Lugović, G. & Beljo, I. (2020): *Financial Behaviour and Well-being Attitudes*, Proceedings of the 9th International Scientific Symposium Region, Entrepreneurship, Development, p. 917-932, ISSN 1848-9559

Buljan Barbača, D., Laća Mrdeža, J. & Ruščić, Ž. (2021): *Financijsko opismenjavanje kao ključ održivosti osigurateljne djelatnosti*, Hrvatski časopis za osiguranje, (5), 97-107. <https://hrcak.srce.hr/267964> (accessed 03.03.2022.)

Croatian Bureau of Statistics (2020): *Procjena stanovništva Republike Hrvatske u 2019*. [https://www.dzs.hr/Hrv\\_Eng/publication/2020/07-01-03\\_01\\_2020.htm](https://www.dzs.hr/Hrv_Eng/publication/2020/07-01-03_01_2020.htm) (accessed 01.12.2021.)

Croatian Bureau of Statistics (2021): *Migracija stanovništva Republike Hrvatske u 2020*. [https://www.dzs.hr/Hrv\\_Eng/publication/2021/07-01-02\\_01\\_2021.htm](https://www.dzs.hr/Hrv_Eng/publication/2021/07-01-02_01_2021.htm) (accessed 01.12.2021.)

Croatian Insurance Bureau, Hrvatski ured za osiguranje (2021): *Statistika* <https://huo.hr/hr/statistika> (accessed 05.02.2021.)



Ćurak, M., Pepur, S. & Kovač, D. (2020): *Does financial literacy make the difference in non-life insurance demand among European countries?* Ekonomski pregled, 71 (4), 359-381.

Erceg, N., Galić, Z. & Vehovec, M. (2019): *Što određuje financijsku pismenost? U potrazi za relevantnim odrednicama.* Revija za socijalnu politiku, 26 (3), 293-312. <https://doi.org/10.3935/rsp.v26i3.1541> (accessed 15.01.2022.)

Gousia, K. (2021): *Financial literacy and long-term care insurance coverage*, SHARE-ERIC, Working Paper Series 26-2016, pp. 1-31.

Hrvatska enciklopedija, mrežno izdanje. Croatian Encyclopedia, online edition. Leksikografski zavod Miroslav Krleža. (2021): *Stav*. <<http://www.enciklopedija.hr/Natuknica.aspx?ID=57912>> (accessed 9. 3. 2022.)

Ipsos. (2015): *Mjerenje financijske pismenosti i financijske uključenosti u Hrvatskoj*, <https://www.hanfa.hr/getfile/43343/Mjerenje%20fin%20pismenosti%20i%20fin%20uklju%C4%8Denosti%20u%20RH.pdf> (accessed 20. 1. 2022.)

Lim, T. S., Dzulkifli, D. Z., Osman, Z., Mohidin, R., & Jamal, A. A. A. (2020): *Determinants of perception toward life insurance and its impact on intention to purchase.* Labuan Bulletin of International Business and Finance (LBIBF), 18(1), eISSN 2600- 7894, pp 16-26.

Lin, X., Bruhn., A. & Williams. J. (2019): *Extending financial literacy to insurance literacy: a survey approach*, Accounting & Finance 59 (2019) 685–713.

Lusardi, A., & Mitchell, O. S. (2011): *Financial literacy around the world: an overview*, Journal of Pension Economics and Finance, 10(04), pp. 497–508. <http://doi.org/10.1017/S1474747211000448> (accessed, 02.01.2022.)

Nurisia, A., Budhijono, F. & Fuad. M. (2021): *Critical Factors Affecting Customers' Purchases Intentions of Insurance Policies in Indonesia*, Journal of Asian Finance, Economics and Business, Vol. 8, No. 2, pp. 0123-0133.

OECD. (2005): *Improving Financial Literacy: Analysis of Issues and Policies*, Paris: OECD

Pennings, J. M., & Wansink, B. (2004): *Channel contract behavior: The role of risk attitudes, risk perceptions, and channel members' market structures.* The Journal of Business, 77(4), 697-724.

Remund, D. L. (2010): *Financial Literacy Explicated: The Case for a Clearer Definition in an Increasingly Complex Economy*, The Journal of consumer affairs, Vol. 44, No. 2, pp. 276-295.

Rubaltelli, E., Pasini, G., Rumiati, R., Olsen, R. A., & Slovic, P. (2010): *The influence of affective reactions on investment decisions.* Journal of Behavioral Finance, 11(3), 168-176.

Sjöberg, L. (1999): *Consequences of perceived risk: Demand for mitigation*. Journal of Risk Research, 2, 129-149.

Swiss Re Institute (2021): *Sigma 3/2021 - World insurance: the recovery gains pace*, <https://www.swissre.com/institute/research/sigma-research/sigma-2021-03.html> (accessed, 02.01.2022.)

Štedopis-Institute for Financial Education (2021): *Što je štedopis (What Štedopis is)*. <http://www.stedopis.hr/sto-je-stedopis/> (accessed 26.01.2022.)

Tennyson, S. (2011): *Consumers' Insurance Literacy*, Cornell Univesity, 1-21, [https://www.researchgate.net/publication/228319777\\_Consumers%27\\_Insurance\\_Literacy](https://www.researchgate.net/publication/228319777_Consumers%27_Insurance_Literacy).

Vehovec, M., Rajh, E. & Škreblin Kirbiš, I. (2015): *Financial Literacy of Croatian Citizens*, Privredna kretanja i ekonomska politika, 24(1), pp 53-76.

Waheeda, H., Ahmedb, H., Saleemc, Q., Ul Dind, S. M., Ahmed, B. (2020): *The Mediating Role of Risk Perception in the Relationship between Financial Literacy and Investment Decision*. International Journal of Innovation, Creativity and Change. [www.ijicc.net](http://www.ijicc.net) Vol. 14, No. 4., 2020, pp. 112-131.

Weedige, S. S., Ouyang, H., Gao, Y. & Liu, Y. (2019): *Decision Making in Personal Insurance: Impact of Insurance Literacy*. Sustainability 2019, 11, 6795, pp 1-24. doi:10.3390/su11236795

World Bank (2010): *Croatia-Diagnostic Review of Consumer Protection and Financial Literacy*. Vol. I., Svjetska banka, Sektor za razvoj privatnog i financijskog sektora, Područje Europe i Središnje Azije, Washington, DC, <http://docplayer.net/37214384-Hrvatska-dijagnosticki-pregled-zastite-potrosaca-i-financijske-pismenosti-svezak-i-glavni-nalazi-i-preporuke-veljaca-2010.html> (accessed 02.01.2022.)

*A scientific paper*

**Tihana Cegur Radović, Ph. D., Senior Lecturer**

Karlovac University of Applied Sciences

E-mail address: tcradovic@vuka.hr

**Petra Pušić, student**

Karlovac University of Applied Sciences

E-mail address: petra.pusic@gmail.com

**Robert Svetlačić, Ph. D.**

Faculty of Tourism and Hospitality Management

E-mail address: robert.svetlacic@gmail.com

## **THE SUSTAINABLE TOURISM DEVELOPMENT OF THE SAVA RIVER IN THE CITY OF ZAGREB**

### ***ABSTRACT***

*Badly managed and unsustainable tourism entails a number of negative consequences such as environmental devastation and pollution due to mass tourism, and the loss of competitiveness and market position. The City of Zagreb has very attractive locations and is distinctive for its old urban core and events that are held year-round. Although having sustainable development potential, Zagreb has become inefficient in natural resource conservation due to poor considerations.*

*The subject of the paper is the impact of the Sava River on sustainable tourism development in the City of Zagreb. The aim of the online research was to determine the attitudes of respondents towards the Sava River bank belt development and possible landscaping, and the attitudes of respondents towards involvement in decision-making.*

*The research was conducted from 21<sup>st</sup> September to 31<sup>st</sup> December 2021. The online survey was created in the Google Forms application and forwarded to social networks and by e-mail. An analysis of the recent literature on the topic of sustainable tourism and marketing was performed. Empirical research was conducted on a convenience sample of 151 respondents. Descriptive and multivariate statistics were used in the data analysis using the software package IBM SPSS Statistic Version 27.*

*The results indicate the dissatisfaction of the residents of the City of Zagreb with the untapped potential of the Sava River in the City of Zagreb. According to the respondents, the potential of the Sava River should be exploited to create a Landscape Park.*

***Key words:*** *sustainable tourism, strategic marketing, the City of Zagreb, the Sava River.*

### **1. Introduction**

Tourism is a fast growing, competitive and dynamic industry that plays a fundamental role in the development of tourist destinations. Despite the fact that tourism offers the potential to contribute significantly to national and local economic development, these benefits need to be balanced in relation to undesirable impacts on the environment and society (Ice and Öztüren, 2021, 529). The economic, social, environmental, and cultural dimensions of tourism can

increase the attractiveness of destinations because of the memorable experiences that they facilitate (Ice and Öztüren, 2021, 529).

The subject of research is the impact of the Sava River on the sustainable tourism development of the City of Zagreb. Over the years, various projects have been implemented to foster the development of the Sava River and encourage more people to visit it, but with little success. The lack of interest and the failure to experience the Sava River as the capital's main natural resource have resulted in poor water utilization. The study aims to investigate the attitudes of the residents of the City of Zagreb and its surroundings concerning the under-utilization of the banks of the Sava River.

The research was conducted from 21<sup>st</sup> September to 31<sup>st</sup> December 2021. An online survey was created in the Google Forms application and forwarded to social networks and by e-mail. An analysis of the recent literature on the topic of sustainable tourism and marketing was performed. Empirical research was conducted on a convenience sample of 151 respondents. The survey consists of five demographic profile questions, 15 questions on attitudes towards the development of green spaces near the river, two questions on satisfaction with river management for the City's potential development, and seven questions on involvement in decision-making. The survey used a 5-point Likert scale. Descriptive and multivariate statistics were used in the data analysis using the software package IBM SPSS Statistic Version 27.

The paper consists of four chapters. The introductory part, explaining the purpose and objectives of the research, is followed by a description of the basic concepts used in the paper, a description of the methodology, and the results of the empirical research. Discussion and conclusions of the research are given at the end of the paper.

## **2. Theoretical framework**

### **2.1. Characteristics of sustainable tourism**

The concept of sustainability began with the document "Our Common Future", in which sustainable development was defined as "satisfying the needs of the present generation without compromising the ability of future generations to meet their needs" (WCED, 1987, 43). Sustainable development became the leading paradigm in the late 20<sup>th</sup> century when it was noticed that economic growth has a negative effect on natural balance and social facilities (Cegur Radović, 2021).

In other words, economic (and any other) development must be sustainable, otherwise, while it benefits one side, harms the other. Therefore, sustainable development is also described as balanced development, development that does not ignore but fully takes into account the impact of the economy on the environment and society. For such a development to be possible, it must be acceptable, fair and feasible. This means that natural and all other resources must be used as efficiently as possible and responsibly towards nature and future generations. In the first place, this means that it is necessary to use renewable energy sources, since, in general, sustainable development is primarily related to nature, given the fact that nature pays the highest price for modern, unsustainable economic development. This topic is especially relevant today when the consequences of harmful actions are becoming more visible and tangible in the form of climate and environmental crises. The economy in the age of globalization is such that its development is increasingly problematic and unsustainable, and therefore it is necessary to create a framework of different development that will keep the economy within the framework of sustainability (Lončar, 2019). Based on these conclusions and efforts, the concept of sustainable

development today is a framework for creating policies and strategies for economic and social progress without irreparable and long-term harmful effects on the environment (Environmental Protection and Energy Efficiency Fund, 2022).

When it comes to the environmental sustainability, which is the most important aspect of sustainability at the moment, it refers to the conservation and management of resources, especially those, as it is stated already, that are not renewable. Through environmental actions, individuals and organizations can minimize air and water pollution and help to preserve biological diversity and natural heritage.

But sustainability is not only necessary for the preservation and protection of the environment and the health of humans and all living beings - although this is its most important goal - but sustainable management is also the foundation of further economic development, given that irreversible destruction of nature undermines numerous industries. One of the industries that depends most on natural resources is tourism. At the same time, tourism is one of the most harmful activities for nature. That is why the implementation of the concept of sustainable development in tourism is imperative.

In other words, the tourism industry is strongly dependent on the environment (Parris, 1997; Kousis, 2000; Dembovska and Zvaigzne, 2021, 702). Unsustainable plans and uncontrolled construction can damage the natural environment and wildlife (Tatoglu et al., 1998), unplanned or uncontrolled road construction or other infrastructure development can contribute to the degradation (Farooquee et al., 2008; Dembovska and Zvaigzne, 2021, 702). The most significant negative impact of tourism on the environment is the pollution of the water, earth and air (Bauer, 2008, 282). Unsustainable growth strategies are leading to global warming, CO<sub>2</sub> emissions (Geo et al., 2019), exceeding carrying capacities, and to the concentration of wealth accruing to some, and precarity of futures for others (Higgins-Desbiolles, 2017, 3). Inadequate sewage and waste management systems combined with pressures resulting from tourism often mean that rivers are used to dispose of garbage and waste (Bauer, 2008, 282). Water pollution can also cause skin, eye, and ear diseases, and other sorts of illnesses and infections both for local residents and for tourists (Bauer, 2008, 282). Disposing of batteries or plastic bags, straws, ear sticks in rivers, or using dangerous pesticides can also damage river ecosystems and cause diseases for local residents and tourists. A further problem is changes caused by the removal of vegetation, like a forest, to make way for tourism infrastructure or recreational activities. Tourism can have a negative impact on biodiversity through the fragmentation, destruction, and degradation of the natural environment, stress to flora and fauna, import of invasive species, and competition for natural resources between wildlife and tourists (Dembovska and Zvaigzne, 2021, 704).

The COVID-19 pandemic and the risk of future pandemics have raised new challenges for sustainable tourism development. Tourism was one of the first sectors of the global economy to be severely disrupted by the COVID-19 pandemic (Sheller, 2020, 1). One consequence is a renewed policy interest in the importance of niche tourism products for destination development (Rogerson and Rogerson, 2021, 1379). From the tourist perspective, it is necessary to maintain a high level of tourist satisfaction and create a memorable tourist experience. It is also important to raise awareness about sustainability issues and promote sustainable tourism practices to tourists. Achieving competitive, socially and environmentally responsible tourism is an opportunity for all residents, a good tourism opportunity for the local community concerning economic prosperity, and a good opportunity for employment. The importance of tourism in the Croatian economy is significant because foreign exchange

revenues from tourism before COVID-19 pandemic accounted for 19.4 percent of the GDP and 37.3 percent of export revenues in 2019 (Šimović et al., 2021, 114).

Sustainable tourism is the responsibility of all stakeholders, including local communities, private organizations, public bodies, and tourists (Dembovska and Zvaigzne, 2021, 699). The government also plays an important role in the process of the sustainable development of a tourist destination (Chang H.-M. et al., 2021, 1). According to OECD (2018), sustained development of the tourism sector will depend on the ability to adapt to emerging economic, social, political, environmental, and technological trends (Costa and Ribeiro, 2019, 1). The positive impact of tourism development on the economy, society, and environment is higher than its negative impact (Chang, H.-M. et al., 2021, 1). Tapping into tourism's potential for sustainable development requires adequate policies, integrated strategies, and mechanisms that involve the private sector and other stakeholders in tourism governance (Costa and Ribeiro, 2019, 1). The UN 2030 Agenda for Sustainable Development has six main section headings, mainly relating to the protection of the planet, ending poverty, social integrity, and providing economic prosperity for all. The sustainable tourism agenda also calls for the re-organization of tourism management and development by all stakeholders to help safeguard the future of tourist destinations (Ice and Öztüren, 2021, 529).

Well-designed and well-managed tourism can make a significant contribution to the three dimensions of sustainable development, may create jobs for the local community and generate trade opportunities (UN Resolution, 2012, 130-283). UNWTO defines sustainable tourism as tourism that takes full account of its current and future economic, social, and environmental impacts, addressing the needs of visitors, the industry, the environment, and host communities (UNWTO, 2021a, b). The European Union institutions define sustainable tourism as follows: Sustainable tourism development meets the needs of present tourists and host regions while protecting and enhancing opportunities for the future.

The Urban Agenda's goals for cities include ensuring economic growth with opportunities for everyone, as well as the protection and conservation of ecosystems, and regard cities to be sustainable (Metaxas and Psarropoulou, 2021, 11). Tourism can turn local culture into a tourist product if local customs and festivals or events are held solely to match tourists' views (Dembovska and Zvaigzne, 2021, 700). There is a standardization risk due to tourists' needs: landscapes, facilities, accommodation, food, and drink must satisfy tourists' desire for something new and unique. They should not be too specific and authentic as only a relatively small number of tourists are looking for entirely new things. Tourists want souvenirs, works of art, handicrafts, and cultural expressions of the tourist destination. The process of commercialization of cultural items can also erode local culture. As the events grow, the budget increases, all the organization becomes professional, and sponsors become in charge of the event (Richards, 2007, Lončarić et al., 2020, 102). There are also cultural conflicts that can arise due to distinctions between different cultures, ethnic and religious groups, values, languages, and lifestyles (Dembovska and Zvaigzne, 2021, 702). Tourists often show disrespect for local traditions and moral values, either because of ignorance or because of carelessness. Therefore, the local residents have to educate them about their culture.

All these aspects of the tourism impact on the destination are important and only further research can answer the questions about the best future direction of development, in accordance with the concept of sustainability. Although the issue of the tourism impact on the environment is the most important one at the moment, all aspects of this impact need to be taken into account so that tourism is in the best interests of all parties involved. On the example of the Sava River,

as a tourist attraction and tourist resource of the City of Zagreb, it will be analyzed in which ways this is possible.

## **2.2. Sustainable marketing strategy of the Sava River in the City of Zagreb**

Croatia's capital and largest city, the City with a Million Hearts, the winner of the Best European Destination of the year, and winner of the Best Christmas Market in Europe are just some of the titles of the city on the Sava River, the City of Zagreb (Zagreb Tourist Board, 2021). "Advent in Zagreb" was voted the Best Christmas Market in Europe for three years in a row (2016, 2017 and 2018). The City of Zagreb offers a variety of events throughout the year, plenty of fun, excellent food, unique events, art, culture and an unforgettable Christmas atmosphere and experience (Lončarić et al., 2020, 105).

"The vision of the City of Zagreb as an urban incubator is being realised by pushing borders in all fields of work and activity relevant for the City and by using the entrepreneurial approach — an approach that does not settle for the status quo, an approach that seeks new ideas in the creative process, and strives to create new values" (Zagreb Tourist Board, 2021). The vision of the City of Zagreb is linked to its mission, which is: "By creating well-designed tourism products that match tourist needs, in order to boost tourism development in the City as well as on the rivers while adhering to the principles of sustainable development, the City of Zagreb will become a genuine tourist brand of Continental Croatia, and a place where tourists will stay for longer than three days." (Zagreb Tourist Board, 2021). This study aims to determine the opinions of respondents concerning the delivery of the City of Zagreb's mission.

The City of Zagreb is visited by over a million tourists a year, which is about 50% more than ten years ago. Foreign tourists account for over 80% of visitors and most are from the Republic of Korea, the U.S.A., Germany, and Italy. These indicators place Zagreb on the top of the list of Croatian cities with the highest increase in the number of arrivals (Croatian Chamber of Commerce, 2021). It has been proven that there is a strong link between visitors' satisfaction with attending an event and their intention to revisit the event, recommend it to others, or share the experience through social media (Lončarić et al., 2020, 101).

In the past two years, two crises have hit the City of Zagreb, the first is the COVID-19 pandemic and the second was a devastating earthquake that damaged most of the buildings in the city centre. After these events, the number of tourist arrivals to the City of Zagreb dropped significantly. Since the beginning of the year 2020, about 30 percent of last year's arrivals has been recorded, and regular visitors from the U.S.A. and the Far East have become rare (Croatian Chamber of Commerce, 2021). The number of arrivals and overnights in the City of Zagreb from the beginning of March 2020 to 20 July 2020 amounted to only 15% of the number of arrivals and 20% of the number of overnights realized in the same period in the previous year. The largest drop in numbers was recorded in April, during the lockdown, but the numbers began to increase after 11 May 2020 when accommodation facilities were reopened and epidemiological measures started to be relaxed. (Croatian Chamber of Commerce, 2021).

The earthquake had a significant impact on the residents, and as far as tourism is concerned, a number of accommodation and cultural facilities were severely damaged. Some 90 vacation rentals had to shut down because of damage caused by the earthquake. Due partly to the earthquake and partly to the COVID-19 pandemic, only 12 hotels out of 71 are open (Croatian Chamber of Commerce, 2021). The length of stay has been extended. In previous years, it was

1.8 to 2 nights and, more recently, has increased to about 3 nights (Croatian Chamber of Commerce, 2021).

The main goals of the City of Zagreb are to foster a competitive economy, and ensure human resources development, environmental protection, and the sustainable management of natural resources and energy, while improving the spatial qualities and functions of the City, the quality of life, and the development management system.

The Sava River flows through four countries: Slovenia, Croatia, Bosnia and Herzegovina, and Serbia. The City of Zagreb, Slavonski Brod, and Županja are just some of the cities located on the Sava River in Croatia. Although the Sava River connects three capitals, Ljubljana, Zagreb, and Belgrade, there is no traffic connectivity between these cities because the river is not navigable throughout its entire course (Pušić, 2021).

Table 1 shows the cities located on the Sava River and how they exploited the river's potential.

**Table 1:** Exploiting the Sava River's potential

CITY	METHOD
Zagreb	Festivals, promenade
Županja	Promenade, docking of cruise ships
Slavonski Brod	Port of Slavonski Brod
Beograd	Nightclubs, gastronomy, and the Belgrade Waterfront
Ljubljana	Water sports, downtown bridges

*Source: Authors*

The cities exploit the potential of the Sava River in different ways. Zagreb uses the river's potential in two ways. First, there are the summer festivals "Zagreb on the Sava River" and "Green River Fest", and, second, there is a promenade stretching along the river banks through one part of Zagreb. Županja has exploited the potential of the river by building a promenade, and in recent years, cruise ships with foreign tourists have docked in Županja. Slavonski Brod is the main river port on the Sava River where the Port of Slavonski Brod is being developed to attract potential concessionaires to the port area. Investment into the Port of Slavonski Brod is an incentive to increase employment in Slavonski Brod-Posavina County, where the standard of living is very low, unemployment is high, and the structural, economic, and social situation is poor (Pušić, 2021, 47).

Belgrade recognized the Sava River as a great opportunity to expand the city through the "Belgrade Waterfront" project, involving a new urban centre in Belgrade located on a million square meters, and offering first-class residential and commercial space. The project includes world-class hotels, cultural venues, educational institutions, modern health centres, and a wide range of attractions and facilities for recreation and entertainment. It will also open new public areas, putting pedestrian and bicycle zones in the foreground. Rafts (floating cafes, restaurants, and nightclubs along the banks of the Sava and the Danube) are located on the river, which attracts tourists mostly from the surrounding countries, Macedonia, Bosnia and Herzegovina, Croatia, and Slovenia. Ljubljana has tapped into the potential of the river by developing water sports on the river such as rafting and kayaking, and by turning the many bridges found throughout the City into a tourist attraction. There are seven hydropower plants on the Sava River in Slovenia (HPP Moste, HPP Mavčiče, HPP Medvode, HPP Vrhovo, HPP Boštanj, HPP Blanca and HPP Krško) and another seven in Croatia (HPP Zaprešić (Podsused), HPP Prečko,



HPP Sisak, SHPP Jarun, SHPP Šanci, SHPP Petruševac and SHPP Ivanja Reka) (Eko Zagreb, 2021).

The history of the Sava River reveals that it was significantly different in the past from what it is today. The river was navigable (traffic flowed upstream and downstream from Zagreb, about 50 boats sailed the river daily), residents bathed on river beaches, and wood and salt were transported on the river. The Sava River was also used for transport in military purposes. In 1859, a permit was issued for the first private-public baths on the Sava River. On the shore was a wooden raft whose location changed depending on the river's water level and course. Upstream from the road bridge, a river beach was built in 1921, and in the time of Mayor Vjekoslav Heinzl it boasted a restaurant, sunbathing boards, deck chairs, and other various facilities. Up to ten thousand residents came to the river beach every day. Due to the gradual pollution of the river caused by the coal mine in Slovensko Trbovlje from the 1960s onward, the river beach could no longer be used for swimming. Instead, it was used as a sunbathing area until 1993. Despite a petition by residents for the renovation of the river beach in 1990, a use permit was not issued, and the river beach remained a cultural monument until it was destroyed by a fire and finally demolished between 1995 and 1996. Consistent neglect and failure to reconnect residents and the Sava River has visually and physically alienated the people of Zagreb from the river.

Through market segmentation, companies divide large, diverse markets into smaller segments that can be reached more efficiently and effectively with products and services that match their unique needs (Kotler and Armstrong, 2018). Market segmentation has identified the potential foreign target markets as being Slovenians, Italians, Germans, Bosnians, and Hungarians of all ages. As to domestic tourists, the target markets are tourists or visitors from the counties of Zagreb, Karlovac, Sisak-Moslavina, Krapina-Zagorje, and Varaždin. The Sava River is suitable as a place to relax and enjoy natural resources or to unwind after a stressful day at work. Young people, middle-aged and elderly people would be the main consumer segment. The goal is to organize as many events on the Sava River as possible throughout the year. The banks of the Sava River could become one of the venues of Advent in Zagreb, and in the summer months, a summer cinema, picnics by the river, concerts, and festivals could be held there (Pušić, 2021, 48). The leading attributes that would position the Sava River as a product are hospitality facilities, a market, a museum, tourist accommodation facilities such as camps, and events.

To realize the set plans, a strategy of differentiation would be implemented, i.e., a strategy of leadership with unique products, services, and experiences different from the competition. Differentiation should offer consumers something unique and especially valuable to them that other tourism providers cannot offer (Porter, 1985, Kotler and Armstrong, 2018).

A landscape includes physical and non-physical resources, natural and cultural settings, as well as tangible and intangible surroundings (Xue et al., 2020, 3). The natural landscape includes the various factors that the eyes can freely view, emphasize, and study while enriching the associations at the location and blurring the emotional stimuli (Xue et al., 2020, 3). Co-creation in the experience of landscape is an important factor which leads to the emotional stimuli and visitor satisfaction. When a landscape creates value for visitors, it affects their consumption behaviour as well as the development of a tourism landscape (Xue et al., 2020, 4).

The 4Cs theory has been also widely used (Zhang et al., 2021, 20). The historical culture of the City of Zagreb and the Sava River, local customs, and nature trails along the banks of the Sava River should be developed using visitor needs as a starting point. The authenticity of the local

culture should be retained, and tourists should have a memorable and unique experience on the Sava River. During the process of pricing the products, services, and experiences, prices and costs should be reasonably controlled. The competitiveness of prices will become a key factor in attracting repeat visitors. Diversified distribution channels should be constructed and the promotion of the Sava River should be integrated on the basis of Internet marketing and Social Networks.

Based on the above, a study hypothesis can be proposed:

H1: The residents of the City of Zagreb seek to exploit the potential of the Sava River to create a Landscape Park.

H1a: The banks of the Sava River should provide appealing facilities, such as for sports and recreations activities.

H2: The opinions of the residents of the City of Zagreb concerning the development of the banks of the Sava River should be taken into consideration.

### 3. Research methodology

The data were collected from 151 respondents. The questionnaires were handed out to the respondents and were completed using the paper and pencil method. A total of 151 valid questionnaires were collected. Table 2 shows the sample description based on gender, age, education level and how long the respondents have been living in the City of Zagreb.

**Table 2:** Sample structure (N=151)

Characteristics	Total	
	N	%
<i>Gender</i>		
Female	97	64.2
Male	54	35.8
<i>Age</i>		
18 – 30	88	58.3
31 – 40	11	7.3
41 – 50	21	13.9
51 – 65	23	15.2
Over 66	8	5.3
<i>Education level</i>		
Elementary school	4	2.6
Secondary school	53	35.1
University or college	88	58.3
Master/PhD	6	4.0
<i>How long have you been living in the City of Zagreb?</i>		
Less than a year	3	2.0

Characteristics	Total	
	N	%
1-5 years	14	9.3
6-10 years	4	2.6
11-20 years	7	4.6
More than 21 years	27	17.9
I have lived in Zagreb my whole life	67	44.4
I do not live in Zagreb	29	19.2

*Source: Research results*

An analysis of the sample structure shows that more women (64.2%) than men (35.8%) participated in the survey. Concerning the age structure, the respondents were mainly younger people between 18 and 30 years of age (58.3%). The reason for this is that younger people tended to complete the online survey, compared with the older population. Most respondents have graduated from University or College (58.3%) and have lived in Zagreb their whole lives (44.4%).

The majority of respondents were neutral (38.4%) when asked about the use of green spaces in the City of Zagreb, 36.4% of them were satisfied and 25.2%, dissatisfied. Concerning the amount of facilities/services available for living, recreation, sports, and games in public areas in Zagreb, 44% of respondents are satisfied, 30% are neutral, and 26% are dissatisfied. In response to the question “Which facilities/services are plentiful along the Sava River?”, 76.2% of the respondents stated hiking trails and bicycle paths, and 37.1%, fishing areas. As to facilities/services that are lacking, respondents reported insufficient access to the river bank (66.2%), as well as a lack of plateaus for lounging and sitting (66.2%), a lack of facilities for outdoor events (58.3%) and a lack of facilities/services for spending leisure time on the river bank (57%).

When asked how the potential of the Sava River should be exploited, 57% of respondents answered that the river belt should be developed into a landscaped park which would include sports and recreational facilities, water sports, leisure facilities, hospitality facilities, and smaller planned settlements. Furthermore, 33.8% of respondents would like the natural character of the river to be preserved, while 9.3% of respondents would like residential buildings to be constructed.

Descriptive analysis was conducted on the variables of the attitudes of the respondents towards development of the Sava River bank (Table 3).

**Table 3:** Descriptive statistics of variables “potential sustainable tourism development”

Item number	Arithmetic mean	Mode	Standard deviation	Cronbach's alpha
8. Rivers are one of the more important identities of the city through which they flow.	4.32	5	0.884	.792
9. The possibility of living along the river bank and holding events requires the construction of a hydroelectric power plant.	2.87	3	1.397	

10. River banks need to be landscaped and accessible.	4.68	5	0.744	
11. There are not enough facilities on the banks of the Sava River for living, sports, recreation, and games.	4.25	5	0.980	
12. The Sava River has the potential to boost the development of Zagreb along its banks.	4.54	5	0.806	
13. I wish I could sail the Sava River.	4.40	5	0.953	
14. I would like to be able to swim in the Sava River.	3.96	5	1.259	
15. If there were more appealing facilities/services provided along the Sava River, I would certainly stay there more often.	4.46	5	0.929	
16. I would like concerts, educational workshops, and other events to be held on the river bank.	4.47	5	0.893	
17. If there were hospitality facilities along the river, the banks of the Sava River would be visited more often.	4.53	5	0.815	

Source: Authors

The arithmetic means of the variables range from 2.87 to 4.68. The variable “The possibility of living along the river bank and holding events requires the construction of a hydroelectric power plant” has the lowest score, while the variable “River banks need to be landscaped and accessible” has the highest. The mode is 5 for all variables. The values of the standard deviation are lower than 1, with the exception of two variables, suggesting that there is no data dispersion. Cronbach’s alpha is 0.792. The closer the coefficient is to the value 1, the more reliable is the measurement scale. The lowest suggested value of the coefficient is 0.6, whereas values of 0.7 and over are considered to be good (Peterson, 1994, Cegur Radović et al., 2021). Descriptive analysis was conducted on the variables of the involvement in the decision-making of the respondents regarding development on the Sava River bank (Table 4).

**Table 4:** Descriptive statistic of variables “involvement in decision-making”

Item number	Arithmetic mean	Mode	Standard deviation	Cronbach alpha
23. The banks of the Sava River have been pushed into the background in the spatial planning of Zagreb.	4.11	5	0.946	0.837
24. Residents’ opinions are not taken into account when making decisions about public spaces and the Sava River belt.	4.19	5	0.969	
25. Residents are not sufficiently informed about projects and tenders for the Sava River.	4.56	5	0.745	
26. The opinions of the residents for the development of the Sava River bank should be respected.	4.62	5	0.620	

27. If I knew that I could exert any influence, I would participate in decision-making concerning the development of the Sava River belt in Zagreb.	4.29	5	0.899	
28. The banks of the Sava River are of great importance for the further development of the City.	4.40	5	0.818	
29. Public money needs to be invested in the development of the Sava River belt.	4.30	5	0.929	

Source: Authors

The arithmetic means of the variables range from 4.11 to 4.62. The variable “The banks of the Sava River have been pushed into the background in the spatial planning of Zagreb” has the lowest score, while the variable “The opinions of the residents for the development of the Sava River bank should be respected” has the highest. The mode is 5 for all variables. The values of the standard deviation are lower than 1, suggesting that there is no data dispersion. Cronbach’s alpha is 0.837.

**Table 5:** Multiple regression analysis for variables of potential sustainable tourism development of the Sava River

Independent variables	B	Std. Error	Beta	t	Sig.
(Constant)	1.391	.334		4.166	.000
SAILING	.177	.064	.209	2.750	.007
SWIMMING	-.036	.052	-.056	-.696	.488
APPEALING FACILITIES FOR SPORTS AND RECREATION	.320	.097	.369	3,288	.001
ENTERTAINMENT	.065	.095	.073	.690	.491
RESTAURANTS, CAFES AND OTHER HOSPITALITY FACILITIES	.174	.078	0.176	2.222	0.028
R <sup>2</sup>	.419				
Adjusted R <sup>2</sup>	.399				
Standard error	.625				
F ratio	20.947				
Significance	0.000				

Source: Authors

The results of regression analysis are statistically significant ( $F=20.947$ ,  $p=0.000$ ), the determination coefficient ( $R^2$ ) totals 0.419, and the variables in the model share 41.9% of the common factors, which means that 41.9% of the variance has the potential to develop the City of Zagreb along the Sava River with sailing ( $\beta=0.177$ ,  $p=0.007$ ), appealing facilities for sports and recreational activities ( $\beta=0.320$ ,  $p=0.001$ ), and restaurants, cafes and other hospitality facilities ( $\beta=0.174$ ,  $p=0.028$ ). Swimming in the Sava River ( $\beta= -0.036$ ,  $p=0.488$ ) and entertainment such as concerts and other events do not have a significant influence on the potential development of the Sava River.

To confirm the relationship between the sustainable tourism development of the Sava River and potential development activities, a correlation analysis was conducted using the Pearson correlation coefficient. A statistically significant positive relationship between the potential for sustainable tourism development and sailing ( $r=0.458$ ,  $p=0.000$ ), appealing facilities such as

sports and recreational activities ( $r=0.600$ ,  $p=0.000$ ), and restaurants, cafes, and other hospitality facilities ( $r=0.478$ ,  $p=0.000$ ) was established.

#### 4. Discussion and conclusion

The subject of the paper was the impact of the Sava River on sustainable tourism development in the City of Zagreb. The purpose of this research was to determine the attitudes of respondents towards the Sava River bank belt development and possible landscaping, and the attitudes of respondents towards involvement in the decision-making process. To achieve these goals, two hypotheses were set and empirical research was carried out. The results confirm all hypotheses. According to the respondents, the potential of the Sava River should be exploited to create a Landscape Park. Multiple regression analysis confirmed the statistical significance and positive influence of developing appealing facilities/service such as sports and recreation activities in the bank belt of the Sava River, sailing on the Sava River, and restaurants, cafes, and other hospitality facilities, thus confirming hypotheses H1 and H1a. It was also confirmed that appealing facilities such as for sport and recreation activities have the greatest influence on the potential sustainable tourism development of the Sava River.

Hypothesis H2 was also confirmed. The opinions of the residents of the City of Zagreb concerning the development of the Sava River bank should be respected. The results suggest that the residents of the City of Zagreb are dissatisfied with the failure to exploit the untapped potential of the Sava River in the City of Zagreb and want to be included in the decision-making process.

The trend of global tourism development gradually changes from mass tourism to ecological tourism with full experience of nature (Chang, H.-M. et al., 2021, 2). The recreational attraction is one of the important factors for tourists when considering whether they want to visit some destination (Chang, M.-Y. et al., 2021, 6).

The sustainable tourism development can be achieved by integrating geological and biological diversity, historical structures, civil architecture, local culture, agricultural and gastronomic products with education, research, and nature-based sports and supporting them with conservation activities (Özgeriş and Karahan, 2020, 12). Economic and tourism development and natural resources are strongly interrelated and long-term reliance on natural resources can result in sustainable development (Barro, 1990; Shaw and Williams, 2004; Engel et al., 2008; Sharpley, 2009; Mandić, 2020, 2). Natural resources remain the key driver of sustainable tourism development of most tourist destinations but resources are often exploited without proper strategic plans.

Developing the banks of the Sava River would help to boost a part of the City of Zagreb that has been neglected for years, during which time the urban part of the City was the focus of development, with the development of the City's natural resources being pushed into the background. Considering that fostering sustainable tourism development in an urban setting is unusual, this would attract tourists who are looking for accommodation characterised by untouched nature. Uniqueness would be achieved by bringing together nature and the urban city, enticing tourists to stay longer than three days in the City of Zagreb.

The study has a theoretical and applicative contribution. The study's theoretical contribution is the identification of constructs sustainable tourism development and marketing strategies in boosting the future development of destination tourism. In a practical sense, this study provides information on the attitudes of the residents of the City of Zagreb toward the Sava River bank belt development and their involvement in the decision-making process. The study can help all

parties in sustainable tourism development of the Sava River to create a Landscape Park for tourists and visitors by using the results of the study.

The study has certain limitations which should be mentioned. The main limitation refers to the study sample. It is relatively small and respondents are mostly young because the survey was conducted online. Future studies should be carried out on larger samples of residents' attitudes and the attitudes of tourists staying in the City of Zagreb.

## REFERENCES

Bauer, I. (2008): *The health impact of tourism on local and indigenous populations in resource-poor countries*, Travel Medicine and Infectious Disease, Vol. 6, pp. 276-291., DOI: 10.1016/j.tmaid.2008.05.005

Costa, T., Ribeiro, F. P. (2019): *Sustainable tourism: Trends, Challenges and Concerns*, European Journal of tourism hospitality and recreation, Vol. 9, No. 2, pp 1-2.

Cegur Radović, T. (2021): *The interdependence of tourist experience and environmentally responsible behaviour of tourists in campsites*, Doctoral Dissertation, Faculty of Tourism and Hospitality Management, Opatija, pp. 1-244.

Cegur Radović, T., Lončarić, D., Cvelić Bonifačić, J. (2021): *Camping tourism experience, satisfaction and loyalty: an empirical study from Croatia*, Congress Proceedings, ToSEE – Tourism in Southern and Eastern Europe, Vol. 6, pp. 817-834., DOI: 10.20867/tosee.06.54

Chang, H.-M., Lin, C.-H., Chuang, Y.-W. (2021): *Study on Sustainable Development Strategy on Indigenous Tribal Tourism*, E3S Web of Conferences 257, AESEE, pp. 1-5.

Chang, M.-Y., Hsu, Y.-S., Chen, H.-S. (2021): *Choice Experiment Method for Sustainable Tourism in Theme Parks*, Sustainability, Vol. 12, pp. 1-16., DOI: 10.3390/su13137146

*Croatian Chamber of Commerce*, <https://www.hgk.hr> (accessed 5 June 2021)

Dembovska, I., Zvaigzne, A. (2021): *Sustainability and its challenges in destinations that highly depend on tourism: a thematic literature review*, Worldwide Hospitality and Tourism Themes, Vol. 13, No. 6, pp. 697-708., DOI: 10.1108/WHATT-07-2021-0098

*Eko Zagreb*, <https://www.ekozagreb.hr>, (accessed 13 February 2022)

Environmental Protection and Energy Efficiency Fund (2022): *Sustainable development*, available at: <https://www.fzoeu.hr/en/sustainable-development/7641> (accessed May 08 2022)

Gao, J., Xu, W., Zhang, L. (2019): *Tourism, economic growth, and tourism-induced EKC hypothesis: evidence from the Mediterranean region*, Empirical Economic, DOI: 10.1007/s00181-019-01787-1

Higgins-Desbiolles, F. (2017): *Sustainable tourism: Sustaining tourism of something more?* Tourism Management Perspectives, DOI: 10.1016/j.tmp.2017.11.017

Ince, E., Öztüren, A. (2021): *Strengths, weaknesses and challenges of municipalities in North Cyprus aspiring to be a sustainable Cittaslow tourism destination*, Worldwide Hospitality and Tourism Themes, Vol. 13, No. 4, pp. 528-534., DOI: 10.1108/WHATT-02-2021-0031

Kotler, Ph., Armstrong, G. (2018): *Principles of Marketing*, Pearson, New York

Lončar, J. (2019): *Globalization and/or sustainable development?* Geografski horizont Vol. 65, No. 2.

Lončarić, D., Cegur Rdović, T., Skendrović, P. (2020): *Who attends Christmas Markets and why? Analysis of visitor structure and motivation for attending two Christmas Markets in Croatia*, Econviews, Vol. 33, No. 1, 101-114.

Mandić, A.: *Structuring challenges of sustainable tourism development in protected natural areas with driving force-pressure-state-impact-response (DPSIR) framework*, Environment System and Decisions, pp. 1-17., DOI: 10.1007/s10669-020-09759-y

Metaxas, T., Psarropoulou, S. (2021): *Sustainable Development and Resilience: A Combined Analysis of the Cities of Rotterdam and Thessaloniki*, Urban Science, Vol. 5, pp. 1-14., DOI: 10.3390/urbansci5040078

Özgeriş, M., Karahan, F. (2020): *Use of geopark values for a sustainable tourism: a case study from Turkey (Cittaslow Uzundere)*, Environment, Development and Sustainability, pp. 1-15., DOI: 10.1007/s10668-020-00773-3

Porter, M. E. (1985): *Competitive advantage: Creating and maintaining top performance*, New York Free Press

Pušić, P. (2021): *Untapped potential of the river Sava in the city of Zagreb*, Final work, Karlovac University of Applied Sciences, pp. 1-113.

Richards, G. (2007): *Culture and Authenticity in a traditional event: The views of producers, residents and visitors in Barcelona*, Event Management, Vol. 11, pp. 33-44.

Rogerson, C. M., Rogerson, J. M. (2021): *Niche tourism in South Africa: a renewed policy focus in the COVID-19 environment*, GeoJournal of Tourism and Geosites, Vol. 39, No. 4, pp. 1379-1387.

*Sava - the river with the longest watercourse in Croatia*, www.voda.hr (accessed 10 July 2021)

Sheller, M. (2020): *Reconstructing tourism in the Caribbean: connecting pandemic recovery, climate resilience and sustainable tourism through mobility justice*, Journal of Sustainable Tourism, pp. 1-14, DOI: 10.1080/09669582.2020.1791141

Šimović, V., Svetlačić, R., Cegur Radović, T. (2021): *Croatian tourism and the economy in the age of Corona: reflection on the unsustainability of the current economic model*, ET2eR, Vol. 3, No. 2, pp. 114-124

Xue, L. L., Chang, Y.-R., Shen, C.-C. (2020): *The Sustainable Development of Organic Agriculture-Tourism: The Role of Consumer Landscape and Pro-Environment Behavior*, Sustainability, Vol. 12, pp. 1-19.

**Zagreb Tourist Board**, available at: <https://www.infozagreb.hr> (accessed 24 May 2021)



Zhang, H., Duan, Y., Han, Z.(2021): ***Research on Spatial Patterns and Sustainable Development of Rural Tourism Destinations in the Yellow River Basin of China***, Land, Vol. 10, pp. 1-23, DOI: 10.3390/land10080849

World Tourism Organization (UNWTO) (2021a): ***2020 worst year in tourism history with 1 Billion fewer international Arrivals***, available at: <https://www.unwto.org/taxonomy/term/347> (accessed 24 May 2021)

World Tourism Organization (UNWTO) (2021b): ***Sustainable development***, available at: <https://www.unwto.org/sustainable-development> (accessed 24 May 2021)

*A scientific paper*

**Marija Čutura, Ph. D., Associate Professor**  
Faculty of Economics University of Mostar  
E-mail address: marija.cutura@ef.sum.ba

**Anela Čolak, Ph. D., Associate Professor**  
Faculty of Economics University of Mostar  
E-mail address: anela.colak@ef.sum.ba

**Ivan Kožul, Ph. D.**  
E-mail address: ivan.kozul@icloud.com

## **COMMUNICATION COMMITMENT AND STAKEHOLDER POWER: CASE OF BUSINESS SECTOR IN THE FEDERATION OF BOSNIA AND HERZEGOVINA**

### ***ABSTRACT***

*In everyday, business organizations communicate with a wide range of internal and external stakeholders in different aspects of their operations and for different reasons. In many cases, it becomes evident that communication efforts occur in an ad-hoc rather than a strategic manner. Different stakeholders have different interests, attitudes and priorities. Therefore, the lack of a strategic approach to communication with stakeholders, in addition to the risk to business and reputation, certainly leads to the irrational waste of organizational resources. A prerequisite for effective communication with stakeholders is that management identifies key stakeholders and gives different priorities to different stakeholder groups. In the case of this study the power that managers associate with a stakeholder group is observed as the most important determinant of how managers prioritize stakeholders. The aim of this paper is to determine whether there is a match between general managers' commitment to communicate with stakeholders and stakeholders' power associated with risk for business operations. The field research was conducted using an online questionnaire survey method. Questionnaires were sent in electronic form to managerial staff in companies, headquartered in the Federation of Bosnia and Herzegovina. A total number of 65 managers properly completed the questionnaires. The results of the study show that managers prioritize more stakeholders' groups from the point of general communication commitment in comparison with stakeholder prioritization associated with their power. The results also provide evidence that there is a correlation between managers' communication commitment to stakeholders and the perceived power of stakeholders to influence business for 11 of 12 observed stakeholder groups. The main contribution of this paper is in evidence that, even in the case of small and medium enterprises, managers provide significant level of strategic approach to communication with stakeholders incorporating stakeholder power in their communication efforts.*

**Key words:** stakeholder communication, stakeholder power, stakeholder prioritization.

## 1. Introduction

From the beginning the stakeholder theory has been seen as a foundation of business strategy (Freeman, 1984), relying on a fundamental premise that stakeholder management represents different ways in which companies relate with a variety of stakeholders in order to maintain control over their organizational environments (Koschmann, 2016). According to Donaldson and Preston (1995) the instrumental view of stakeholder theory establishes a connection between the management of stakeholder relationships and the attainment of a firm's performance objectives. Kull, Mena and Korschun (2016) by integrating stakeholder theory and the resource-based view of the firm propose that the network of stakeholder relationships is, in an essence, a strategic resource with the inherent potential to contribute substantively to a company's performance. Pragmatically view on the process of maintaining stakeholder relationship involves establishing and managing stakeholder's salience (Mitchell, Agle, & Wood, 1997). Stakeholder management is generally viewed as a partnering between the companies and their stakeholders, that involves "communicating, negotiating, contracting, and managing relationships" (Freeman, 2004, 237).

Managing long term relationship among company and their stakeholders, among others, relays on effective organizational communication. The organizational communication field of study looks at communication and organizational behavior describing them in various ways (Welch & Jackson, 2007). Koschmann (2016) argues that the dominant theme in the stakeholder literature is communication as a strategic endeavor that firms engage in to accomplish organizational goals and strengthen firm performance. From the point of communications activity as a strategy, "communication is an instrument used by management to harmonize external and internal communication creating a favorable basis for relationship with groups upon which the company is dependent" (Van Riel, 1995, 26). In this view, management communication efforts are in relation with access to resources (Welch & Jackson, 2007).

Starting from the instrumental point of view on stakeholder theory, as well as the perspective of communication as a strategic instrument of management, the purpose of this paper is to gain insight into the degree of managerial commitment to communication with different stakeholders. The researches in stakeholder management have been mostly focused on the stakeholder prioritization but have paid less attention to the organizational practices involved in the process of deciding "who and what really counts" (Boesso & Kumar, 2009), and how managers integrate their stakeholder prioritization into the practice (Hall, Millo, & Barman, 2015). In order to bridge an identified research gap, the main goal of this research is to get an insight in to managers' communication practice within a framework of establishing and managing stakeholder's salience. In the case of this study the stakeholder salience has been observed from the level of manager's commitment to communicate with stakeholders as well as from the power that managers associate with stakeholders.

In order to establish managers' commitment to communicate with different stakeholders in relation to the stakeholder power the field research was conducted using an online questionnaire survey method on the sample of managers from the companies headquartered in the Federation of Bosnia and Herzegovina.

The paper is structured as follows. In the second section, the theoretical framework for the study has been provided by explaining stakeholders' salience and stakeholder communication. The third section outlines methods, with the fourth section presenting the findings from empirical study. The concluding section gives a discussion of findings and highlight their contribution and limitation as well as further research directions.

## 2. Stakeholder salience and stakeholder communication

The first part of this section deals with definitions, typology and stakeholder salience. The second part of this section deals with stakeholder communication from several perspectives.

### 2.1. Stakeholder identification and salience framework

In a seminal work Freeman (1984, 25-26) proposed an instrumental view on stakeholders defining them as “any group or individual who can affect or are affected by the achievement of the firm’s objectives”, suggesting at the same time that there is a need for strategic approaches for dealing with multiple stakeholders on multiple issues. According to stakeholder theory, a key task of managers is to manage the relations between the firm and its various stakeholders in ways that create value for all salient stakeholders (Donaldson and Preston, 1995; Freeman, 1984; Hall, Millo, & Barman, 2015).

One of the most influential theory in explaining relation among companies and its stakeholders is a resource dependency theory which suggests that the main criterion for establishing stakeholder salience is whether stakeholder control resources required by the company. In the line with that theory, Tipurić (2006) states that primary stakeholders are the one who affect company’s critical resources. In most approaches that kind of stakeholders are: shareholders, employees, customers and suppliers, and large creditors. Interests of primary stakeholders are direct and tangible, crucial to the existence and operation of the organization. According to Tipurić (2006), secondary stakeholders are those who indirectly influence the organization and their status is often determined by their activity. Their interests are indirect and distant, and they are: end consumers, competitors, the state at various levels, the public, society as a whole, the media, and the like. Also, author concludes that stakeholders differ from each other, not only because there is a difference in their primary interests and motives, but also because of differences in the level of involvement in the company and the level of risk associated with it (Tipurić, 2006).

One of the main topics in stakeholder management is establishing stakeholder salience through the processes of identification and prioritization of stakeholders (Donaldson & Preston, 1995; Freeman, 1984). Mitchell, Agle and Wood (1997) have developed a most influential theory of stakeholder identification and salience using attributes of power, legitimacy and urgency in determination of stakeholder salience. The main thesis of this theory is that the stakeholders with more attributes have a greater salience. The stakeholder salience theory offers a framework for examining how managers of a firm determine which stakeholder groups are salient to the firm and thus receive high prioritization for engagement efforts undertaken by the firm (Boesso & Kumar, 2008).

Regardless of the widespread use of the framework of stakeholder identification and salience, recently stakeholder theory and its implementation are often the target of criticism in the field of transferring the value of stakeholder relations in the performance of the company (Kull, Mena, & Korschun 2016). Among others, the reason for this type of criticism, but also the real disconnection between the value of the stakeholder network and business performance, is in the specific elements of the internal and external environment of each company. Different companies have different levels of resources and approach their stakeholders in different ways. Also, in different social and economic contexts, stakeholders have lower or higher expectations from business as well as, more or less, context specific requirements. In the more developed countries with higher living standard material values are displaced by post materialistic values and quality of life becomes important to society ranking environmental issues as highly important. According to Zadek (2007) many companies today deal with different pressures

from society through network and processes of so called civil regulation. Civil regulation can take the form of activities of various NGOs and non-profit organizations whose pressure to do business in modern society is growing or is in forms that are somewhere between institutional, individual and collective reactions that are transferred to market signals (Zadek, 2007, 81). Zadek (2007, 82) concludes that such civil campaigns, as forms of civil regulation, can damage the company's reputation to the extent that it will affect business performance and thus the financial result.

## 2.2. Stakeholder communication framework

Welch and Jackson (2007) have emphasized that there is a strong notion in the communication literature against the use of the internal/external communication labels. According to the authors this kind of dichotomous view on organizational communication ignores the benefit of reflection on the linkages between them and the resultant fuzzy organizational boundaries with its environment. Welch and Jackson (2007, 180) concludes that this should be a useful reminder to managers and theorists that internal communication becomes external as soon as the e-mail is forwarded to the media or the newsletter is taken home. Furthermore, individuals may have dual stakeholder roles of, for example, internal employee and external shareholder and/or customer. In this line, it is important to notice that regardless the fact that marketing communication, even its integrated form, is predominantly viewed in the light of communication aimed exclusively at costumers. Moreover, there is a growing literature on stakeholder marketing that emphasizes the need that marketing look beyond the customer as the focal stakeholder (Ferrell *et al.*, 2010; Hillebrand, Driessen, & Koll, 2015). Also, there is a growing consensus in the marketing literature that the company's stakeholders are integrated directly or indirectly into the relationship network. Consequently, companies range from conflicting positions between market and stakeholder orientation to complementary positions where market and stakeholder orientation complement and integrate into business strategies (Ferrell *et al.*, 2010). In addition to the traditional marketing approach, segmentation can be also used to identify key stakeholders (Murphy, Öberseder and Laczniak, 2013) and to provide communication strategies for targeted stakeholders.

Doing literature review on stakeholder communication Koschmann (2016, 5) has identified three areas of current thinking about stakeholder communication: 1) communication as strategy, 2) communication as interaction, and 3) communication as normative obligation. According to author these themes are not necessarily mutually exclusive, but rather describe alternative ways in which stakeholder communication is understood and conceptualized in the literature. Risk communication with stakeholders is a specific sub-area of stakeholder communication literature, especially when it comes to reputational risk for a business. In one of the pioneering papers on the topic of communication with stakeholders, the topic of vulnerability of the reputation of business has been a starting point for an integrated approach to stakeholder communication (Scholes & Clutterbuck, 1998). On the beginning of their paper Scholes and Clutterbuck (1998, 228) transferred a quote from the magazine *Management Today* published in November 1997: „ (...) in the 1990s corporate reputation has become more important and more vulnerable than ever before (...) “. Subsequently, the reputational risk has been observed as a one of the main topics of risk management in general, as well as risk communication in particular. Stakeholder participation in the risk management process is becoming increasingly recognized as a mean of producing decisions that are responsive to the varying interests and values (Jardine, 2008). From the literature review Gurabardhi, Gutteling, and Kuttschreuter (2005, 509-510) have concluded that in the observed period 1998-2000 the interest in stakeholder risk communication strategies remain rather constant. The authors pointed out

several trends within this research stream: 1) there was an increase of the articles representing the two-way communication flow, referring to a more large-scale use of forms of communication; 2) there was continuity in the use of the different communication strategies during the studied period.; 3) the stakeholders' input in risk decisions constitutes an important indicator of the development of thinking in risk communication.

When observing stakeholder communication, it is unavoidable to mention CSR communication with stakeholders. Morsing and Schultz (2006) argue that corporate CSR engagement today requires more sophisticated and ongoing stakeholder awareness and calls for more sophisticated CSR communication strategies than previously. Authors have emphasized three CSR communication strategies from the point of communication ideal of sense-making and sense-giving proposed by Grunig & Hunt (1984): 1) The stakeholder information strategy (i.e. one-way communication); 2) The stakeholder response strategy (i.e. two-way asymmetric communication); 3) The stakeholder involvement strategy (i.e. two-way symmetric communication) (Morsing & Schultz, 2006, 326).

From the whole described above, it can be seen that stakeholder communication has been observed from the different viewpoints, and that gaining an optimal communication model demands a more integrative approach to stakeholders. Kull, Mena and Korschun (2016) proposed an integrative perspective of resource-based view and stakeholder marketing in purpose to provide a theoretical basis to stimulate further research and, in turn, direct managers to actions that can benefit their exchange relationships with the stakeholder network.

### **3. Research design and procedure**

The specific aim of this paper is to determine if there is a match between general managers' commitment to communicate with stakeholders and stakeholders power associated with risk for business operations. The main idea is to get an insight into elements of strategic planning by addressing a research questions: whether managers that show the highest degree of communication commitment to certain stakeholders at the same time consider these stakeholders as the ones that have the highest power? In order to accomplish the goals of the paper cross-section field research was conducted using an online questionnaire survey method. Statistical analysis was done in the SPSS package using descriptive statistics, t-test of independent samples, and correlation analysis.

#### **3.1. Research instruments**

This research focus on stakeholder communication practice within a framework of establishing and managing stakeholder's salience. In the case of this study the stakeholder salience has been observed from the level of manager's commitment to communicate with stakeholders as well as from the power that managers associate with stakeholders. The communication commitment has been observed as a degree to which managers, dedicate their self to communication with the different stakeholders in the practice. Communication commitment has been observed as a common communication practice irrespective of situation, while stakeholder power has been observed as a manager assessment of risk that may arise from the actions of different stakeholders on the long-term financial stability of business.

The first part of the questionnaire refers to the basic information about the companies, and consists of questions about the companies' location, sectors, number of employees, type of ownership, and companies' departments that mostly communicate with stakeholders. The second part of the questionnaire consists several lists of statements within a framework of

establishing stakeholder's salience. The list of statements refers to the questions related to management commitment to communicate with different stakeholders and managers' assessment of stakeholders' power. The level of managerial agreement/disagreement with the offered statements was measured using a Likert scale of 5 degrees.

### 3.2. Sample characteristics

Online research was conducted via professional network LinkedIn. Questionnaires were sent in electronic form to managerial staff in the companies, headquartered in the Federation of Bosnia and Herzegovina. A total number of 140 questionnaires were distributed. A return rate was around 46%, with 65 properly completed questionnaires. The following section describes characteristics of the observed companies in the sample.

**Table 1:** Companies' headquarters locations

Cantons	Frequency	Relative frequency
West Herzegovina Canton	23	35.38%
Herzegovina-Neretva Canton	13	20.00%
Sarajevo Canton	7	10.77%
Central Bosnia Canton	20	30.77%
N/A	2	3.08%
Total	65	100.00%

*Source: Authors' survey*

As it can be seen from the previous table (Table 1), the most companies in the sample are regionally concentrated in three cantons: West Herzegovina Canton, Central Bosnia Canton and Herzegovina-Neretva Canton.

**Table 2:** Companies' sectors

Sector	Frequency	Relative frequency
Services	25	33.33%
Sales	31	41.33%
Production	16	21.33%
Engineering	2	2.68%
Mediation	1	1.33%
Total	75	100.0%

*Source: Authors' survey*

From the table above (Table 2) it can be seen that more than  $\frac{3}{4}$  of the companies from the sample are in the service sectors and less than  $\frac{1}{4}$  are in sector of production, with minor number of companies in other sectors.

**Table 3:** Number of employees

Number of employees	Frequency	Relative frequency
0 - 9	15	23.08%
10 - 49	25	38.46%
50 - 249	11	16.92%
> 250	14	21.54%
Total	65	100.00%

*Source: Authors' survey*

Micro and small enterprises dominate with almost 2/3 of total sample of the companies (Table 3). When it comes to type of ownership, the greatest number of companies are private owned companies (86%) in comparison with public owned companies (14%).

**Table 4:** Departments in the companies that mostly communicate with different stakeholders

Departments	Frequency	Relative frequency
Marketing department	12	16.44%
Sales department	26	35.62%
Public relations department	5	6.85%
Department of Commercial Affairs	18	24.66%
Director/Manager	9	12.33%
Other	3	4.11%
Total	73	100.00%

*Source: Authors' survey*

As it can be seen from the Table 4, sales departments are mostly responsible for communication with different stakeholders, and after that department for commercial affairs and marketing department.

#### 4. Data analysis and interpretation

The table 5 offers an overview of descriptive statistics of stakeholders' salience based on a level of communication commitment. The managers were asked to rate the degree to which they dedicate themselves to communication with the different stakeholders in their everyday management practice.

**Table 5:** Level of managerial commitment to communication with different stakeholders

Different stakeholders	Rank	M	SD
Clients (big buyers/big users)	1	4.63	0.70
Distributors/Subcontracts	2	4.03	0.98
Owners/Co-owners	3	3.98	0.94
Suppliers	4	3.95	0.99
Employees	5	3.95	1.01
Consumers (end consumers, small buyers and users)	6	3.80	1.15
Investors (private investors, banks, etc.)	7	3.57	1.09
Regulatory bodies (inspections and other regulators)	8	3.46	1.03
Local community	9	2.81	1.17
Media	10	2.64	1.27
Political/administrative entities (municipal, county and others)	11	2.57	1.24
Different pressure groups (unions, associations, etc.)	12	2.32	1.19

*Source: Authors' survey*

Observing descriptive statistics of stakeholders' salience based on the level of communication commitment, the eight group of stakeholders are ranked as the ones to whom managers dedicate the higher level of communication commitment. Among them, as the highly ranked stakeholders ( $M \geq 4.0$ ) are: clients and distributors/subcontracts. Right after them, the highly ranked are: owners, suppliers, employees, and consumers. As the last one in that group are: investors and regulatory bodies ( $M \geq 3.5$ ). Other listed stakeholders have been ranked as the one



to whom managers do not give importance in communication ( $M \leq 3.0$ ): local community, media political/administrative entities and different pressure groups such as unions. As it can be seen from the results related to communication commitment, managers in communication give priority primarily to primary stakeholders, but also to a certain number of secondary stakeholders. Stakeholders to whom managers do not attach importance in communication are at the same time stakeholders from the wide organizational environment, including the local community.

The table 6 gives an overview of descriptive statistics of stakeholders' salience based on the stakeholder power. The managers were asked to assess of risk that may arise from the actions of different stakeholders on long-term financial stability of business.

**Table 6:** Level of assessed stakeholder risk – stakeholder power

Different stakeholders	Rang	M	SD
Clients (big buyers/big users)	1	4.12	1.11
Consumers (end consumers, small buyers and users)	2	3.63	1.13
Employees	3	3.48	1.17
Owners/Co-owners	4	3.48	1.17
Distributors/Subcontracts	5	3.37	0.99
Suppliers	6	3.34	1.20
Investors (private investors, banks, etc.)	7	3.21	1.19
Regulatory bodies (inspections and other regulators)	8	3.09	1.09
Political/administrative entities (municipal, county and others)	9	2.75	1.06
Media	10	2.57	1.20
Local community	11	2.15	1.00
Different pressure groups (unions, associations, etc.)	12	2.05	1.12

*Source: Authors' survey*

Observing descriptive statistics of stakeholders' salience, in case of stakeholders' power, the most important stakeholders are ( $M \geq 3.5$ ): clients, consumers, employees, and owners/co-owners. Compared to results related to communication commitment, managers attach importance to fewer stakeholders from a power standpoint. Except in the case of end consumers, managers give the power to influence the financial result of operations exclusively to a small number of primary stakeholders.

The next table shows t-test results (Table 7). T-test was done in order to establish potential differences among companies of different size by the established criteria of stakeholders' salience: level of commitment to communication and level of assessed stakeholder power. Due to the relatively small sample, companies are divided into two groups according to the number of employees. The first group consists of micro and small enterprises (0-49 employees), the second group consists of medium and large enterprises (over 50 employees). Managers were asked to assess the stakeholders' power as a degree of risk that may arise from the actions of different stakeholders providing financial risk for a business (Table 7).

**Table 7:** T-test results

		N	M	SD	p<0.01**
<b>Level of commitment to communication with stakeholders</b>					
Media	0-49	40	2.15	0.89	.000**
	>50	25	3.44	1.39	
Local community	0-49	40	2.50	0.96	.005**
	>50	25	3.32	1.31	
<b>Level of assessed stakeholder power</b>					
Clients (big buyers/big users)	0-49	40	3.80	1.20	.001**
	>50	25	4.64	0.70	
Consumers (end consumers, small buyers and users)	0-49	40	3.33	1.07	.005**
	>50	25	4.12	1.05	
Media	0-49	40	2.13	1.04	.000**
	>50	25	3.28	1.10	
Local community	0-49	40	1.88	0.79	.004**
	>50	25	2.60	1.15	

Source: Authors' survey

Looking at the results of the t-test, it can be seen that there are statistically significant differences in the degree of commitment to communication and the power of stakeholders in only a few cases, in favor of larger companies. Namely, larger companies show a greater degree of commitment to communication and attach more importance in terms of power to a larger range of secondary stakeholders such as: the media, the local community, but also end consumers.

The next table (Table 8) shows correlation analysis between the questions related to the degree of communication commitment (q\_2) and the degree of power of stakeholders (q\_3). The normality test showed that no variable is equal to the normal distribution, therefore Spearman correlation coefficient was selected for further analysis.

**Table 8:** Correlation analysis

<b>Spearman's Correlation coefficient</b>	Clients_3	Employees_3	Distributors_3	Suppliers_3
Clients_2	<b>r = 0.34</b> <b>p &lt; 0.006 **</b> <b>n = 65</b>			
Employees_2		r = 0.02 p < 0.858 n = 65		
Distributors_2			<b>r = 0.46</b> <b>p &lt; 0.000 **</b> <b>n = 65</b>	
Suppliers_2				<b>r = 0.376</b> <b>p &lt; 0.002 **</b> <b>n = 65</b>
<b>Spearman's Correlation coefficient</b>	Investors_3	Owners/ Co-owners_3	Consumers_3	Regulatory bodies_3

Investors_2	$r = 0.40$ $p < 0.001 **$ $n = 65$			
Owners/Co-owners_2		$r = 0.37$ $p < 0.002 **$ $n = 65$		
Consumers_2			$r = 0.31$ $p < 0.012 *$ $n = 65$	
Regulatory bodies_2				$r = 0.58$ $p < 0.000 **$ $n = 65$
<b>Spearman's Correlation coefficient</b>	Political/ administrative_3	Media_3	Local community_3	pressure groups_3
Political/ administrative_2	$r = 0.48$ $p < 0.000 **$ $n = 65$			
Media_2		$r = 0.70$ $p < 0.000 **$ $n = 65$		
Local community_2			$r = 0.48$ $p < 0.000 **$ $n = 65$	
Pressure groups_2				$r = 0.78$ $p < 0.000 **$ $n = 65$

*Source: Authors' survey*

As can be seen from the correlation analysis between the questions related to communication commitment (q\_2) and the power of stakeholders (q\_3) in 11 out of 12 cases there is a positive, statistically significant correlation. Although these are correlations of varying intensity, it can be concluded that managers in their day-to-day management give a greater degree of communication commitment to those stakeholders to whom they attribute the higher power.

## 5. Discussion and conclusion

The stakeholder theory gives an important input in theoretical and practical terms for communication management, but also, stakeholder communication has been observed from different points and different theoretical foundation. When it comes to stakeholder communication in practice, there is no clear boundaries among companies' internal and external communications. On the other hand, different stakeholders inform themselves about companies on different ways and through the different channels. Murphy, Öberseder and Laczniak (2013) see marketing as an external face of a company arguing that different experiences with company through its products, advertising offers, interaction with sales, the company's website, participation in social networks etc., are just different ways in which consumers, but also the general public, gain knowledge about the company. Many companies recognize that different segments show different preferences, but also that stakeholders have different characteristics and requirements (Murphy, Öberseder and Laczniak, 2013). From the management perspective, different stakeholders have different importance and power considering company's goals and issues. In accordance with their goals, managers attach different priority to stakeholders in general and to stakeholder communication in particular.

There is a growing body of research that recently begin to investigate issues of stakeholder communication (Koschmann, 2016). Also, there is a lack of studies that deal with the question of how managers integrate their stakeholder prioritization into the practice (Hall, Millo & Barman, 2015). In order to bridge an identified research gap, the main goal of this research was to get an insight in to managers' practice within a framework of establishing and managing stakeholder's salience. Starting from the instrumental point of view on stakeholder theory, as well as the perspective of communication as a strategic instrument of management, the purpose of this paper was to gain insight into the degree of managerial commitment to communication with different stakeholders. In the case of this study the stakeholder salience has been observed from the level of manager's commitment to communicate to stakeholders as well as from the power that managers associate with stakeholders. Both perspectives provide an insight in the process of stakeholder prioritization in the managers' practice.

Research results show that managers attach different level of salience to different stakeholders in terms of communication commitment as well as in terms of stakeholder power. Even managers communicate with a wider range of stakeholders, at the same time they do not attach importance to communication with the local community and local media. Larger companies show a greater degree of commitment to communication and attach more importance in terms of power to a larger range of secondary stakeholders such as: the media, the local community, but also end consumers. The civil sector is also of no importance in communication of managers, nor are pressure groups such as trade unions. Except in the case of end consumers, managers give the power to influence the financial result of operations exclusively to a small number of primary stakeholders. Given that the sample is mostly small and medium enterprises that are mainly oriented to the local market, it is possible to assume that managers do not view consumers as distant from the organization and thus give them more importance, and the attribute of power to influence financial result of business operations. By the same logic, it is reasonable to expect local businesses to recruit labor from the local community. However, if this assumption is correct, it is quite unusual for managers to attach little importance in communication with the local community, but also little importance in terms of the power to influence the business financial result. Therefore, it is also unusual for managers not to attach importance both in communication and in power to pressure groups such as unions from local community. This can be partly explained by the fact that trade union organization in the region where the sampled companies are headquartered is not a practice, with exception of public sector. Also, due to the high unemployment rate throughout the region, it is logical that unions do not have or have very diminished power.

The results also provide evidence that there is a correlation between managers' communication commitment to stakeholders and the perceived power of stakeholders to influence business for 11 of 12 observed stakeholder groups. However, since there is no statistically significant correlation between communication commitment and power in the case of employees, it can be assumed that the reason is in practice where managers certainly communicate with their employees on a daily basis regardless of not giving them the power to influence long term financial results, but giving them the power in influencing the achievement of the other goals of the organization, which were not the subject of analysis. Also, the power of employees is certainly conditioned by the previously mentioned specificity of the local environment, which is very high unemployment rate.

Generally, it can be seen from the results that there is a strategic framework for assessing the stakeholders' salience observed at the levels of commitment to communication and power of stakeholders. Therefore, it can be concluded that the answer to the research question is positive,

i.e. that there is a strategically oriented communication because managers show a greater degree of commitment to communication with stakeholders to whom they give more power. In case of this study it is clear that managers prioritize stakeholders in the market environment in comparison with stakeholders in wide social environment, which means that instrumental, market centric approach to stakeholders is dominant.

The main contribution of this paper is in evidence that, even in the case of small and medium enterprises, managers provide significant level of strategic approach to communication with stakeholders incorporating stakeholder power perspective in their communication efforts. At the same time, the limitation of this work is in a small sample that does not allow the analysis of differences between companies operating in different sectors but also between different departments that communicate with stakeholders. Recently, stakeholder theory mostly has focused on the importance of engaging stakeholders in long-term value creation (Morsing & Schultz, 2006). On the other hand, Kull, Mena, and Korschum (2016) state that a primary challenge of conceptualization and definitional perspective of value still remains. This research didn't observe the main values that managers expect from their relationship with stakeholders. Therefore, further research should also pay attention to identification of values that companies intent to achieve from stakeholder relationship.

## REFERENCES

- Boesso, G. & Kumar, K. (2009): *An investigation of stakeholder prioritization and engagement: who or what really counts*, Journal of Accounting & Organizational Change, 5(1), pp. 62 – 80. DOI: <http://dx.doi.org/10.1108/18325910910932214>
- Donaldson, T., & Preston, L.E. (1995): *The stakeholder theory of the corporation: Concepts, evidence, and implications*, Academy of Management Review, 20(1), pp. 65–91.
- Ferrell, O.C., Gonzalez-Padron, T. L, Hult, G. T. M., & Maignan, I. (2010): *From market orientation to stakeholder orientation*, Journal of Public Policy & Marketing, 29(1), Spring, pp. 93–96. DOI: <https://doi.org/10.1509/jppm.29.1.93>
- Freeman, R. E. (1984): *Strategic Management: A Stakeholder Approach*, Pitman, Boston.
- Freeman, R. E. (2004). *The stakeholder approach revisited*, Zeitschrift für Wirtschafts- und Unternehmensethik, 5(3), 228-254. DOI: <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-347076>
- Grunig, J. E. & Hunt, T. (1984): *Managing Public Relations*, Fort Worth, TX: Harcourt Brace Jovanovich College Publishers.
- Gurabardhi, Z., Gutteling, J. M. & Kuttschreuter, M. (2005): *An empirical analysis of communication flow, strategy and stakeholders' participation in the risk communication literature 1988–2000*, Journal of Risk Research, 8(6), pp. 499-511. DOI: 10.1080/13669870500064192
- Hall, M., Millo, Y., & Barman, E. (2015): *Who and what really counts? Stakeholder prioritization and accounting for social value*, Journal of Management Studies, 52 (7). pp. DOI: 907-934. 10.1111/joms.12146

- Hillebrand, B., Driessen, P. H., & Koll, O. (2015): *Stakeholder Marketing: Theoretical Foundations and Consequences for Marketing Capabilities*, Journal of the Academy of Marketing Science, 43 (4), 411-428. DOI: <http://dx.doi.org/10.1007/s11747-015-0424-y>
- Jardine, C. (2008): *Stakeholder Participation in Risk Management Decision Making*. In E. L. Melnick & B. S. Everitt (Eds.), Encyclopedia of Quantitative Risk Analysis and Assessment. DOI: 10.1002/9780470061596.risk0012.
- Koschmann, M. A. (2016): *A communication perspective on organisational stakeholder relationships: discursivity, relationality, and materiality*, Communication Research and Practice, 2(3), pp. 407-431. DOI: 10.1080/22041451.2016.1217383
- Kull, A. J., Mena, J. A., & Korschun, D. (2016): *A resource-based view of stakeholder marketing*, Journal of Business Research, 69(12), pp. 5553-5560. DOI: <https://doi.org/10.1016/j.jbusres.2016.03.063>
- Mitchell, R., Agle, B., & Wood, D. (1997): *Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts*, Academy of Management Review, 22(4), pp.853–858.
- Morsing, M., & Schultz, M. (2006). *Corporate social responsibility communication: stakeholder information*, response and involvement strategies, Business ethics: A European review, 15(4), pp. 323-338.
- Murphy, P. E., Öberseder, M., & Lacznik, G. R. (2013): *Corporate societal responsibility in marketing: normatively broadening the concept*, Academy of Marketing Science, 3(2), pp. 86-102. DOI: 10.1007/s13162-013-0046-9
- Scholes, E., & Clutterbuck, D. (1998). *Communication with stakeholders: An integrated approach*. Long Range Planning, 31(2), pp. 227–238. DOI: [https://doi.org/10.1016/S0024-6301\(98\)00007-7](https://doi.org/10.1016/S0024-6301(98)00007-7)
- Tipurić, D. (2006): *Nadzorni odbor i korporativno upravljanje*, Sinergija, Zagreb.
- Van Riel, C. (1995): *Principles of Corporate Communication*, Prentice-Hall, Harlow.
- Welch, M., & Jackson, P.R. (2007): *Rethinking internal communication: a stakeholder approach*, Corporate Communications: An International Journal, 12(2), pp. 177-198 DOI: <https://doi.org/10.1108/13563280710744847>
- Zadek, S. (2007): *The Civil Corporation*, Earthscan, London.

*A scientific paper*

**Tomislav Dagen, Ph. D., Assistant Professor**

Josip Juraj Strossmayer University of Osijek, The Academy of Arts and Culture in Osijek

E-mail address: tomlav.dagen@aukos.hr

**Marijana Majnarić, LLB**

Constitutional Court of the Republic of Croatia

E-mail address: Marijana\_Majnarić@usud.hr

## **VERTICAL SEPARATION OF POWERS AND THE PRINCIPLE OF SUBSIDIARITY AS *condicio sine qua non* OF REGIONAL DEVELOPMENT OF THE REPUBLIC OF CROATIA**

### **ABSTRACT**

*The principle of separation of powers, as it was formed more than two hundred years ago, is today facing re-examination, or at least, the need for its expansion, that is, a different view of this “division”. Social, political, and economic circumstances, i.e., public policies have changed in many ways, including the division of power according to its horizontal dimension, which is influenced by many new and increasingly demanding factors. These factors affect the realization of the separation of powers, namely its division from the concentration in one centre of power, i.e., the dispersion of power towards regional centres by the factors of regional development. It is precisely due to such dispersion and separation of powers that there is an increasing differentiation in society, and consequently numerous autonomous functional systems are emerging that are not tied to the state monopoly and concentration of power in one centre. Power limitation mechanisms are being developed, which are accumulating in local and regional self-government, which represents a vertical separation of powers. All this has led to the fact that the classical doctrine of the separation of powers into legislative, executive, and judicial acquires a new meaning and a new general and possibly economic and political significance. Therefore, the aforementioned facts will be decisive for the authors of this paper to set the goal of the research, which is to present, with the method of analysis and comparison, a decision on the necessity of reforming institutions, determining the level of relevant decision-making, starting at the local level, then at the regional, national, and finally supranational. All of the above is necessary in order to accelerate and improve the decision-making process, achieve greater efficiency and democracy, i.e., to ultimately attain the goal of achieving regional efficiency and, consequently, the overall development of the Republic of Croatia through vertical separation of powers. In accordance with the set goal of the research, the necessity of the “bottom-up” organisation of society through the principle of local self-government arises as a result, which would ensure better decision-making that meets the needs and interests of citizens, where the relationship between the central and local government depends on the way the principle of subsidiarity is applied.*

**Key words:** *Separation of powers, principle of subsidiarity, local self-government, regional development.*

## 1. Introduction

The principle of the “separation of powers”, as articulated in the works of Locke, Montesquieu, and the American constitution-makers from 1787, is facing re-examination, or at least, a need for its expansion, i.e., a different view of that “separation”. Social circumstances have changed in many respects, even in relation to the separation of powers according to its horizontal dimension, which is affected by many new factors. These factors affect the achievement of the separation of powers, i.e., its separation from the concentration in one centre of power. Power limitation mechanisms are being developed, which are cumulated in the local and regional self-government, and that represents the vertical separation of powers. All the aforementioned has led to the classical doctrine about the separation of powers into the legislative, executive, and judicial branch taking on a new meaning (Krbek, 1999, 144-152). It is presumed that the largest number of the most important decisions are to be made at a local, then at a regional, national, and finally, at a supranational level. The necessity of organising the society bottom-up by the principle of local self-government appears indispensable. It ensures higher-quality decision-making that suits the citizen’s needs and interests, whereby the relationship between the central and local government depends on the way the principle of subsidiarity is applied. Subsidiarity is defined as “a real measure of limiting the state’s power” (Lauc, 2010, 23). The aforementioned is a way of taking responsibility and independence in decision-making, whereby the law is the only limit, but not protection within a hierarchical structure. Emphasis is placed on self-organisation, self-education, and self-training, whereby higher levels are not excluded from decision-making, but appear as correctors when lower levels of decision-making fail to make appropriate decisions. The need for coordination and cooperation between different vertical levels of decision-making, without confrontation, appears as a necessity. It is assumed that local and regional governments can respond well to globalisation and Europeanisation processes by such a decision-making method. In other words, “globalisation processes should be juxtaposed with localisation processes” (Lauc, 2010, 23). The Republic of Croatia had to, due to historical and war events and the breakup of Yugoslavia, build the state “*top-down*”; however, we witness that the creation of a modern democratic society (especially since the accession of the Republic of Croatia to the European Union) is not possible without the establishment of a strong democratisation at a local and self-government level, which counterbalances the central national government and is a form of the vertical separation of powers.

## 2. Meaning of the principle of subsidiarity

The principle of subsidiarity, according to literature, was first named by Pope Pius XI in the encyclical *Quadragesimo Anno* in 1931, in which he states: “Just as it is gravely wrong to take from individuals what they can accomplish by their own initiative and industry and give it to the community, so also it is an injustice and at the same time a grave evil and disturbance of right order to assign to a greater and higher association what lesser and subordinate organisations can do” (Grbac, 2009, 15). This principle means assistance of the higher to the subordinate association, to facilitate freedom and development for the subordinate association, which is not abolished by such assistance, but fostered and aided. This would be an approach to the principle of subsidiarity through the prism of the Christian Social Teaching, whereby it rests on three postulates: respect the power of everybody, aid in case of emergency, and deputise in exceptional situations. A secular approach to the principle of subsidiarity would be such that most of the decisions are made at a local level, followed by the regional, national, and supranational level, which could be described as “playing off” powers, both the horizontal and vertical one. The principle of subsidiarity was first explicitly mentioned in Article 4 paragraphs



3 and 4 of the European Charter of Local Self-Government (Act on Ratification of the European Charter of Local Self-Government, Official Gazette – International treaties No 14/97 and 4/08): “Public responsibilities shall generally be exercised, in preference, by those authorities which are closest to the citizen. Allocation of responsibility to another authority should weigh up the extent and nature of the task and requirements of efficiency and economy. Powers given to local authorities shall normally be full and exclusive. They may not be undermined or limited by another, central or regional, authority except as provided for by the law.” The fact that all Member States of the Council of Europe, 47 of them, including the small ones, such as Andorra, Monaco, and San Marino, ratified the European Charter of Local Self-Government, speaks in favour of it being a key legal document that regulates local self-government. It showed the determination of the Council of Europe to introduce an increasingly strong local autonomy, as well as the Member States’ readiness to uphold values in strengthening local democracy. The European Charter of Local Self-Government defines the concept of local self-government and the way of its execution, as well as the method of establishing the borders of local authorities (the change of which is possible with a prior opinion of these authorities and a referendum, where it is permitted by law). It is laid down therein that, wherever possible, the authorities autonomously regulate their internal structure, and the officials within are to be guided by criteria of quality, expertise, and competence. The authorities are supervised in accordance with the legislation in force, whereby the supervision must be limited solely to the compliance with the principle of constitutionality and legality and the compliance with the principle of proportionality. It highlights three fundamental legal-political requirements, upon which the entire local and regional self-government should be built. Those are the principle of subsidiarity, application of the general competence, and the financial independence of local authorities. On those grounds, the *enumeration method* was abandoned, and the *general competence method* was adopted in the separation of powers between the national level and the local self-government. The general competence method states that, in case of a doubt, it should be considered that a power belongs to a local self-government, and national powers must be explicitly stated. The principle of subsidiarity, therefore, assumes the general competence method, which enables initiative, engagement, and adaptability to the needs and moment of individual local communities. It also presumes a goal, towards which the establishment of a modern, contemporary, and democratic local self-government must strive. It strongly acts in favour of decentralisation, whereby it is required that as many as possible public affairs are entrusted to the authorities that are closer to the citizens, and their capacity (financial, personal, organisational, etc.) for administering such affairs is strengthened at the same time. It can be said that the essence of the principle of subsidiarity lies in the fact that authorities will not assume powers if the matter can be efficiently resolved by the citizens and that higher-level authorities will act only when lower levels fail to resolve the matter in a satisfactory way. According to the reasoning of Professor Lauc, the principle of subsidiarity in European integrations signifies a democratic legitimation (i.e., the prevention of centralisation), transparency, and efficiency. By changing its laws and accepting international documents that govern the citizens’ rights to a local self-government, the Republic of Croatia created prerequisites for changing its legislation and harmonising it with the democratic standards expressed by such documents. Changes to the basic rules relating to this field strengthened the elements for implementing political decentralisation, the principle of subsidiarity was accepted, and prerequisites for regarding the local self-government as an instrument of the vertical separation of powers were created. It is therefore necessary, with the existence of formal prerequisites and the recognition of the meaning of decentralisation, in addition to a strong political will and the total of public policies of all political actors, including the consensus of the ruling majority and the opposition minority, to work again on a long-term and planned

strategy, in order to respond to such a great and significant challenge as effective as possible in practice by individual specific engagement of participants.

### **3. Constitutional regulation of the vertical separation of powers and the principle of subsidiarity**

Constitutional amendments of 2000 laid down the fundamentals for the development of local authorities, and fundamental principles for the organisation of local self-government were established. Pursuant to Article 4 of the Constitution (Official Gazette No 124/00 - consolidated text), the government in the Republic of Croatia is organised on the principle of separation of powers into the legislative, executive, and judicial branch; however, it is limited by the constitutional right to a local and regional self-government, whereby the principle of separation of powers is strengthened by its vertical separation. The local self-government is the highest degree of independence in relation to the central national government and the level of government that is closest to the citizens (Smerdel, 2013, 458-501). Furthermore, the Constitution recognizes municipalities and cities as local authorities, and counties as regional authorities, which provides counties with the opportunity to be bearers of development in the regions and to become strong regional centres.

Article 135 paragraphs 1 and 2 of the Constitution substituted the enumeration method in the vertical separation of administrative affairs in the territorial administration system for the general clause method. The presumption in administering local affairs is now on the side of local and regional authorities. The principle of subsidiarity has become a constitutional category contained in Article 135 paragraphs 3 and 4 of the Constitution, according to which affairs of local and regional actions are regulated by law. When assigning these affairs, authorities closest to the citizens will take precedence. In accordance with the European Charter of Local Self-Government, when determining the scope of local and regional authorities, the scope and nature of the affairs, as well as the requirements of efficiency and economy must be considered. The *principle of autonomy* of local and regional authorities is guaranteed under Article 136 of the Constitution, where it is stated that they autonomously regulate, through their statutes, the internal organisation and scope of their bodies. In administering the affairs within their power, local and regional authorities are autonomous, and the supervision of state bodies is limited to the review of constitutionality and legality (Article 137 of the Constitution) – the *principle of review of constitutionality*. Local and regional authorities are entitled to their own revenues, and the state is obliged to provide financial assistance to weaker local and regional authorities in compliance with law – the *principle of solidarity* (Article 138 of the Constitution). The right to a local and regional self-government is constitutionally protected, in accordance with Article 129 of the Constitution. The Constitutional Court therefore decides on constitutional claims against individual decisions by state bodies, bodies of local and regional authorities, and legal persons vested with public authority, when such decisions violate human rights and fundamental freedoms, as well as the right to local and regional self-government, which is a constitutional right. These changes paved the way for achieving and shaping a model of a modern and European local and regional self-government, i.e., a complete application of decentralisation of power and political power occurs, which should affect the entire economic and regional growth of such constitutionally provided authorities.

#### 4. The principle of subsidiarity in European Union affairs

The principle of subsidiarity is central to the European Union's actions and its fundamental principle. The definition of the principle of subsidiarity in the Treaty of Lisbon<sup>1</sup> is as follows: "Under the principle of subsidiarity, in areas which do not fall within its exclusive competence, the Union shall act only if and insofar as the objectives of the proposed action cannot be sufficiently achieved by the Member States, either at central level or at regional and local level, but can rather, by reason of the scale or effects of the proposed action, be better achieved at Union level."\* A conclusion can be drawn therefrom, that the aim of the European Union is that decisions therein are made as close as possible to the citizens, since  $\frac{3}{4}$  of the entire legislation of the European Union is implemented at a local and regional level, which is the highest level of democracy and the totality of a state's development. According to the Treaty of Lisbon, the principle of subsidiarity signifies an allocation of competence between the European Union and Member States. The principle of subsidiarity in the European Union reflects the system of a joint evaluation at four levels – the European, national, regional, and local level – and it is a regulatory criterion for areas not under the exclusive competence of the European Union. According to Article 5 paragraph 3 of the Treaty of Lisbon, the institutions of the Union act in accordance with the principle of subsidiarity if three preconditions have been met: a) the area of action does not fall within the European Union's exclusive competence, b) Member States cannot sufficiently achieve the goals of the proposed action (need), c) the action can be better achieved by the European Union due to its scope and effects. On 25 October 1993, the Council, the European Parliament, and the Commission signed an interinstitutional agreement on the application of the principle of subsidiarity. On 13 May 1997, the European Parliament adopted a Resolution, in which the principle of subsidiarity was established to be a binding legal principle, but its implementation should not obstruct the European Union's exercise of its exclusive competence. By the Treaty of Amsterdam, Protocol (No 2) on the application of the principles of subsidiarity and proportionality was annexed to the Treaty on European Union. According to Protocol (No 2) on the application of the principles of subsidiarity and proportionality, each Member State ensures the complete application of the principles of subsidiarity and proportionality. Prior to proposing the act, the European Commission carries out consultations considering the local and regional aspects of the Member States, and the review of the principle of subsidiarity has become the responsibility of the European Court of Justice. The Treaty of Lisbon recognises active legitimacy of national parliaments and the function of overseeing the principle of subsidiarity of the European Committee of the Regions. For the purpose of correct application of the principle, a monitoring system was introduced in Protocol (No 2) annexed to the Treaty of Lisbon, which for the first time mentions national parliaments in this role when deciding at the European level. Article 6 paragraph 1 of the Protocol (No 2) annexed to the Treaty of Lisbon states that every national parliament or any chamber of a national parliament may, within eight weeks from the date of transmission of a draft legislative act, in the official languages of the Union, send to the Presidents of the European Parliament, the Council and the Commission a reasoned opinion stating why it considers that the draft in question does not comply with the principle of subsidiarity, whereby each national parliament shall have two votes.<sup>2</sup> In the practice of the

<sup>1</sup> Article 5 paragraph 3 cited according to: Lisabonski ugovor Europske Unije, Adrias, Split-Zagreb, 2009

\* Although the European Union is a *sui generis* community of states, a similar separation of competence is also carried out in federations as federal states, i.e., between the federal state and federal authorities.

<sup>2</sup> If the total number of votes exceeds a certain threshold, the Commission must review its proposal and state why the state amends or withdraws it. If the proposal that is subject to the ordinary legislative procedure achieves a simple majority of votes in national parliaments, the Commission must reason why it retains its proposal (in case it does not withdraw or amend it), and the European Parliament and European Council shall consider whether it complies with the principle of subsidiarity.

European Union, the principle of subsidiarity implies determining the best level of governance for policymaking and implementation. Accordingly, the European Union should act only when necessary and if its action offers clear advantages over action at national, regional, and local level. By accepting the legislation of the European Union, the Republic of Croatia prescribed the monitoring of compliance with the principle of subsidiarity (affairs arising from the membership of the Republic of Croatia in the European Union) by the Act on the Co-Operation of the Croatian Parliament and the Government of the Republic of Croatia in European Affairs (Official Gazette No 81/13). The aforementioned act prescribes that in case the European Affairs Committee of the Croatian Parliament receives a draft legislative act from an EU institution, it will determine whether it is compliant with the principle of subsidiarity within seven weeks. If it determines that the legislative act is not compliant with the principle of subsidiarity, the Committee will send a reasoned opinion to the President of the Croatian Parliament, who will deliver it to the Government of the Republic of Croatia and the Presidents of the European Parliament, the Council, and the Commission. "It is important to consider each opinion carefully, and to explain any possible disagreement in detail, because it is always a reasoned opinion on non-compliance with the principle of subsidiarity and proportionality." (Lauc, 2010, 31). The European Affairs Committee of the Croatian Parliament has so far given two such reasoned opinions on 6 October 2014 and 5 May 2016, when it determined that a legislative act of the European Union was not compliant with the principle of subsidiarity.<sup>3</sup> If the European Affairs Committee determines that the legislative act is not compliant with the principle of subsidiarity, it can adopt a reasoned opinion, on the basis of which the Government of the Republic of Croatia will bring the action before the Court of Justice of the European Union in accordance with Article 8 paragraph 1 of the Protocol (No 2) annexed to the Treaty of Lisbon, on grounds of infringement of the principle of subsidiarity and proportionality.<sup>4</sup> The Committee of the Regions was established by the Maastricht Treaty in 1992, and it became operational in 1994. It acts as an advisory body made up of representatives of regional and local authorities from the Member States, and its work takes place in six committees responsible for the following policy areas: territorial cohesion, economic and social policy, education and culture, youth and research, environment, climate change and energy, citizenship, governance, institutional and external affairs, natural resources. The role of the Committee of the Regions is to express views on the legislation of the European Union during the preparation of various reports, i.e., numerous opinions sent to the European Commission. It acts as a guardian of the principle of subsidiarity. It has a right to give its opinion in all cases in which affairs are concerned, which are important to local and regional authorities, be it on its own initiative or upon request. The Committee of the Regions may initiate judicial proceedings if it deems that its opinion was not requested when it should have been or if consultation processes have not been conducted properly. Thus, the Committee of the Regions may request the annulment of legislative acts adopted within the scope of its competence, in terms of non-compliance with the principle of subsidiarity. Studies conducted so far by the Committee of the Regions show that 70% of the legislation of the European Union directly affects the lives of citizens in regions and local communities and it requires that elected representatives are able to incorporate their

---

<sup>3</sup> The reasoned opinion related to the Proposal for a Directive of the European Parliament and of the Council amending Directive 96/71/EC of the European Parliament and of the Council of 16 December 1996 concerning the posting of workers in the framework of the provision of services COM(2016)128 and the Proposal for a Directive of the European Parliament and of the Council amending Directives 2008/98/EC on waste, 94/62/EC on packaging and packaging waste, 1999/31/EC on the landfill of waste, 2000/53/EC on end-of-life vehicles, 2006/66/EC on batteries and accumulators and waste batteries and accumulators, and 2012/19/EU on waste electrical and electronic equipment COM(2014)397 COM (2016)128.

[http://ec.europa.eu/dgs/secretariat\\_general/relations/relations\\_other/np0/docs/croatia](http://ec.europa.eu/dgs/secretariat_general/relations/relations_other/np0/docs/croatia)

<sup>4</sup> According to data obtained from the Croatian Parliament, the European Affairs Committee, the Republic of Croatia has not yet utilised the aforementioned concept (it has not submitted a reasoned conclusion).

views into drafts of European acts (Rubić, 2013, 171). Members of national delegations in the Committee of the Regions, in communication with the Members of Parliaments, agree on the best stances with the aim of protecting the interests of regions, cities and municipalities they come from. This method of action affects the process of political decision-making at the EU level, which contributes to the democratisation and strengthening of the bottom-up policy, and it aims at maintaining and preserving the characteristics and identities of the people, regions, and local communities of the Member States.

### **5. Strengthening the role of the principle of subsidiarity in EU policy – a solution for regional development in Croatia?**

In November 2017, the President of the European Commission, Jean-Claude Juncker, established the Task Force on Subsidiarity, Proportionality and *'Doing Less, More Efficiently'*, asking for three issues to be considered: the role of local and regional bodies in the adoption and implementation of EU policies, the role of subsidiarity and proportionality in the operations of the Union's institutions and bodies, and the potential need for returning competence for specific areas of the policy to Member States. Members of the Task Force *'Doing Less, More Efficiently'* were representatives of the Committee of the Regions and national parliaments. The Task Force considered the role of subsidiarity and proportionality in the work of institutions, the role of local and regional authorities in EU policymaking and whether responsibility for specific policy areas or competencies can be transferred or given back to Member States. As key conclusions it was highlighted, that the adoption of better rules requires a new method of operation, which is based on mutual understanding of subsidiarity and proportionality during the entire policy cycle, more "active subsidiarity" is required, which provides local and regional bodies and national parliaments with a more prominent role and promotes taking on more responsibility for the action of the European Union and a more efficient utilisation of resources with prioritising actions. The European Commission identified the changes it intends to make and invited the European Parliament, the European Council, national parliaments, national governments, as well as local and regional authorities to consider how to respond to them, whereas in the State of the Union Address 2017, the President of the European Commission pointed out: "I want our Union to have a stronger focus on things that matter, building on the work this Commission has already undertaken. We should not meddle in the everyday lives of European citizens by regulating every aspect. We should be big on the big things. We should not march in with a stream of new initiatives or seek ever growing competences. We should give back competences to Member States where it makes sense."<sup>5</sup> Regionalism emerges through returning competences and the provision of the development of democracy in its broadest form, and in the sense and context of the development of modern societies. Increasing regionalisation is strongly influenced by modern globalisation processes that on one hand impose new supranational and universal policies and economic patterns, which in some way diminish and obscure the sovereignty of nation states, and on the other hand, local identity is strengthened, and regional and cross-border cooperation are encouraged. We are witnessing the promotion of regionalism as an essential component of public policies in terms of the concept of a Europe of the regions, whereby regions, not nation states, form the basis of a geopolitical and economic whole based on real and natural (geographical), political, economic, historical, and cultural foundations, which define the region as a specific whole. Regionalism and region signify political action based on decentralisation and the principle of subsidiarity, directed against the action of the centralist way of organising government. It emerges as a natural request

---

<sup>5</sup> The speech by the President of the European Commission, Jean-Claude Juncker, about the state of the Union in 2017 [https://eur-lex.europa.eu/resource.html?uri=cellar:da6e3b4b-d79b-11e8-90c001aa75ed71a1.0020.02/DOC\\_1&format=PDF](https://eur-lex.europa.eu/resource.html?uri=cellar:da6e3b4b-d79b-11e8-90c001aa75ed71a1.0020.02/DOC_1&format=PDF)

for autonomy and greater competences at the regional level, which should ultimately be the key or formula for regional development in all its forms. To achieve this, it is necessary to point out the fact that regional requests strive for increasing autonomy in deciding about the lives of people at a local level, which leads to increasing decentralisation, which should allow more freedom and opportunity to decide on specific issues that can be resolved much better and more efficiently within the local community than by the government at the central (state) level. *European governance – A white paper* of 25 July 2001 is one of the foundations of modern European governance. It describes the way in which the Union exercises the competence given to it by its citizens, it suggests opening up the process of adopting policy measures so that many people and organisations could participate in shaping and adopting policy measures of the European Union, reaching citizens through local and regional democracy, with a focus on a renewed Community method as a model for the future. It highlights the importance of the principle of subsidiarity, while requiring an increased involvement of local and regional authorities in the European Union's policy, which is based on five principles: openness, participation, responsibility, efficiency, and coherence. It proposes partnership and interactions on several levels where national governments involve their regions and cities in decision-making at the European level, and it advocates for associations of regional and local government, and co-operation between those associations and the Committee of the Regions (<http://www.rsp.hr/ojs2/index.php/rsp/article/view/4>). On 1 March 2017, the European Commission presented the *White paper on the future of Europe* in which possible directions for the future of Europe are given, along with five proposed scenarios. The emphasis is on the need for the European Union to agree with all Member States, its institutions, regions and local authorities, social partners, civil society, and universities on how to unite and overcome globalisation in partnership with empowered regions ([https://european-union.europa.eu/priorities-and-actions/actions-topic/regional-policy\\_hr](https://european-union.europa.eu/priorities-and-actions/actions-topic/regional-policy_hr)). In order to accomplish faster and more efficient decision-making, *the concept of multi-level governance has emerged*, which is a reflection of multi-level governance where all levels together shape, propose, implement and monitor policy. Multi-level governance is a system of supranational, national, regional, and local authorities linked to territorial networks. Its vertical multi-level dimension refers to the interdependence of governments operating at different territorial levels, while the governance component is the horizontal dimension of interdependence between governments and government actors (those who are not) at different territorial levels. The regional principle of state organisation has thus been set up as the one that can be a basis for local autonomy, democracy and cooperation, and based on such reflection we cite: "Europe has thus closed a historical cycle from pre-modern regionalism and political particularism, through a modern nation state to a modern supranational community in which regionalism is (re)affirmed as an expression of an increased degree of democracy, a postmodern expression of subnational identity, and a postmaterialist demand for a better quality of life" (Maldini, 2014, 138).

## **6. Regionalisation of the Republic of Croatia – a path towards development?**

For the very notion of regionalisation within the context of vertical separation of power, the role and meaning of the term, as well as public policies that should achieve such a goal, it should first be started at the vertical notion of regional policy, goals and importance set by the European Union. These include: investing in people by facilitating access to employment, education and social inclusion, supporting the development of SMEs, strengthening research and innovation through investment and opening up research-related workplaces, improving the environment through large investment projects, modernising transport and energy production, especially in renewable energy and innovative transport infrastructure to combat climate change

([https://european-union.europa.eu/priorities-and-actions/actions-topic/regional-policy\\_hr](https://european-union.europa.eu/priorities-and-actions/actions-topic/regional-policy_hr)). In that sense, Koprić detects the following preconditions that contribute to the full application of the vertical separation of powers and the totality of the development of local authority, and thus it can be said regional development as well, and that is “...defining public services provided by local authorities or administrative organisations to the community, citizens and entrepreneurs. Once they have defined their core work processes and services, each can measure and demonstrate performance in their “production”. This raises the question of productivity and its measurement” (Koprić, 2010, 378, Maldini, 2014, 140). From the above preconditions that affect primarily local authorities, we can consequently say that the same applies to regional development, and the purpose of regionalisation from the perspective of the state should therefore be to achieve balance and uniformity in the development of all state areas, as well as an improved relationship between the central government with local authorities. Perhaps the meaning and purpose of regionalisation and public policies that should promote regional development are seen in more detail by Maldini, who believes that the benefits of regionalisation can be manifold, and states the following: “From the perspective of regions, its purpose is affirmation and preservation of regional distinctiveness (especially cultural ones) and regional interests (primarily socio-economic, but also political in terms of greater autonomy in relation to state power). From the aspect of the state, the meaning of regionalisation is to achieve mutual balance and equality in the development of all state areas, and an increased connection of central government to the local one.” It is precisely the improved connection of the central government with the local one that not only strengthens the vertical separation of power, but also leads to building “the society or state bottom-up”. However, in real life this is not the case. Regionalisation almost always provokes conflicting views in the actions of national governments, which has always been the subject of yearslong disputes. The latter is especially specific for the Republic of Croatia. In Croatia, the issue of regions and regionalisation was approached ideologically and spontaneously, which led to the territorial division being the result of political and psychological factors, without considering the establishment of a modern self-government. Regional policy in Croatia is facing many problems, the most important of which are unequal regional development (a consequence of uneven economic development, both in the past and especially due to the war), weak administrative capacity (a consequence of high administrative centralisation), and the influence of political actors on local (regional) authorities, which is reflected in the dominance of political over professional criteria, both in the structuring of institutions and human resources (lack of expertise, low efficiency, redundancy). The possibility that mayors and municipal mayors also perform the duty of representatives in the Croatian Parliament is also worth mentioning. This leads to the creation of non-transparent connections that hinder the functioning of local self-government, with preference given to national, ideological, and narrower party interests, rather than local ones. The regionalisation of the Republic of Croatia was carried out in 1992<sup>6</sup> with the establishment of counties as units of regional self-government that perform tasks of regional importance, while cities and municipalities were organised as units of local self-government. This regionalisation took place in specific political and historical circumstances with a strong centralisation and nationalisation. It was impossible for regions (counties) to be in a competitive relationship with the (then newly formed) state,\* so the compromise solution was to establish a larger number of counties that were established more by administrative-political than territorial-cultural criteria, which is the essence of regional development. In the period between 1993 and 2001, the concept of administrative decentralisation was applied, and such decentralisation did not yield the desired results – many prominent experts in administrative law agree on the aforementioned (“The crisis of local self-government is not a transient

---

<sup>6</sup> When the Act on Local Self-Government and Administration (Official Gazette No 90/92) and the Act on Areas of Counties, Towns and Municipalities (Official Gazette No 90/92) were adopted.

phenomenon. In difficult times, hidden problems become apparent. The questions of costs, efficiency of representative bodies, rationalisation of territorial organisation, and efficiency of the system as a whole are raised. In times of progress and seeming economic abundance, serious questions of the meaning and success of such a system were not raised, and the silent degeneration of the system, the fatigue of people and institutions, did not cease. The things that were not questioned or that were opportunistically postponed came to the agenda as a political and economic priority.”) (Kregar, Đulabić, 2011, 5). If decentralisation is conceptually described as the same means of the vertical separation of powers and limitations of political power and an organisational model of increasing the efficiency of public administration (Kregar, Đulabić, 2011, 1), in the Croatian legal-historical, comparative, and analytical review of the vertical and horizontal separation of powers, with particular emphasis on regionalism and regional development, it should be noted that a period of decentralisation followed from 2001 to 2013. The basis for the aforementioned was formed by constitutional changes in 2000, when the principle of subsidiarity and solidarity, the general clause, and the guarantee of a wide self-governing scope of local authorities were accepted. However, real changes did not occur until 2008 with the adoption of the European Charter of Local Self-Government, when regionalism and cross-border co-operation ceased to be seen as a threat to the country’s sovereignty and integrity (Koprić, 2010, 666-667). With the accession of the Republic of Croatia to the European Union (1 July 2013), the phase of functioning within the European multilevel administrative area with continuous Europeanisation begins. Europeanisation is primarily reflected in opening up a perspective on European Union funds, strengthening the capacity of local self-government systems, and adapting to existing mechanisms and standards of the European Union. A precondition for Croatia’s accession to the European Union was the acceptance of the entire *acquis communautaire* of the European Union, part of which was the harmonisation of statistical spatial (territorial, regional) units according to the NUTS (French: *Nomenclature des unités territoriales statistiques*) classification.<sup>7</sup> This division was made exclusively for statistical purposes and for development planning, and does not presume the legal-political or administrative division of a country, which would be a solution to the real development in the Croatian case. For example, NUTS data form the basis for decisions on the level and type of Structural Funds that would finance development programs in each territorial unit. The beneficiaries of these funds are regions, not countries, which is why regionalisation as a process of administrative-statistical division is very important, since its implementation depends on the structure of statistical data on the basis of which support programs are created for individual regions/administrative units. Precisely such a fact, or as it could be said, a common and nationally valid issue together with the importance of recognising the role and importance of regions, is recognised by Kregar, who states: “European policy of harmonious development of regions and consideration of regional specifics is not only a political platform for regionalisation, but also relevant for the technical functioning of the management system” (Kregar, Đulabić et al., 2011, 20). The Republic of Croatia has initiated a statistical regionalisation and has so far reported three variants of division into statistical regions (whereby a fourth variant has also been proposed). In the 2005 version, four statistical regions were reported, consisting of Central Croatia, Region of the City of Zagreb, Adriatic Croatia, and Eastern Croatia. In 2007, three NUTS II regions were defined, which were accepted by the European Commission. These included the following: Northwest, Pannonian, and Adriatic Croatia. However, such a division exhibited shortcomings arising from the uneven socio-

---

<sup>7</sup> The Nomenclature of territorial units for statistics, known by the acronym NUTS, is a statistical classification used to collect, process, analyse, and publish statistical spatial data at the level of the European Union. The intention of this system is the administrative and statistical division of the EU territory into regions, regional and subregional units. The most important criterion for establishing a NUTS level is population size. <https://razvoj.gov.hr/vijesti/predstavljena-studija-o-izradi-prijedloga-nove-nuts-2-klasifikacije/3945>



economic development of Croatian regions and their components. Consequently, in 2012, the Government of the Republic of Croatia and the European Commission established a new statistical division into two regions, namely Continental Croatia (which includes Northwest and Pannonian Croatia) and Adriatic Croatia. In January 2019, the survey Proposal of a new NUTS 2 classification in the Republic of Croatia was drafted, and the new division of the Republic of Croatia into four regions (with three proposed variants) was also considered. In accordance with the Act on regional development of the Republic of Croatia (Official Gazette No 147/14 and 123/17), regional authorities are classified into four groups, whereby local authorities are classified into eight groups according to the development index (<https://razvoj.gov.hr/o-ministarstvu/regionalni-razvoj/indeks-razvijenosti/112>, <https://www.zakon.hr/z/239/Zakon-o-regionalnom-razvoju-Republike-Hrvatske>). This form of regionalisation was implemented primarily due to the need to adapt to the framework of the European Union. The regionalisation of the Republic of Croatia implemented in this way is certainly significant, however, it is not sufficient in itself if the aim is to create a modern, democratic, and decentralised local and regional self-government. Therefore, in terms of regional development, which includes decentralisation and further development of the vertical separation of powers, as well as identifying factors that would lead to the full affirmation of the aforementioned, the 2030 Croatian National Development Strategy should be cited at the end of this section: “A more balanced regional development requires the adjustment of economic policies to individual regions, their different needs and potentials, including an appropriate balance between investment in physical capital, strengthening institutions, and investment in human capital.” (2030 Croatian National Development Strategy (Official Gazette No 13/2021))

## 7. Conclusion

The territorial structure of every European country, including Croatia, is certainly important for its functioning and development, and especially its adjustment to increasingly demanding European trends. For the last 20 years or more, Croatia has had a territorial organisation in force, and it can be rightfully said that it has fulfilled its function. The time has come to establish a new one that will be able to respond to the needs and challenges of globalisation effectively, and especially to implement EU benchmarks. Considering the state of local and regional self-government in the surrounding countries, it is concluded that Croatia is far behind with its territorial reform, which also (in)directly affects demographic indicators. When designing a new territorial organisation, attention should be paid to the vertical separation of powers based on the principle of subsidiarity and true decentralisation. It is necessary to start building a bottom-up society (with a bottom-up approach) in accordance with its own values and interests, while harmonising the interests of the local community and the nation state, all to achieve optimal social development. This, of course, is not possible without strong political will devoid of personal and a party's aspirations. The issue of Croatia's territorial reorganisation must cease to be the mantra of all government programs with no real implementation, as well as part of the pre-election promises that remain promises even after the elections. Regional policy should cease to be understood as something implemented to satisfy the Brussels bureaucracy but should instead be understood as something necessary for a true, real, and future progress and development of the state and society. Regional policy and the development policy of the Republic of Croatia through regions should be considered through the prism of full implementation of the National Security Strategy of the Republic of Croatia, within the context of balanced regional development, whereby regional policy pertains not only to economic aspects, but also to aspects of national security (National Security Strategy of the Republic of Croatia, Official Gazette No 73/17). Therefore, in order to achieve the aforementioned, it is necessary to truly, and without burdens of the past, see the reality and fact of the current

unsustainable situation, which will ultimately have far-reaching consequences if immediate changes are not initiated. These will build a better state, a happier society and enable participation in the life of the European Union.

## REFERENCES

- Bakota, B. (2005): *Problemi primjene načela supsidijarnosti (podrednosti) u sklopu oblikovanja zajedničkog institucijalnog modela europske lokalne i regionalne samouprave*: doctoral thesis, Faculty of Law in Osijek
- Đulabić, V. (2018): *Lokalna samouprava i decentralizacija u Hrvatskoj, Zagreb*
- Đulabić, V. (2007): *Regionalizam i regionalna politika*, Hrvatska javna uprava, Pravni fakultet u Zagrebu
- Đulabić, V. (2004): *Neki razvojni procesi uređenja lokalne samouprave u Republici Hrvatskoj*, Hrvatska javna uprava
- European Charter of Local Self-Government (Act on Ratification of the European Charter of Local Self-Government, Official Gazette – International treaties No 14/97 and 4/08)
- Gelo, J. i Gelo. T. (2012): *Teritorijalni ustroj u funkciji razvoja gospodarstva*, Ekonomski fakultet sveučilišta u Zagrebu, Zagreb
- Grbac, J. (2009): *Političko-društveni vid supsidijarnost*, Bogoslovna smotra, p. 15
- Grbac, J. (2011): *Socijalni i gospodarski vid supsidijarnosti, mogućnosti i potrebe u Hrvatskoj*, Bogoslovna smotra
- HAZU, (2012): *Ustavna demokracija i odgovornost*, round table, Zagreb
- Croatian Parliament, European Affairs Committee
- Hrženjak, J. (2009): *Napomene o lokalnoj i regionalnoj samoupravi u Republici Hrvatskoj*, Hrvatska i komparativna javna uprava
- Ivanišević, S. (2009): *Stupnjevanje lokalnih samoupravnih jedinica*, Hrvatska javna uprava
- Koprić, I. (2018): *Europeizacija hrvatske lokalne samouprave*, Zagreb, Institut za javnu upravu
- Koprić, I. (2004): *Djelokrug lokalne i područne (regionalne) samouprave*, Hrvatska javna uprava
- Koprić, I. (2010): *Karakteristike sustava lokalne samouprave u Hrvatskoj*, Hrvatska javna uprava, p. 378

Koprić, I. (2014): Zbornik radova Pravnog fakulteta u Splitu, (online); ***Europeizacija hrvatske javne uprave***, Pravni fakultet Sveučilišta u Zagrebu, Suvremena javna uprava, knjiga br. 28, Zagreb

Krbek, I. (1943): ***Dioba vlasti***, Hrvatski izdavački bibliografski zavod, Zagreb, pp. 7-19

Kregar, J., Đulabić, V. i ostali, (2011): ***Decentralizacija***, Centar za demokraciju i pravo Mika Tripalo, Zagreb, pp. 5 and 20

Lauc, A. (2000): ***Metodologija društvenih znanosti***, Pravni fakultet Osijek

Lauc, Z. (2016): ***Moralitet, legitimitet, legalitet – Zbirka radova***, Osijek

Lauc, Z. (2012): ***Kako pisati, čitati, tumačiti i primjenjivati Ustav, Ustav i demokracija – strani utjecaji i domaći odgovori***, HAZU, Zagreb

Lauc, Z. (2010): ***Odnos države i samouprave promatran kroz načelo supsidijarnosti***, Anali Zavoda za znanstveni i umjetnički rad u Osijeku, p. 23

Lauc, Z. (2010): ***Acquis Vijeća Europe i hrvatska lokalna samouprava***, Ustavne promjene RH i EU, Pravni fakultet, Split

Lauc, Z. (1998): ***Autopoietično oblikovanje lokalne, regionalne, nacionalne i nadnacionalne zajednice***, Sveučilišta Augsburg i Osijek

Lauc, Z. (2001): ***Decentralizacija - uvjeti optimalizacije lokalne i regionalne samouprave***, Hrvatska javna uprava

Lauc, Z. (2014): ***The Vertical separation of powers***, Oslo, Norway

Lauc, Z. (2010): ***Okrugli stol, Reforma lokalne samouprave***, Znanstveno vijeće za državnu upravu, pravosuđe i vladavinu prava, HAZU, Zagreb

Lauc, Z. (1999): ***Promicanje, i provedba načela Europske povelje o lokalnoj samoupravi, osobito načela supsidijarnosti***, Hrvatska javna uprava

Lauc, Z. (1998): ***O ustavnoj demokraciji***, Politička misao

Lisabonski ugovor Europske Unije, Adrias, Split-Zagreb, 2009.

Maldini, P. (2014): ***Politički i administrativni aspekti regije***, Sveučilište u Dubrovniku, p. 138

Marasović, Š. (2008): ***Supsidijarnost kao teološki problem***, Bogoslovna smotra, Split

Moreno, A.-M. (2012): ***Local Government in the Member States of the European Union: A Comparative Legal Perspective***, National Institute of Public Administration, Madrid

2030 Croatian National Development Strategy (Official Gazette No 13/2021)

Novosel, K. (2018): Znanstveno-stručni skup Instituta za javnu upravu Europeizacija hrvatske lokalne samouprave: *standardi i europske povelje o lokalnoj samoupravi i hrvatska lokalna i regionalna samouprava*

Decision of the Croatian Constitutional Court No U-II-433/94 of 2 February 1995

Panara, C. (2016): *Multi-Level Governance as a Constitutional Principle in the Legal System of the European Union*

Poglavlje B. „**Dobrobit i prosperitet građana Ekološka Hrvatska i razvoj snažnoga i održivoga gospodarstva**“, Strategija nacionalne sigurnosti Republike Hrvatske, („Narodne novine“, br. 73/17) [Chapter B. “Welfare and prosperity of citizens Ecological Croatia and the development of a strong and sustainable economy”, National Security Strategy of the Republic of Croatia (Official Gazette No 73/17)] Znanstveno-stručni skup Instituta za javnu upravu Europeizacija hrvatske lokalne samouprave: standardi i europske povelje o lokalnoj samoupravi i hrvatska lokalna i regionalna samouprava

Pusić, E. (1999): *Država i državna uprava*, Pravni fakultet u Zagrebu, pp. 144-152

Pusić, E. (2002): *Upravljanje u suvremenoj državi*, Društveno sveučilište u Zagrebu

Rubić, M. (2013): *Odbor regija u oblikovanju EU zakonodavstva*, Jesenski i Turk, p. 171

Smerdel, B. (2013): *Ustavno uređenje europske Hrvatske*, Zagreb, p. 458-501

Smerdel, B. i Gardašević, Đ. (2011): *Izgradnja demokratskih ustavnopravnih institucija Republike Hrvatske u razvojnoj perspektivi*, izabrani radovi, (urednici Branko Smerdel i Đorđe Gardašević, istraživački tim Biljana Kostadinov, Robert Podolnjak, Mario Jelušić, Sanja Barić, Đorđe Gardašević, Ana Horvat Vuković)

National Security Strategy of the Republic of Croatia (Official Gazette No 73/17)

Constitution of the Republic of Croatia (Official Gazette No 124/00 - consolidated text)

Vrban, D. (2011): *Uprava, dobro vladanje i autopoiesis*, Pravi fakultet u Osijeku

Act on Local Self-Government and Administration (Official Gazette No 90/92)

Act on Areas of Counties, Towns and Municipalities (Official Gazette No 90/92)

Act on Ratification of the European Charter of Local Self-Government (Official Gazette – International treaties No 14/97 and 4/08)

Law on regional development of the Republic of Croatia (Official Gazette, No 147/14 and 123/17)

Act on the Co-Operation of the Croatian Parliament and the Government of the Republic of Croatia in European Affairs (Official Gazette No 81/13)

[http://ec.europa.eu/dgs/secretariat\\_general/rerelations/rerelations\\_other/npo/docs/croatia](http://ec.europa.eu/dgs/secretariat_general/rerelations/rerelations_other/npo/docs/croatia)  
(accessed 20 September 2019)

<https://eur-lex.europa.eu/resource.html?uri=cellar:da6e3b4b-d79b-11e8-90c0> (accessed 20 September 2019)

<http://www.rsp.hr/ojs2/index.php/rsp/article/view/4> (accessed 22 September 2019)

[https://ec.europa.eu/commission/sites/beta-political/files/reflection-paper-globalisation\\_hr.pdf](https://ec.europa.eu/commission/sites/beta-political/files/reflection-paper-globalisation_hr.pdf)  
(accessed 22 September 2019)

[https://european-union.europa.eu/priorities-and-actions/actions-topic/regional-policy\\_hr](https://european-union.europa.eu/priorities-and-actions/actions-topic/regional-policy_hr)  
(accessed 25 September 2019)

<https://razvoj.gov.hr/vijesti/predstavljena-studija-o-izradi-prijedloga-nove-nuts-2-klasifikacije/3945> (accessed 25 September 2019)

<https://razvoj.gov.hr/o-ministarstvu/regionalni-razvoj/indeks-razvijenosti/112> (accessed 10 February 2022)

<https://www.zakon.hr/z/239/Zakon-o-regionalnom-razvoju-Republike-Hrvatske> (accessed 10 February 2022)

<https://razvoj.gov.hr/o-ministarstvu/regionalni-razvoj/indeks-razvijenosti/112> (accessed 10 February 2022)

<https://www.zakon.hr/z/239/Zakon-o-regionalnom-razvoju-Republike-Hrvatske> (accessed 10 February 2022)

*A scientific paper*

**Teresa Dieguez, Ph. D., Associated Professor**  
Polytechnic Institute of Cávado and Ave, Portugal  
E-mail address: [tdieguez@ipca.pt](mailto:tdieguez@ipca.pt)

**Paula Loureiro, Ph. D., Associated Professor**  
Polytechnic Institute of Cávado and Ave, Portugal  
E-mail address: [ploureiro@ipca.pt](mailto:ploureiro@ipca.pt)

**Isabel Ferreira, Ph. D., Associated Professor**  
Polytechnic Institute of Cávado and Ave, Portugal  
E-mail address: [iferreira@ipca.pt](mailto:iferreira@ipca.pt)

**Mario Basto**  
Polytechnic Institute of Cávado and Ave, Portugal  
E-mail address: [mbasto@ipca.pt](mailto:mbasto@ipca.pt)

## DIGITAL & ENTREPRENEURIAL MINDSET TRANSFORMATION

### ABSTRACT

*Digital Transformation introduces fast changes and revolutions in a people's way of living. Economic market globalization is a decisive factor for a country's sustainability, appearing technology everywhere and everything seems centered on machines and processes. Companies must survive and, more than ever, maintain or gain a competitive advantage. The literature is rich in the argument that the Human Resources of an organization are its main asset. However, the world is exchanging and Covid19 is becoming the accelerator of one of the most disruptive workplace transformations in recent years: new rules, new job profiles, new skills are needed, and Human Resources must be prepared for this alteration. How to develop the required labor force? More than ever, it is essential to recognize how to encourage students and teachers to bring Higher Education closer to the labor market and increase the awareness of tomorrow's leaders in the need of generating a sustainable future. This paper focuses its research on the study of the perceptions of master's students at the Polytechnic Institute of Cávado and Ave, based in Portugal. For the empirical study, it was used a questionnaire based on the 21<sup>st</sup>-century competences namely: Social, Business, Industry-specific, and Entrepreneurial self-efficacy. The study allows concluding that most IPCA students have a positive perception regarding the relevance of non-cognitive skills even if the cognitive skills are also important for digital transformation.*

**Key words:** *Competences, Digital Transformation, Entrepreneurship, Higher Education, Skills.*

### 1. Introduction

In recent years the global economy has become more aggressive (Dieguez, Loureiro & Ferreira, 2021 a), and it is not enough today to produce faster, cheaper, and with the highest quality than competitors. Society is at a new crossroads (Flores-Guevara & Ortega-Luna, 2022) while triggering a disruptive and radical transformation in the industrial environment, mostly owed

to the emergence of conceptions and technologies based on the fourth industrial revolution (Sendler, 2013). These new challenges are highlighted especially when SMEs are at the centre of the political agenda and scientific research (Rauch et al, 2019) and European Commission actively supports SMEs by providing direct and indirect financial support to increase innovation capability through Horizon 2020.

Industry 4.0 technologies may provide great opportunities for SMEs to increase their competitiveness and, according to many academic and market players, they are likely to be the big winners of the change: they are smaller and if flexible enough, they can implement digital transformation faster than large companies, and easily can develop and implement new Information Technology (IT) structures (Deloitte, 2017). However, the digital transformation unprecedented rate stresses people and societies, showing research that employees and organizations are more overwhelmed than ever (Hodson et al, 2014). The gap in business performance potential is increasingly between technological change and business productivity due to the slower linear rate that has been adopted by humans vs the disruptive rate forced by IT (Friedman, 2017). And this gap can be relativized through how “businesses organize, manage, develop, and align people at work (Deloitte, 2017, p. 3). A new set of digital business and working skills is needed. Companies should focus more seriously on career strategies, and talent mobility, as well as organizational ecosystems and networks, to enable both individual and organizational reinvention. Not only reskilling or planning new and better careers are needed. Organizations must care about leadership, structures, variety, technology, and the overall experience in new and exciting ways (Deloitte, 2017).

Higher Education plays an important role in laying the foundations for the development of competences for sustainable entrepreneurship, competences that go beyond disciplinary knowledge and encompass skills, knowledge, and attitudes oriented towards a holistic and sustainability-driven approach (Dieguez et al, 2021). This paper focuses its research on the study of the perceptions of master’s students at the Polytechnic Institute of Cávado and Ave, based in Portugal. It has four sections. It begins with a literature review, followed by a brief presentation of the research used methodology. After some descriptive data, the k-means clustering method was applied to the results of a survey answered by such students and allowed for the identification of various student profiles, finally, the conclusions are shared, as well as limitations and possible future research.

## **2. Literature Review**

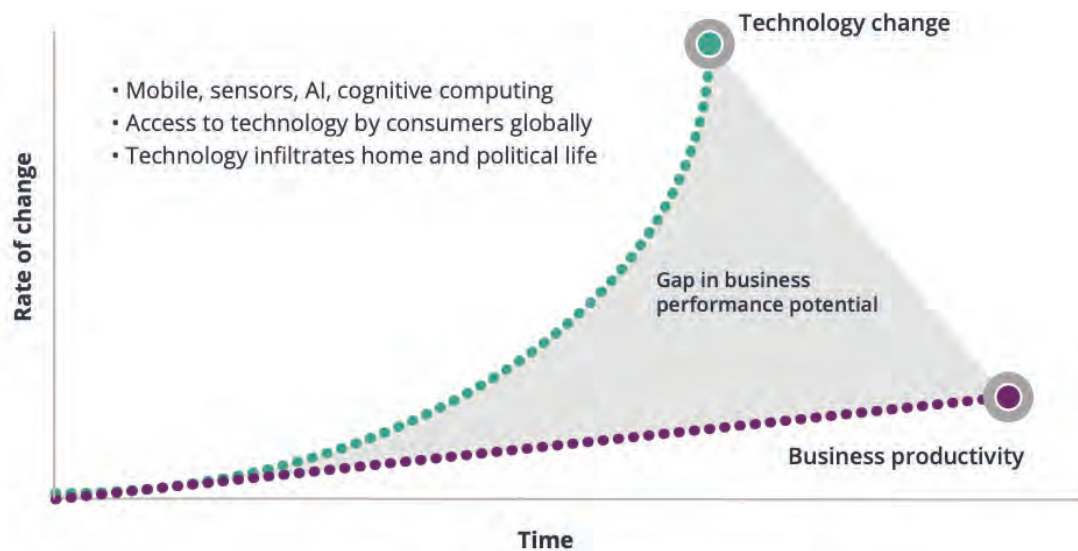
### **2.1. The future of work: challenges for all**

Compelled by the acceleration of connectivity and cognitive technology, the nature of work is changing. As Artificial Intelligence systems, robotics, and cognitive tools grow in complexity, practically every job is being reinvented, generating what many call the “augmented workforce”. Even if numerous studies have a non-direct connection between technological advances and unemployment (World Economic Forum, 2020), however, if automation will put an end to some of the people’s today functions, it is expected that future jobs will promote a need for recruitment in areas such as the green economy, cloud computing, big data, and artificial intelligence, among others (Schwab, 2016).

While the adoption of robotics is speedily occurring, companies to reskill and reorganize around automation are still backside. Fifty years after the formulation of Moore’s law, management, and computing power remain highly developed, with compelling improvements in robotics and machine learning while companies slowly follow this trend (Figure 1). Cognitive tools to augment, and in some cases replace, knowledge work will work to accelerate and convert commonly arranged and accepted. The future of work, workforce and workplace subjects will

sooner come one of the main concerns and agenda of Human Resources and business leaders. This challenge requires major cross-functional attention, effort, and collaboration. As this trend assembles speed, organizations must reconsider how they design jobs, organize work, and plan for future growth (Deloitte, 2017).

**Figure 1:** What appears to be happening



Source: Deloitte, 2017

Nowadays, around 3.5 million people effectively use the Internet. Nonetheless, it is only half of the planet Earth (Portugal INCoDe.2030, 2021) and Digital Transformation is becoming a pertinent issue for businesses around the world (Van der Bel, 2018) and one of the most crucial topics for business leaders, researchers, and analysts (Andersson et al, 2018). The changing process itself is complex (Jørgensen, 2015), depending primarily on the success of projects not on technology, but somewhat on successful transformation projects that depend mainly on people (Dickerson, Rider & Chaffin, 2004). Trends point to scenarios where successful organizations work in an open innovation environment (Sivam et al, 2019), approaching faster solutions, formally involving not only the organisational structure but also the several stakeholders (Andersson et al, 2018).

Any endeavour to initiate change encompasses substantial challenges for leaders at all levels, as well as for the organisation itself (McConnell, 2018). Resistance is an ordinary reaction to change, as change usually involves moving from the known to the unknown (Coghlan, 1993). Successfully managing organisational resistance and addressing the human capital perspective on change is perhaps more relevant than managing other aspects of the Digital Transformation challenge and is decisive to the successful accomplishment of change (Scholkmann, 2021). In this context, education and training are central drivers of the development of societies (Dieguez, Loureiro & Ferreira, 2021a).

## 2.2. Entrepreneurial Mindset for Digital Transformation

Being entrepreneurial is crucial for all organizations that want to go ahead with success. It involves value creation and the acceptance that discovery, evaluation, and exploitation of opportunities involve uncertainty (Soltanifar, 2016). Being entrepreneurial is the labeling characteristic of an entrepreneur whose dreams are greater than their resources (Pinchot, 1985). If digitalized environments open new possibilities and access to borderless resources, a mindset shift and a digital strategy creation are required (Soltanifar & Smailhodžić, 2021). In this sense,



a new entrepreneurial mindset emerges as an answer to act proactively and innovatively to face challenges, competitors, and other stakeholders.

All these changes generate uncertainty, risks, and fears while opening huge opportunities (Kooskora, 2021). If innovation starts with the right mindset (Meyers, 2016), an uncertain environment triggers an entrepreneurial mindset (McGrath & MacMillan, 2000) able to be orientattowardrds entrepreneurial activities and outcomes (Financial Times, 2019), often in the search of opportunity with rare, scarce, and uncontrolled resources. People within the dynamic process of vision, change, and creation (Kuratko & Hodgetts, 2004). Digital transformation opens a business environment where people with an entrepreneurial have great opportunities to enter big marketplaces and provide innovative, often web- or data-based solutions, new products, and services. Nevertheless, only those who are talented to launch, managing growing, anpromoteeee new businesses will become successful entrepreneurs (Humbert & Drew, 2010). The digital mindset requires open-mindedness (Kerr, 2019) and the digital world is not about technology, but especially about people (Becerra, 2017). This means that, more than ever, leadership today is no longer hierarchical (Dubey, 2019) and great leaders know that people can realize great things when they are driven by a solid drive and discover work meaningful (Walumbwa, Christensen & Muchiri, 2013). Likewise, when organizations implement a learning organization mindset, the culture of learning, failures, and experiments lead to inventions and innovations. Digitally minded and entrepreneurial leaders deliver confidence and energy minds while inspiring them with an inclusive vision. Digital leaders are flexible and can handle pressure and iterative processes while taking decisions with agility (Dubey, 2019). They also can understand the value of diversity, open-mindedness, inclusion, and the challenges of technological disruptions (Claeys-Kulik, Jørgensen & Stöber, 2019).

### 2.3 Skill-Based Entrepreneurship Education

The conception of “skills” is linked with knowledge, understanding, and capability of doing something (European Commission, 2019). This means that skills are not a genetic predisposition, but a process of accommodation of knowing how to do. They are of strategic importance for employability, growth, innovation, and social cohesion (Europarl, 2017). They can be developed in formal education with *curricula*, programs, training sessions, workshops, laboratory work, co-creation projects, business visits, in individual or group learning approaches, among others (Cinque, 2016). In turn, informal learning can help the development of skills, attitudes, and values by promoting the application of the capacities of trainees in problem-solving in non-academic situations, according to the real needs that are not a priori structured (Bamber, 2013).

Future requires new skills, skills that definitively influence the bases of the education system (World Economic Forum, 2020). It will have to move from a curriculum and evaluation-centered model to a pedagogical system that stimulates critical, reflective, creative, and adaptive thinking and reinforces cognitive and computational skills, predominantly in information technology, data analysis, and cloud computing (Dieguez, Loureiro & Ferreira, 2021 a). Entrepreneurship can be seen as a means of transitioning from surviving to thriving (Devece, Peris-Ortiz & Rueda-Armengot, 2016; Obschonka et al, 2016) and Higher Education Institutions (HEI) can now fulfill their mission of teaching entrepreneurship (Maritz, Perenyi, de Waal & Buck, 2020). However, the main purpose of most entrepreneurship education rests on the development of entrepreneurial skills (Dieguez, 2017; Dieguez, 2021) which, agreeing to Lans, Blok, and Wesselink (2014), is built on opportunity, social relationships, management, industry specificity, and self-efficacy. The first three skills are soft skills (non-cognitive entrepreneurial skills) and the last two skills are hard skills (cognitive entrepreneurial skills).

Opportunity is related to the ability to create and identify opportunities (Venkataraman & Shane, 2000). More than just an opportunity recognition, it centers on the systematic development of adequate solutions to problems, evolving perception, interpretation, and construction (Lans, Blok & Wesselink, 2014). Social relationship/competence refers to interactions with others (Baron & Tang, 2009; Gan & Cheng, 2017), enhancing the potential to foster and generate new ideas, resources, legitimacy, and contacts, among others. Business competence involves the ability to manage, lead, develop, organize, plan and coordinate, either during exploration or exploitation phases (Mitchelmore & Rowley, 2010). Industry-specific competence is related to technical knowledge (know-how) and market knowledge (know-what). Entrepreneurial self-efficacy is a broad domain of meta-level competencies, comprising constructs nearest conceptual links with more motivational psychological individual-level constructs. The ability to cope with negative emotions and pressures while being incessantly exposed to an entrepreneurial environment (Gist & Mitchell, 1992; Shepherd, 2004), can be achieved, changed, and improved (Barz et al., 2016), and to supplementary assume their performance via developing originality, resourcefulness, and other skills (Gist & Mitchell, 1992; Fugida, 2017).

### 3. Empirical Evidence and Results

#### 3.1 Methodology

The phenomenon under study in this article is defined as the master's students' perception of how soft skills are worked and developed by the *curricula* of the master's courses they attend at the Polytechnic Institute of Cávado and Ave (IPCA), based in Portugal. IPCA is a young Higher Education Institution, with 25 years of existence and 5 Higher Schools, namely: Management, Technology, Design, Technical Professional, Hospitality and Tourism. The IPCA offers 14 bachelor's degrees, 16 master's degrees, 11 postgraduate courses and 35 Technical Professional Courses.

In this context, under the perspective of the postivist paradigm, the observation of this phenomenon aims at collecting data to analyse, according to the students' perception and experience, if the *curricula* and pedagogies of the different courses are effectively promoting the development of their soft skills. This analysis also seeks to identify key competences to redesign some *curricula* or pedagogies to face challenges and prepare students to be successful in the future. To concert these objectives, quantitative research of descriptive nature is adopted, using the questionnaire for data collection (Grégoire, Lachance & Taylor, 2015) fundamental to find clusters of students with similar entrepreneurial skills. In the present study two-step clustering was the selected technique. In first step the cases are divide in small sub cluster and then, in the second step, a hierarchal clustering algorithm is used to group the cluster.

The postulation is that entrepreneurs and leaders act on building the future they believe in, developing and creating opportunities in line with their convictions and dreams (Karp, 2006). Based on emotions and perceptions about the reality that underlies the situations they have experienced, their subjective choices for entrepreneurial value creation, and their ability to understand the potential effects of those choices (Alvarez & Barney, 2006; Karp, 2006; Grégoire, Lachance & Taylor, 2015). The population comprises all the master's students of IPCA, with a total of 581 students. The instrument for data collection was designed by adapting scales validated in the empirical and conceptual literature. The good practices that are intended to share in this article are linked with current methodologies used in IPCA for a better understanding what the perceptions of the demand for digital workforce competencies are. For this purpose, a questionnaire was prepared with 2 main areas namely socio-demographic data and students' perceptions. It was used a Likert scale from 1 to 5, representing from less to maximum levels. The questionnaire was sent by google form in February 2021 and has been

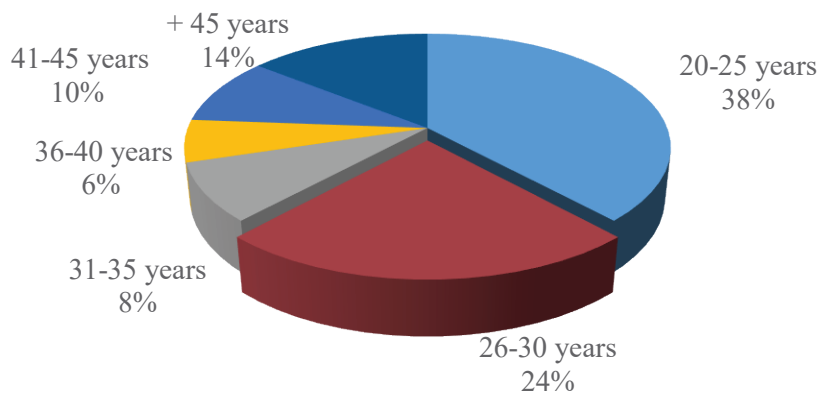
previously evaluated by 3 students and 2 academic experts. After one week, data were collected and analysed.

### 3.2. Results

#### 3.2.1. Socio-demographic data

The sample is composed of 84 students, representing 15% of all the students attending the IPCA Masters in February 2021. The female gender is the most represented in the survey, with 71.4% of the answers. The great majority has between 20 and 25 years old (38%), even if there are students of all ages, as we can see in Figure 2.

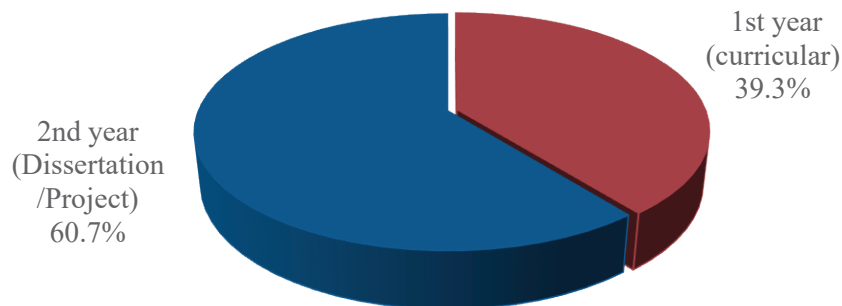
**Figure 2:** Age of inquired students



Source: Authors

Respondents are mainly from Management (57.1%), followed by Technology (22.6%). The Design represents only 9.5%. The Master's areas are related to Audit, Accounting and Finance, Digital Design, Product Design and Development, Electronic and Computer Engineering Computer Science, and engineering. Engineering in Digital Game Development. Taxation Management, Municipal Management (b-learning), Organizational Management, Tourism Management, Illustration and Animation, Marketing, Integrated QES Management Systems, and Solicitor. Most respondents attend the 1st year of the master's degree, representing 60.7% of the sample (Figure 3).

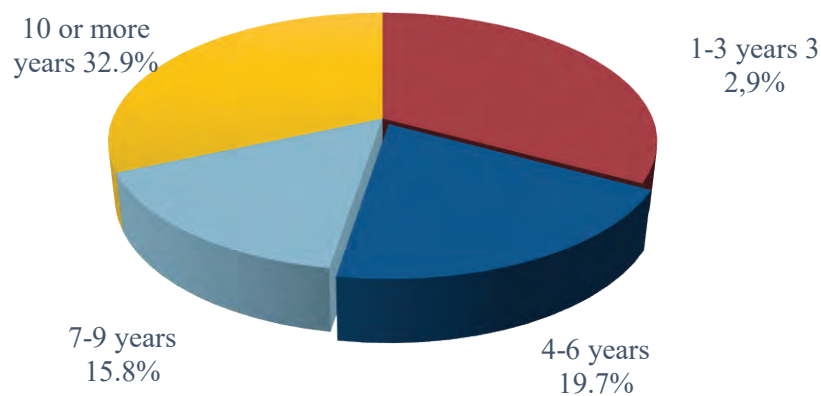
**Figure 3:** Year of studies



Source: Authors

In what concerns professional experience, 77.4% of the respondents have a job. 13.1% have professional experience but are not currently employed and only 9.5% of students never had job experience. Respondents work in all sectors of activity, with a special focus on services (28.4%), industry, and public services in *exequo*, with 19.4%. They have professional functions that defeat different levels, from the most operational ones to managerial positions. Some examples are the following: industrial designer, software developer, certified accountant, management, banking, quality manager, technical assistant, physiotherapist, finance, tourism, logistics, and commercial. The most frequent professional experience is between 1 and 3 years, representing 32.9%. It follows, with 31.6%, 10 or more years. Last appears respondents with 7 to 9 years of experience (15.8%), as seen in Figure 4.

**Figure 4:** Professional experience



Source: Authors

**3.2.2. Students’ perception**

To understand the student’s perception regarding the importance of new skills for their professional future in the face of Industry 4.0 developments, a set of 23 questions were done (Table 1). The skills have been classified into four main groups, according to the presented reviewed literature (Lans, Blok & Wesselink, 2014). It was not considered a non-cognitive skill opportunity, as it centers on the systematic development of adequate solutions to problems, evolving perception, interpretation, and construction (Lans, Blok & Wesselink, 2014), something that IPCA is already working very hard on while achieving excellent results (Dieguez et al, 2021; Dieguez, Loureiro & Ferreira, 2021, b).

**Table 1:** Collected answers from several students on a Likert scale

Skill	Likert scale					4+5
	1	2	3	4	5	
People management	2	3	8	45	36	71
Problem-solving	0	1	10	31	42	73
Creativity	1	2	6	33	42	75
Negotiation	1	2	15	46	20	66
Quality control	0	2	8	28	46	74
Emotional intelligence	2	5	11	31	35	66
Active listening	2	4	14	39	25	64
Co-ordination with others	0	2	11	33	38	71
Critical thinking	0	5	12	36	31	67

Skill	Likert scale					4+5
	1	2	3	4	5	
Service orientation	0	2	16	36	30	66
Analysis and decision making	0	0	8	32	44	76
Cognitive flexibility	1	5	5	52	21	73
Cultural competence	1	4	18	41	20	61
Computational thinking	0	1	15	27	41	68
New media Literacy	0	3	14	33	34	67
Social Intelligence	2	3	17	31	31	62
Virtual Collaboration	0	1	9	29	45	74
Design	0	2	23	29	30	59
Leadership	1	1	10	33	39	72
Foreign languages	0	1	10	33	40	73
Administrative skills	0	2	18	33	31	64
Computer/IT skills	0	0	7	18	59	77
Communication	0	1	6	32	45	77

Source: Authors

Table 1 shows the collected answers in numbers of students, using the Likert Scale. If results are divided into three rankings, the importance for their professional future in face of the industry 4.0 developments is as follows:

- Higher than 89%: creativity, analysis and decision making, computer/IT, and communication skills;
- Between 82% and 89%: people management, problem-solving quality control, virtual collaboration, coordination with others, and cognitive flexibility skills;
- Less than 82% but higher than 70%: negotiation, emotional intelligence, active listening, critical thinking; service orientation, cultural competence, computational thinking, new media literacy, social intelligence, design, and administrative skills.

It is important to notice that for some Master students people management, creativity, negotiation, emotional intelligence, active listening, cognitive flexibility, cultural competence, social intelligence, and leadership are not important at all.

### 3.3. Discussion of Results

Respondents are mostly between 20 and 40 years old and represent 15% of all the students attending the IPCA Masters in February 2021. The female gender is the most represented in the survey, with 71.4% of the answers. Students have different backgrounds and come from different Higher Schools belonging to IPCA. Given the size of the sample and the diversity of the analyzed skills, four big groups were constituted: social relationship, management, industry specificity, and self-efficacy (Lans, Blok & Wesselink, 2014). These reshape allowed a better understanding and comprehension of results and data (Table 2).

**Table 2:** Skills reclassification according to non-cognitive and cognitive entrepreneurial skills

Skill	non-cognitive entrepreneurial skills		cognitive entrepreneurial skills	
	Social competence	Business competence	Industry-specific competence	Entrepreneurial self-efficacy
People management	71			
Problem-solving				73
Creativity				75
Negotiation		66		
Quality control			74	
Emotional intelligence				66
Active listening	64			
Co-ordination with others	71			
Critical thinking				67
Service orientation		66		
Analysis and decision making				76
Cognitive flexibility				73
Cultural competence		61		
Computational thinking			68	
New media Literacy			67	
Social Intelligence	62			
Virtual Collaboration		74		
Design			59	
Leadership				72
Foreign languages		73		
Administrative skills		64		
Computer/IT skills			77	
Communication	77			

Source: Authors

Considering the literature, the main purpose of most entrepreneurship education rests on the development of entrepreneurial skills (Dieguez, 2017; Dieguez, 2021) which, agreeing to Lans, Blok, and Wesselink (2014), is built on opportunity, social relationships, management, industry specificity, and self-efficacy. The first three skills are soft skills (non-cognitive entrepreneurial skills) and the last two skills are hard skills (cognitive entrepreneurial skills).

In a direct study, cognitive and non-cognitive entrepreneurial skills seem to be perceived by students with the same importance, which requires a deeper study to understand if there is a correlation between gender, Master's, or age.

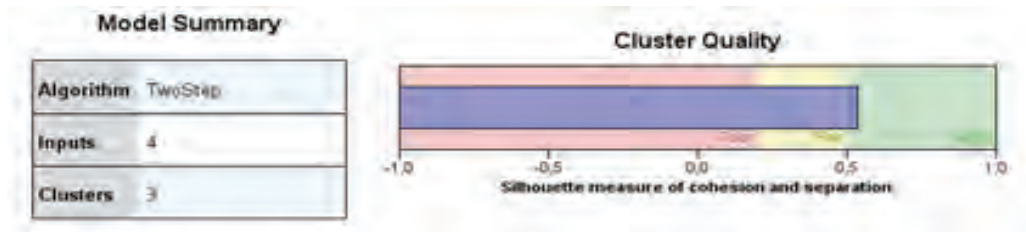
### 3.3.1. Classification of entrepreneurial skills profiles using clustering algorithms

For the present research, a cluster analysis was applied whose aim is to identify groups of similar individuals based on a multivariate profile, that is, to identify distinct profiles of cases, classifying them in terms of their perception of the importance of the new skills in industry 4.0 for their professional future. This is a technique whose objective is to identify clusters among the cases, maximizing the homogeneity within each cluster and the heterogeneity between different clusters (Kaufman & Rousseeuw, 2005). It is intended to identify similarities and

differences between cases by grouping them and identifying the characteristics of each group. Several clustering processes exist (Anderson 2013; Kaufman & Rousseeuw, 2005). One of the most popular techniques is called k-means clustering. In this algorithm and its variations, the clusters are identified by proximity, with the differences between the cluster's centroids being maximized. The number of clusters is defined in advance. To start the iterative process, initially, k centroids for k clusters must be identified.

Using the two-step clustering, the optimal solution acknowledged by the BIC and the AIC was the 2-cluster solution if the euclidean distance was used or the 3-cluster solution if the log-likelihood distance was used. The silhouette coefficient was slightly higher for the 2-cluster solution compared to the 3-cluster solution. However, carefully analyzing the results obtained and looking at their interpretability, the 3-cluster solution appears to be the most adequate, as it includes a group that does not give too much importance to the specific-industry competence. The smaller size of this group may result from the small sample size used. Even when the order of the cases varied, the 3-cluster solution remained stable. Also, the silhouette measure points to a good quality of cohesion and separation (Figure 5). These results support the validity of the 3-cluster solution obtained.

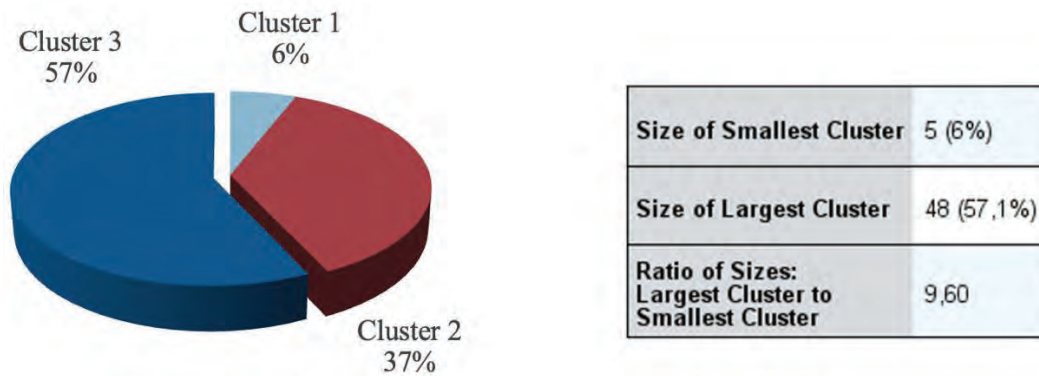
**Figure 5:** Method summary and quality of cluster solution



Source: Authors

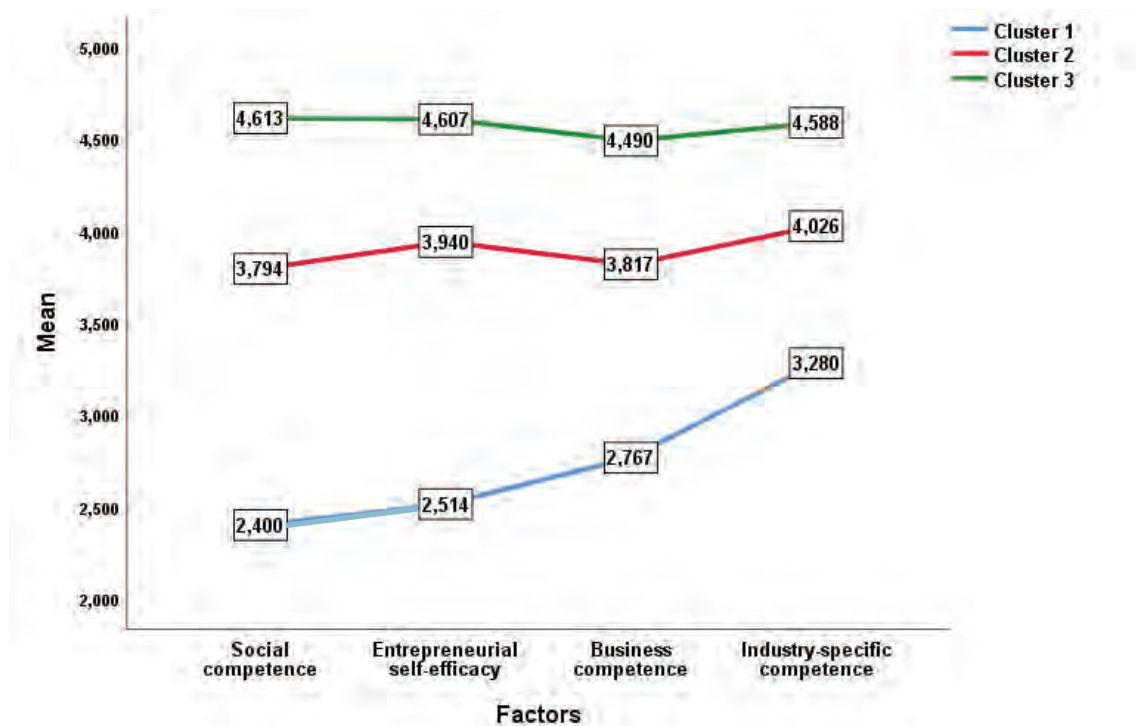
The smaller cluster (cluster 1) has 5 respondents, cluster 2 has 31 respondents and the largest cluster (cluster 3) has 48 cases (Figure 6).

**Figure 6:** Cluster sizes



Source: Authors

The values of the centroids for each cluster are shown in Figure 7, a very intuitive representation that shows three groups of students who perceives industry 4.0 and digital transformation as big challenges requiring special different skills.

**Figure 7:** Centroids for each cluster

Source: Authors

Based on such results, the following skills perceptions profiles were defined as:

Cluster 1 – **Pragmatics**: Students who valorized the cognitive entrepreneurial skills, namely specific -industry competence, followed by business competence. Entrepreneurial self-efficacy and social competence seem to be less important.

Cluster 2- **Self-confidence**: Students who valorized both cognitive entrepreneurial and non-cognitive skills. They give importance to specific -industry competence, entrepreneurial self-efficacy, followed by business competence, and finally social competence.

Cluster 3- **Critical Thinkers**: Students who valorized non-cognitive skills even though they understood that cognitive skills are needed in the present digital transformation process.

#### 4. Conclusion

Digital transformation and the impact on Industry 4.0 bring huge challenges to society and educational institutions. The future is uncertain, and the challenge is for everyone. A paradigm shift is needed based on a digital mindset where teaching entrepreneurial skills will trigger the development of solutions that respect the values of ethics and sustainability. Today, cognitive skills continue to be valued to the detriment of non-cognitive skills, which may translate into a culture of demotivation with consequences on the efficiency and profitability of organizations. Higher Education Institutions as key players in the training of human capital should include in their *curricula* both types of skills.

The empirical study allows concluding that most IPCA students have a positive perception regarding the relevance of non-cognitive skills. With cluster analysis, it was possible to categorize skills perceptions of IPCA students into three main categories: (i) Pragmatics, which valorized the cognitive entrepreneurial skills, namely specific -industry competence, followed by business competence; (ii) Self-confidence, which valorized both cognitive entrepreneurial and non-cognitive skills; and (iii) Critical Thinkers, which valorized non-cognitive skills even



though they understood that cognitive skills are needed in the present digital transformation process. The results seem to indicate that the Higher Education Institution is attentive to the ongoing changes and is creating the conditions for the development of critical thinking for the consolidation of the Triple Helix model and has a truly proactive role in the desired future. However, it is always possible to improve the education system and *curricula* based not only on the perception of the students but also on the needs of employers and on the labor market changes as a consequence of industry 4.0 and digital transformation challenges.

Another conclusion seems to point out that there is no correlation between gender, master, or age. The percentage of Critical Thinkers students is still too low and IPCA's master's *curricula* should focus more on activities closer linked with the community to improve students' skills related with non-cognitive skills, namely social intelligence, teamwork, communication, and leadership. Students are increasingly seeking a proactive role in their education, so the possibility to have access to *curricula* with active methodologies and co-creation projects can be a determining factor for success and satisfaction.

The main limitation is the small sample size, which may weaken possible results not highlighted in the first approach. For future studies, it is suggested to replicate the research with the inclusion of more variables, namely training area, professional experience, perception of the future of the labor market, and how organisations are responding to the challenges of digital transformation.

## REFERENCES

- Alvarez, S., & Barney, J.B. (2006). *Discovery and creation: Alternative theories of entrepreneurial action*. Fisher College of Business Working Paper, (2006-01), 005.
- Anderson, R. E. (2013). *Human Suffering and Quality of Life: Conceptualizing stories and statistics*. Springer Science and Business Media.
- Andersson, P., Movin, S., Mähring, M., Teigland, R., & Wennberg, K. (2018). *Managing digital transformation*. SSE Institute for Research, Stockholm School of Economics.
- Bamber, J. (2013). *Promoting the creativity and innovative capacity of young people by identifying competences and skills acquired through non-formal and informal learning relevant for employability. A report to the Youth Working Party from the Expert Group on Peer-Learning*. November 2013.
- Baron, R.A., & Tang, J. (2009). *Entrepreneurs' social skills and new venture performance: Mediating mechanisms and cultural generality*. *Journal of Management*, 35(2), 282-306.
- Barz, M., Lange, D., Parschau, L., Lonsdale, C., Knoll, N., & Schwarzer, R. (2016). *Self-efficacy, planning, and preparatory behaviours as joint predictors of physical activity: A conditional process analysis*. *Psychology & Health*, 31(1), 65-78.
- Becerra, J. (2017, March). *The digital revolution is not about technology—it's about people*. In *World Economic Forum* (Vol. 28, No. 3).

- Claeys-Kulik, A.L., Jørgensen, T.E., & Stöber, H. (2019). *Diversity, equity, and inclusion in European higher education institutions. Results from the INVITED Project*. Brussel: European University Association Asil, 51p.
- Cinque, M. (2016). “*Lost in translation*”. *Soft skills development in European*, 3(2), 389-42. [https://doi.org/10.18543/tjhe-3\(2\)-2016pp389-427](https://doi.org/10.18543/tjhe-3(2)-2016pp389-427).
- Coghlan, D. (1993). *A person-centred approach to dealing with resistance to change*. *Leadership & Organization Development Journal*.
- Deloitte. (2017). *Rewriting the rules for the digital age: 2017 Deloitte Global Human Capital Trends*, Report, pp. 1–137. Deloitte University Press.
- Devece, C., Peris-Ortiz, M. & Rueda-Armengot, C. (2016). *Entrepreneurship during economic crisis: Success factors and paths to failure*. *Journal of Business Research*, 69, 5366-5370.
- Dieguez, T. (2021). *Collective Approach and Best Practices to Develop Skills for the Post-COVID Era*. In *Handbook of research on Strategies and Interventions to Mitigate COVID-19 Impact on SMEs*, Ch. 2, 23-47. IGI Global.
- Dieguez, T. (2017). *Empowering Hub*. In *Handbook of Knowledge Integration Strategies for Entrepreneurship and Sustainability*, Ch. 16, 256-284. IGI Global.
- Dieguez, T., Au-Yong-Oliveira, M., Sobral, T., & Jacquinet, M. (2021, December). *Entrepreneurship and changing mindsets: a success story*. In *Proceedings of the International Conferences-Internet Technologies & Society (ITS 2021)*. Applied Management Advances in the 21st Century 2021 (AMA21 2021) and Sustainability, Technology and Education 2021 (STE 2021) (pp. 111-116). IADIS.
- Dieguez, T., Loureiro, P., Ferreira, I. (2021). *Let's Surf on the Future Workforce*. In *Proceedings of 10th International Scientific Workshop, Region Entrepreneurship, Development (XRED 2021)*, Croatia, 17th of June 2021.
- Dieguez, T., Loureiro, P., & Ferreira, I. (2021 b, November). *Entrepreneurship and Leadership in Higher Education to Develop the Needed 21st Century Skills*. In *ECMLG 2021 17th European Conference on Management, Leadership, and Governance* (p. 143). Academic Conferences Limited.
- Dubey, A. (2019, June). *This is what Great Leadership looks like in the digital age*. In *World Economic Forum*. <https://www.weforum.org/agenda/2019/04/leadership-digital-age-leader/>. Accessed (Vol. 15).
- Dickerson, C.R., Rider, K.A., & Chaffin, D.B. (2004). *Merging biomechanical models of the shoulder with digital human modeling* (No. 2004-01-2166). SAE Technical Paper.
- Europarl (2017): *Relatório sobre a Nova Agenda de Competências para a Europa*. [https://www.europarl.europa.eu/doceo/document/A-8-2017-0276\\_PT.html](https://www.europarl.europa.eu/doceo/document/A-8-2017-0276_PT.html)(acessed 15 january 2021).

European Commission (2019). **Key Competences for Lifelong Learning**. <https://doi.org/10.2766/291008>.

Financial Times (2019). **Term—Entrepreneurial mindset**. <http://markets.ft.com/research/Lexicon/Term?term=entrepreneurial-mindset>.

Flores-Guevara, S. & Ortega-Luna, L.G. (2022). **Contemporary Society, Crossroads Between Social Movements and Party Systems in México**. In *Digital Political Communication Strategies* (pp. 107-116). Palgrave Macmillan, Cham.

Friedman, T.L. (2017). **Thank you for being late: An optimist's guide to thriving in the age of accelerations (Version 2.0, With a New Afterword)**. Picador USA.

Fugida, S.O.S. (2017, July). **Distinctive Competence as main driver in building business performance**. Seminar Nasional Akuntansi dan Bisnis (SNAB), Fakultas Ekonomi Universitas Widyatama.

Gan, X.Y., & Cheng, S.S. (2017, February). **Multimodal Appraisal Framework of Intercultural Communication Competence**. In *2017 2nd International Conference on Humanities and Social Science (HSS 2017)* (pp. 376-381). Atlantis Press.

Gist, M.E., & Mitchell, T.R. (1992). **Self-efficacy: A theoretical analysis of its determinants and malleability**. *Academy of Management Review*, 17(2), 183-211.

Grégoire, S., Lachance, L., & Taylor, G. (2015). **Mindfulness, mental health, and emotion regulation among workers**. *International Journal of Wellbeing*, 5(4).

Hodson, T., Schwartz, J., Van Berkel, A., & Winstrom Ottem, I. (2014). **The overwhelmed employee: Simplify the work environment**. *Global Human Capital Trends 2014: Engaging the 21st-century workforce*, 97-104.

Humbert, A., & Drew, E. (2010). **Gender, entrepreneurship and motivational factors in an Irish context**. *International Journal of Gender and Entrepreneurship*, 2(2), 173–196.

Jørgensen, K. (2015). **13 Dark Play in Dishonored**. *The dark side of gameplay: Controversial issues in playful environments*, 210.

Karp, T. (2006). **The inner entrepreneur: A constructivist view of entrepreneurial reality construction**. *Journal of Change Management*, 6(3), 291-304.

Kaufman, L. & Rousseeuw, P.J. (2005). **Finding Groups in Data: An Introduction to Cluster Analysis**. John Wiley and Sons.

Kerr, J. (2019). **Today's best leaders all share these 5 traits—A digital mindset**. <https://www.inc.com/james-kerr/every-business-leader-needs-a-digital-mindset-to-succeed-and-it-starts-with-these-5-things.html>.

Kooskora, M. (2021). **The Role of an Entrepreneurial Mindset in Digital Transformation—Case Study of the Estonian Business School**. *Digital Entrepreneurship*, 143.

- Kuratko, D.F., & Hodgetts, R.M. (2004). *Entrepreneurship: Theory, process, and practice (6th ed.)*. Mason, OH: Thomson/South-Western.
- Lans, T., Blok, V. & Wesselink, R. (2014). *Learning apart and together: towards an integrated competence framework for sustainable entrepreneurship in higher education*. *Journal of Cleaner Production*, 62, 37-47.
- Maritz, A., Perenyi, A., de Waal, G. & Buck, C. (2020). *Entrepreneurship as the Unsung Hero during the Current COVID-19 Economic Crisis: Australian Perspectives*. *Sustainability*, 12, 4612.
- McConnell, D. (2018). *Cultural Insights for Christian Leaders (Mission in Global Community): New Directions for Organizations Serving God's Mission*. Baker Academic.
- McGrath, R.G., & MacMillan, I.C. (2000). *Assessing technology projects using real options reasoning*. *Research-Technology Management*, 43(4), 35–49.
- Meyers, A. (2016). *Innovation starts with the right mindset*. <https://www.linkedin.com/pulse/innovation-starts-right-mindset-arden-meyers-md-mba/>.
- Mitchelmore, S., & Rowley, J. (2010). *Entrepreneurial competencies: a literature review and development agenda*. *International journal of entrepreneurial Behavior & Research*.
- Obschonka, M., Stuetzer, M., Audretsch, D.B., Rentfrow, P.J., Potter, J. & Gosling, S.D. (2016). *Macropsychological Factors Predict Regional Economic Resilience during a Major Economic Crisis*. *Social Psychological and Personality Science*, 7, 95-104.
- Pinchot, (1985). *Intrapreneuring: why you don't have to leave the corporation to become an entrepreneur*. New York, Harper & Row.
- Portugal INCoDe.2030 (2021): <https://www.incode2030.gov.pt/>.
- Rauch, E., Stecher, T., Unterhofer, M., Dallasega, P., & Matt, D.T. (2019, March). *Suitability of Industry 4.0 concepts for small and medium-sized enterprises: Comparison between an expert survey and a user survey*. In *Proceedings of the International Conference on Industrial Engineering and Operations Management* (Vol. 2019, pp. 1174-1185).
- Scholkmann, A.B. (2021). *Resistance to (digital) change: Individual, systemic and learning-related perspectives*. *Digital Transformation of Learning Organizations*, 219.
- Schwab, K. (2016). *The Fourth Industrial Revolution*. New York Crown Business.
- Sendler, U. (2013). *Industrie 4.0–Beherrschung der industriellen Komplexität mit SysLM (Systems lifecycle management)*. In *Industrie 4.0* (pp. 1-19). Springer Vieweg, Berlin, Heidelberg.
- Shepherd, G.M. (2004). *The synaptic organization of the brain*. Oxford university press.
- Sivam, A., Dieguez, T., Ferreira, L.P., & Silva, F.J. (2019). *Key settings for successful open innovation arena*. *Journal of Computational Design and Engineering*, 6(4), 507-515.

Soltanifar, M. (2016). *Corporate entrepreneurship and triple helix*. In R. Segers (Ed.), *Multinational management* (pp. 275–299). Cham: Springer.

Soltanifar, M., & Smailhodžić, E. (2021). *Developing a Digital Entrepreneurial Mindset for Data-Driven, Cloud-Enabled, and Platform-Centric Business Activities: Practical Implications and the Impact on Society*. *Digital Entrepreneurship*, 3.

Van der Bel, M. (2018). *Digital culture: Your competitive advantage*. URL: <https://news.microsoft.com/uploads/2018/02/EEE-Insights-Report>. Pdf.

Walumbwa, F. O., Christensen, A.L., & Muchiri, M.K. (2013). *Transformational leadership and meaningful work*. *Purpose and meaning in the workplace*, 197-215.

Venkataraman, S., & Shane, S. (2000). *The promise of entrepreneurship as a field of research*. *Academy of management review*, 25(1), 217-226.

World Economic Forum (2020). *The Future of Jobs Report 2020*. <https://www.weforum.org/reports/the-future-of-jobs-report-2020>.

*A scientific paper*

**Jelena Dujmović Bocka, Ph. D., Assistant Professor**

Faculty of Law Osijek, Josip Juraj Strossmayer University of Osijek

E-mail address: [jdujmovi@pravos.hr](mailto:jdujmovi@pravos.hr)

**Danijela Romić, univ. spec. admin. publ., Senior Lecturer**

College of Applied Sciences „Lavoslav Ružička“ in Vukovar

E-mail address: [dromic@vevu.hr](mailto:dromic@vevu.hr)

## ROLE OF YOUTH COUNCILS IN LOCAL GOVERNANCE

### ABSTRACT

*Despite universally accepted idea that youth civic engagement harvests many benefits, both for young people in question and their larger communities, there is still limited engagement of young people in policy formulation and local youth councils almost everywhere play marginal or even symbolic role in local decision making. In the same manner Croatian legislation requires establishing youth councils at local and regional level of government. The idea is to form an advisory body that will protect youth rights and promote their interests at the local level. Based on survey distributed among youth council's chairman in four Croatian regions, Istria County, Primorje-Gorski Kotar County, Vukovar-Srijem County and Osijek-Baranja County, paper aims to assess the role of youth councils in local governance. There are two main working hypotheses: 1. Youth councils represent a form of participation of citizens in local governance and 2. Participation of youth in local governance ensures their institutional positioning with the purpose of taking over the leading roles in the administrative system. Data is interpreted by descriptive statistics. Additionally, this data is supplemented with reviews of legislation, other documents and official websites. Findings indicate that formal youth engagement in local democracy is lacking. Many municipalities have sent out multiple calls for candidates, but youth councils still haven't been established. On the other hand, where they were established, youth councils engaged in a wide range of activities. Additionally, results indicate that formal youth participation in local governance serves more than the one role intended for them by the legislator - boosting youth participation. Equally important is that youth councils serve as a way to present young people and promote them among senior political party members and to jump-start future careers in politics.*

**Key words:** *youth councils, local governance, youth participation, youth policy, Law on youth councils.*

## 1. Introduction

The paper “Role of youth councils in local governance”<sup>1</sup> is a result of empirical research conducted with the aim of exploring the importance and significance of the role of youth councils. Its authors believe that young people in the Republic of Croatia belong to the category of participants, who should play the key role in policy formulation at local and regional levels. Supporting this are two affirmative hypotheses. The first hypothesis is: youth councils represent a form of participation of citizens in local governance. The second hypothesis is: participation of youth in local governance ensures their institutional positioning with the purpose of taking over the leading roles in the administrative system. Contribution to the administrative science is reflected in the analysis of the research results and young people awareness raising about the need to participate in policy making.

## 2. Theoretical background

The support for the two hypotheses set in this paper is their analysis of the two processes. On one hand, it is about the participatory role of the young people in local policy formulation. On the other, it refers to the youth policies in Croatia. Before specifically defining the given terminology, one should recall the significance of the administrative processes and their specific features. Considering that the authors focus on local administration, the role of youth council in local administration to be more precise, the process of governance should be defined first. Starting from the administrative definition, one can claim that it is a dynamic and continuous connection between people in a particular activity with the purpose of achieving prior set aims (Pusić, 2002, 34). There are two features hidden within the definition itself, dynamics, which refers to a particular rhythm of the activity and continuity, signifying that the activity does not end until its full realization. It is interesting to mention that Pusić (2002, 35 – 38) highlights several others administrative features besides dynamics and continuity, such as duplicity of character of the rules regulating the administrative process (this refers to technical rules and interest norms), transmission as mediation between the set aims and their realisation. Administration, as process, is closely connected with demands and limitations imposed to human activity by their relevant surroundings (Koprić et al., 2014, 4).

In his formidable work “Administrative Science” the author E. Pusić (Pusić, 2002) highlights fundamental distinction between participation and decision-making as one of the basic resources of political monitoring in administration. From this, a key question arises: what is the main difference between the prior mentioned processes? Since there are numerous foreign authors, who have dealt with this exceptionally important topic for analysing the resources of political monitoring in administration in general, for the purposes of answering this question, the authors will refer to the definition provided by Pusić (2002, 147) describing citizen participation as “resources of political monitoring implying that citizens participate directly in the administrative activities or indirectly influence its functioning”. Blažević (2004, 71, according to Pusić, 2002, 147) also writes about participation whereby specifying two groups of citizens, internal (participation) and external (influence). When observing the levels of local and regional self-government, it is obvious that youth councils are the interest groups, whose aim is to participate in formulating local policies and by doing so, after having analysed all their civil rights, to support the improvement of activities in their municipalities, towns and counties. With regard to citizens and their decision-making, it means that “in the

---

<sup>1</sup> In introductory considerations, the authors offer explanation of the term “local governance”. In this text, the prior mentioned term refers to engagement of youth councils at municipal, town and county levels.

decision-making process regarding administration, all citizens with political rights are involved” (Pusić, 2002, 142). Cooperation signifies “a certain active state, the relationship of mutual activities of more subjects, regarding the questions of their common interest” (Cvitan, 2008, 230). By analysing good governance as administrative doctrine, the authors Bakota and Romić (2013, 74), highlight several key principles from the White Paper on European Governance. For the purposes of this paper, only those principles will be presented, which are of outmost importance for explaining the two prior mentioned hypothesis. This is the so-called principle of participation referring to citizens’ participation, as the mentioned authors claim, indicating that quality, relevance and efficiency of public politics depend on the wide participation of citizens in the decision-making processes, from the initial ideas to their full realization.

Koprić and Manojlović (2013, 9) explain the different forms of citizens’ participation at levels of local self-government. They highlight that the local self-government represents the level of authority closest to citizens, which means that the decisions directly influence the everyday life and interests of citizens. In accordance with the subject of participation, the Youth Councils Act (hereinafter: YCA) proscribes that the aim of the YCA itself is youth participation in decision-making regarding governance of public affairs, which are of interest and significance for the young people, active engagement of the youth in public life as well as informing and counselling of the youth within local and regional self-government units (hereinafter: LRSUs), whereby the youth councils are established as advisory bodies of LRSUs promoting and advocating the rights, needs and interests of the youth at local and regional levels.<sup>2</sup>

What do other relevant authors say about the notion of participation? One significant paper, which is to be highlighted, is the paper written by V. Ilišin (Flanagan, Gally, 2005; Fahmy, 2006; Esser, De Vresse, 2007; Quintelier, 2008; Youniss, Levine, 2009; Marzana et al., 2012; Garcia – Albacente, 2014, according to Ilišin, 2017, 188), who in her article “Youth and politics: the trends of (dis)continuity” emphasizes, that engagement of youth in untraditional forms of political participation frequently presents an alternative for engagement in unconventional politics, it also appears as a transitional stage towards higher institutional participation which corroborates the second hypothesis formed for the purposes of this paper. Moreover, she claims that the activities in the citizens’ initiatives and associations serve as a source of knowledge and skills for one part of the youth. In addition, participation in some initiatives increases the interest of young people for traditional politics and preparedness for participation in institutional politics while at the same time increasing the probability of future political engagement. Youth participation in various citizens’ initiatives and activities lead to a conclusion that “there is no democratic participation crisis among the youth of Europe” (Cammaerts et al., 2016, 198, according to Ilišin, 2017, 188).

In the article “Youth Politics in Croatia – anatomy of public politics”, Kovačić (2014, 269) emphasizes that specific public politics in Croatia are difficult to describe and in particular to analyse. There are, however, according to his claims, very few texts, which in detail describe the sector of politics.

---

<sup>2</sup> For more details see Article 1 and 2 of the Youth Councils Act, Official Gazette, no. 41/14. According to the YCA young people are the persons with permanent or temporary residence in local or regional self-government units in the Republic of Croatia for which the youth council is established, who when asking for membership in youth councils are between 15 and 30 years of age and as such have the right to be selected for council member or substitute for a youth council member (see Art. 3).



Youth policy is a “strategy implemented by public authorities to provide young people with opportunities and experiences that support their successful integration into society and enable them to be active and responsible members of society and agents of change” (Council of Europe CM/Rec(2015)3).

When talking about the youth at the European level, the authors agree that two key entities have the primary role in this field, the Council of Europe, on one hand, that has defined working with the youth as “activities of social, cultural and political nature for, with and from the youth” and European Union, on the other, that allows their member states to independently regulate the work with the youth (Kovačić, Čulum, 2015).

Buković (2008, 114) emphasizes three key problems regarding public politics. The first problem relates to, as he states, the complexity of structures, that is, the increased number of participants with different values and interpretations regarding the fundamental problems of public politics. The second problem is connected with the increase of veto participants, indicating that the number of participants, who have the right to decline the government decisions or simply make them more difficult to implement, is increasing. The third problem is directly related to the outcomes of public politics, which are undeniably difficult to predict.

Ilišin (2003, 41) names two concepts in approach to youth, the first one refers to youth as “resources”, in other words, this concept labels youth as representatives of idealised future, source of values which are carried from generation to generation, whereas the other concept identifies youth as “problems”, as population in a delicate stage of development as well as a potential source of danger. An interesting interpretation of youth is the one referring to them as “sceptical generation” (the author of terminology: German theorist Helmut Schelsky – 1957, and it stands for retreat and defence against politics) as Tomić – Koludrović (1999, 185) claims, the Croatian society is like the German after the World War II, faced with the post-war restoration, so young people are apolitical, oriented towards their private lives, personal progress and free time.<sup>3</sup>

In 2018, the Education, Youth, Culture and Sport Council passed the new EU Youth Strategy for the period from 2019 to 2027<sup>4</sup>, based on which the EU Youth Dialogue was established, the successor of the previous process of structured dialogue. Through the processes of the EU Youth Dialogue, the EU institutions and bodies of public authority consult youth on particular topics of great importance for the youth population across Europe. The process takes place in cycles lasting 18 months. Currently, seventh cycle of the EU Youth Dialogue is being implemented with the thematic priority set on “Creating opportunities for youth”, focusing on three subtopics: quality employment for all, quality youth work for all and opportunities for youth from rural areas.<sup>5</sup>

---

<sup>3</sup> Authors highlight the significant role of the Croatian Youth Network which encompasses youth associations and associations for youth in the entire territory of the Republic of Croatia. Fundamental goals of the Croatian Youth Network, as is visible on their official web site, are youth social justice, youth in civil society and youth engagement. More about the specific aims of the project in: Croatian Youth Network, <https://mmh.hr/>, (accessed 10th December 2021). More about the youth politics in: Central State Office for Demography and Youth, <https://demografijaimladi.gov.hr/istaknute-teme/mladi-4064/savjeti-mladih-4069/4069>, (accessed 10 December 2021); the Government of the Republic of Croatia, <https://vlada.gov.hr/program-vlade-republike-hrvatske-zamandat-2011-2015/12-politika-za-mlade/14915>, (accessed 10 December 2021); Youth policy, <https://www.youthpolicy.org/>, (accessed 10 December 2021).

<sup>4</sup> Everything about the mentioned Strategy is available in: European Union, EU Youth Strategy, [https://europa.eu/youth/strategy\\_en](https://europa.eu/youth/strategy_en), (accessed 10 December 2021).

<sup>5</sup> More in: the EU Youth Dialogue – engage and tell us what you think!, <https://mzo.gov.hr/vijesti/dijalog-eu-a-s-mladima-ukljucci-se-i-rci-nam-sto-misli/3103>, (accessed 10 December 2021). The role of the Youth Council of

### 3. Legal regulations and youth awareness about the youth councils

Including youth in decision-making at local levels in Croatia was introduced in 2007 through the Youth Councils Act.<sup>6</sup> Numerous drawbacks were identified during the implementation of this law, so the new YCA was passed. In the exposition of the proposition of the new act, it was stated that, despite the implementation of the old law through the period of six years, only 241 youth councils were founded at local and 19 youth councils at regional level. Unclear definition of the concept, role and scope of the youth council, the possibility of influencing decision-making and insufficiently transparent defining of authorised applicants<sup>7</sup> were identified as the biggest disadvantages. Reports of the departmental bodies of state administration indicate that after passing the YCA the number of youth councils significantly decreased. In 2018<sup>8</sup> there were 119 youth councils at local and regional levels, out of which only 92 youth councils were active, in 2019<sup>9</sup> there were 124 of them, out of which only 96 were active (there is no available data for 2020). These numbers clearly imply that youth councils are yet to be accepted as a form of youth participation in local governance. There are numerous reasons for that, coming both from local units and youth themselves. According to the latest research conducted in Croatia,<sup>10</sup> only 26,6% (266 out of 1000) of the questioned participants know about the existence of youth councils. The great majority, out of the total number of participants, has never read the Youth Councils Act (84,2%), does not follow the work of youth councils in their units (80,9%), nor is it familiar with the way youth council members are selected (81,7%). 64,1% of the participants express a high level of agreement (I completely agree; I agree) with the statement that public should be more informed about the results achieved by youth councils, the necessity of existence of a body comprised only of youth (68,9%) and that its members should only be selected by youth (73,9%). General youth population is, as is visible from the results, insufficiently informed, despite all the modern, easily attainable channels of communication. In addition, in accordance with the YCA, the open calls for candidacy for members of youth councils (Art. 10) and results for members and substitutes along with notifications about forming youth councils (Art. 11) are officially

---

the Government of the Republic of Croatia is to be highlighted, since it represents interdepartmental advisory body of the Republic of Croatia whose task is to participate in development of youth politics. The reports from the mentioned Council are available in: Reports on Youth Councils, <https://demografijaimladi.gov.hr/istaknute teme/mladi-4064/savjeti-mladih-4069/izvjesca-o-savjetima-mladih-4070/4070>, (accessed 10 December 2021).

<sup>6</sup> The Youth Councils Act, Official Gazette, no. 23/2007

<sup>7</sup> Proposition of the Youth Councils Act, file:///C:/Users/kor123/Downloads/document.pdf, (accessed 20 October 2021).

<sup>8</sup> Annual report on implementation of the Youth Councils Act for 2018, [https://demografijaimladi.gov.hr/UserDocsImages/Direktorij%201/Godisnje%20izvjesce%20o%20provedbi%20 Zakona%20o%20savjetima%20mladih%20u%202018.\\_za%20objavu.pdf](https://demografijaimladi.gov.hr/UserDocsImages/Direktorij%201/Godisnje%20izvjesce%20o%20provedbi%20 Zakona%20o%20savjetima%20mladih%20u%202018._za%20objavu.pdf), (accessed 20 October 2021).

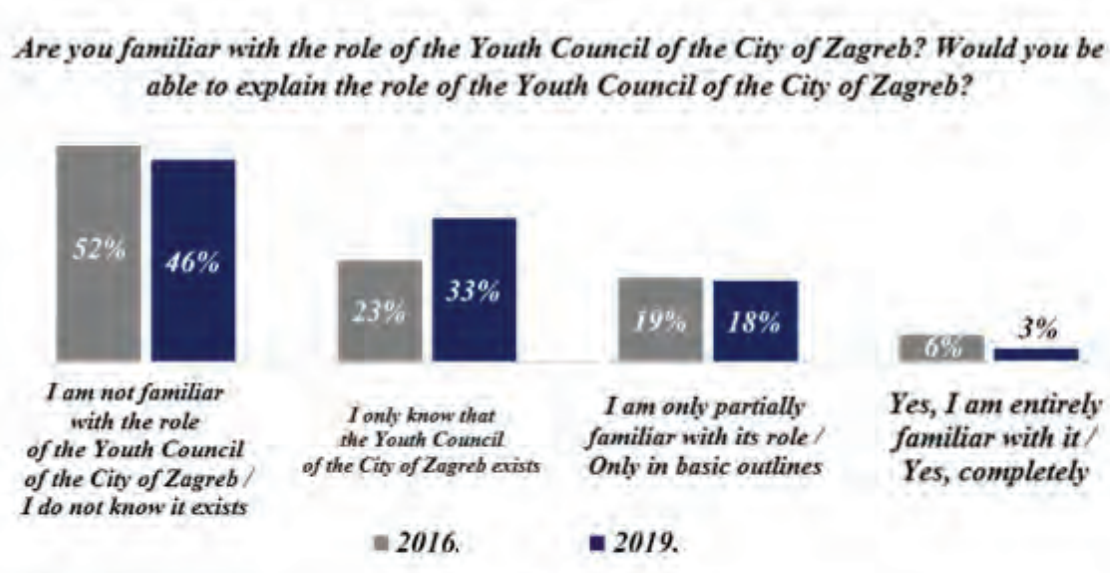
<sup>9</sup> Annual report on implementation of the Youth Councils Act for 2019, <https://demografijaimladi.gov.hr/UserDocsImages/Direktorij%201/Godisnje%20izvjesce%20o%20pracenju%20 provedbe%20Zakona%20o%20savjetima%20mladih%20u%202019.%20godini.pdf>, (accessed 30 November 2021).

<sup>10</sup> The research was conducted as part of the Youth Activation Network Project UP.04.2.1.06.0048, by project beneficiaries from the Association Zamisli from Zagreb. 1000 participants took part in the research across the entire Republic of Croatia. The research was conducted by the Hendl Agency, it was an online research in combination with personal surveying (the participants filled out questionnaires on tablets), the research lasted from 9<sup>th</sup> to 25<sup>th</sup> April 2021. The representative, double stratified sample according to age, gender and region as main criteria. Age categories: 16 to 19 years of age, 20 to 24 and 25 to 29 years of age. The coverage area is divided in 6 regions (Zagreb; North Croatia; Slavonia, Lika, Kordun and Baniya; Istria, Croatian Littoral, Gorski Kotar and Dalmatia) and 4 different city sizes (from 2.000, from 2.001 to 10.000, from 10.001 to 100.000 and more than 100.001). Initial data for calculating necessary sample representativeness are the data from 2011 population census. The research data obtained by the aforementioned project have not yet been published and have been used with the project coordinator's consent for the purposes of this paper.

published on LRSUs' web sites, official gazette and other means of public notifications, whereas the annual report on youth council work, which is presented to the representative body (Art. 19), is published on official web sites. However, since the mentioned provisions of the YCA are *lex imperfecta* because they do not indicate the sanctions for not implementing them, the information, in practice, is not being published regularly.

Similar results were obtained from the research about youth opinions and needs organized by the Youth Council of the City of Zagreb in 2019 (which includes the data from the previous research in 2016). The results referring to the part of the research about the level of youth awareness about youth councils and engagement in their work indicate that only 13% of the questioned participants know who a member of youth council can be, which is exactly identical to the results obtained in 2016 (the Youth Council of the City of Zagreb, 2019). Chart 1 shows that levels of youth awareness about youth councils are constantly low, which might be interpreted as reason for concern.

**Chart 1:** Levels of youth awareness about youth councils



Source: *The Youth Council of the City of Zagreb, 2019*

Apart from being poorly informed, youth is also quite inactive within their community. Youth research in Croatia 2018/2019 indicates that 62% of young people are not at all or only to a small extent interested in politics in general, whereas 12% express great or mostly great interest (Gvozdanović et al., 44 – 46).<sup>11</sup> Those, who do participate in various activities in Croatia, choose rather to be active in politics than other civil society associations (Taleski et al, 2015, 22). These results are confirmed by other domestic research whereby the explanations are concerning (Ilišin, Spajić, Vrkaš, 2017, 20). The levels of institutional trust are becoming lower, regardless of the institution, but the number of young members of political parties, however, is twice as high than those who trust parties. Therefore, the question of the motivation of youth for participation in political parties arises. Even though they express a mixture of altruistic, social and utilitarian motives, it is more logical to

<sup>11</sup> Moreover, it is recommendable to study the National programme for youth which determines aims, priorities and measures of public politics for youth with the aim of generally improving life quality of youth. See more in: Ministry of Demographics, Family, Youth and Social Policy, Draft, National programme for youth in the period from 2020 to 2024, <https://esavjetovanja.gov.hr/ECon/MainScreen?entityId=13290>, (accessed 10 December 2021).

hypothetically conclude that youth perceive political activism as a form of existential care, that is, a survival strategy (Ilišin, 2017, 249). This research was also used to obtain the data about intrinsic motivation of current presidents of youth councils.

#### 4. Methodology of empirical research about the role of youth councils in local governance

Since the information about the youth councils on web sites of local and regional self-government is oftentimes lacking or not even available, only 4 counties have been chosen for the purposes of empirical research: Osijek-Baranja County, Vukovar-Srijem County, Primorje-Gorski Kotar County and Istria County. The targeted group of participants were the presidents of youth councils at local or regional levels. Considering the type of information that research participants were asked about in the questionnaire, it was estimated that other members of youth councils do not possess enough relevant information about the subject matter and would only distort the final evaluation results. Participants were selected by searching through web pages and contacting heads of administrative departments at local or regional levels and through personal contacts. All the participants were, by phone, introduced with the research goals and then on November 22<sup>nd</sup>, 2021, a link for accessing the questionnaire in Google forms was sent to them by email. The final day of the research was December 6<sup>th</sup>, 2021. Table 1 illustrates the number of local self-government units in the selected counties as well as the number of those that have youth councils.

**Table 1:** Number of local self-government units

County	Number of LSUs			Number of LSU with youth councils			
	1 Cities	2 Municipality	3 Total	4 Cities	5 Municipality	6 Total	7 % (6/3*100)
Vukovar-Srijem	5	27	32	3	9	12	37,5
Osječko-Baranja	7	35	42	4	1	5	11,9
Istria	10	31	41	6	1	7	17,07
Primorje-Gorski Kotar	14	22	36	7	1	8	22,22
Total	36	115	<b>151</b>	20	12	<b>32</b>	<b>21,19</b>

Source: Authors

As visible from Table 1, there are only 32 youth councils at local levels in total in all four observed counties. For additional questionnaire was sent to county youth council presidents.

For the purposes of this research, a questionnaire (created by the author) containing 45 questions distributed in 5 groups was prepared. The first group of question was intended for gathering general information about the participants (7 question: type of LRSU or county, size of LRSU, gender, age, education, employment and political orientation). The second group of questions (4 questions) was oriented towards discovering motivation for participation in youth councils, the third group (12 questions) was related to the work of youth councils, whereas the fourth group (10 questions) analysed the cooperation between youth councils and bodies of the corresponding LRSUs. Close-ended questions were mostly used in the mentioned four groups, while their content and the offered answers referred to legal provisions about candidacy, competency, and relations of the youth councils with representative and executive bodies of their legally proscribed unit. The fifth group (12 questions) researched the attitudes

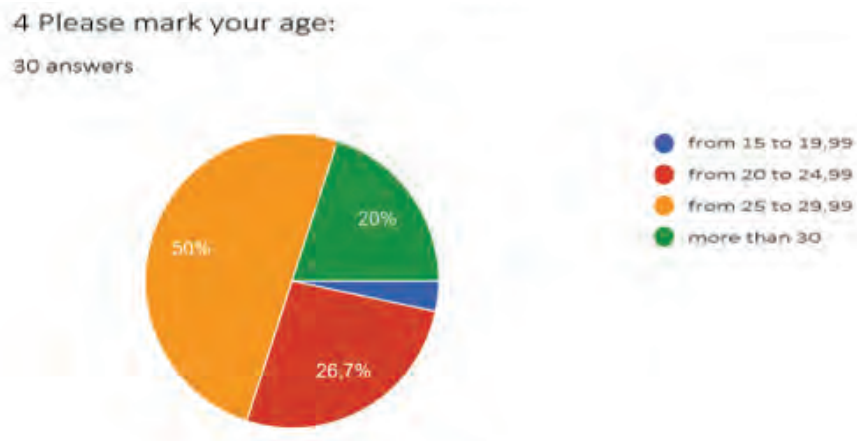
of participants about the position of youth councils and youth in general within their unit whereby the 5-point Likert scale was used.

The data obtained through the questionnaire were analysed, organised, statistically evaluated and processed by the statistical programme IBM SPSS Statistics 26 (SPSS Inc., Chicago, Illinois, USA, 2019). Descriptive statistics was done first, followed by the check of distribution normality of dependant variables through Shapiro-Wilk test. In order to determine the differences in answers according to gender, the Mann Whitney U test was applied and for hypothesis confirmation the Chi-square test for independence. For establishing the connection between the number of mandates in youth council with other questions, as well as motivation for participation in youth councils, the Spearman's Rank Correlation Coefficient ( $\rho$ ) was used. The value of statistical significance was  $p \leq 0.05$ .

## 5. Results of the conducted empirical research

The questionnaire was sent to 36 e - mail addresses, which returned 30 (27 LSU and 3 LRSU) questionnaire answered. Only one youth council president at county level (from the contacted four) has not responded to the invite. The majority of participants, 36,7%, live in the units between 3.001 and 10.000 residents, an additional 26,7% live in the units between 10.001 and 20.000 residents, while only 5 (or 16,7%) participants live in the units counting up to 3.000 residents. Chart 2 illustrates the age group of the participants, indicating, that in the presented sample, youth councils consist mainly out of older younger persons (older than 25 years of age). Approximately the same number of participants have finished an educational programme on level VII and lower (VI and IV degree).

**Chart 2:** Age distribution of participants



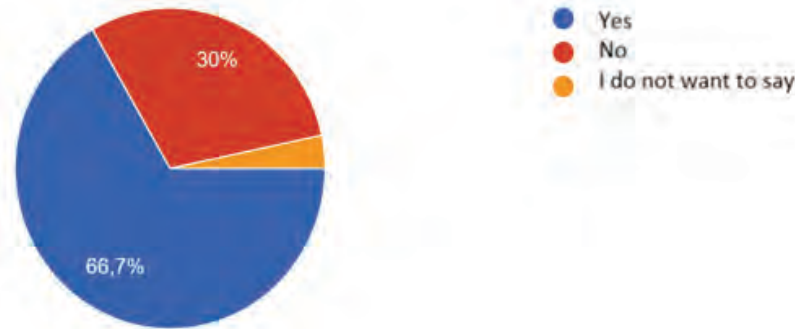
Source: Authors

More than 60% of the participants were men. However, men and women participating in the research did not offer any statistically significant different answers to relevant questions ( $p > 0.05$ ).

**Chart 3:** Political party orientation

7 Are you a member of a political party?

30 answers

*Source: Authors*

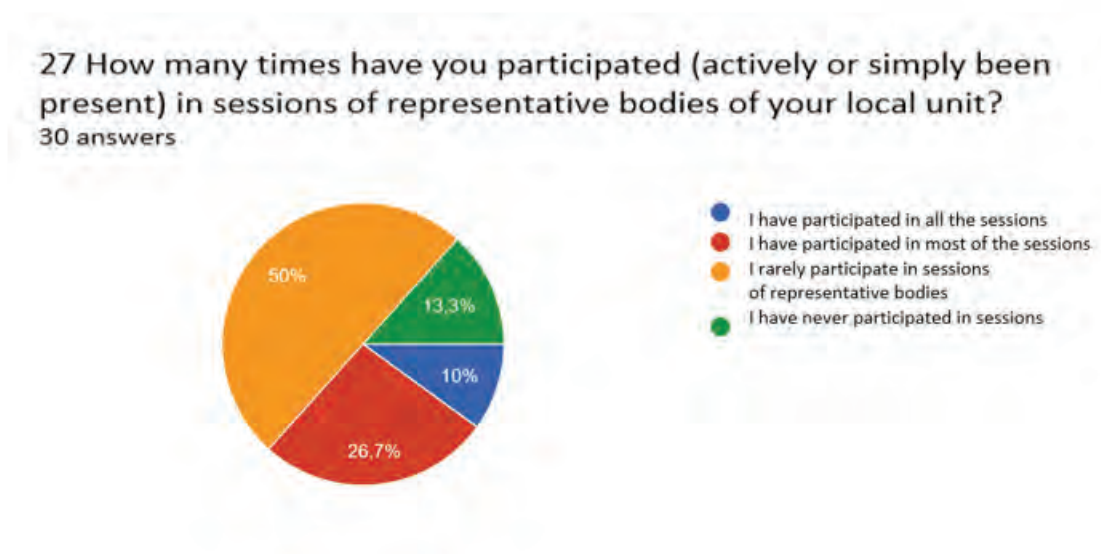
According to Chart 3, most of the participants are members of political parties, however, only 30% of the participants claim that they became members of youth councils because of formal propositions of their political parties, the same percentage refers to those who became youth council members due to propositions of youth associations, while the highest percentage (33,3%) participants state, that they became youth council members based on propositions by informal groups. When discussing motivation to join youth councils, half of the participants claim that they themselves made the decision to join, whereas 26,7% of the participants say they were encouraged to do so by their political parties. The last piece of information converges with the existing research and indicates that public persons and political parties have the least motivational influence on youth (Ilišin, 2017, 249). Personal decision to join youth councils is encouraged by altruistic motives, that is, desire to do something useful for the community, which is what 22 (73,3%) participants claim. This statement possesses statistically significant moderately positive correlation with inclusion in programme priorities and determining the criteria for financing of youth councils (question 30) ( $\rho=0.41$ ;  $p=0.02$ ), even though only 6 participants declare they regularly participate in such programmes. The reasons for such low numbers might be external factors, which are beyond the scope of youth influence (for instance, there might not even be any initiatives in their units at all).

From the total number of participants, 60% say that this is their first mandate in youth councils, which implies they have a relatively short experience in managing local affairs, since youth council mandates last for 3 years. In addition, the previous two years were greatly influenced by the COVID-19 pandemic, so, in reality, there were even less opportunities for participation in decision-making at local levels. To observe how the number of mandates of youth council presidents influences their contacts with executive officials of LRSUs, the two questions were correlated, which resulted in statistically significant moderate relationship of negative orientation ( $\rho=-0.49$ ;  $p=0.006$ ). This data indicates that youth, who run for candidacy for the second time or more, maintain less contacts and hold fewer meetings with executive bodies than those in their first mandate. Due to the small size of the sample, the reasons for this are left for speculation and may imply the influence of disappointment, fatigue or something else. However, the results may be considered indicative for conducting another research.

The group of questions referring to the work of youth councils illustrates that the founded youth councils fulfil their legal requirements and actively perform their obligations at a satisfying level. 73,3% of the youth councils regularly hold their sessions, 80% of them have their Rules of Procedure, while 56,7% of youth councils publish their Rules of Procedure on LRSU's web sites. Most of the youth councils have established their work programme for 2022 (66,7%). Moreover, approximately the same number of youth councils have submitted the reports on their work to representative bodies (73,3%) and cooperate with other youth councils in Croatia (83,3%). International cooperation is, sadly, quite rare, since only 1 youth council plans to join an international association during this year.

The fourth group of questions was aimed at obtaining data referring to the extent to which LRSUs fulfil their, legally proscribed, obligations to youth councils. One of these obligations is the obligation to deliver calls and materials for the sessions of the representative bodies (Art. 24, Para. 1 of the YCA), which 60% of the questioned units claim to fulfil, whereas only 20% do not. On the other hand, as is illustrated by Chart 4, the response of youth to attend the sessions is not representative, only 10% of the participants have participated in all the held sessions. The reasons for such results should be systematically researched to determine whether it is a lack of interest that causes youth to behave in such a manner or a lack of influence on the decision-making processes in representative bodies. It is interesting to highlight, that 73,3% participants say that they contact the officials whenever they find it necessary, even though this is not legally proscribed. On the other hand, the president of the representative body (Art. 24, Para. 2 of the YCA) and the executive official (Art. 25, Para. 2 of the YCA) are obligated to meet with the youth council at least once in a three-month period. According to the obtained results, the executive officials are more diligent when it comes to their obligations (50% of the participants meet whenever it is necessary and additional 6,6% once in three months), whereas more than 40% of the youth councils meet the president of the representative body on regular basis.

**Chart 4:** Response of the youth council presidents to calls for sessions of the representative bodies

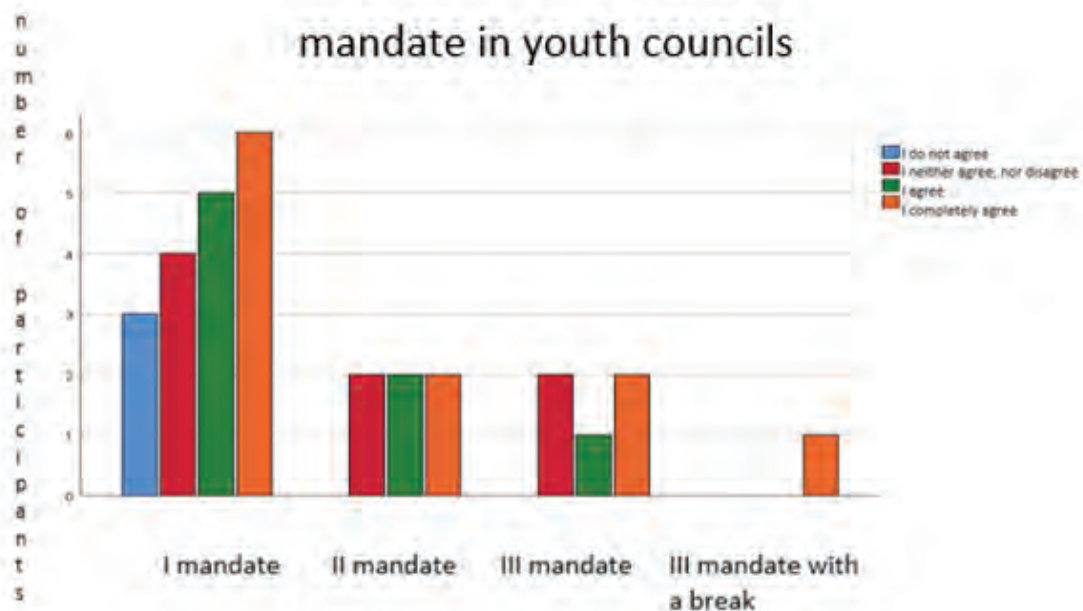


Source: Authors

### 6. Confirmation or negation of the set hypotheses

In order to confirm the first hypothesis: *youth councils represent a type of participation of citizens in local governance*, question 9 from the questionnaire, referring to number of mandates in youth councils, was chosen as a predictor variable. It is to be assumed, that those who are active for a longer period of time (several mandates), are more informed about the rights and obligations proscribed by the YCA and are as such more interested and more easily involved in the activities. Predictor variable was compared with the answers to the following questions: the question regarding the frequency of initiated cooperation between youth councils and presidents of representative bodies of local community (question 24), the question referring to the inclusion of youth councils in preparation and/or implementation of projects financed by the EU with local community as main beneficiary (question 25), the question about whether youth councils receive calls, materials and minutes from each session held by the representative body (question 26), the question regarding the number of propositions addressed to the representative bodies of local community in reference with improving the youth position (question 28), the question about the levels of satisfaction regarding cooperation with local community (question 36) and the question of inclusion of youth councils in debates and decision-making processes when it comes to questions concerning youth (question 39). Neither of the mentioned questions showed statistically significant correlation (for question 24  $\chi^2(9)=6.13$ ;  $p=0.73$ , question 25  $\chi^2(6)=5.31$ ;  $p=0.51$ , question 26  $\chi^2(6)=2.82$ ;  $p=0.83$  and question 28  $\chi^2(9)=9.1$ ;  $p=0.43$ ). The remaining two questions are graphically illustrated.

**Chart 5:** Connection between the number of mandates of youth council members and levels of satisfaction regarding collaboration with bodies of local community (question 36).

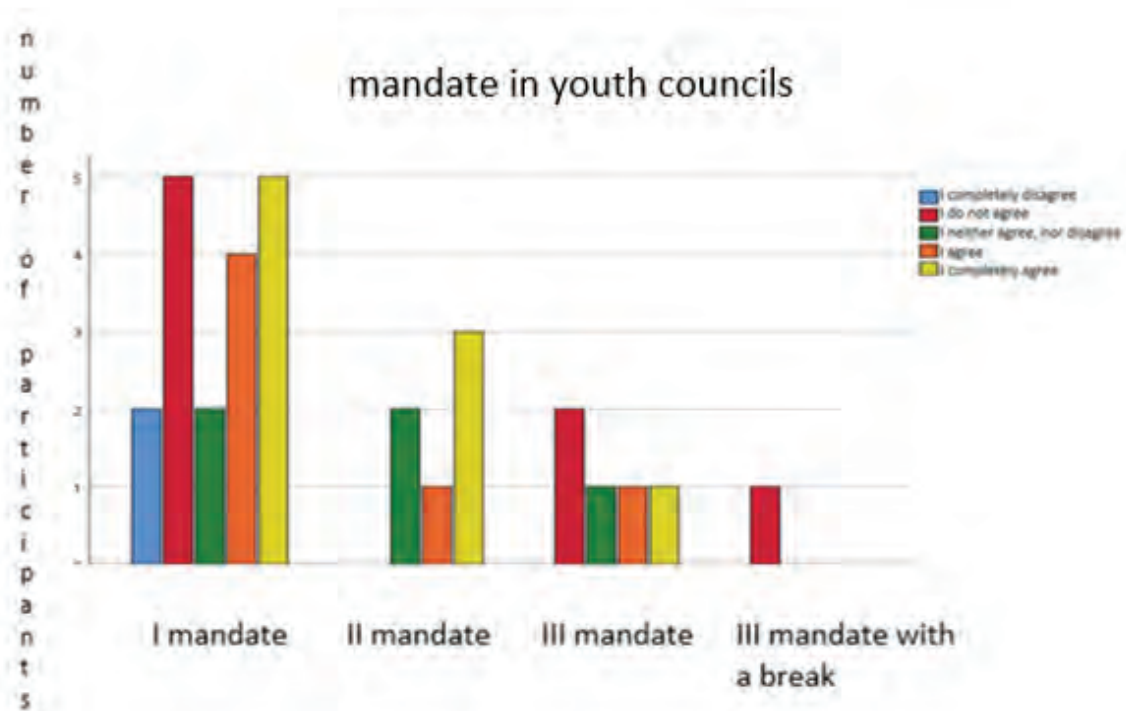


Source: Authors



Youth council members in their first mandate form the majority that claims they are completely satisfied with levels of cooperation with bodies of local community. There is no statistically significant correlation  $\chi^2(9)=4.47$ ;  $p=0.88$  between the number of mandates of youth council members and satisfaction with cooperation with the bodies of local community.

**Chart 6:** Connection between the number of youth council members and inclusion in the debate and decision-making processes regarding issues concerning youth (question 39)



Source: Authors

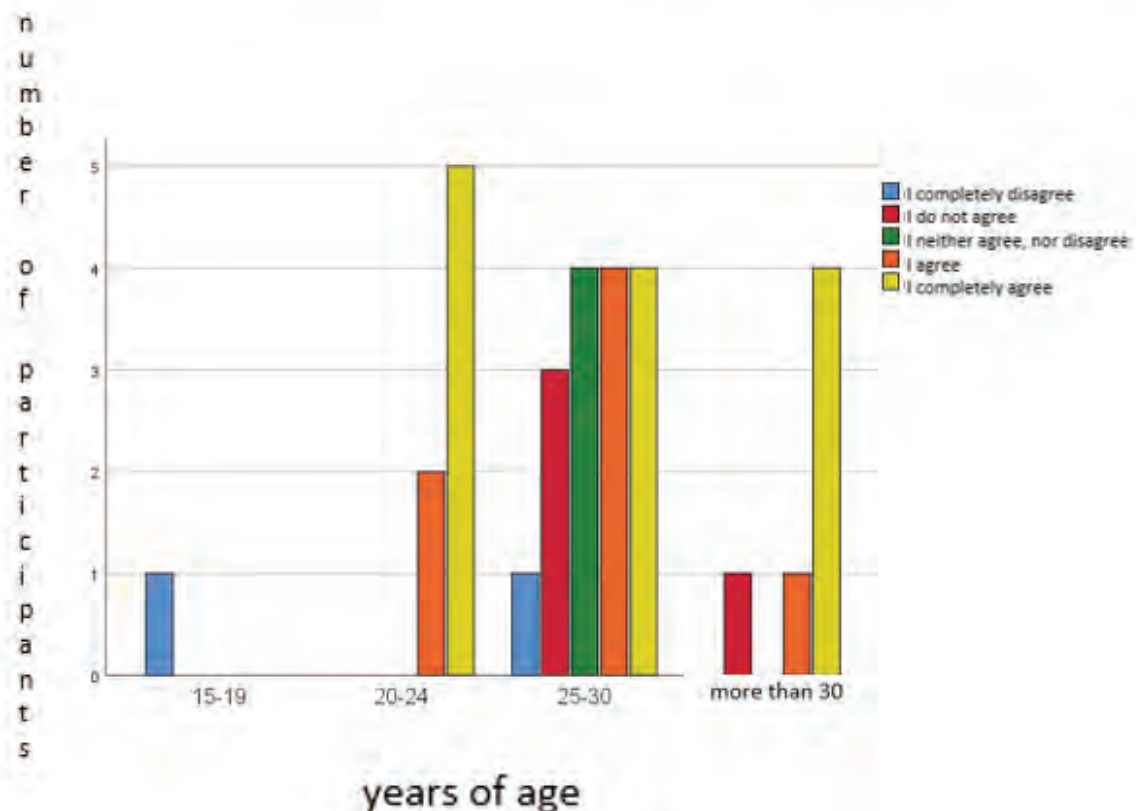
There is an equal number of members of youth councils with the first mandate who disagree (5) and completely agree (5) with the statement of being involved in debates and decision-making processes regarding issues concerning youth. There is no statistically significant correlation  $\chi^2(12)=8.40$ ;  $p=0.75$  between the number of mandates of youth council members and inclusion in debates and decision-making processes regarding issues concerning youth.

It should be mentioned that some of the results originated from the influence of features of local communities. For instance, if the LRSU is rather small, it is most likely that it is not involved in any projects financed by the EU, therefore the president of youth council would not even have the opportunity to have participated in one. However, the result analysis indicates, that the first hypothesis cannot be considered confirmed since there are no statistical correlations between the number of mandates and cooperation between the president of youth council and bodies of LRSU.

For the second hypothesis, claiming that *youth participation in local governance ensures their institutional positioning with the purpose of taking over the leading roles in the administrative system*, the age of participants (question 4) was taken as a predictor variable and compared with the answer to the question, whether the experience of work in youth council influences the development of participants' political careers (question 45). In the age categories from 20-24, 25 to 30 and more than 30 years of age, 13 participants completely agree that participation in youth councils is useful for further development of political careers.

There is a statistically significant correlation  $\chi^2(12)=23.06$ ;  $p=0.03$  between the age of participants and opinion that participation in youth councils is beneficial for further development of political careers of participants. It is, therefore, to be concluded that the second hypothesis is confirmed.

**Chart 7:** Connection of the age of participants and opinion that participation in youth councils is beneficial for further development of political careers of participants.



Sources: Authors

## 7. Discussion and conclusion

Participation of youth in decision-making at local levels is still not satisfactory. Even though the YCA predicts their establishment, youth councils do not exist in many LRSUs in Croatia. The LRSUs are partially to be blamed for this, but more frequently, the responsibility is to be placed on insufficient engagement of youth, either not responding to open calls for candidacy or not fulfilling their roles in youth councils thus being dismissed by the representative bodies. The necessity for empowering the position of youth was also noticed by departmental bodies of state administration, who, in 2020,<sup>12</sup> enlisted the change of measures and act amendments regarding the YCA in their plans of legislative activities. The explanation of the necessity for act amendments of the YCA states, that the change will achieve greater flexibility when founding youth councils and selecting their members while at the same time

<sup>12</sup> The plans of legislative activities for 2020, 2021 and 2022 are available on: <https://zakonodavstvo.gov.hr/godisnji-plan-normativnih-aktivnosti/229>, (accessed 26 January 2022).

paying attention to local specificities, which will ensure easier work of youth councils and their profiling to adequate advisory bodies of the LRSUs.<sup>13</sup>

The research results should be interpreted with a dose of scepticism due to the small number of participants. However, the data obtained from the reports on work of youth councils indicate that, at the time being, there are around 120 youth councils in Croatia and that the research sample represents at least one fourth of the currently active youth councils. The second important piece of information is the fact, that most of the participants are active in their first mandate, although they belong to the age category of older younger persons (25 years of age and more). This implies that youth should be more intensely motivated by all relevant stakeholders for engagement and participation. Furthermore, the results suggest that youth councils are not relevant factors for governance at local levels, regardless the length of the active period of individuals. Why is this so? There are numerous possible answers to this question, however, considering the sample and content of the questions, the obtained research results cannot be accepted as completely representative. Nevertheless, they can be used as basis for future research about the reasons why nearly 73% of the LRSUs do not have youth councils, what the real motives for participation in youth councils are and what influence does youth really have on governance and decision-making at local levels.

## REFERENCES

Bakota, B., Romić, D. (2013): *Organizacija i metode rada u upravi* (Organisation and methods of administrative work), Pravni fakultet Sveučilišta Josipa Jurja Strossmayera u Osijeku, Veleučilište Lavoslav Ružička u Vukovaru, Vukovar

Blažević, R. (2004): *Upravna organizacija – kompendij* (Administrative organisation – compendium), Pravni fakultet Sveučilišta u Rijeci, Rijeka

Buković, N. (2008): *Politika za mlade u Hrvatskoj – kontekst, koncept i ograničenja* (Youth Politics in Croatia – context, concept and limitations), Politička misao, Vol. XLV, br. 2, str. 113. –132. <https://hrcak.srce.hr/file/45604> (accessed 10 December 2021)

Cammaerts, B., Bruter, M., Banaji, S., Harrison, S., Anstead, N. (2016): *Youth Participation in Democratic Life. Stories of Hope and Disillusion*, Palgrave Macmillan, London

Council of Europe, About youth policy, Recommendation CM/Rec(2015)3 of the Committee of Ministers to member States on the access of young people[1]from disadvantaged neighbourhoods to social rights (Adopted by the Committee of Ministers on 21 January 2015 at the 1217th meeting of the Ministers' Deputies), <https://www.coe.int/en/web/youth/about-youth-policy>, (accessed 10 December 2021)

Cvitan, O. (2008): *Upravna organizacija* (Administrative Organisation), Veleučilište u Šibeniku, Šibenik

Dijalog EU-a s mladima - uključi se i reci nam što misliš! (EU Youth Dialogue – engage and tell us what you think!), <https://mzo.gov.hr/vijesti/dijalog-eu-a-s-mladima-ukljuci-se-i-reci-nam-sto-misli/3103>, (accessed 10 December 2021)

---

<sup>13</sup> Draft of act amendments of Youth Councils Act, <https://esavjetovanja.gov.hr/ECon/MainScreen?entityId=14754>, (accessed 26 January 2022).

European Union, EU Youth Strategy, [https://europa.eu/youth/strategy\\_en](https://europa.eu/youth/strategy_en), (accessed 10 December 2021)

Esser, F., De Vresse, C. H. (2007): *Comparing Young Voters' Political Engagement in the United States and Europe*, *American Behavioral Scientist* 50 (9), pp. 1195 – 1213.

Fahmy, E. (2006): *Young Citizens. Young People's Involvement in Politics And Decision Making*, Ashgate, Aldershot

Flanagan, C. A., Gally, L. (2005): *Social Participation and Social Trust in Adolescence: the Importance of Heterogeneous Encounters*, u: Omoto, A. M. – ed: *Processes of Community Change and Social Action*, Laurence Erlbaum, Mahwah

Garcia – Albacete, G. (2014): *Young People's Political participation in Western Europe. Continuity or Generational Change?*, Palgrave Macmillan, London

Ilišin, V. (2003): *Politička participacija mladih i politika prema mladima*: Hrvatska u europskom kontekstu (Youth Participation in Politics and Politics for Youth: Croatia in European Context), *Politička misao*, Vol XL, br. 3, pp. 37–57

Godišnje izvješće o provedbi Zakona o savjetima mladih za 2018. godinu (Annual report on implementation of the Youth Councils Act for 2018), [https://demografijaimladi.gov.hr/UserDocsImages/Direktorij%201/Godisnje%20izvjesce%20o%20provedbi%20Zakona%20o%20savjetima%20mladih%20u%202018.\\_za%20objavu.pdf](https://demografijaimladi.gov.hr/UserDocsImages/Direktorij%201/Godisnje%20izvjesce%20o%20provedbi%20Zakona%20o%20savjetima%20mladih%20u%202018._za%20objavu.pdf), (accessed 20 October 2021)

Godišnje izvješće o provedbi Zakona o savjetima mladih za 2019. godinu (Annual report on implementation of the Youth Councils Act for 2019), <https://demografijaimladi.gov.hr/UserDocsImages/Direktorij%201/Godisnje%20izvjesce%20o%20pracnju%20provedbe%20Zakona%20o%20savjetima%20mladih%20u%202019.%20godini.pdf>, (accessed 30 November 2021)

Gvozdanović, A., Ilišin, V., Adamović, M., Potočnik, D., Baketa, N., Kovačić, M., *Istraživanje mladih u Hrvatskoj 2018./2019.* (Youth Research in Croatia 2018/2019) <http://library.fes.de/pdf-files/bueros/kroatien/15291.pdf>, (accessed 10 December 2021)

Ilišin, V. (2017): *Mladi i politika: trendovi (dis)kontinuiteta* (Youth and Politics: Trends of (dis)continuity) // *Generacija osujećenih. Mladi u Hrvatskoj na početku 21. stoljeća* (Generation of disillusioned youth in Croatia at the beginning of the 21st century.) / Ilišin, Vlasta ; Spajić-Vrkaš, Vedrana (ur.). Zagreb: Institut za društvena istraživanja, pp. 185-254. <http://idiprints.knjiznica.idi.hr/803/1/Generacija%20osuje%C4%87enih.pdf>, (accessed 27 May 2021)

Ilišin, V., Spajić-Vrkaš, V. (2017): *Generacija osujećenih. Mladi u Hrvatskoj na početku 21. stoljeća* (Generation of disillusioned youth in Croatia at the beginning of the 21st century.), Zagreb, Institut za društvena istraživanja, <http://idiprints.knjiznica.idi.hr/803/1/Generacija%20osuje%C4%87enih.pdf>, (accessed 27 May 2021)

Izvješća o Savjetima mladih (Reports on Youth Councils), <https://demografijaimladi.gov.hr/istaknute-teme/mladi-4064/savjeti-mladih-4069/izvjesca-o-savjetima-mladih-4070/4070>, (accessed 10 December 2021)

Izvješće o provedenom ispitivanju mišljenja i potreba mladih Grada Zagreba (Report on research about youth opinions and needs organized by the Youth Council of the City of Zagreb in 2019)

Koprić, I., Marčetić, G., Musa, A., Đulabić, V., Lalić Novak, G. (2014): *Upravna znanost. Javna uprava u suvremenom europskom kontekstu* (Administrative Science. Public administration in modern European context), Pravni fakultet Sveučilišta u Zagrebu, Studijski centar za javnu upravu i javne financije, Suvremena javna uprava, Zagreb

Koprić, I., Manojlović, R. (2013): *Participacija građana u lokalnoj samoupravi - nova hrvatska pravna regulacija i neka komparativna iskustva* (Citizens' participation in local self-government – new Croatian legal regulations and some comparative experiences), Četvrti Skopsko-zagrebački pravni kolokvij: Zbornik radova / Davitkovski, Borče (ur.), Pravni fakultet, Skopje

Kovačić, M. (2014): Politika za mlade u Hrvatskoj – anatomija javne politike (Youth Politics in Croatia – anatomy of public politics), Demokratski potencijali mladih, Zagreb, file:///C:/Users/Jelena/Downloads/767134.12%20(1).pdf, (accessed 10 December 2021)

Kovačić, M., Čulum, B. (2015): *Rad s mladima, teorija i praksa rada s mladima: prilog razumijevanju rada s mladima u hrvatskom kontekstu* (Youth Work Theory and Practice: a contribution to the understanding of youth work in the Croatian context), [https://www.mmh.hr/uploads/publication/pdf/33/Teorija\\_i\\_praksa\\_rada\\_s\\_mladima\\_-\\_Prilog\\_razumijevanju\\_rada\\_s\\_mladima\\_u\\_Hrvatskom\\_kontekstu.pdf](https://www.mmh.hr/uploads/publication/pdf/33/Teorija_i_praksa_rada_s_mladima_-_Prilog_razumijevanju_rada_s_mladima_u_Hrvatskom_kontekstu.pdf), (accessed 10 December 2021)

Marzana, D., Marta, E., Pozzi, M. (2012): *Social action in young adults: Voluntary and political engagement*, *Journal of Adolescence* 35, pp. 497 – 507

Ministarstvo za demografiju, obitelj, mlade i socijalnu politiku, *Nacrt, Nacionalni program za mlade za razdoblje od 2020. do 2024. godine* (Ministry of Demographics, Family, Youth and Social Policy, Draft, National programme for youth in the period from 2020 to 2024), <https://esavjetovanja.gov.hr/ECon/MainScreen?entityId=13290>, (accessed 10 December 2021).

Mreža mladih Hrvatske (Croatian Youth Network), <https://mmh.hr/>, (accessed 10 December 2021)

Nacrt prijedloga Zakona o izmjenama i dopunama Zakona o savjetima mladih (Draft of act amendments of the Youth Councils Act), <https://esavjetovanja.gov.hr/ECon/MainScreen?entityId=14754>, (accessed 26 January 2022)

Planovi zakonodavnih aktivnosti za 2020., 2021. i 2022. godinu (The plans of legislative activities for 2020, 2021 and 2022), <https://zakonodavstvo.gov.hr/godisnji-plan-normativnih-aktivnosti/229>, (accessed 26 January 2022)

Prijedlog Zakona o savjetima mladih (Proposition of the Youth Councils Act), file:///C:/Users/kor123/Downloads/document.pdf, (accessed 20 October 2021)

Pusić, E. (2002): **Nauka o upravi** (Administrative Science), Školska knjiga, Zagreb

Savjet mladih Grada Zagreba, 2019, [https://www.zagreb.hr/userdocsimages/arhiva/odgoj\\_obrazovanje\\_spot/sport%20i%20mladi/Istrazivacki%20izvjestaj%20Mladi%20Grada%20Zagreba%20rujan%202019.pdf](https://www.zagreb.hr/userdocsimages/arhiva/odgoj_obrazovanje_spot/sport%20i%20mladi/Istrazivacki%20izvjestaj%20Mladi%20Grada%20Zagreba%20rujan%202019.pdf) (accessed 21 November 2021)

Središnji državni ured za demografiju i mlade (Central State Office for Demography and Youth), <https://demografijaimladi.gov.hr/istaknute-teme/mladi-4064/savjeti-mladih-4069/4069>, (accessed 10 December 2021)

Taleski, D., Reibold, H., Hurrelmann, K. (2015): ***Building Democracies in South East Europe: Youth as an Unwilling Agent?***// Lost in democratic transition? Political Challenges and Perspectives for Young People in Southeast Europe, Results of Representative Surveys in Eight Countries Hurrelmann, Klaus; Weichert, Michael (Ed.). Sarajevo, Friedrich Ebert Stiftung, pp. 13-66

Tomić – Koludrović, I. (1999): ***Skeptična generacija u protumodernizacijskom kontekstu*** (Sceptic generation in anti-modernisation context), *Politička misao : časopis za politologiju*, Vol. 36 No. 3, pp. 175—193, <https://hrcak.srce.hr/file/50837>, (accessed 10 December 2021)

Vlada Republike Hrvatske (Government of the Republic of Croatia), <https://vlada.gov.hr/program-vlade-republike-hrvatske-za-mandat-2011-2015/12-politika-za-mlade/14915>, (accessed 10 December 2021)

Youth policy, <https://www.youthpolicy.org/>, (accessed 10 December 2021)

Quintelier, E. (2008): ***Who is Politically Active: The Athlete, the Scout Member or the Environmental Activist?: Young People, Voluntary Engagement and Political Participation***, *Acta Sociologica* 51 (4), pp. 355 – 370

Youniss, J., Levine, P. (2009): ***Engaging young people in civil life***, Vanderbilt University Press, Nashville

Youth Councils Act, Official Gazette, no. 23/2007

Youth Councils Act, Official Gazette, no. 41/2014

*A scientific paper*

**Darko Dukić, Ph. D., Full Professor**

Josip Juraj Strossmayer University of Osijek

Department of Physics

E-mail address: darko.dukic@fizika.unios.hr

**Bojan Bodražić, Ph. D. Candidate**

Osijek Women's Football Club

E-mail address: bojanbodrazic@hotmail.com

## ICT USE BY SPORT MANAGERS IN CROATIA

### ABSTRACT

*Technological development has a profound impact on all spheres of society, including sport. Sport organisations need to keep up with technological change and integrate innovations into their operations to improve performance. It is particularly important that sport managers are aware of the benefits of ICT and possess the necessary skills, since they are responsible for technology implementation in their organisations. Now that technology has permeated nearly all aspects of sport, there is a great need for research on the use of ICT among sport managers in order to understand their needs and address them accordingly. Therefore, the aim of this study was to determine the level, purposes, and patterns of ICT use in the management of sport organisations. An online survey was conducted with a sample of Croatian sport managers. In order to answer the research questions, descriptive statistics were calculated, exploratory factor analysis was performed, and Cronbach's alpha reliability coefficients were computed. Respondents' answers suggest that the potential of ICT in the management of Croatian sports organisations is not fully exploited. However, the surveyed managers believe that they themselves rely heavily on ICT in their work. According to the results, there are only a few areas in which the managers use ICT less frequently. In addition, factor analysis identified patterns of sport managers' ICT use by revealing three underlying dimensions. The first factor refers to the use of ICT for management and administration, the second factor to the use of ICT for finding information, and the third factor to the use of ICT for building relationships with stakeholders. The paper explored the issues that have been neglected and poorly addressed in the context of sport management. Despite some limitations, the study provides valuable information and directions for future research.*

**Key words:** *ICT, sport managers, purposes of ICT use, patterns of ICT use, sport management.*

### 1. Introduction

Sport takes various forms and is unique in many ways. In the past, it used to be all about competition and entertainment. Today, sport is no longer just a social and cultural activity capturing the attention of the masses around the world, but is also an important economic phenomenon (Taylor and O'Sullivan, 2009; Novak, Knežević, and Škrobot; 2018; Orlova, Ilin, and Ostroukhov, 2018; Ratten, 2019; Kucera and Fila, 2021). Over the last few decades, sport has become a money-making business. This has significantly changed the way sport is viewed nowadays. Enthusiasm alone is no longer enough to successfully manage sport. Globalisation,

commercialisation, and increasing accountability in sport have led professional and amateur sport organisations to implement business models and sophisticated management systems into their practices (Taylor, Doherty, and McGraw, 2008; Drynda, 2014; Surujlal and Grobler, 2014; Sharpe, Beaton, and Scott, 2018; Vagh, 2019; Goslin and Mosola, 2020). However, it is necessary to take into account that sport has a special position in society and cannot be treated like any other business enterprise (Smith and Stewart, 2010; Lefever, 2012; Gkirtziki et al, 2018). Although sport organisations contribute significantly to the development of national and global economy, one must not forget the many specific features they have (Barnhill, Smith, and Oja, 2021). Ratten (2020) highlights several features of sport organisations that make it unique. First of all, generally the mission of sport organisations is to pursue both financial and social goals, not just one of them. Furthermore, their services are related to physical activity, but there are exceptions such as e-sports. One of the important features of sport organisations is that, typically, they depend on both private and public support. Another characteristic highlighted by Ratten is that sport organisations have to invest in themselves to further their development. Therefore, sport organisations are expected to be knowledge-intensive and to use new information.

There are various definitions of sport management in the literature. According to Baker and Esherick (2013), sport management is both a profession and an academic discipline that in the broadest sense encompasses all activities, individuals, and organisations related to sport through any of its dimensions. Pitts and Stotlar (2007) define sport as the study and practice of all people, activities, and organisations involved in any sport-related business. Novaković and Ilić (2019) describe sport management as a process of anticipating, planning, organising, managing, and controlling all the resources of a sport organisation to achieve the set goals. Similarly, Retar, Plevnik, and Kolar (2013) define sport management as a process of key resources management and cooperation with important stakeholders, which enables the effective realisation of business and sports goals of an organisation. Sport management is also considered a vocation concerning the business aspects of sport that involves areas such as marketing, finance, and accounting (Sawyer and Judge, 2012). For the purposes of this study, sport management needs to be viewed from a broader perspective. The reason for this lies in the fact that the research includes sport managers from diverse backgrounds and settings.

When it comes to sport management, one must distinguish between organisations belonging to the state or public sector, the non-profit or voluntary sector, and the professional or commercial sector. Hence, the management of sport organisations involves the application of techniques and strategies from governmental, non-profit, and business organisations (Hoye et al, 2015). Sport organisations from all three sectors are strongly influenced by a number of factors. To fulfil their mission and goals, they need to be innovative and flexible, to commit to sustainable growth, to seek quality leadership, and to act with integrity (Covell and Walker, 2017).

Sport management is a relatively new and rapidly growing discipline. In addition to sport and management, it covers a wide range of areas including marketing, finance, accounting, entrepreneurship, statistics, analytics, ethics, law, psychology, organisational behaviour, and ICT. The focus of sport management is on the business side of sport. Therefore, a sport manager is primarily expected to possess knowledge and skills related to management functions such as planning, organising, leading, controlling, and staffing. However, given the many specific features of sport, people who manage sport organisations need to have other competencies as well. A sport manager must know his organisation well and understand the processes that take place in it. Managing a small amateur club is not the same as managing a large professional sport organisation. A person who manages a small amateur club often does more work, as there



is no need and, quite often, there is no money to hire more staff. In contrast, managers in large professional sport organisations mainly deal with specific issues, such as promotion, public relations, facility management, contract negotiations, organising competitions, etc. However, what they both have in common is that they are responsible for securing funding. While small amateur clubs rely heavily on membership fees and donations, large professional clubs raise money through the sale of tickets, media rights, sports equipment, and souvenirs, or through sponsorships. Although money is very important, especially for large professional clubs, in sports, unlike in the business world, there are other imperatives. The desire to win, to be the best, is certainly one of the most important among them.

Today's sport managers have a demanding job. They need to know how to respond to the challenges facing their organisations in an increasingly complex and ever-changing environment greatly due to the rapid technological advances. In the world we live in, information and communication technology (ICT) has a huge impact on sport management. ICT can be defined as a “diverse set of technological tools and resources used to communicate and to create, disseminate, store, and manage information” (Blurton, 1999). There are a number of areas where ICT can be employed to assist sport managers in their work. However, the potential of ICT cannot be fully exploited without having an insight into how sports managers use it. Thus, the purpose of this study is to investigate the use of ICT by Croatian sport managers.

## **2. Sport managers and ICT**

The transfer and integration of knowledge from various disciplines have brought about significant change to the sport business (Brüggemann, 2009). The technology used in sport is advancing very rapidly, providing means and devices for a wide range of organisations, from recreational to top-level sport. Modern sport organisations rely on advanced technologies to increase their operational efficiency and help athletes improve their performance. In addition, technologies change the way people consume sport, improve sport management, enable new classes of non-human athletes, and drive the development of new sports (Schmidt, 2020). Bearing this in mind, Ratten (2020) concludes that technologies are ubiquitous in sport and affect playing, consumption, and the spectator experience. Mallen (2019) points out that technology-enabled options put pressure on sport managers to re-evaluate many policies and directives. There are other implications for sport management. The introduction and application of technologies have multiple impacts on the management of sport organisations. This process affects virtually every aspect of sport management, such as financial, marketing, legal, public relations, and sociological. All sport managers are faced with a challenge of providing leadership in the implementation of the new technologies. According to Mallen, sport organisations need skilled and innovative leaders to help them successfully navigate technological change.

Sport organisations of all kinds need a variety of information from different sources. The tools they use to collect, process, store, and share information inside and outside the organisation depend on a number of factors. Various digital tools have been developed to support specific areas of sport management practices (e.g. sport industry management, intercollegiate athletics administration, sport facility and event management, recreational sport management, and sport analytics). However, just like other decision makers, sport managers often use general-purpose ICT tools in their daily activities. People managing a sport organisation need to have the knowledge and skills to choose the ICT that best meets the organisation's needs. The ICT tools chosen should be efficient as well as cost-effective. Fully functional ICT solutions are the best

option, but the question is whether the sport organisation has the funds to procure and maintain them. This is especially true for non-profit and amateur sport organisations. Therefore, Minikin (2011) suggests that managers should consider all key factors before investing in ICT. One such factor is organisational culture. The implementation of ICT is often unsuccessful because of the reluctance of people within the organisation to adopt it. This is why it is important to prepare them for technological change and provide ICT training to develop their skills. Considering this, Minikin concludes that the main challenge for sport managers is to determine what the needs of their organisations are and whether the organisation has the ability to use available ICT tools. Managers then need to determine whether the cost of procuring and maintaining ICT is justified given the expected benefits of its use.

In addition to increasing the efficiency and cost-effectiveness of sport organisations at all levels, the implementation of ICT plays a vital role in bringing innovation to the sports sector (Nová, 2015). According to Shen, Li, and Wang (2012), the most important application areas for ICT in this sector are government affairs management, school physical education, competitive sports, mass sports, and sports and leisure. Ramesh (2016) cites the following examples of ICT applications that improve processes in sports: monitoring player health status, preparing training schedules, obtaining training feedback, assessing physical activity, analysing team performance in competitions, storing athletes' personal data, and finding information on the latest training programmes.

The use of ICT greatly facilitates the work of sport managers. Moreover, the age in which we live makes it virtually impossible to work in sport management without using ICT. Obtaining timely and accurate information is highly important in this sector. To achieve this, it is necessary to establish adequate information systems in sport organisations. There are several main types of information systems designed for lower, middle or higher-level sport managers. Among the most important ones are transaction processing systems, management information systems, decision support systems, and executive support systems (Li and Wang, 2011). Naturally, sport managers must possess the necessary skills to effectively use ICT and successfully guide organisations through the process of technological change.

### **3. Objectives and research questions**

Digitalisation, interconnection, automation, and interoperability, which are enabled by ICT, are important features of the world in which we live. Given that ICT is a global phenomenon and one of the main drivers of change in modern society, it is necessary to understand different aspects of its use. That is why research on the use and adoption of ICT in various contexts and areas is being conducted, including the business sector (Acar et al, 2005; Gollakota, 2008; Januszewska, Jaremen, and Nawrocka, 2015; Zečević and Radović-Stojanović, 2017; Sołek-Borowska, 2018; Tang and Konde, 2020). However, few studies are available that address these issues among managers (Birchall and Giambona, 2008; Dukić, Turkalj, and Bodražić, 2011; Solis, Howe, and O'Brien, 2015; Dukić, Dukić, and Bertović, 2016; Szabo et al., 2017). Despite the importance and impact on management practices, the use of ICT by sport managers has been scarcely explored. This conclusion is drawn based on an analysis of the available literature. Thus, the paper intends to fill this gap by investigating the use of ICT by Croatian sport managers. The significance of this research is also evidenced by the study of Gabrić, Škorić, and Mornar Jelavić (2020), who found that Croatian sport managers do not pay enough attention to developing ICT skills.

In particular, the study seeks to determine the level, purposes, and patterns of ICT use in the management of sport organisations. To achieve that, the research aims to answer the following questions:

- To what extent do Croatian sport managers agree with the statement that the level of ICT use in the management of their sport organisation is sufficiently high?
- For what purposes do Croatian sport managers use ICT in their work?
- What are the patterns of ICT use among Croatian sport managers, i.e. what do the variables that measure the use of ICT in management have in common?

#### **4. Instrument and sample**

The survey was conducted during the first half of 2021 using a structured online questionnaire administered via Google Forms. The first part of the questionnaire looks at the socio-demographic characteristics of the respondents, followed by questions on the use of ICT in sport management. The invitation to participate in the survey was sent to managers in national Olympic sport federations and clubs in Croatia. Managers are considered to be all persons who are responsible for planning, organising, leading, controlling, and staffing in sport organisations, from the lowest to the highest level. Most respondents were contacted via e-mail, which contained a link to the survey. The invitation e-mail was sent to over 1000 potential participants. They were encouraged to share a link to the survey with other sport managers.

The sample included at least one representative from each of the 44 national Olympic sport federations, which incorporate more than 4100 clubs (Šamija, Kolar, and Jeričević, 2019). The questionnaire was completed by 310 managers. Among them, 68.7% were men and 31.3% women. The mean age of the respondents was  $43.32 \pm 9.97$  years. The youngest surveyed manager was 21, and the oldest was 69 years old. Of all participants, 30% had secondary school education, 58.1% completed undergraduate or graduate studies, and 11.9% held a postgraduate degree. Most respondents (83.9%) said they were senior managers, such as presidents of national sport federations, general directors of sport clubs, and chairmen and members of the executive and supervisory boards. The other 16.1% stated that they were middle or lower level managers. There were 17.4% of participants from national sport federations, 9.7% from professional clubs, and 72.9% from amateur clubs.

#### **5. Results of the analysis**

To answer the research questions, descriptive statistics (mean, median, mode, standard deviation, and interquartile range) were calculated, exploratory factor analysis was performed, and Cronbach's alpha reliability coefficients were computed. Respondents were first asked to indicate the degree to which they agree or disagree with the statement that the level of ICT use in the management of their sport organisation is sufficiently high. Their responses were measured on a five-point Likert scale (1 = strongly disagree, 2 = somewhat disagree, 3 = neither agree nor disagree, 4 = somewhat agree, 5 = strongly agree). Most respondents somewhat agreed with this statement, which means that the mode was 4. The mean for this statement was 3.4, and the median was 3. Thus, it could be concluded that Croatian sport managers only somewhat agreed that the level of ICT use in the management of their sport organisations was sufficiently high. This suggests that there is still a lot of room for improvement. A standard deviation of 1.21 and an interquartile range of 2 indicated there was significant variability in sport managers' responses.

Respondents were then asked to rate how often they use ICT in their work on a five-point Likert scale (1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always). Descriptive statistics of their responses are presented in Table 1.

The mean value for most items was greater than 4, indicating frequent use of ICT by respondents. According to the means, the surveyed sport managers most often used ICT to find information and follow sports news. Slightly less frequently they used ICT to communicate within the organisation, and in organising and planning activities. The means for seven items ranged from 4.08 to 4.38. This suggests that respondents often used ICT for the purpose of coordinating, obtaining information from social networks, seeking information for decision-making, arranging business meetings, monitoring and controlling business processes, building relationships with public authorities, and analysing business data. For two items, the mean was slightly less than 4. Thus, it can be concluded that Croatian sport managers used ICT less frequently for building relationships with sponsors and managing marketing activities. One item stands out from the rest. The respondents rated the frequency of using ICT for the purpose of building relationships with fans with an average of 2.51. For this item, the median was 2 and the mode was 1, which further confirmed that the surveyed sport managers relatively rarely used ICT to build relationships with fans. Although this finding is somewhat surprising, it can be explained by the fact that the sample included mainly managers from non-profit and amateur clubs who are less driven to establish and maintain such relationships as part of their work. It should be noted that there were only three more items for which the median was less than 5, while the mode was not 5 only for this one item.

**Table 1:** Descriptive statistics of participants' responses regarding the use of ICT

<b>Purpose of use</b>	<b>Mean</b>	<b>Median</b>	<b>Mode</b>	<b>Standard deviation</b>	<b>Interquartile range</b>
Coordination	4.38	5.00	5.00	0.97	1.00
Arranging business meetings	4.24	5.00	5.00	1.05	1.00
Organising	4.42	5.00	5.00	0.92	1.00
Planning	4.40	5.00	5.00	0.92	1.00
Seeking information for decision making	4.28	5.00	5.00	0.97	1.00
Business data analysis	4.08	5.00	5.00	1.13	2.00
Monitoring and controlling business processes	4.20	5.00	5.00	1.10	1.00
Communication within the organisation	4.43	5.00	5.00	0.86	1.00
Seeking information about sports	4.44	5.00	5.00	0.88	1.00
Following sports news	4.44	5.00	5.00	0.91	1.00
Getting information from social networks	4.34	5.00	5.00	1.08	1.00
Building relationships with fans	2.51	2.00	1.00	1.55	3.00
Building relationships with sponsors	3.95	4.00	5.00	1.15	2.00
Managing marketing activities	3.85	4.00	5.00	1.30	2.00
Building relationships with public authorities	4.16	4.00	5.00	1.00	1.00

Source: Authors

Standard deviations and interquartile ranges largely indicated that participants' views on the issues analysed were similar. Four items were exceptions. Respondents' answers relating to the use of ICT to build relationships with fans were the least homogeneous. Relatively large variability in responses was found in three more items (management of marketing activities, building relationships with sponsors, and analysing business data).

The results suggest that the surveyed sport managers relied heavily on ICT in their work. In contrast, their answers showed that the potential of ICT in the management of sport organisations was not fully exploited. Hence, it could be concluded that respondents were aware that ICT can be used in many sport management areas, not covered by this study, where they deemed that the level of use of technological tools was not adequate. It is also possible that the respondents believed that, unlike them, other sport managers did not use ICT to a sufficient extent, which would explain their cautious assessments.

To determine the patterns of ICT use among Croatian sport managers, an exploratory factor analysis was conducted. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO = 0.921) and the Bartlett's test of sphericity ( $\chi^2 = 3477.358, p < 0.001$ ) confirmed that the data were appropriate for analysis. A principal components extraction with varimax rotation was performed on the items. Three factors which explained 69.7% of the total variance were revealed. The results of the factor analysis are shown in Table 2.

**Table 2:** Results of factor analysis

	<b>Factor loading</b>	<b>Eigenvalue</b>	<b>Variance explained (%)</b>
<b>Factor 1:</b> Use of ICT for management and administration		5.207	34.7
Coordination	0.775		
Arranging business meetings	0.748		
Organising	0.747		
Planning	0.738		
Seeking information for decision making	0.721		
Business data analysis	0.710		
Monitoring and controlling business processes	0.706		
Communication within the organisation	0.570		
<b>Factor 2:</b> Use of ICT for finding information		2.648	17.7
Seeking information about sports	0.777		
Following sports news	0.776		
Getting information from social networks	0.745		
<b>Factor 3:</b> Use of ICT for building relationships with stakeholders		2.594	17.3
Building relationships with fans	0.802		
Building relationships with sponsors	0.646		
Managing marketing activities	0.616		
Building relationships with public authorities	0.572		

Source: Authors

The first factor, which explained 34.7% of the total variance, contained eight items relating to the use of ICT for management and administration. All variables except one were quite strongly correlated with the factor. The first factor loaded most heavily on items reflecting the use of ICT with the purpose of coordinating, arranging business meetings, and organising. The variable that represents the use of ICT for communication within the organisation showed weaker loading on the first factor.

The second factor explained 17.7% of the total variance. It was comprised of three items which were all concerned with the use of ICT for finding information, namely seeking information about sports, following sports news, and getting information from social networks. All loadings were greater than 0.7, indicating that the second factor strongly influenced the variables.

There were four items that made up the third factor. This factor, which explained 17.3% of the total variance, represented the use of ICT for building relationships with stakeholders. Building relationships with fans was the variable most strongly correlated with the third factor. The variable defined as the use of ICT for building relationships with public authorities had the weakest loading on the factor.

Additionally, Cronbach's alpha coefficients were calculated to assess the internal consistency of the subscales derived from the factor analysis. Cronbach's alpha reliability coefficients of the subscales were 0.921, 0.82, and 0.806, respectively, indicating a good internal consistency of the constructs.

## 6. Conclusion

Due to a large number of different stakeholders in sports, the job of sport managers is quite demanding. They face a variety of challenges, one of them being technological advancement. Rapid technological development has brought dramatic change to all spheres of life, including sport. To keep up and develop, sport organisations need to integrate ICT into their everyday practices. The responsibility for this lies with sports managers who need to lead the ICT implementation process. The impact that technology has on society and the environment, including sport, warrants further research on the use of ICT by different groups of people aimed at gaining a better understanding of their needs and respond accordingly. With this in mind, the present study investigated the use of ICT by sport managers in Croatia. The responses suggest that the full potential of ICT in this environment is not yet being fully realised. In contrast, the surveyed sport managers find that they themselves use ICT in their work quite often. This conclusion is drawn based on the respondents' self-reported frequency of ICT use. In almost all researched areas, sport managers rely heavily on ICT. In addition, exploratory factor analysis identified patterns of ICT use by Croatian sport managers. Factor analysis revealed three dimensions underlying their use of ICT. The first factor refers to the use of ICT for management and administration, the second factor to the use of ICT for finding information, and the third factor to the use of ICT for building relationships with stakeholders.

This paper explored the issues that have been only superficially addressed in the context of sport management. Although the study provides valuable information, there are some limitations that need to be considered. As in any survey, the possibility of social desirability bias cannot be ruled out. Thus, despite the fact that the questionnaire was anonymous, the results may have been affected by the tendency of some respondents to answer questions in a way they deem to be more acceptable to others. The second limitation concerns the representativeness of the sample. In the absence of any data on the population, it was not possible to determine how well the sample represents all Croatian sport managers. Given the diversity of respondents, it is

believed that the sample reflects the characteristics of the population that it is intended to represent. This implies that the conclusions of the study may be considered valid. It should also be noted that the questionnaire used in the research contained more general questions. The reason for that lies in the fact that the target population was all sport managers in Croatia. Due to the unique features of sport and peculiarities of sport organisations, it was not possible to use the instrument with more specific questions. Therefore, to obtain a deeper insight into this issue, future research should focus on homogeneous groups of sport managers. Differences with respect to background characteristics of sport managers also need to be explored. In addition, it will be necessary to examine the extent to which higher education institutions in the field of sport management prepare their students to use new technologies and lead the ICT implementation process.

## REFERENCES

- Acar, E., Koçak, I., Sey, Y., Arditi, D. (2005): *Use of Information and Communication Technologies by Small and Medium-Sized Enterprises (SMEs) in Building Construction*, Construction Management and Economics, Vol. 23, No. 7, pp. 713-722.
- Baker, E. D., Esherick, C. (2013): *Fundamentals of Sport Management*, Human Kinetics, Champaign.
- Barnhill, C. R., Smith, N. L., Oja, B. D. (2021): *Organizational Behavior in Sport Management: An Applied Approach to Understanding People and Groups*, Palgrave Macmillan (Springer Nature), Cham.
- Birchall, D. W., Giambona, G. (2008): *The Impact of ICT on the Work Patterns of Managers and Their Organisations*, EuroMed Journal of Business, Vol. 3, No. 3, pp. 244-262.
- Blurton, C. (1999): *New Directions in Education*, in Tawfik, M., Bartagnon, G., Courier, Y., eds.: World Communication and Information Report 1999 – 2000. UNESCO Publishing, Paris, pp. 46-61.
- Brüggemann, G.-P. (2009): *Sports Technologies*, in Bullinger, H.-J., ed.: Technology Guide: Principles – Applications – Trends, Springer, Dordrecht, pp. 442-445.
- Covell, D., Walker, S. (2017): *Managing Intercollegiate Athletics*, 2nd ed., Routledge, Abingdon.
- Drynda, P. (2014): *Brand Image Management in Sport on the Example of Kolejarz Opole*, Central and Eastern European Journal of Management and Economics, Vol. 2, No. 2, pp. 141-153.
- Dukić, G., Dukić, D., Bertović, N. (2016): *The Impact of Information and Communication Technologies on Public Administration Managers and Their Work*, in Mihanović, D., Hunjet, A., Primorac, Z., eds.: Proceedings of the 18th International Scientific Conference on Economic and Social Development – Building Resilient Society, Varaždin Development and Entrepreneurship Agency; University North; Faculty of Management University of Warsaw, Varaždin, pp. 353-362.
- Dukić, G., Turkalj, D., Bodražić, B. (2011): *The Purposes of Croatian Managers' Computer Usage*, in Luzar-Stiffler, V., Jarec, I., Bekic, Z., eds.: Proceedings of the 33rd International Conference “Information Technology Interfaces” (ITI 2011), SRCE University Computing Centre, University of Zagreb, Zagreb, pp. 397-402.

- Gabrić, D., Škorić, S., Mornar Jelavić, M. (2020): *Komparativna analiza edukacije menadžera u kineziološkoj rekreaciji i ostalim djelatnostima*, Poslovna izvrsnost, Vol. 14, No. 2, pp. 107-118.
- Gkirtziki A., Yfantidou G., Panagiotopoulos D., Costa G., Karagkounidis A. (2018): *Broadcasting Rights under the EC Antitrust Rules*, Advances in Sport Management Research, Vol. 1, No. 1, pp. 91-112.
- Gollakota, K. (2008): *ICT Use by Businesses in Rural India: The Case of EID Parry's Indiagriline*, International Journal of Information Management, Vol. 28, No. 4, pp. 336-341.
- Goslin, A. E., Mosola, M. E. (2020): *Towards a Viable Business Model for the Management of Professional Football in Africa*, African Journal for Physical Activity and Health Sciences, Vol. 26, No. 1, pp. 1-20.
- Hoye, R., Smith, A. C. T., Nicholson, M., Stewart, B. (2015): *Sport Management: Principles and Applications*, 4th ed., Routledge, Abingdon.
- Januszewska, M., Jaremen, D. E., Nawrocka, E. (2015): *The Effects of the Use of ICT by Tourism Enterprises*, Zeszyty Naukowe Uniwersytetu Szczecińskiego, Service Management, Vol. 16, pp. 65-73.
- Kucera, J., Fila, M. (2021): *Business Environment and the Performance of the Sports Industry in Relation to the Population Physical Activity of the EU*, Journal of Business, Vol. 10, No. 1, pp. 31-42.
- Lefever, K. (2012): *New Media and Sport: International Legal Aspects*, T.M.C. Asser Press, The Hague.
- Li, C., Wang, Z. (2011): *Research on the Applications of Information Technology in Sport Management*, in Qu, X., Yang, Y., eds.: Information and Business Intelligence, Vol. 2, Springer, Heidelberg, pp. 247-252.
- Mallen, C. (2019): *Introduction to Emerging Technologies and Their Implications in Sport Management*, in Mallen, C., ed.: Emerging Technologies in Sport: Implications for Sport Management, Routledge, Abingdon, pp. 1-15.
- Minikin, B. (2011): *Information Technology and Voluntary Sport Organisations*, in Robinson, L., Palmer, D., eds.: Managing Voluntary Sport Organisations, Routledge, Abingdon, pp. 239-256.
- Nová, J. (2015): *Specific Features of Sport and Their Influence on Entrepreneurship in Sport*, Studia sportiva, Vol. 9, No. 1, pp. 197-206.
- Novak, I., Knežević, B., Škrobot, P. (2018): *Sport as an Entrepreneurial Activity and Possibility of Selffinancing throughout Crowdfunding Platforms*, International Journal Vallis Aurea, Vol. 4, No. 1, pp. 59-74.
- Novaković, S., Ilić, R. (2019): *Menadžment u sportu*, Univerzitet Singidunum, Beograd.
- Orlova, L., Ilin, A., Ostroukhov, S. (2018): *Sports Industry: State Regulation, Entrepreneurship or Public-Private Partnership*, Journal of Modern Competition, Vol. 12, No. 2-3, pp. 115-125.
- Pitts, B. G., Stotlar, D. K. (2007): *Fundamentals of Sport Marketing*, 3rd ed., Fitness Information Technology, Morgantown.
- Ramesh, K. A. (2016): *Role of Information Technology in Enhancing Sports Performance*, International Journal of Physical Education, Sports and Health, Vol. 3, No. 5, pp. 277-279.



- Ratten, V. (2019): *Sport Entrepreneurship and Public Policy: Future Trends and Research Developments*, Journal of Entrepreneurship and Public Policy, Vol. 8, No. 1, pp. 207-216.
- Ratten, V. (2020): *Sport Start-ups: The Role of Networking*, in Ratten, V., ed.: *Sport Entrepreneurship: An Economic, Social and Sustainability Perspective*, Emerald Publishing Limited, Bingley, pp. 93-106.
- Ratten, V. (2020): *Sport Technology: A Commentary*, The Journal of High Technology Management Research, Vol. 31, No. 1, Article 100383.
- Retar, I., Plevnik, M., Kolar, E. (2013): *Key Competences of Slovenian Sport Managers*, Annales Kinesiologiae, Vol. 4, No. 2, pp. 81-94.
- Sawyer, T. H., Judge, L. W. (2012): *The Management of Fitness, Physical Activity, Recreation, and Sport*, Sagamore Publishing, Urbana.
- Schmidt, S.L. (2020): *How Technologies Impact Sports in the Digital Age*, in Schmidt, S.L., ed.: *21st Century Sports: How Technologies Will Change Sports in the Digital Age*, Springer, Cham, pp. 3-14.
- Sharpe, S., Beaton, A., Scott, O. (2018): *Considering Ongoing Professionalization in Sport Organizations: A Case Study of the ACT Brumbies Super Rugby Club*, Journal of Global Sport Management, Vol. 3, No. 3, pp. 215-236.
- Shen, F., Li, J., Wang, Z. (2012): *Information Technology and Its Application in Sports Science*, in Jin, D., Lin, S., eds.: *Advances in Future Computer and Control Systems*, Vol. 1, Springer, Heidelberg, pp. 591-596.
- Smith, A. C. T., Stewart, B. (2010): *The Special Features of Sport: A Critical Revisit*, Sport Management Review, Vol. 13, No. 1, pp. 1-13.
- Sołek-Borowska, C. (2018): *The Use and Benefits of Information Communication Technology by Polish Small and Medium Sized Enterprises*, Online Journal of Applied Knowledge Management, Vol. 6, No. 1, pp. 211-225.
- Solis, F. A. M., Howe, J., O'Brien, W. J. (2015): *Integration of Information Technologies into Field Managers' Activities: A Cognitive Perspective*, Journal of Management in Engineering, Vol. 31, No. 1, Article 4014001.
- Surujlal, J., Grobler, W. C. J. (2014): *Retaining Sport Coaches: A Qualitative Assessment of Retention Strategies at Sport Clubs in South Africa*, Mediterranean Journal of Social Sciences, Vol. 5, No. 2, pp. 651-658.
- Szabo, L., Romanova, A., Bolek, L., Zelina, M. (2017): *Intensity of ICT Use by Managers of Agricultural Enterprises*, Agricultural Economics, Vol. 63, No. 11, pp. 485-492.
- Šamija, K., Kolar, J., Jeričević, M., eds. (2019): *National Sports Program 2019 – 2026: Towards a Healthy and Active Nation Proud of Its Sporting Achievements*, Central State Office for Sport, Zagreb.
- Tang, Y. K., Konde, V. (2020): *Differences in ICT Use by Entrepreneurial Micro-Firms: Evidence from Zambia*, Information Technology for Development, Vol. 26, No. 2, pp. 268-291.
- Taylor, M., O'Sullivan, N. (2009): *How Should National Governing Bodies of Sport Be Governed in the UK? An Exploratory Study of Board Structure*, Corporate Governance: An International Review, Vol. 17, No. 6, pp. 681-693.

Taylor, T., Doherty, A., McGraw, P. (2008): *Managing People in Sport Organizations: A Strategic Human Resource Management Perspective*, Butterworth-Heinemann, Oxford.

Vagh, M. G. (2019): *Sport Management: Strategic Planning of the Resources for the Welfare of Athletes*, International Journal of Physiology, Nutrition and Physical Education, Vol. 4, No. 1, pp. 1488-1490.

Zečević, A., Radović-Stojanović, J. (2017): *The Use of Information and Communication Technologies in Enterprises in Serbia*, Ekonomika preduzeća, Vol. 65, No. 5-6, pp. 393-402.

*A scientific paper*

**Gordana Dukić, Ph. D., Full Professor**

Josip Juraj Strossmayer University of Osijek, Faculty of Humanities and Social Sciences

E-mail address: gdukic@ffos.hr

## **MANAGERS' INFORMATION LITERACY AND THEIR DECISION-MAKING ABILITY**

### ***ABSTRACT***

*The success of any organisation largely depends on its management. It is of utmost importance that managers at all levels make informed decisions, which implies that they need to know how to find, evaluate, and use information. Therefore, managers must be information literate to be able to carry out their functions in today's complex and dynamic business environment. With this in mind, the aim of the present study was to investigate the information literacy of Croatian managers in the context of their ability to find information and use it effectively in the decision-making process. In order to answer the research questions, an online survey was conducted on a sample of Croatian managers. In addition to descriptive statistics, the Wilcoxon signed rank test, Mann-Whitney test, and Kruskal-Wallis test were used to analyse the data. According to the results, the surveyed managers were quite confident in their general information literacy skills, as well as in their ability to find and use information effectively in decision-making. The study further revealed that the analysed groups of managers with different background characteristics mostly did not differ significantly in their self-assessments, with the exception of age and management level. However, only age proved to be an important predictor of managers' information literacy-related skills. In all cases, the youngest managers' self-assessments were highest, while the oldest managers gave themselves the lowest ratings. The issues addressed in this paper have not been adequately examined. Seen in this context, these findings expand knowledge about the information literacy of managers and their decision-making ability.*

**Key words:** *managers, information literacy, decision-making, analysis of differences.*

### **1. Introduction**

Efficient and effective management is a key to the success of any organisation. It is essential for the smooth running of business processes and achieving intended outcomes. In this context, management can be simply defined as the attainment of organisational goals through planning, organising, leading, and controlling available resources (Samson, Donnet, and Daft, 2021). These are known as the core or basic management functions (Obiefuna, 2014; Schraeder et al., 2014; Schermerhorn and Bachrach, 2018; Peterlin et al., 2021). In addition to the four mentioned above, there are several other management functions such as commanding, coordinating, decision-making, influencing, motivating, staffing, and communicating (McNamara, 2009). In order to perform these functions, managers need up-to-date, accurate, and relevant information. Therefore, they have to know how to acquire and use information. This means that managers must be information literate.

Information literacy has become one of the core competencies in modern society. Indeed, this is an essential skill for life and work in the Information Age. According to the American Library

Association (1989), information literate people are those who “know how to find, evaluate, and use information effectively to solve a particular problem or make a decision.” Nikou et al. (2020) emphasise that information literacy helps to develop critical awareness necessary for interpreting and making judgments about a source’s characteristics in terms of its accessibility and quality. However, they warn that a lack of quality assurance mechanisms could lead to a reluctance to use digital sources. In the workplace context, Cheuk (2008) views information literacy as a set of employees' abilities to interact with information when it is required to address some business issues or work-related problems. More precisely, Cheuk defines information literacy in the workplace as “a set of abilities for employees to recognize when information is needed and to locate, evaluate, organize and use information effectively, as well as the abilities to create, package and present information effectively to the intended audience.” Thus, the importance of information literacy is not only reflected in a decision-making process but also in creating business value (Ahmad, Widén, and Huvila, 2020). This is especially applicable to managers as facilitators and decision-makers.

## 2. Theoretical framework

Today, information literacy skills are of vital importance for managers at all levels. By enhancing such skills managers improve their decision-making ability. According to Meutia et al. (2019), information literacy skills allow managers to identify information needs, find information sources, evaluate collected information, and organise and integrate information. In other words, it allows managers to make better, more-informed decisions and thus improve their performance. Moreover, information literacy helps managers to increase employees’ creativity (Rajabzadeh and Esmacelpour, 2016). Ding, Guo, and Zhang (2013) perceive information literacy of senior managers as one of the human factors that influence business processes. These authors believe that some aspects of senior managers' information literacy are directly related to the process of change.

The study by Marković (2021) points to the importance of another dimension of managers’ information literacy. Managers must be information literate in order to properly evaluate the role of IT in businesses and effectively use it as a decision-making tool. In her article, Marković stated that in the context of IT management, information literacy includes recognising when information is needed, efficiently finding information, transforming information into new knowledge, and disseminating information to others. Finally, it must not be forgotten that information literacy should be an integral part of managers' qualifications (Bolek, Kokles, and Korček, 2016). Therefore, it is necessary to raise awareness among business management students regarding the development of information literacy skills during both formal education and professional career (Santos and Mayoral, 2018).

The level of information literacy among some population groups has been relatively well researched. For example, there are many studies on students’ information literacy (Rafique and Khan, 2017; Flywel and Jorosi, 2018; Naveed and Mahmood, 2019; Aharony and Gazit, 2020; Al-Qallaf, 2020; Svensson, Wilk, and Åman, 2022). Several other related topics, such as health information literacy, have also been widely explored (Eriksson-Backa et al., 2012; McCabe and Wickham, 2016; Hirvonen et al., 2020; Wang et al., 2022). However, despite its importance, the information literacy of managers has not yet received the attention it deserves. There are a few empirical studies in the available literature that have directly addressed this issue. Their main findings are presented in the next chapter.

### 3. Empirical studies on information literacy of managers

Kord, Andouhjerdi, and Hallajian (2014) investigated the information literacy of managers in an Iranian communications company and its effect on their efficiency. According to the results, slightly more than half of the respondents had above-average information literacy skills. It was also revealed that information literacy has a positive impact on managers' performance. As part of a broader research effort, Lin, Ku, and Huang (2014) examined the information literacy of Taiwanese top managers. In the survey, they were asked to rate their familiarity with the technology used to create, access, present, and disseminate information on a seven-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). The mean of this item was 5.29 with a standard deviation of 1.16. The authors also concluded that information literacy enables managers to understand the value of innovative information technologies for their companies. The results of the research by Zenita et al. (2015) showed that Indonesian bank managers were highly confident in their information literacy skills. In addition, it was confirmed that information literacy significantly affected managerial performance. In contrast, Tait and Edwards (2016) found that information literacy of public sector managers in the Welsh Government were limited. Similarly, Farokhzadian et al. (2016) revealed that Iranian nurse managers did not have the appropriate skills to search and retrieve information. Using a sample of managers and directors of Serbian SMEs, Simić, Slavković, and Ognjanović (2020) explored their information literacy skills. For this purpose, a 12-item questionnaire was developed and administered to the target population. Respondents rated their agreement with the statements on a five-point Likert scale, where 1 represented strong disagreement and 5 represented strong agreement. With one exception, the participants' mean responses ranged from 3.45 to 3.94, suggesting that their level of information literacy was not satisfactory. A similar conclusion emerges from a survey conducted on a sample of Croatian health managers (Marković and Milković, 2021).

Some aspects of managers' information literacy have also been touched upon by Dukić, Turkalj, and Bodražić (2010). Their sample consisted of Croatian business managers. On a five-point Likert scale (1 being the lowest and 5 being the highest score), the surveyed managers rated their overall computer and information literacy skills as 3.51. Based on the interviews with Estonian top and middle library managers, Virkus and Mandre (2015) found that they were aware of the importance of information literacy. In addition, the interviewed managers related the concept of information literacy to their everyday practice. After analysing several previous studies, Ottonicar, Valentim, and Feres (2018) concluded that Brazilian managers valued knowledge and lifelong learning, but did not understand that information literacy influences decision-making. Poorhassan (2020) examined the relationship between information technology and project cost management from the perspective of executives in an Iranian cement company. The results of the study suggest that failure to control costs was associated with poor information literacy of managers.

### 4. Study aims, research questions, and hypotheses

As previously highlighted, information literacy skills are very important for managers as decision-makers. In a time of rapid technological change and growing business complexity, such skills are required by managers at the strategic, tactical, and operational levels for successful completion of their assignments. Information literacy skills enable managers to locate, access, choose, collect, and use the best and most relevant information when making decisions. In view of this, the main aim of the present study was to investigate the information

literacy of Croatian managers in the context of their ability to find and use information in the decision-making process.

Specifically, the study sought to answer these questions:

1. How do Croatian managers rate their information literacy skills?
2. Are there significant differences in information literacy skills by gender, age, level of education, management level, educational background, and region?
3. To what extent do Croatian managers agree with the statements regarding their ability to find the needed information and use it effectively in decision-making?
4. What are the similarities and differences in the ability of Croatian managers to find the needed information and use it effectively in decision-making?

The following hypotheses arose from the research questions:

1. Croatian managers rate their information literacy skills as above average.
2. Managers with different background characteristics have quite similar views regarding their own information literacy.
3. Croatian managers believe that they are able to find the needed information and use it effectively in decision-making.
4. Managers with different background characteristics have quite similar views regarding their ability to find the needed information and use it effectively in decision-making.

## 5. Sample and methods

The data for this study were collected via an online questionnaire created in Google Forms. The target population were persons in managerial positions in Croatian enterprises. An invitation e-mail with a link to the self-administered structured questionnaire was sent to about 1500 managers from all over the Republic of Croatia. Their contacts were obtained from the Croatian Chamber of Commerce database. Non-respondents received at least one reminder e-mail.

A total of 198 responses were used in the analysis. The sample consisted of 96 (48.5%) male and 102 (51.5%) female managers. Among the respondents, 54 (27.3%) were between the ages of 22 and 37, 99 (50.0%) were between 38 and 52 years of age, and 45 (22.7%) were between 53 and 68 years old. Out of all participants, 28 (14.1%) had secondary education, 139 (70.2%) had completed undergraduate or graduate studies, and 31 (15.7%) had a postgraduate degree. Most respondents, 129 (65.2%) of them, classified themselves as top managers. In addition, the sample included 44 (22.2%) mid-level managers and 25 (12.6%) lower-level managers. There were 93 (47.0%) surveyed managers with a degree in economics and business, while the remaining 105 (53.0%) had a background in other disciplines. Among the participants, 47 (23.7%) were employed by companies in east Croatia, 100 (50.5%) by companies in central Croatia, and 51 (25.8%) by companies in Adriatic and mountainous Croatia.

Statistical methods were used to summarise and describe the data collected. Descriptive statistics included frequency analysis, measures of central tendency (mean and median) and measures of dispersion (standard deviation and interquartile range). A one-sample Wilcoxon signed rank test was used to check whether the median of the managers' responses was greater than 3, which represents the midpoint of the scale. The Mann-Whitney test and Kruskal-Wallis test were applied to determine group differences. The level of statistical significance was set at  $p < 0.05$ .

## 6. Results

Respondents were asked to assess their general information literacy skills on a five-point Likert scale (1 = poor, 2 = fair, 3 = average, 4 = good, 5 = excellent). The mean for this item was 4.1 with a standard deviation of 0.7, while the median and interquartile range were 4 and 1, respectively. This indicated that managers were quite confident in their general information literacy skills, showing little variability in their self-assessments. According to the one-sample Wilcoxon signed rank test, the median response was greater than 3 ( $W = 13998.00$ ,  $p < 0.001$ ). Thus, it was confirmed that Croatian managers rated their information literacy skills as above average.

Table 1 presents the results of the analysis of differences in general information literacy skills between and among the groups. The Mann-Whitney and Kruskal-Wallis tests were used to determine which differences with respect to gender, age, level of education, management level, educational background, and region were statistically significant.

**Table 1:** Analysis of differences in general information literacy skills

Characteristic		Mean rank	Test results
Gender	Male	102.18	$Z = 0.715^a$
	Female	96.98	$p = 0.474$
Age group	22 – 37	115.21	$H = 11.118^b$ $p = 0.004^*$
	38 – 52	99.42	
	53 – 68	80.82	
Level of education	Secondary school	96.57	$H = 0.280^b$ $p = 0.869$
	Undergraduate or graduate degree	99.21	
	Postgraduate degree	103.44	
Management level	Top-level management	100.63	$H = 0.910^b$ $p = 0.634$
	Middle-level management	101.35	
	Lower-level management	90.42	
Educational background	Economics and business	99.95	$Z = 0.114^a$ $p = 0.909$
	Other disciplines	99.10	
Region	East Croatia	92.82	$H = 1.076^b$ $p = 0.584$
	Central Croatia	101.13	
	Adriatic and mountainous Croatia	102.46	

<sup>a</sup> Mann-Whitney test

<sup>b</sup> Kruskal-Wallis test

\* Statistically significant at  $p < 0.05$

Source: Author

The results showed that groups of managers with different background characteristics had quite similar views regarding their own information literacy. The Mann-Whitney test did not indicate any significant difference with respect to gender and educational background. Only one statistically significant difference was identified by the Kruskal-Wallis test. The results of the Kruskal-Wallis test confirmed that there were at least two age groups that differed significantly from each other. The mean ranks indicated that the youngest managers rated their information literacy skills highest. In contrast, the oldest managers were the least confident in their information literacy skills. In all other cases (level of education, management level, and region), the differences were not statistically significant.

In order to find out how respondents evaluate their ability to find the needed information and use it effectively in decision-making, they were presented with eight statements. The first four statements listed in table 2 were related to finding information, while the rest of the items focused on using information in decision-making. A five-point Likert scale was employed to measure the respondents' level of agreement or disagreement with the statements (1 = strongly disagree, 2 = somewhat disagree, 3 = neither agree nor disagree, 4 = somewhat agree, 5 = strongly agree). Descriptive statistics and results of the Wilcoxon test are summarised in Table 2.

**Table 2:** Descriptive statistics of respondents' opinions and results of one-sample Wilcoxon signed rank tests

Item	Descriptive statistics				Wilcoxon test	
	Mean	Median	Standard deviation	Interquartile range	<i>W</i>	<i>p</i>
I always find information that I am looking for	4.34	4.00	0.78	1.00	16524.00	0.000*
I am able to find information quickly	4.28	4.00	0.79	1.00	14928.00	0.000*
I am able to evaluate the reliability of information sources	4.21	4.00	0.78	1.00	14518.00	0.000*
I am able to assess the accuracy and relevance of information	4.24	4.00	0.76	1.00	15122.50	0.000*
I am able to effectively use information in decision-making	4.45	5.00	0.67	1.00	16889.50	0.000*
I am able to effectively combine information to make the right decision	4.54	5.00	0.63	1.00	17825.00	0.000*
I am able to organise and store information for later retrieval and use in decision-making	4.48	5.00	0.69	1.00	17040.50	0.000*
I am able to effectively share information with other decision-makers	4.45	5.00	0.70	1.00	16671.50	0.000*

\* Statistically significant at  $p < 0.05$

Source: Author

The central tendency values suggested that respondents were better at using information than finding it. The means for four statements regarding the ability to find the needed information ranged from 4.21 to 4.34, while the means for the statements regarding the ability to use information effectively in decision-making were between 4.45 and 4.54. The median values were in line with these findings. The median for four statements regarding the ability to find the needed information was 4, while the median for other statements was 5. Overall, the results suggested that participants were highly confident in their abilities of finding and using information in decision-making. No standard deviation was greater than 0.8 and all interquartile ranges were 1, which implied that respondents similarly assessed their abilities. Since the standard deviations for the statements regarding the ability to use information effectively in making-decisions were somewhat lower, it can be concluded that respondents were more



uniform in this regard. As expected, according to the one-sample Wilcoxon signed rank test, all median responses were greater than 3, indicating that Croatian managers believed that they were able to find the needed information and use it effectively in decision-making.

Furthermore, the differences in the ability to find information with respect to gender, age, level of education, management level, educational background, and region were examined. The results of the difference analysis are given in Table 3.

**Table 3:** Analysis of differences in the ability to find the needed information

Characteristic		I always find information that I am looking for	I am able to find information quickly	I am able to evaluate the reliability of information sources	I am able to assess the accuracy and relevance of information
		Mean rank			
Gender	Male	101.31	93.79	100.85	101.51
	Female	97.80	104.87	98.23	97.61
	Mann-Whitney test	$Z=0.476$ $p=0.634$	$Z=-1.482$ $p=0.138$	$Z=0.349$ $p=0.727$	$Z=0.521$ $p=0.602$
Age group	22 – 37	107.49	107.14	110.73	107.56
	38 – 52	105.81	106.67	101.53	104.40
	53 – 68	76.03	74.57	81.57	79.04
	Kruskal-Wallis test	$H=12.042$ $p=0.002^*$	$H=13.116$ $p=0.001^*$	$H=7.847$ $p=0.020^*$	$H=9.010$ $p=0.011^*$
Level of education	Secondary school	101.16	97.36	92.05	92.89
	Undergraduate or graduate degree	99.94	99.47	99.04	99.36
	Postgraduate degree	96.03	101.58	108.27	106.10
	Kruskal-Wallis test	$H=0.178$ $p=0.915$	$H=0.095$ $p=0.953$	$H=1.436$ $p=0.488$	$H=0.938$ $p=0.626$
Management level	Top-level management	98.12	96.83	98.60	97.98
	Middle-level management	102.68	110.45	108.5	114.11
	Lower-level management	101.00	94.00	88.28	81.60
	Kruskal-Wallis test	$H=0.279$ $p=0.870$	$H=2.520$ $p=0.284$	$H=2.465$ $p=0.292$	$H=6.454$ $p=0.040^*$
Educational background	Economics and business	93.68	93.69	93.44	94.79
	Other disciplines	104.65	104.65	104.87	103.67
	Mann-Whitney test	$Z=-1.489$ $p=0.136$	$Z=-1.463$ $p=0.143$	$Z=-1.525$ $p=0.127$	$Z=-1.189$ $p=0.234$
Region	East Croatia	89.36	90.80	87.98	93.95
	Central Croatia	105.69	100.93	102.19	99.95
	Adriatic and mountainous Croatia	96.71	104.73	104.85	103.74
	Kruskal-Wallis test	$H=3.392$ $p=0.183$	$H=1.867$ $p=0.393$	$H=3.046$ $p=0.218$	$H=0.869$ $p=0.648$

\* Statistically significant at  $p < 0.05$

Source: Author

As can be seen, the Mann-Whitney test did not reveal any significant difference between male and female managers, nor between managers with a degree in economics and business, and those who had a background in other disciplines. The results of the Kruskal-Wallis test suggested that age significantly influenced managers' ability to find the needed information. According to the mean ranks, the oldest managers were less likely than others to find information they were looking for and were less able to find information quickly. They were also less able to evaluate the reliability of information sources as well as to assess the accuracy and relevance of information. In the case of the fourth item, the Kruskal-Wallis test showed that there were at least two management level groups that differ significantly from each other. The mean ranks indicated that middle-level managers agreed the most highly with the statement that they were able to assess the accuracy and relevance of information, followed by top-level managers and lower-level managers.

**Table 4:** Analysis of differences in the ability to use information in decision-making

Characteristic		I am able to effectively use information in decision-making	I am able to effectively combine information to make the right decision	I am able to organise and store information for later retrieval and use in decision-making	I am able to effectively share information with other decision-makers
		Mean rank			
Gender	Male	97.31	97.09	97.04	96.46
	Female	101.56	101.77	101.81	102.36
	Mann-Whitney test	Z= -0.587 p=0.557	Z= -0.665 p=0.506	Z= -0.666 p=0.505	Z= -0.818 p=0.413
Age group	22 – 37	112.69	108.35	108.28	117.48
	38 – 52	102.53	103.17	106.14	104.25
	53 – 68	77.00	80.80	74.36	67.48
	Kruskal-Wallis test	H= 12.833 p=0.002*	H= 8.719 p=0.013*	H= 14.632 p=0.001*	H= 25.640 p=0.000*
Level of education	Secondary school	94.43	84.91	101.30	92.11
	Undergraduate or graduate degree	99.58	101.53	98.21	100.32
	Postgraduate degree	103.73	103.60	103.68	102.52
	Kruskal-Wallis test	H= 0.494 p=0.781	H= 2.886 p=0.236	H= 0.342 p=0.843	H= 0.742 p=0.690
Management level	Top-level management	98.59	100.50	99.01	98.41
	Middle-level management	104.33	102.17	100.61	101.28
	Lower-level management	95.68	89.64	100.08	101.96
	Kruskal-Wallis test	H= 0.581 p=0.748	H= 1.176 p=0.555	H= 0.037 p=0.982	H= 0.173 p=0.917
Educational background	Economics and business	100.71	100.51	94.62	95.37
	Other disciplines	98.43	98.60	103.82	103.16
	Mann-Whitney test	Z= 0.314	Z= 0.269	Z= -1.283	Z= -1.079

Characteristic		I am able to effectively use information in decision-making	I am able to effectively combine information to make the right decision	I am able to organise and store information for later retrieval and use in decision-making	I am able to effectively share information with other decision-makers
		Mean rank			
		$p = 0.753$	$p = 0.788$	$p = 0.199$	$p = 0.281$
Region	East Croatia	92.53	89.82	103.24	93.72
	Central Croatia	99.67	100.82	100.52	102.31
	Adriatic and mountainous Croatia	105.59	105.84	94.06	99.31
	Kruskal-Wallis test	$H = 1.619$ $p = 0.445$	$H = 2.714$ $p = 0.257$	$H = 0.899$ $p = 0.638$	$H = 0.919$ $p = 0.632$

\* Statistically significant at  $p < 0.05$

Source: Author

Table 4 shows the results of the analysis of differences in the ability of Croatian managers to use information effectively in decision-making. As seen in the table, again the Mann-Whitney test did not reveal any significant difference with respect to gender and educational background. According to the Kruskal-Wallis test, only age proved to be a significant predictor of managers' ability to use information effectively in decision-making. The difference between at least two age groups was statistically significant in all cases. Again, the oldest managers tended to be less confident in their abilities. More precisely, managers aged 53 to 68 years agreed less than their younger counterparts that they were able to effectively use, combine, organise and store, and share information in the context of decision-making.

## 7. Conclusion

Efficient and effective management is essential for the smooth running of business processes and achieving intended outcomes. Managers as leaders are responsible for directing and shaping the organisation to meet its mission and vision. The growth and success of any organisation critically depends on its managers' abilities to make informed decisions. To be able to make such decisions, managers need to know how to find, evaluate, and use information. Therefore, managers must be information literate. It should be noted that the information needs of managers vary according to their place in the organizational hierarchy. The decisions that are made by top-level managers differ from those that are made by mid-level and lower-level managers. Regardless of the level, all managers have to be information literate to carry out their roles and responsibilities effectively. With this in mind, the study examined the information literacy of Croatian managers. The research focused on their ability to find and use information in the decision-making process.

The results indicated that the surveyed managers were quite confident in their general information literacy skills. The study further revealed that the analysed groups of managers mostly did not differ significantly in their self-assessments, except for age. In addition, it was found that managers who participated in the survey were also quite confident in their ability to find and use information effectively in decision-making. Again, the analysis showed that groups of managers with different backgrounds have similar views in this regard. Only in the case of

one item, there were at least two management level groups that differed significantly from each other. Age proved to be a significant predictor of differences in all cases, while gender, level of education, educational background, and region did not influence managers' self-assessments. Therefore, it can be concluded that the research results supported all the hypotheses.

The findings of this study are consistent with some previous research, which indicated that managers had good information literacy skills. However, it should not be forgotten that the conclusions are drawn from the analysis based on respondents' self-assessments, which could have affected the results. More reliable data on managers' information literacy would have been obtained if it had been possible to test their capabilities. Further, this paper discussed some aspects of managers' information literacy. In order to get a deeper insight into this topic, a more detailed questionnaire should be developed. It will also be necessary to conduct research on a larger sample of managers, which is not an easy task as they are generally reluctant to participate in surveys. Despite these limitations, the study provides information that may be useful to various audiences. Since the issues addressed in this paper have not been adequately examined, the findings expand the knowledge about the information literacy of managers in the context of their ability to find and use information in the decision-making process.

## REFERENCES

- Aharony, N., Gazit, T. (2020): *Students' Information Literacy Self-Efficacy: An Exploratory Study*, Journal of Librarianship and Information Science, Vol. 52, No. 1, pp. 224-236.
- Ahmad, F., Widén, G., Huvila, I. (2020): *The Impact of Workplace Information Literacy on Organizational Innovation: An Empirical Study*, International Journal of Information Management, Vol. 51, Article 102041.
- Al-Qallaf, C. L. (2020): *Information Literacy Skills of Graduate Students: A Case of the Master's of Information Studies Program in Kuwait*, Journal of Information & Knowledge Management, Vol. 19, No. 2, Article 2050011.
- American Library Association (1989): *Presidential Committee on Information Literacy: Final Report*, <https://www.ala.org/acrl/publications/whitepapers/presidential> (accessed 27 January 2022)
- Bolek, V., Kokles, M., Korček, F. (2016): *The Information Literacy Level of Slovak Managers*, in Soliman, K. S., ed.: *Vision 2020: Innovation Management, Development Sustainability and Competitive Economic Growth: Proceedings of the 28th International Business Information Management Association Conference, IBIMA, Norristown*, pp. 1100-1111.
- Cheuk, B. (2008): *Delivering Business Value through Information Literacy in the Workplace*, Libri, Vol. 58, No. 3, pp. 137-143.
- Ding, X., Guo, S., Zhang, J. (2013): *Research on the Grading Model of Information Oriented Improvement of Processes*, in Proceedings of the 5th International Conference on Measuring Technology and Mechatronics Automation, IEEE, Hong Kong, pp. 941-946.
- Dukić, D., Turkalj, D., Bodražić, B. (2010): *Croatian Managers' Self-Evaluation of Their Information and Communication Technologies Skills*, in Galetić, L., Spremić, M., Ivanov, M., eds.: *Proceedings of the 5th International Conference "An Enterprise Odyssey: From Crisis to Prosperity – Challenges for Government and Business"*, Faculty of Economics and Business, Zagreb, pp. 1113-1124.

- Eriksson-Backa, K., Ek, S., Niemelä, R., Huotari, M.-L. (2012): *Health Information Literacy in Everyday Life: A Study of Finns Aged 65–79 Years*, Health Informatics Journal, Vol. 18, No. 2, pp. 83-94.
- Farokhzadian, J., Ahmadian, L., Khajouei, R., Mangolian Shahrabaki, P. (2016): *Information Literacy and Training Needs of Nursing Managers for Evidence-Based Practice*, Iran Journal of Nursing, Vol. 29, No. 101, pp. 43-56.
- Flywel, D., Jorosi, B. N. (2018): *Information Literacy Skills among the Undergraduate Students at the University of Livingstonia, Malawi*, International Journal of Library and Information Services, Vol. 7, No. 2, pp. 43-56.
- Hirvonen, N., Enwald, H., Mayer, A.-K., Korpelainen, R., Pyky, R., Salonurmi, T., Savolainen, M. J., Nengomasha, C., Abankwah, R., Uutoni, W., Niemelä, R., Huotari, M.-L. (2020): *Screening Everyday Health Information Literacy among Four Populations*, Health Information & Libraries Journal, Vol. 37, No. 3, pp. 192-203.
- Kord, R. A., Andouhjerdi, S. P., Hallajian, E. (2014): *A Study of Manager's Information Literacy of the Communication and Telephone Company of Mazandaran and Determining the Role of Executive Manager's Duties*, International Journal of Research in Organizational Behavior and Human Resource Management, Vol. 2, No. 2, pp. 137-146.
- Lin, T.-C., Ku, Y.-C., Huang, Y.-S. (2014): *Exploring Top Managers' Innovative IT (IIT) Championing Behavior: Integrating the Personal and Technical Contexts*, Information & Management, Vol. 51, No. 1, pp. 1-12.
- Marković, B. (2021): *Važnost informacijske pismenosti za upravljanje zdravstvenim sustavom Republike Hrvatske*, Bilten Hrvatskog društva za medicinsku informatiku, Vol. 27, No. 1, pp. 33-42.
- Marković, B., Milković, M. (2021): *Analysis of Information Literacy of Health Management in the Republic of Croatia*, in Proceedings of the 3rd International Conference on Advanced Research in Social Sciences, Diamond Scientific Publishing, Oxford, pp. 62-75.
- McCabe, A., Wickham, S. (2016): *Health Information Literacy among Healthy Older Irish Adults*, Journal of Nursing and Care, Vol. 5, No. 2, Article 1000333.
- McNamara, D. E. (2009): *From Fayol's Mechanistic to Today's Organic Functions of Management*, American Journal of Business Education, Vol. 2, No. 1, pp. 63-78.
- Meutia, Ismail, T., Ummi, N., Rahmawati, D. (2019): *Effect of Information Literacy and Tolerance of Ambiguity on Managerial Performance of SMEs*, in Proceedings of the 9th Annual International Conference on Social Sciences, Syiah Kuala University, Banda Aceh, pp. 1-7.
- Naveed, M. A., Mahmood, M. (2019): *Information Literacy Self-Efficacy of Business Students in Pakistan*, Libri, Vol. 69, No. 4, pp. 303-314.
- Nikou, S., Brännback, M. E., Orrensalo, T. P., Widén, G. (2020): *Social Media and Entrepreneurship: Exploring the Role of Digital Source Selection and Information Literacy*, in Schjoedt, L., Brännback, M. E., Carsrud, A. L., eds.: *Understanding Social Media and Entrepreneurship: The Business of Hashtags, Likes, Tweets and Stories*, Springer, Cham, pp. 29-46.
- Obiefuna, O. A. (2014): *The Role of Top Management in Business Organizations*, Review of Public Administration and Management, Vol. 3, No. 5, pp. 93-105.

- Otonicar, S. L. C., Valentim, M. L. P., Feres, G. G. (2018): *Managers' Information Literacy: A Case Study of a Cluster in Brazil*, AtoZ: Novas Práticas em Informação e Conhecimento, Vol. 7, No. 1, pp. 4-11.
- Peterlin, J., Dimovski, V., Meško, M., Roblek, V. (2021): *Cultivating Management Education Based on the Awareness of Students' Multiple Intelligences*, SAGE Open, Vol. 11, No. 1, pp. 1-12.
- Poorhassan, S. (2020): *Information Technology for Project Cost Management (Case Study: Soufian Cement Co, Iran)*, International Journal of Finance and Managerial Accounting, Vol. 4, No. 16, pp. 39-49.
- Rafique, G. M., Khan, H. A. (2017): *Information Literacy Skills of Management Sciences' Students*, Pakistan Journal of Information Management and Libraries, Vol. 19, pp. 52-73.
- Rajabzadeh, A., Esmaeelpour, E. (2016): *Study on Relationship between Staff's Informational Literacy and Organizational Creativity (Case Study: Simkat Azerbaijan Company)*, Quarterly Knowledge and Information Management Journal, Vol. 3, No. 3, pp. 33-47.
- Samson, D., Donnet, T., Daft, R. L. (2021): *Management*, 7th Asia-Pacific ed., Cengage Learning Australia, Sydney.
- Santos, M. V., Mayoral, R. M. (2018): *Information Literacy in Managers' Education*, Journal of Business & Finance Librarianship, Vol. 23, No. 2, pp. 167-182.
- Schermerhorn, J. R. Jr., Bachrach, D. G. (2018): *Exploring Management*, John Wiley & Sons, Hoboken.
- Schraeder, M., Self, D. R., Jordan, M. H., Portis, R. (2014): *The Functions of Management as Mechanisms for Fostering Interpersonal Trust*, Advances in Business Research, Vol. 5, No. 1, pp. 50-62.
- Simić, M., Slavković, M., Ognjanović, J. (2020): *Information Literacy Competencies in Digital Age: Evidence from Small- and Medium-Sized Enterprises*, in Domanović, V., Zlatanović, D., eds.: Proceedings of the 6th International Scientific Conference on Contemporary Issues in Economics, Business and Management (EBM 2020), Faculty of Economics in Kragujevac, Kragujevac, pp. 105-114.
- Svensson, T., Wilk, J., Åman, K. G. (2022): *Information Literacy Skills and Learning Gaps – Students' Experiences and Teachers' Perceptions in Interdisciplinary Environmental Science*, The Journal of Academic Librarianship, Vol. 48, No. 1, Article 102465.
- Tait, E., Edwards, R. (2016): *Information Literacy and Information Seeking of Public Sector Managers in the Welsh Government*, Library and Information Research, Vol. 40, No. 123, pp. 88-105.
- Virkus, S., Mandre, S. (2015): *Information Literacy, Leadership and Management*, in Kurbanoglu S., Boustany J., Špiranec S., Grassian E., Mizrachi D., Roy L., eds.: Information Literacy: Moving Toward (ECIL 2015), Springer, Cham, pp. 80-89.
- Wang, Z., Fan, Y., Lv, H., Deng, S., Xie, H., Zhang, L., Luo, A., Wang, F. (2022): *The Gap between Self-Rated Health Information Literacy and Internet Health Information-Seeking Ability for Patients with Chronic Diseases in Rural Communities: Cross-Sectional Study*, Journal of Medical Internet Research, Vol. 24, No. 1, Article e26308.
- Zenita, R., Sari, R. N., Anugerah, R., Said, J. (2015): *The Effect of Information Literacy on Managerial Performance: The Mediating Role of Strategic Management Accounting and the Moderating Role of Self Efficacy*, Procedia Economics and Finance, Vol. 31, pp. 199-205.

*A scientific paper*

**Barbara Fajdetić, M. Econ.**

University of Rijeka, Faculty of Economics and Business

E-mail address: barbara.fajdetic@efri.hr

**Mejra Festic, Ph. D.**

University of Maribor, Faculty of Economics and Business

E-mail address: mejra.festic@epf.si

## THE ROLE OF SOLAR ENERGY IN DECARBONIZATION – EVIDENCE OF THE EUROPEAN UNION

### ABSTRACT

*Decarbonization is a global process that is firmly rooted in the European Union. Within this framework, the European Union has developed the Green Deal, a strategy that aims to create a carbon-neutral continent by 2050. To achieve this ambitious goal, cleaner energy sources and new methods of energy production must be used. Therefore, each EU member state must align its energy strategies with the EU Green Deal. Two important pillars of successful decarbonization are renewable energy sources and energy efficiency. Although the potential of renewable energy is not yet fully exploited, the future of the energy sector will definitely depend on renewable energy. Therefore, this paper aims to explore the relationship between the use of renewable energy in power generation and its role in mitigating greenhouse gas (GHG) emissions. More specifically, the role of solar energy infrastructure, solar energy deployment in electricity generation, and GHG emissions for EU member states are examined. The country's GDP per capita is included in the study as an indicator of economic development. The panel data analysis is conducted for EU member states in the period from 2010 to 2020, and the statistical data on solar energy, greenhouse gas emissions and electricity from renewable sources are presented. It is expected that the better the renewable energy infrastructure is developed, the lower the GHG emissions will be. In addition, the more photovoltaic systems are used to generate electricity, the lower the GHG emissions. Finally, we expect economic development to have a positive impact on reducing GHG emissions.*

**Key words:** *decarbonization, solar energy, GHG emissions, economic development.*

### 1. Introduction

Energy is the driving force of all human activity - whether it is daily or economic. The fact is that fossil fuels such as oil and gas still account for the largest share of total energy consumption. In the last decade, however, environmental concerns and carbon emissions have come into focus. Rising temperatures, global warming and melting polar ice are affecting biodiversity. As a result, agreements have been reached at the international level to reduce greenhouse gases and develop energy sources with a smaller carbon footprint. This process can be reduced to a single denominator - decarbonization. Decarbonization is a global process that aims to reduce carbon emissions on a global scale and introduce cleaner energy sources. This process is firmly rooted in the European Union, which has taken decarbonization most seriously at the global level. In order to reduce the harmfulness of greenhouse gas emissions to the

environment and ensure the sustainable and uninterrupted development of future generations, it is necessary to work on reducing emissions now. In the last twenty years, environmental awareness has increased on a global scale. However, since 2020, the world has faced a number of serious challenges in the form of health and political crises. All these events have serious implications for the economy - especially in the European Union, which is the most affected. The rise in energy prices and the increase in inflation have put the European Union in a dangerous position. Under these circumstances, it has become clear that the European Union must pursue an independent energy policy and ensure a smooth economic process. One of the biggest problems is the lack of energy sources like gas and oil which are still key fuels in the most EU member states. However, in the last decade renewable energy sources increased its importance and enter the broader consumption. At the European Union level, a strategic plan called the EU Green Deal has been adopted, which aims to reduce carbon emissions by 50% by 2030. (European Commission, 2022) The long-term goal is to achieve carbon neutrality and increase investment in renewable energy sources and energy efficiency. There is no doubt that all members of the Union are facing a time of great economic, technological, and social change. Although the potential of renewable energies has not yet been fully exploited, the future of the energy sector will definitely depend on renewable energy sources. The purpose of this paper, therefore, is to examine the relationship between the use of renewable energy in electricity generation and its role in reducing greenhouse gas emissions. More specifically, the role of solar energy infrastructure, the use of solar energy in electricity generation, and greenhouse gas emissions for EU member states will be examined. The country's GDP per capita is considered in the study as an indicator of economic development. Panel data analysis is performed for EU Member States in the period from 2010 to 2020, and statistical data on solar energy, greenhouse gas emissions, and electricity from renewable sources are presented. It is expected that the better the renewable energy infrastructure is developed, the lower the GHG emissions will be. In addition, the more photovoltaic systems are used to generate electricity, the lower the GHG emissions. Finally, we expect economic development to have a positive impact on reducing GHG emissions. The paper is organized as follows. After the introduction, data on renewable energy use is presented, focusing on solar energy potential and use. The literature review summarizes the current work on this topic. Afterwards, data and methodology are presented and the obtained results. The last section contains important conclusions about the role of solar energy systems in mitigating greenhouse gases.

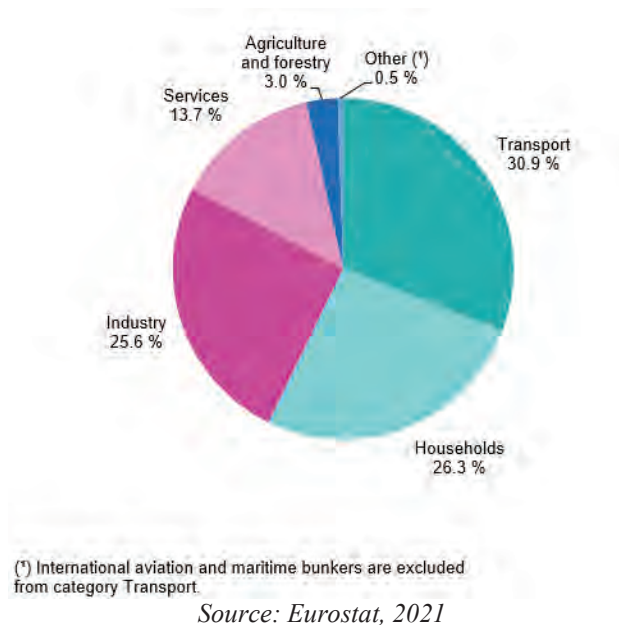
## **2. Renewable energy – potential of solar**

Without the sun, there would be no human or plant life on earth. The amount of solar energy that reaches the earth's surface is enormous. It is so great that in one year it is twice as much as all the non-renewable energy sources on earth such as coal, natural gas, and oil (Vlahinić Lenz et al. 2019). The sun is the greatest source of energy on earth. Therefore, it is necessary to develop the most efficient systems for the use of solar energy, especially in households, but also in the service sector. Solar energy makes an important contribution to the EU energy mix, accounting for 4% of gross electricity generation in the European Union. However, the potential of solar energy is even more significant. Estimates put it at 20% of EU electricity demand in 2040. The biggest obstacles are seen in production costs and energy efficiency. Renewables accounted for the largest share of primary energy production in the European Union in 2019, at over 36%. This was followed by nuclear heat and solid fossil fuels. In the last decade, primary energy production of solid fossil fuels, oil and natural gas was negative (Eurostat, 2021). However, Eurostat (2021) data show that the European Union is still dependent on fossil fuels. Final energy consumption of fossil fuels has decreased significantly between 1990 and 2019, while the share of renewable energy has increased from 4.3% to almost 11% in 2019. However,



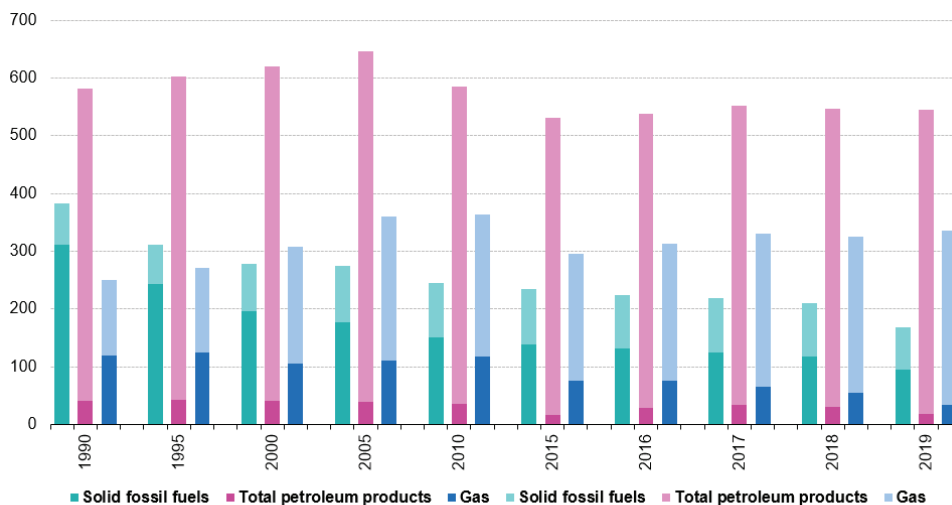
oil and petroleum products still account for the largest share of final energy consumption (37%), followed by electricity (22.8%) and natural gas (21.3%). Figure 1 shows that the dominant categories are transportation, households, and industry.

**Figure 1:** Final energy consumption by sector in EU in 2019 (% of total, based on tonnes of oil equivalent)



The problem of the European Union is the high energy dependence ratio. It is the ratio between net imports and gross available energy and shows the country's ability to meet its energy needs. Since fossil fuels still play an important role, Europe does not have reserves to meet the demand. Figure 2 shows the data on energy dependence in the European Union. In 2019, 61% of all fuels consumed were imported, compared to 50% in 1990. In fact, 97% of oil and petroleum products were imported in 2019.

**Figure 2:** Energy dependency by fuel in EU (million tonnes of oil equivalent)

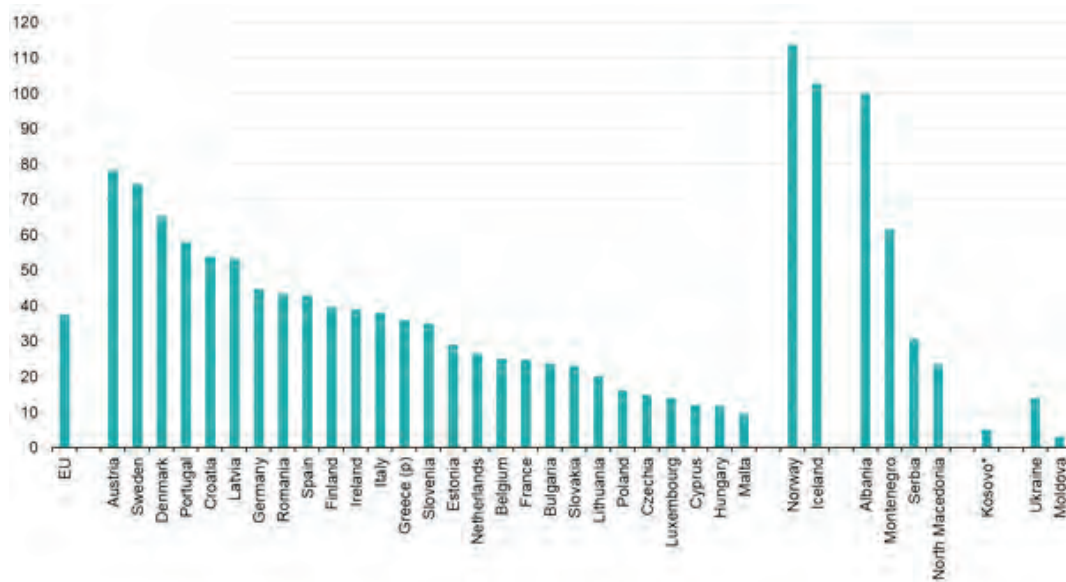


Note: the light coloured proportion of the column shows net imports with respect to gross available energy, which is represented by total column height.

Source: Eurostat, 2021

Renewable energy sources, such as hydro, wind, and solar, which is in the focus of this study, play the main role in implementing decarbonization. Households have the greatest potential for the use and development of solar energy. As one of the most important sectors with energy consumption, households are a large pool for the use of renewable energy sources.

**Figure 3:** Share of energy from renewable sources in gross electricity consumption in 2020



Source: Eurostat, 2022a

In the European Union, Austria (78%) and Sweden (75%) have the largest share of renewable energy sources. Outside the EU, Norway and Iceland produce more electricity from renewable energy sources than they consume in 2020. More than two-thirds of all renewable electricity comes from wind and hydro, 14% from solar, and 8% from solid biofuels. The interesting information is that solar energy is the fastest growing source - from 7.4 TWh in 2008 to 144.2 TWh in 2020 (Eurostat, 2022a).

Solar technology can be divided into active and passive systems. Passive systems use solar radiation without the use of other forms of energy, while active systems include additional mechanisms such as pumps and generators for energy conversion. Active solar systems include photovoltaic cells and solar collectors (Vlahinić Lenz et. al, 2019). Photovoltaic cells are made of semiconductor material and convert sunlight into electricity. Their advantage is that they do not need direct sunlight for the electricity generation and could use artificial light for electricity generation (EIA, 2021). According to the EIA (2021) photovoltaic systems can supply electricity where distribution systems do not exist, the photovoltaic arrays can be installed really fast and with minimum environmental effects.

Table 1 shows the percentage changes in the solar potential of the European Union in period 2010-2020. It can be seen that only in Sweden was negative change in solar capacities while Estonia and Lithuania do not have solar thermal collectors. On the other side, the use of solar in electricity generation was increased in all EU member states. At the same time, all countries are meeting their goals in mitigating the GHG emissions, where Estonia is leading country.

**Table 1:** The percentage change in the solar potential and GHG emissions in the EU 2010-2020

Country	% change in solar capacities	% change solar electricity generation	% change in GHG emissions
Belgium	49,4%	89,0%	-21,2%
Bulgaria	56,5%	99,0%	-15,8%
Czechia	46,8%	73,1%	-20,6%
Denmark	76,6%	99,5%	-25,0%
Germany	28,5%	75,9%	-31,1%
Estonia	-	100,0%	-93,7%
Ireland	46,8%	99,3%	-4,2%
Greece	17,9%	96,4%	-46,5%
Spain	45,4%	59,0%	-33,5%
France	57,4%	95,4%	-28,7%
Croatia	68,1%	99,9%	-23,6%
Italy	45,8%	92,4%	-36,4%
Cyprus	17,5%	97,8%	-17,4%
Latvia	100,0%	100,0%	-13,9%
Lithuania	-	100,0%	10,5%
Luxembourg	61,5%	86,9%	-0,2%
Hungary	64,3%	100,0%	-8,1%
Malta	46,1%	99,7%	-64,0%
Netherlands	13,9%	99,4%	-24,9%
Austria	7,4%	95,7%	-19,1%
Poland	78,2%	100,0%	-7,2%
Portugal	46,6%	87,5%	-14,9%
Romania	52,5%	100,0%	-12,8%
Slovenia	20,0%	96,5%	-11,5%
Slovakia	47,0%	97,4%	-24,2%
Finland	61,3%	97,8%	-60,5%
Sweden	-13,1%	99,2%	-42,2%

Source: Eurostat, 2022a

Although the use of solar energy does not produce greenhouse gas emissions and could replace the use of fossil fuels in homes and industry, the production of solar energy technologies is still potentially harmful to the environment. Materials such as glass and metal are energy intensive to manufacture. In addition, hazardous chemicals are used in the manufacture of solar cells and panels, creating a problem with their disposal at the end of their life cycle (EIA, 2021b). All these potential problems must be considered when using solar panels and cells. The entire process of electricity generation must become green for decarbonization to be effective. In this case, education and investment in research and development will play a key role for technology development.

### 3. Literature review

Renewable energy sources such as solar energy will have a significant impact on reducing the carbon footprint in the European Union. Several authors have studied the impact of renewable energy sources on reducing the carbon footprint in different fossil fuel dependent countries. Granovskii et al. (2007) studied the economic aspects of renewable technologies to reduce greenhouse gas emissions. They concluded that the introduction of wind and solar energy instead of natural gas to produce electricity and hydrogen reduces greenhouse gas emissions. Renewable technologies in electricity production are less costly than hydrogen production for reducing GHG emissions, but "renewable" hydrogen has great potential in transportation.

Sharma et al. (2021) studied the impact of renewable energy consumption on the ecological footprint in eight countries in South and Southeast Asia during 1990-2015 and found the existence of an EKC curve in the observed countries. Moreover, the increased use of renewable energy sources helps to control the ecological footprint in both the short and long run. Xue et al. (2021) evaluated the impact of renewable energy use on the ecological footprint in countries dependent on fossil fuels - Bangladesh, India, Pakistan, and Sri Lanka. The results showed that the use of renewable energy sources reduces the ecological footprint, while non-renewable energy increases the ecological footprint. The authors suggested that these countries should gradually reduce their dependence on fossil fuels and add renewable energy to their energy mix. Miškinis et al. (2021), Bilan et al. (2019), and Dogan and Seker (2016) studied the impact of renewable energy sources on greenhouse gas emissions in European countries. Miškinis et al. (2021) investigates the role of renewable energy sources in reducing GHG emissions in three Baltic countries. The analysis confirms that the use of renewable energy has increased in recent years and exceeds mandatory targets. Moreover, they pointed out that GHG emissions in these countries have decreased mainly due to the decrease in energy intensity and the use of renewable energy sources. Bilan et al. (2019) demonstrated the impact on GDP, more specifically that renewable energy has a positive impact on GDP and GDP increases the use of renewable energy. They point out that there is a win-win situation - increasing GDP level and reduced GHG emissions when using renewable energy in the long run. Dogan and Seker (2016) concluded that an increase in renewable energy leads to a reduction in GHG emissions. Moreover, the increase of non-renewable energy sources increases GHG emissions. However, to increase the use of renewable energy, significant investments need to be made, especially in energy efficiency and renewable technologies. Chien et al. (2021) examined the role of innovations and renewable energy sources in environmental degradation in ASEAN countries. The results show that innovations and higher consumption of renewable energy such as solar and wind energy have a significant impact on reducing carbon emissions and environmental footprint. In addition, GDP level has a positive impact on ecological footprint, so the impact should be controlled by environmental reforms. Matuszewska-Janica et al. (2021), Rataj et al. (2021), Sun et al. (2021) studied the use of solar energy systems to reduce environmental degradation, focusing on the positive aspects of solar energy. Matuszewska-Janica et al. (2021) examined the use of renewable energy in electricity generation in EU countries over the period 2005-2019, concluding that all EU member states are increasing the share of renewable energy in electricity generation. Hydropower plants dominate in electricity generation. However, wind and solar power plants have seen an increase in electricity generation. This is mainly due to the decrease in the cost of solar and wind power in recent years. The European Union has seen the largest growth in solar power at over 8500% since 2005. They have highlighted three main reasons for the popularity of solar energy in power generation. First, solar energy is one of the most competitive in the group of renewable energy for power generation. Second, the development of the technology has contributed to the reduction of electricity generation costs, and third, the energy is environmentally friendly and suitable for the low-carbon transition. Rataj et al. (2021) studied the solar energy system in electricity generation in Poland. Although coal is the leading energy source for electricity generation and Poland will not be able to meet EU green transition requirements, solar energy is increasing in recent years, with 75% of the total installed capacity of Polish solar systems coming from individual PV investments. This is mainly due to subsidy programs and co-financing of investments in solar systems. In addition, rising energy prices and more effective technology are one of the most important factors. The study concluded that solar PV installations are more common in the poorest regions with the highest unemployment, rising energy prices, and in rural households. Factors such as pollution and solar radiation are not important factors for solar energy production. Sun et al. (2021) studied China's green transition and economic development. The results show that carbon

intensity has been reduced and the share of renewable energy sources has increased. Moreover, solar energy patent GDP has a significant impact on China's carbon emissions, while GDP has a significant impact on solar energy patent improvement. Higher economic development indicates lower carbon emissions. The authors made several suggestions. The government should strengthen environmental policies and establish a reward and punitive system to control pollution. Relationships between scientific research institutes and enterprises should be strengthened to promote the translation of scientific and technological achievements into practice. In addition, the carbon market mechanism and emissions trading must be strengthened. Strith et al. (2015) studied the deployment of solar thermal storage technologies in Slovenia and Turkey and their potential to reduce carbon emissions. Both countries are implementing legislation to reduce carbon emissions in order to increase renewable energy consumption. The results show that significant amounts of carbon emissions could be reduced through the use of short-term solar systems and district/central heating systems. More specifically, with short-term solar systems, Turkey could prevent the release of 404 kg of CO<sub>2</sub> per person into the atmosphere, while in Slovenia it could be 16 kg of CO<sub>2</sub> per person. Furthermore, Arif (2013) studied residential solar energy use in California, United States, and its role in reducing carbon emissions. The results show that a significant impact on reducing carbon emissions can only be expected if at least 60% of homes install solar systems. However, to achieve such high levels, the government needs to introduce and promote subsidies and feed-in tariffs. Almasoud et al. (2015) studied the importance of solar energy for electricity generation with PV systems in Saudi Arabia. The analysis shows that conventional fossil fuel power generation is one of the main contributors of harmful gases that affect public health. In addition, countries with large solar potential, such as Saudi Arabia, should use solar energy to reduce greenhouse gas emissions. The cost of solar energy is less than conventional electricity generation plus the indirect costs of fossil fuels and health costs. A similar study was conducted by Shahsavari et al. (2018), which investigated the potential of solar energy in Iran. With more than 300 days of sunshine per year, solar energy is a suitable low-carbon energy source, especially for electricity generation, which is responsible for 28% of total greenhouse gas emissions. In the existing literature, authors addressed the positive and negative impacts on the environment and existing infrastructure. Solar energy is the most readily available renewable energy source because the sun radiates its energy to all parts of the earth. Ummah et al. (2021) pointed out that solar cells do not require mechanical motion generators. They can be installed in residential areas, on office buildings, shopping malls, hotels, schools, museums, hospitals, and other buildings. They do not require special space, so they can be easily integrated into urban areas with good solar radiation. Tsoutsos et al. (2005) evaluated the potential environmental impacts of solar energy technologies. They concluded that solar energy technologies have numerous advantages over conventional energy sources. The main advantages are that there are no carbon emissions or waste products, the systems can be operated independently, and they are versatile. Most of the negative side effects are related to loss of amenities such as visual impact or noise. However, with technological advances, these impacts could be reduced. Lupu et al. (2016) conducted the analysis SWOT for the solar energy sector in Romania. They concluded that Romania has a good potential for solar systems due to its geographical location, legal framework, and well-trained personnel. They emphasised that it is a sustainable energy source that has minimal environmental impact and provides economic development and value creation. However, the lack of infrastructure or investment policies cannot provide long-term price or purchase guarantees. They see opportunities for solar energy in well-developed technology and increased energy efficiency. Risks to solar energy could be associated with political instability or corruption in application, regulation, or licencing. In addition, insufficient know-how, expertise, or management skills are also risks to the efficient use of solar energy.

#### 4. Data and Methodology

The study of the impact of solar energy on the reduction of greenhouse gas emissions is carried out for the EU Member States in the period 2010-2020. The dependent variable is greenhouse gas (GHG) emissions, more specifically GHG and air pollutant emissions from 64 industries and households. It consists of CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>, PFCs, HFCs, SF<sub>6</sub>, NF<sub>3</sub>, NO<sub>x</sub>, CO, NMVOC, particulate matter < 10µm, particulate matter < 2.5 µm, SO<sub>2</sub> and NH<sub>3</sub>. Greenhouse gas emissions are measured in thousand tonnes. Independent variables are Solar thermal collectors' surfaces (COLLECTOR), the share of photovoltaics in gross electricity generation (SOLARELECTR), and GDP per capita (GDPPC) as a measure of economic development expressed in euros per capita. The area of solar thermal collectors is shown in thousands of square meters, while the actual use of solar energy is shown with the other variable - the use of photovoltaics for electricity generation in gross electricity generation, measured in gigawatt hours. All data are obtained from Eurostat database.

Table 2 shows the descriptive statistics for the variables used in the study. There are 297 observations. According to the obtained results, the average value of greenhouse gas emissions in the European Union is 120775.8 thousand tonnes. The highest value was observed in Germany in 2013 (Eurostat, 2022b). By 2020, Germany will still take the first place in greenhouse gas emissions among EU member states. This is logical because Germany has the most developed industry in the European Union. The average GDP per capita is 27,557.4 euros. The highest value was reached in 2020 in Luxembourg, the lowest in Bulgaria in 2010 (Eurostat, 2022a). The average value of solar thermal collector areas in the European Union is 1697 thousands of square meters. Germany has the largest solar thermal collector areas, while Lithuania and Estonia do not have them in the observed period (Eurostat, 2022d). The average electricity generation from photovoltaics is 3233.7 gigawatt hours. Logically, Germany has the largest electricity generation, as its capacities are the largest in the European Union. Germany is followed by Italy with 24 941.5 gigawatt hours and Spain with 15 675 gigawatt hours. (Eurostat, 2022e).

**Table 2:** Descriptive statistics

Variable	Category	Mean	Std. Dev.	Min.	Max.
GHG	Overall	120775.8	164348.8	1858.949	810009.8
	between		166542.9	2557.448	753197.4
	within		14526.71	-21821.3	177588.2
GDPPC	overall	27557.44	18858.15	5080	101760
	between		18816.14	6777.273	93615.45
	within		3680.232	11340.17	49510.17
COLLECTOR	overall	1697.71	3470.921	0	19455
	between		3501.537	0	17655.64
	within		448.0516	-2043.926	3497.074
SOLARELECTR	overall	3233.669	7803.323	0	48641
	between		7456.881	0.953636	34316.55
	within		2676.813	-19353.9	17558.12

Source: Authors

Since solar capacity and the use of solar energy for electricity generation are correlated, two models are derived for this research.

$$GHG_{it} = \alpha + \beta_1 SOLARELECTR_{it} + \beta_2 GDPPC_{it} + \epsilon_{it}, \quad (1)$$

where dependent variable is GHG emissions,  $\alpha$  is constant,  $\beta_1$  and  $\beta_2$  are regression coefficients,  $SOLARELECTR_{it}$  represents the share of photovoltaics in gross electricity generation,  $GDPPC_{it}$  is GDP per capita, as a measure of economic growth and  $eit$  is error term.

$$GHG_{it} = \alpha + \beta_1 COLLECTOR_{it} + \beta_2 GDPPC_{it} + eit, \quad (2)$$

where GHG emissions are dependent variable,  $\alpha$  is constant,  $\beta_1$  and  $\beta_2$  are regression coefficients,  $COLLECTOR_{it}$  shows solar thermal collectors' surfaces,  $GDPPC_{it}$  is GDP per capita and  $eit$  is error term.

The research hypotheses are:

- H1: The higher the electricity from solar photovoltaics is generated the lower GHG emissions are detected
- H2: The higher the solar capacities in the EU member states are the lower GHG emissions are detected
- H3: Better economic development decreases GHG emissions

In order to test these three hypotheses, the fixed and random effects are conducted. Afterwards, the Hausman test was performed to see which test is better fit for presented dataset.

## 5. Results and discussion

Table 3 contains the results of the fixed and random effects and the Hausman test. The first model examined the effects of electricity generation from solar PV and GDP per capita. In addition, the second model explained the effects of solar thermal collector area and GDP per capita. The objective was to investigate the impact of solar energy systems and solar energy on electricity generation in the process of decarbonization.

The first model includes GDP per capita, and electricity generated from solar energy as independent variables. The fixed effects results show a statistically significant negative effect of electricity generation from solar energy on greenhouse gas emissions. More specifically, when electricity generation from solar PV increases by one gigawatt-hour, greenhouse gas emissions are reduced by 4 thousand tonnes per year. Furthermore, GDP per capita has a positive impact on greenhouse gas emissions. A one euro increases in GDP per capita increases greenhouse gas emissions by 0.024 thousand tonnes per year. However, this result is statistically insignificant for the observed countries. Moreover, the random effects show similar results. When electricity generation increases by one gigawatt-hour, greenhouse gas emissions decrease by 3.9 thousand tonnes. GDP per capita also has a positive effect on greenhouse gas emissions but is also not statistically significant. Finally, a Hausman test was performed for the first model, which showed that fixed effects are more appropriate for this data set. The second model includes GDP per capita and solar thermal collector area as independent variables. The fixed effects results show that an increase in solar thermal collector area has a negative impact on greenhouse gas emissions. More precisely, results show that in period 2010-2020 an increase of solar thermal collector area by one square metre leads to a reduction of greenhouse gas emissions by 21 thousand tonnes per year. This result is statistically significant. In the same period, GDP per capita has a positive effect on greenhouse gas emissions, suggesting that higher economic activity increases the carbon footprint. As in the first model, this result is not statistically significant. Also, the results of the random model effects show that solar thermal collector area has a statistically significant negative effect on greenhouse gas emissions. Increasing solar thermal collector area by one square meter results in a 16 thousand tonne reduction in greenhouse gas emissions per year in period 2010-2020. In addition, GDP per capita has a negative effect on GHG emissions, but the results are not statistically significant.

For the second model, the Hausman test was performed, and the test results were in favour of fixed effects.

The research indicates importance of solar energy in reducing environmental degradation and carbon missions which is crucial for the decarbonization path of the European Union. Results are in accordance with the previous research of Arif (2013), Stritih et al. (2015), Matuszewska-Janica et al. (2021), Rataj et al. (2021) and Sun et al. (2021). The authors have concluded that solar energy has significant role in the process of reducing carbon footprint in European economies. Moreover, Dogan and Seker (2016) and Miškinis et al. (2021) also confirmed the importance of total renewable energy consumption in decarbonization process. It can be concluded that this research verified two out of three research hypotheses. Firstly, results indicated that higher use of electricity from solar PV is generated, the GHG emissions will be reduced. Furthermore, higher the solar capacities are in the EU member states the GHG emissions decrease. Finally, the results could not verify that better economic development decreases GHG emission.



**Table 3: Fixed and random effects**

	1) model			2) model		
	Fixed effects	Random effects		Fixed effects	Random effects	
	coefficients	prob.	coefficients	prob.	coefficients	prob.
GDP per capita	0,0248249	0,875	0,0030632	0,987	0,0927459	0,622
Electricity generation from solar	-4,186597	0,000	-3,9319410	0,000	-21,70063	0,000
constant	133629,8	0,000	133406,0	0,000	155061,3	0,000
						150608,5
						0,000
<i>Descriptive statistics</i>						
Tests for model significant						
F-statistic (fixed effects)	195,31				105,25	
p-value > F-statistic	0,000				0,000	
Wald statistic (random effects)			241,6100			99,47
p-value > Wald-statistic			0,000			0,000
<i>Descriptive statistics</i>						
Tests for model significant						
Observations	297		297		297	297
Minimum	11		11		11	11
Maximum	11		11		11	11
Average	11		11		11	11
<i>Hausman test</i>						
Hausman test	Fixed vs. Random effects		Hausman test		Fixed vs. Random effects	
Test statistic	92,34		Test statistic		88,92	
p-value > test statistic	0,000		p-value > test statistic		0,000	
Decision	fixed effects		Decision		fixed effects	

Source: Author

This issue could be controlled with better environmental regulation and better technological progress. Since households consume 26% of the total energy consumed, they represent a large pool for the use of renewable energy sources, especially solar energy. Solar panels can be easily installed on the roofs of houses, flat buildings, or other non-residential buildings. Solar energy can be used for lighting, water heating, and space heating in households. Installation in households should be supported by government incentives and co-financing. An additional incentive for households may also be to sell the excess energy generated on the grid to provide additional income for the household.

## 6. Conclusion

Reducing greenhouse gas emissions has been one of the European Union's main goals over the past decade. The EU Green Deal, a strategic plan, aims to achieve climate neutrality by 2050. This can only be achieved by phasing out non-renewable energy sources such as coal, oil, and natural gas, and expanding renewable energy sources. Each member of the European Union will adapt its policies to the geographical location and natural resources it has. Solar energy is prescribed as one of the most important energy sources. In the last decade, solar energy has seen the greatest growth in electricity generation and, along with wind energy, is one of the most important energy sources of the future in the European Union. Solar energy is available to all inhabitants of the earth and without it there would be no life on earth. The only question is how effectively it can be used. Investment in the development of solar energy and energy efficiency technologies will play a key role in this. The aim of this research was to investigate the role of solar energy and solar systems in reducing greenhouse gas emissions in the European Union in the period 2010 - 2020. To answer this question, two research models were established. The first model examined the impact of solar energy in electricity generation on greenhouse gas emissions, while the second model examined the impact of solar thermal collector area on greenhouse gas emissions. Both models showed a statistically significant impact of solar energy on reducing greenhouse gas emissions. In addition, the effect of GDP per capita on GHG emissions was examined, but the results obtained were statistically insignificant. The results are very important for policy makers to direct their policies to encourage solar installation as much as possible. Policymakers should reduce bureaucratic barriers, facilitate connection to the grid, and encourage private investment in solar energy systems through incentives and co-financing. Households represent the biggest pool of consumers, precisely because it is so easy to install solar on the roofs of residential buildings and houses. Solar energy can be used for lighting, water heating, and space heating. This would reduce the unnecessary use of fossil fuels, which have a harmful impact on the environment and make it impossible to implement the EU Green Deal plans. Given the uncertainty in which the world currently finds itself, two questions remain: Will the current global crisis accelerate the process of decarbonization of the European Union and the path to energy neutrality, and what role will solar energy play? These questions are left for the future research.

## REFERENCES

- Almasoud, A. H., & Gandayh, H. M. (2015). *Future of solar energy in Saudi Arabia*. *Journal of King Saud University-Engineering Sciences*, 27(2), 153-157.
- Arif, M. S. (2013). *Residential solar panels and their impact on the reduction of carbon emissions*. University of California, Berkeley. Retrieved from [https://nature.berkeley.edu/classes/es196/projects/2013final/ArifM\\_2013.pdf](https://nature.berkeley.edu/classes/es196/projects/2013final/ArifM_2013.pdf).

Bilan, Y., Streimikiene, D., Vasylieva, T., Lyulyov, O., Pimonenko, T., & Pavlyk, A. (2019). *Linking between renewable energy, CO2 emissions, and economic growth: Challenges for candidates and potential candidates for the EU membership*. *Sustainability*, 11(6), 1528

Chien, F., Hsu, C. C., Sibghatullah, A., Hieu, V. M., Phan, T. T. H., & Hoang Tien, N. (2021). *The role of technological innovation and cleaner energy towards the environment in ASEAN countries: proposing a policy for sustainable development goals*. *Economic Research-Ekonomska Istraživanja*, 1-16. <https://doi.org/10.1080/1331677X.2021.2016463>

Dogan, E., & Seker, F. (2016). *Determinants of CO2 emissions in the European Union: the role of renewable and non-renewable energy*. *Renewable Energy*, 94, 429-439.

EIA (2021a): *Photovoltaics and electricity*, <https://www.eia.gov/energyexplained/solar/photovoltaics-and-electricity.php> (Accessed on 05 March 2022)

EIA (2021b): *Solar energy and the environment*, <https://www.eia.gov/energyexplained/solar/solar-energy-and-the-environment.php> (Accessed on 05 March 2022)

European Commission (2022): *EU Green Deal*, [https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal\\_en](https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en) (Accessed on 19 February 2022)

Eurostat, (2021): *Energy statistics - an overview*, [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy\\_statistics\\_-\\_an\\_overview](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy_statistics_-_an_overview), (Accessed on 20 February 2022)

Eurostat, (2022a): *GDP per capita*, [https://ec.europa.eu/eurostat/databrowser/view/NAMA\\_10\\_PC/default/table?lang=en&category=na10.nama10.nama\\_10\\_aux](https://ec.europa.eu/eurostat/databrowser/view/NAMA_10_PC/default/table?lang=en&category=na10.nama10.nama_10_aux) (Accessed on 15 February 2022)

Eurostat, (2022b): *GHG emissions*, [https://ec.europa.eu/eurostat/databrowser/view/ENV\\_AC\\_AINAH\\_R2\\_\\_custom\\_2009698/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/ENV_AC_AINAH_R2__custom_2009698/default/table?lang=en) (Accessed on 15 February 2022)

Eurostat, (2022c): *Renewable energy statistics*, [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Renewable\\_energy\\_statistics](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Renewable_energy_statistics) (Accessed on 20 February 2022)

Eurostat, (2022d): *Solar thermal collectors' surface*, [https://ec.europa.eu/eurostat/databrowser/view/nrg\\_inf\\_stcs/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/nrg_inf_stcs/default/table?lang=en) (Accessed on 15 February 2022)

Eurostat, (2022e): *Use of renewables for electricity – details (solar photovoltaic)* [https://ec.europa.eu/eurostat/databrowser/view/NRG\\_IND\\_URED\\_\\_custom\\_2009591/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/NRG_IND_URED__custom_2009591/default/table?lang=en) (Accessed on 15 February 2022)

Granovskii, M., Dincer, I., & Rosen, M. A. (2007). *Greenhouse gas emissions reduction by use of wind and solar energies for hydrogen and electricity production: economic factors*. *International Journal of Hydrogen Energy*, 32(8), 927-931.

- Lupu, A. G., Dumencu, A., Atanasiu, M. V., Panaite, C. E., Dumitrașcu, G., & Popescu, A. (2016). *SWOT analysis of the renewable energy sources in romania - case study: Solar energy*. *IOP Conference Series. Materials Science and Engineering*, 147(1) doi:<http://dx.doi.org/10.1088/1757-899X/147/1/012138>
- Matuszewska-Janica, A., Żebrowska-Suchodolska, D., Ala-Karvia, U., & Hozer-Koćmiel, M. (2021). *Changes in Electricity Production from Renewable Energy Sources in the European Union Countries in 2005–2019*. *Energies*, 14(19), 6276. <https://doi.org/10.3390/en14196276>
- Miškinis, V., Galinis, A., Konstantinavičiūtė, I., Lekavičius, V., & Neniškis, E. (2021). *The Role of Renewable Energy Sources in Dynamics of Energy-Related GHG Emissions in the Baltic States*. *Sustainability*, 13(18), 10215.
- Rataj, M., Berniak-Woźny, J., & Plebańska, M. (2021). *Poland as the EU Leader in Terms of Photovoltaic Market Growth Dynamics—Behind the Scenes*. *Energies*, 14(21), 6987. <http://dx.doi.org/10.3390/en14216987>
- Shahsavari, A., Yazdi, F. T., & Yazdi, H. T. (2019). *Potential of solar energy in Iran for carbon dioxide mitigation*. *International Journal of Environmental Science and Technology*, 16(1), 507-524.
- Sharma, R., Sinha, A., & Kautish, P. (2021). *Does renewable energy consumption reduce ecological footprint? Evidence from eight developing countries of Asia*. *Journal of Cleaner Production*, 285, 124867.
- Strith, U., Paksoy, H., Turgut, B., Osterman, E., Evliya, H., & Butala, V. (2015). *Sustainable energy management: Solar energy and thermal storage technologies in two Mediterranean countries*. *Management of Environmental Quality: An International Journal*.
- Sun, Y., Li, M., Zhang, M., Khan, H. S. U. D., Li, J., Li, Z., ... & Anaba, O. A. (2021). *A study on China's economic growth, green energy technology, and carbon emissions based on the Kuznets curve (EKC)*. *Environmental Science and Pollution Research*, 28(6), 7200-7211. <https://doi.org/10.1007/s11356-020-11019-0>
- Tsoutsos, T., Frantzeskaki, N., & Gekas, V. (2005). *Environmental impacts from the solar energy technologies*. *Energy policy*, 33(3), 289-296. doi:10.1016/S0301-4215(03)00241-6
- Ummah, H. F., Setiati, R., Dadi, Y. B. V., Ariq, M. N., & Malinda, M. T. (2021). *Solar energy as natural resource utilization in urban areas: Solar energy efficiency literature review*. *IOP Conference Series. Earth and Environmental Science*, 780(1) <http://dx.doi.org/10.1088/1755-1315/780/1/012007>
- Vlahinić Lenz, N., Žiković, S., & Gržeta, I. (2019): *Novi izazovi u energetici: ekonomska perspektiva*. Sveučilište u Rijeci, Ekonomski fakultet, Rijeka
- Xue, L., Haseeb, M., Mahmood, H., Alkhateeb, T. T. Y., & Murshed, M. (2021). *Renewable energy use and ecological footprints mitigation: evidence from selected South Asian economies*. *Sustainability*, 13(4), 1613. <https://doi.org/10.3390/su13041613>

*A scientific paper*

**Katerina Fotova Čiković**  
University North, Croatia  
E-mail address: kcikovic@unin.hr

**Joško Lozić**  
University North, Croatia  
E-mail address: jlozic@unin.hr

**Mirko Smoljić**  
University North, Croatia  
E-mail address: msmoljic@unin.hr

## **EFFICIENCY OF COUNTIES IN EASTERN CROATIA: APPLICATIONS OF DATA ENVELOPMENT ANALYSIS**

### **ABSTRACT**

*This paper identifies and analyses the applications of the leading nonparametric methodology, namely the Data Envelopment Analysis (hereafter DEA) in the investigation of the efficiency of Croatian counties. This article aims to present the findings regarding the efficiency and performance of Eastern Croatian counties (which are Osijek – Baranja, Brod – Posavina, Virovitica – Podravina, Požega – Slavonia and Vukovar – Sirmium) as well as their comparison to the other Croatian counties. Other goals of this article are to present and provide a theoretical background to the DEA methodology as one of the most popular techniques in efficiency evaluation since its introduction in 1978 by Charnes, Cooper and Rhodes. This article implements an in-depth extensive literature review of studies implementing the DEA methodology in efficiency evaluation of Croatian counties. The conducted literature review has explored the Scopus, WoS (SSCI and SCI papers) and CROSBİ (Croatian Scientific Bibliography) databases using „Croatia“, „County“ and „Data Envelopment Analysis“ as keywords for the search. This approach resulted in 7 hits in Scopus, 15 on WoS and 11 on CROSBİ, which eventually resulted in the analysis of a total of 12 papers. This study identifies all the previous work regarding the efficiency of Eastern Croatia counties as well as an analysis of their used models, the variable set and their findings.*

*The findings reveal different aspects of efficiency evaluation of Croatian counties with a special focus on counties in Eastern Croatia. This literature review indicates that most of the analysed studies have been published after the year 2010 but have included the time frame from the year 2000 onwards for the efficiency analysis. The longest study includes 14 years, whereas the shortest includes 1 analysed year.*

*This article could serve as an incentive for greater use of the DEA methodology as a very suitable tool for efficiency and performance evaluation as well as a benchmarking tool in different industries.*

**Key words:** *County, Eastern Croatia, Relative Efficiency, DEA, Data Envelopment Analysis.*

## 1. Introduction

Since 1992, the Republic of Croatia has been divided into a total of 21 counties (i.e. 20 counties and the capital city of Zagreb). The counties are „Croatia's primary administrative subdivisions“ (Borozan & Borozan, 2018). The region of Eastern Croatia (also known as Slavonia) consists of five counties as follows: Osijek – Baranja, Brod – Posavina, Virovitica – Podravina, Požega – Slavonia and Vukovar – Sirmium. These counties „lag behind significantly“ when compared to the city of Zagreb in their level of regional development, including indicators such as „GDP per capita, huge population drain in the region and the development index“ (Marošević, 2020). In this paper, the focus will be on the counties of Eastern Croatia, and the findings regarding their efficiency.

Efficiency is one of the most important principles in any business and industry. In the past few decades, “regional and economic efficiency and the prospects of their improvement have become one of the leading imperatives of all world economies” (Rabar, 2013). Furthermore, the assessment of “efficiency in the public sector has become important after a significant increase in the public expenditures of the most developed countries and the question of economic and social effects of using such large resources” (Slijepčević, 2019). The reason behind this is the fact that “achievement of high rates of economic growth is the government’s task of any country because the future world order depends on the own ability to improve the living standards of its citizens” (Škuflić et al., 2010). This is also true for the counties and other local administration subdivisions. For every organization (profit or non-profit, private or public), it is crucial to consistently measure the performance and efficiency and to compare it to other peer entities (in our case, with other Croatian counties). The benchmarking (i.e. the comparison with the other peer units) reveals new insights regarding the performance and position (ranking) of all the units in the analysed sample. In addition, if one unit appears to be a top performer and is relative efficient, it needs to “take adequate actions to continuously adapt to changes to remain in that position in the future. However, if it shows a lower performance, it is crucial to learn what the top performers are doing to achieve better results and thus, set targets for improvements” (Cvetkoska & Fotova Čiković, 2021).

DEA is the leading non-parametric linear programming methodology that is commonly used in assessing the relative efficiency of peer entities and is successfully applied to both profit and non-profit making organizations, which is one of the reasons for its major popularity in the last few decades. Unlike parametric methodologies, DEA has many advantages and is relatively easy to implement, which is one of the reasons why it is commonly used in assessing the efficiency of organizations in different industries. In the beginning, DEA has been mostly used in the efficiency evaluation of non-profit organizations, since it is difficult to evaluate them based on traditional economic and financial indicators used for commercial organizations. However, its application was thereafter spread to many other industries (Santos et al., 2013). Today, the DEA as an integral part of operations research (OR) has been employed in efficiency evaluation in many different industries, such as the health system (Lupu & Tiganasu, 2022), the educational system (Tran et al., 2022), the tourism industry (Wu et al., 2022) and even in measuring the efficiency of Formula 1 drivers and teams (Jubran et al., 2012).

In this paper, we have surveyed, identified and analysed all the DEA applications which measure the relative efficiency of counties in the Republic of Croatia. The aim of this study is to present the findings regarding the efficiency and performance of five Eastern Croatian counties as well as their comparison to the other Croatian counties. Other goals of this study

are to present and provide a theoretical background to the DEA methodology as one of the most popular techniques in efficiency evaluation since its introduction in 1978 by Charnes, Cooper and Rhodes, which is given in Section 2.

This paper is structured as follows. The next chapter describes the DEA methodology. The different applications of DEA in efficiency measurement of Eastern Croatia's counties have been presented in Section 3. The fourth section opens up a discussion regarding the extensive literature review and their findings and gives recommendations and guidance for future work. The paper ends with the final section: the conclusions from the study.

## **2. Data Envelopment Analysis (DEA): theoretical background**

Data Envelopment Analysis has been introduced in 1978 in the revolutionary paper of Charnes, Cooper & Rhodes (1978) "Measuring the Efficiency of Decision Making Units" and it has ever since become an integral part of Operations Research (OR). DEA today is one of the most used and most popular non-parametric methodologies that is implemented for efficiency assessment of homogeneous entities (so-called Decision-Making Units, i.e. DMUs). Škare & Rabar (2014) state that DEA is a performance measurement technique. According to Paradi et al. (2018), DEA is "an example of a frontier approach, which identifies and assesses the areas or examples of best performance or best practice within the sample, i.e. those located on the "frontier". The frontier identified by DEA suggests the best performance within the group of operating units being evaluated and does not promise or even suggest that these represent the theoretically best performance". The DMUs achieve efficiency by projecting to the efficient frontier and thus, the efficiency frontier represents an achievable goal to be pursued by inefficient decision-makers. All DMUs that are not on the frontier are considered inefficient (Jorda et al., 2012).

DEA is a „data-oriented“ methodology that uses mathematical (linear) programming for measuring the relative efficiency of both productive and non-productive DMUs, which use the same inputs and the same outputs, and are distinguished by the level of available resources and the operations included in their transformation process (Cvetkoska, 2010). Namely, a mathematical programming problem is solved for each DMU in the sample and the results reveal whether it is a relative efficient or inefficient DMU (Lukač & Neralić, 2012). Cvetkoska (2011) states "DEA as a linear programming procedure computes a comparative ratio of outputs to inputs for each DMU, which is reported as the relative efficiency score". The efficiency score is presented as either a number between 0-1 or a percentage between 0-100%. A DMU with a score of 1 is considered relative efficient, whereas the DMU with an efficiency score lower than 1 is considered relative inefficient.

Thanassoulis (2001) refers to the resources as "inputs" and the outcomes as "outputs".

There are different types of DEA models, which are determined by the type of return to scale, the frontier format and the chosen orientation. The CCR and the BCC DEA models are considered to be the basic DEA models. Namely, the CCR DEA model has been named after its authors (Charnes, Cooper & Rhodes, 1978) and it is characterized with a constant return to scale (CRS) and "meaning that a proportional increase in all inputs results in the same proportional increase in outputs" (Borozan & Borozan, 2018). The BCC model has been introduced in 1984 by Banker, Charnes and Cooper (1984), and the main distinction between these models is that the BCC model allows for a variable (either increasing or decreasing) returns to scale (VRS), which assumes that an increase in the input variables does not result in

a proportional change in the output variables. In addition, the DEA model, depending on the orientation, can be input-oriented or output-oriented model.

Fidasoski et al. (2021) state that DEA, “through linear programming, approximates the true but unknown technology without imposing any restriction on the sample distribution”. DEA’s main advantage over the parametric methodologies is the fact that “no prior functional form is assumed for the frontier” (Paradi et al., 2018). Since DEA measures the relative efficiency of peer DMUs that use multiple inputs and outputs, it enables researchers and academic members to benchmark the DMU (Borozan & Borozan, 2018). DEA has a wide range of applications, from banks, to hospitals, police stations, tax offices, defence bases, schools, insurance companies, libraries, university departments and countries (Fotova Čiković & Lozić, 2022). Furthermore, Fotova Čiković & Lozić (2022) state the following advantages of the methodology: the DEA does not require prior knowledge of the explicit functional form linking input variables and output variables nor a priori determination of the weights for these variables, it provides simultaneous analysis of inputs and outputs and a comparison of each inefficient unit with its "peer group" and it offers a characterization of each DMU by a single result of relative efficiency. Researchers use the DEA methodology because it can handle multiple inputs and outputs (Stancheva et al., 2008).

DEA is, however, not without limitations. Unlike typical statistical approaches based on average values, DEA is based on extreme observations comparing each decision-maker only with the best ones (Rabar & Blažević, 2011). Some of the most presented limitations are as follows: the basic assumption that random errors do not exist can lead to frontier sensitivity to extreme observations and measurement errors (Jemrić & Vujčić, 2002); “it does not take into account the effect of exogenous variables on the calculation and operation, it does not offer possibilities and ways for efficiency improvement, the performance of statistical tests with the findings could be quite challenging and the results can be sensitive to the selection of inputs and outputs, thus an analysis of their relative importance is essential prior to the calculation” (Fotova Čiković & Lozić, 2022). However, it is considered that its advantages outweigh by far its limitations (Fotova Čiković et al., 2021). DEA is the leading non-parametric methodology that has been extensively applied in agriculture, banking, transportation, supply chain and public policy (Emrouznejad & Yang, 2018). It should be perceived as “a significant diagnostic tool” which gives new insights to stakeholders in different types of companies and different industries (Fotova Čiković & Lozić, 2022).

### **3. Applications of DEA in efficiency evaluation of Eastern Croatia's counties**

The conducted in-depth extensive literature review has explored the Scopus, WoS (SSCI and SCI papers) and CROSBI (Croatian Scientific Bibliography) databases without imposing any exclusion criteria regarding the time period of publication. Thus, all of the published papers have been included in the survey since the introduction of the DEA methodology. The keywords „Croatia“, „County“ and „Data Envelopment Analysis“ have been used when searching for studies that focus on efficiency evaluation of Croatian counties. This survey resulted in 7 hits in Scopus, 15 on WoS and 11 on CROSBI, which eventually resulted in analysis of a total of 12 papers regarding the efficiency of Croatian counties.

The authors hypothesised that there is not enough published work regarding the efficiency evaluation of Croatian counties with the application of DEA in general and thus, the research is based on two research questions:



RQ1: What are the relevant previously published studies regarding the efficiency of Eastern Croatia counties, what are the different perspectives of efficiency evaluation used and what DEA models have they employed?

RQ2: Which Eastern Croatia's county is most efficient, and which one is least efficient?

This study identifies all the previous work regarding the efficiency of Eastern Croatia counties and it provides a presentation of the studies, their used DEA models, the variable set and their findings. A short overview of the applications of DEA in Croatia's counties is presented in Table 1, and a thorough presentation and analysis of the findings and used models are presented thereafter.

**Table 1:** Applications of DEA in Eastern Croatia's counties efficiency evaluation

<b>Author/s and year of publication</b>	<b>Application</b>
Bahovec & Neralić (2001)	Assessing the relative efficiency of the agricultural production in 10 county districts of Croatia
Škuflić, Rabar & Šokčević (2010)	Assessment of the efficiency of Croatian counties
Rabar & Blazevic (2011)	Evaluating the relative efficiency of Croatian county in tourism
Rabar (2013)	Regional efficiency of Croatian counties
Škare & Rabar (2014)	Regional efficiency assessment
Korent, Detelj & Vukovic (2015)	Evaluating the efficiency of Croatian counties in entrepreneurship
Borozan & Borozan (2018)	Analyzing total-factor energy efficiency in Croatian counties
Škrinjarić (2018)	Evaluation of environmentally conscious tourism industry
Slijepčević (2019)	Analysis of efficiency of public expenditures at the regional level
Hodžić & Muharemović (2019)	Evaluating the efficiency of regional government in Croatia
Rabar & Grbin (2019)	Analysis of regional efficiency in Croatia using fiscal indicators
Rabar (2020)	Efficiency of regions: Environmental vs. Economic point of view

*Source: Authors' construction*

Bahovec & Neralić (2001) have analysed the relative (technical) efficiency of the agricultural production in 10 county districts in Croatia in the period from 1980 until 1990 (eleven years). They implement both non-parametric (the DEA methodology) and parametric (the regression analysis) methodology for their research. In their study, they implement the CCR DEA model, which is input-oriented with a constant return to scale with four inputs (the area of the land under cereals, the number of tractors, the number of used fertilizers, and the number of people employed in agriculture) and two outputs (the production of wheat and the production of corn). Their findings indicate that „only the area of land under corn and the number of tractors significantly influence on the variation of the production of corn“. Their study is of great significance due to the use of both DEA and regression analysis, enabling this study to combine the advantages of both methodologies.

Škuflić, Rabar & Šokčević (2010) have analysed the regional efficiency in Croatia implementing the CCR output-oriented DEA methodology with five inputs and two outputs for the period 2000-2006. The number of graduated students and active legal entities, and the amounts of foreign direct investment (FDI), equipment investment and exports are selected as input variables, whereas the gross domestic product (GDP) and gross wages are selected as outputs of the DEA model. The obtained results show that the average efficiency of the whole sample is 0.8492. The Vukovar – Sirmium county is found to be the least efficient, with an efficiency score of 0.5057. Seven other counties noted lower than average efficiency, and among them are all the Eastern Croatia's counties: Slavonski Brod – Posavina (0.5065), Požega – Slavonia (0.6472), Osijek – Baranja (0.6545) and Virovitica – Podravina (0.7906).

Rabar & Blažević (2011) have implemented the DEA methodology in exploring the touristic efficiency of Croatian counties in one calendar year (the year 2008). They have applied the CCR, the BCC output-oriented DEA models and the DEA window technique for the period from 2004 to 2008. In their study, they have selected the number of beds, number of seats and number of employees as input variables, whereas the number of arrivals, number of stays, number of nights, revenue in thousands of kuna – HRK as output variables. The obtained results of the BCC DEA model show 13 efficient and 8 inefficient counties, whereas the CCR model shows 10 efficient and 11 inefficient counties in 2008. They have run the window DEA model with one and with five windows. The obtained results from the window DEA with one window shows the following results regarding Eastern Croatia's counties: Osijek – Baranja 0.760, Brod – Posavina 0.726, Virovitica – Podravina 0.834, Požega – Slavonia 0.986 and Vukovar Sirmium 0.696. The results from the window DEA model with five windows show the following efficiency results: Osijek – Baranja 0.817, Brod – Posavina 0.798, Virovitica – Podravina 0.950, Požega – Slavonia 1.00 and Vukovar Sirmium 0.776. Požega – Slavonia is the most efficient county whereas Vukovar Sirmium the least efficient county in both window DEA models. In their study, there are, however, counties that have not achieved efficiency in any of the analysed periods. These are Brod-Posavina, Osijek-Baranja, Vukovar – Sirmium (three of the five Eastern Croatia counties) and Split-Dalmatia counties. The authors of this study go one step further by introducing role models in the performance of other efficient counties. For Brod – Posavina County it is Bjelovar-Bilogora County (2008), for Osijek – Baranja County it is Krapina-Zagorje County (2008), for Vukovar – Sirmium County it is Sisak-Moslavina County (2005, 2007 or 2008), and for Split County-Dalmatian it is Primorje-Gorski Kotar County (2007).

Rabar (2013) has focused on assessing the regional efficiency of Croatian counties in the period from 2005 to 2007 with the implementation of the DEA BCC and window analysis technique with the assumption of variable returns-to-scale. The selected input and output variables include seven socioeconomic indicators. The registered unemployment rate and number of support allowance users are selected as inputs, while the share of the secondary sector in gross value added (GVA), gross fixed capital formation in fixed assets (by headquarter of investor), level of import coverage by export, number of graduated students (by residence) and gross domestic product (GDP) are selected as outputs. The window analysis technique has been applied with an input- and an output-orientation and one window for the period (2005-2006-2007). The results from the input-oriented model show that Vukovar – Sirmium county has been the least efficient county with a result of 0.2364. The other Eastern Croatia's counties noted significant inefficiency as follows: Slavonski Brod – Posavina 0.2550, Osijek – Baranja 0.4537, Virovitica – Podravina 0.8569 and Požega – Slavonia 0.9437. The output-oriented window analysis model showed higher efficiency in

Eastern Croatia's counties. Namely, the efficiency results were 0.6981, 0.7821, 0.8729, 0.9664 and 0.9838 for Vukovar – Sirmium, Slavonski Brod-Posavina, Osijek-Baranja, Virovitica – Podravina and Požega – Slavonia counties, respectively. The author constructed a combined BCC model results with one window (2005-2006-2007) and three categories and re-run the model with both input- and output-orientation. The results from the input-oriented combined BCC model show significantly lower efficiencies (Vukovar – Sirmium 0.3410, Slavonski Brod – Posavina 0.3655, Osijek – Baranja 0.4737, Virovitica – Podravina 0.8709 and Požega – Slavonia 0.9437) than the output-oriented combined BCC model (Vukovar – Sirmium 0.7458, Slavonski Brod – Posavina 0.7986, Osijek – Baranja 0.9360, Virovitica – Podravina 0.9713 and Požega – Slavonia 0.9871). The Vukovar – Sirmium county notes the lowest, whereas Požega – Slavonia county the highest efficiency scores in all the constructed DEA models.

Škare & Rabar (2014) have measured the regional efficiency of Croatian counties in the period from 2005 - 2007 with the implementation of the DEA BCC methodology- the window technique. They have selected registered unemployment rate and number of support allowance users as input variables, and the share of secondary sector in gross value added (GVA), gross fixed capital formation in fixed assets (by headquarter of investor), level of import coverage by export, number of graduated students (by residence), gross domestic product (GDP), level of emigrants coverage by immigrants, number of active legal entities and number of medical doctors as output variables. They have conducted their research in two phases. In order to include dynamics in the results, the first phase was carried out using the window analysis (one window - 2005-2006-2007). The worst efficiency scores for the input orientation DEA model has been achieved by the County of Vukovar – Sirmium (0.213164). Brod – Posavina noted 0.255036, Osijek – Baranja 0.467044, Virovitica – Podravina 0.874994 and Požega – Slavonia 0.943663. As for the output-oriented window model, the relative efficiency results were as follows: Vukovar – Sirmium 0.720074, Brod – Posavina 0.805768, Osijek – Baranja 0.880615, Virovitica – Podravina 0.976773 and Požega – Slavonia 0.984536. It can be concluded that the output-oriented window DEA model (with an average total efficiency score of 0.964310) notes higher efficiency scores than the input-oriented (with an average total efficiency score of 0.821179). In the second phase, the authors implemented a combined BCC model with one window (2005-2006-2007) and three categories. The obtained results from the input-oriented model show the following efficiency results: Vukovar – Sirmium 0.3410, Brod – Posavina 0.4058, Osijek – Baranja 0.6827, Virovitica – Podravina 0.9341 and Požega – Slavonia 0.9436. The output orientation of the model, on the other hand, shows rather higher efficiency values for all of Eastern Croatia's counties as follows: Vukovar – Sirmium 0.7733, Brod – Posavina 0.9201, Osijek – Baranja 0.9787, Virovitica – Podravina 0.9887 and Požega – Slavonia 0.9890.

Korent, Detelj & Vuković (2015) have assessed the efficiency of Croatian counties as decision-makers in entrepreneurship in the year 2009. They have implemented both BCC and CCR output-oriented DEA models with two inputs (Total expenses of entrepreneurs in millions of HRK and Investments of entrepreneurs in fixed assets in millions of HRK) and two outputs (Total income of entrepreneurs in millions of kuna and Patents granted). The findings from their DEA BCC-O model identify Istria, Karlovac, Krapina – Zagorje, Lika – Senj, Požega – Slavonia, Split – Dalmatia, Varaždin and Vukovar – Sirmium counties and Zagreb County and the City of Zagreb as relative efficient, whereas all other counties have been recognized as relative inefficient counties, in regard with entrepreneurship. Based on the results of the analysis, according to the CCR-O model, four counties were identified as efficient, as follows: Karlovac, Krapina – Zagorje, Požega – Slavonia and Varaždin counties.

In their research, two out of the five analysed Eastern Croatia's counties have been identified as efficient in the BCC-O model: the Požega – Slavonia and Vukovar – Sirmium counties, whereas the Požega – Slavonia has been identified as relative efficient in the CCR-O model as well. The average relative efficiency of all counties is 94.95% and 97.03% for the CCR and BCC models, respectively. This study highlights the positive impact of entrepreneurial activity on the economic growth and regional development of Croatian counties.

Borozan & Borozan (2018) have explored the energy efficiency of the Croatian counties in the period 2001 – 2013 using both CCR and BCC DEA methodology with labor employment, final electricity consumption and gross fixed capital formation as inputs and GDP as the single output. In their study, twelve out of 20 counties have exhibited the average TFEE scores lower than one. Furthermore, their findings show that the counties in northeast Croatia (Slavonski Brod – Posavina County, Vukovar – Sirmium County, Osijek – Baranja County) are less-developed counties and inefficient in terms of energy efficiency with an average technical efficiency result of 0.8688, 0.8362 and 0.8091, respectively. However, the efficiency scores for the Virovitica – Podravina County (0.9551), which also belongs to Eastern Croatia show that it is considered a highly efficient county. Furthermore, Požega – Slavonia has been classified as a less efficient county with an efficiency score of 0.9287. They claim that „subnational governments may play an important role in energy efficiency policies“.

Škrinjarić (2018) has explored the relative efficiency of the „environmentally-conscious tourism industry“ of 21 Croatian counties in the time frame 2011-2015. Her study is considered pioneering since it perceives the tourism industry as a sustainable business that combines both economic and environmental variables in the evaluation of efficiency. Škrinjarić (2018) has developed four DEA models, which include the following variables: number of beds, number of rooms, municipal waste in tourism (in tons), current expenditures on environment protection (in thousands of HRK), total investments in environment protection (in thousands of HRK), number of tourist arrivals, number of overnight stays, total GDP (in thousands of HRK) and the surface of each county (in square kilometres), tourism pressure, reciprocal value of municipal waste, percentage of current expenditures in, percentage of total investments in GDP and undesirable output municipal waste. The findings imply that „tourist arrivals in all of the Croatian counties are satisfactory but changes regarding the expenditures on environmental protection are needed for all the counties to become relative efficient“. Požega – Slavonia has been identified as the second-ranked county in relative efficiency, after the City of Zagreb in one of the DEA models, whereas Brod – Posavina has been amongst the most efficient counties in another DEA model. Vukovar – Sirmium, Virovitica – Podravina and Osijek – Baranja have been less efficient and have not noted a relative efficiency score of 1 in any of the analysed years.

Slijepčević (2019) has focused on measuring the regional efficiency with the implementation of the DEA methodology taking into consideration six dimensions of performance of local government units at the regional level (so-called sub-indicators, i.e. outputs) as follows: Education, General administration services, Social services for elderly, Environmental protection, Infrastructure and Culture. The one input for the DEA model is the total expenses of local government units in the county per capita. The efficiency results from this very interesting study give efficiency ranks for each county. Namely, Osijek – Baranja has been ranked second, Brod – Posavina fifth, Vukovar Sirmium ninth, Požega-Slavonia eleventh and Virovitica – Podravina fourteenth. This study offers great scientific contribution due to its ranking and individual efficiency score for each of the six sub-indicator, which gives new

insights into the weaknesses and strong suits for each county, which could benefit the public and the policymakers. Her findings indicate „large differences at the regional level in using resources to provide public services“. Furthermore, the local government units in the least efficient county are advised to „on average decrease their expenses by 55 per cent while achieving the same performance to become efficient“.

Hodžić & Muharemović (2019) have determined the efficiency of regional and local government public functions implementing the DEA methodology for the 2009-2016 period in the first stage and the Tobit regression in the second stage of the research. The selected inputs are gross earnings of people employed in counties, material expenses and borrowing costs for each county, whereas the output variables are the number of businesses, the number of elementary and secondary schools in total and the number of individuals in each county. The results from both their models show that Virovitica – Podravina and Vukovar – Sirmium from Eastern Croatia are relative efficient and among the most efficient counties in Croatia. Their findings indicate that “among exogenous determinants, only the annual registered unemployed rate and the annual average wage for full-time jobs are statistically significant”.

Rabar & Grbin (2019) have covered the period from 2002 to 2015 and included six indicators related to fiscal policy measures in order to examine the regional efficiency in Croatia. They have applied the BCC DEA window-technique model, with Tax revenues, Current expenses, Capital expenditures, Number of employees in local and regional self-government, and the Total number of employees less employees in local and regional self-government bodies and with budget users as input variables, and GDP as an output variable. They have run the DEA window model with one window and with 14 windows. The relative efficiency results from the window analysis technique with 14 windows show that Slavonski Brod – Posavina County has been the most efficient with an efficiency score of 0.992, whereas Virovitica – Podravina as most inefficient county with 0.910 score. On the other hand, the results from the one window show quite lower efficiency of all the Eastern Croatia counties. Namely, in that model, Virovitica – Podravina county has been the least efficient county with an efficiency score of 0.812, whereas Slavonski Brod – Posavina County has once more been the most efficient county with an average efficiency of 0.877. The obtained efficiency results of 21 counties confirmed the set hypotheses regarding the significant inter-county disparities and the leading position of the City of Zagreb in the light of selected indicators, pointing out at the same time to inefficiency generators, among which the most pronounced is the number of employees in local and regional self-government units.

Rabar (2020) has designed two different output-oriented BCC DEA models to separately address both the economic and environmental efficiency of Croatian counties for 2016 only. In the first model, the economic efficiency of Croatian counties is measured, based on six indicators (population size, GDP, number of graduated students by residence, level of import coverage by export, the total number of persons in employment and number of medical doctors), while the second model assesses the environmental efficiency of the Croatian counties, with the use of five indicators (recovery rate of municipal waste collected by local government units, CO<sub>2</sub> emission in kg per capita, share of treated water in total municipal wastewater discharge, environmental protection expenditure and investments as a percentage of GDP and ratio of production and installed capacity of renewable energy plants).

The findings from the first model regarding economic efficiency show that Vukovar – Sirmium county is the least efficient county with the lowest minimum efficiency score of 0.6704 and Požega-Slovenia noted the highest economic efficiency among the counties from Eastern Croatia with 0.9572. Slavonski Brod – Posavina (0.7640) and Osijek – Baranja

(0.7209) counties have noted efficiency lower than the average economic efficiency of 0.8350. As for the second model regarding the environmental efficiency, Virovitica – Podravina (0.9618) and Osijek – Baranja (0.9427) note below the average efficiency (0.9793). Interestingly, the other three Eastern Croatia's counties (Slavonski Brod – Posavina, Požega – Slavonia and Vukovar – Sirmium) note a relative efficiency score of 1. Osijek – Baranja is the least successful county considering the sum of both rankings.

#### 4. Discussion

The analysed papers include very different aspects of efficiency. Namely, Bahovec & Neralić (2001) evaluate the efficiency of the agricultural production of Croatia's counties; Rabar & Blažević (2011) analyse the touristic efficiencies of Croatian counties; Škuflić, Rabar & Šokčević (2010), Rabar (2013) and Skare & Rabar (2014) have measured the regional efficiency of counties; Borozan & Borozan analyse the total-factor energy efficiency in Croatian counties; Škrinjarić (2018) has explored the relative efficiency of the „environmentally-conscious tourism industry“; Slijepčević (2019) has measured the regional efficiency with the implementation of the DEA methodology taking into consideration six dimension of performance of local government units at the regional level; Hodžić & Muharemović (2019) focus on the fiscal decentralization and efficiency of regional government in Croatia; Rabar & Grbin (2019) focus on the regional efficiency in Croatia using fiscal indicators and Rabar (2020) combined both the economic and environmental efficiency of Croatian counties.

One very interesting insight from this research is that the author Rabar has authored and/or co-authored in six out of the analysed twelve analysed and presented studies, as follows: Škuflić, Rabar & Šokčević (2010); Rabar & Blažević (2011); Rabar (2013); Skare & Rabar (2014); Rabar & Grbin (2019) and Rabar (2020). As for the journals, in the *Lex localis - Journal of Local Self-Government* two of the analysed papers have been published in 2019 (Slijepčević, 2019; and Hodžić & Muharemović, 2019).

The surveyed papers have been published in the period from 2001 – 2020. However, they mostly cover the time frame from 2000 onwards (i.e. 2000 – 2016), except for the study of Bahovec & Neralić (2001), which covers the period from 1980-1990. The longest study is Rabar & Grbin (2019), which covers 14 years (i.e. from 2002 – 2015), whereas the shortest is Rabar (2020), which covers one single year-the year 2016.

Both BCC and CCR DEA models are implemented in the efficiency evaluation of Croatia's counties. And interestingly, the window technique DEA model has been used in four of the twelve surveyed studies.

The findings of most of the analysed papers are rather consistent and show that Vukovar – Sirmium county is the least efficient county (Škuflić, Rabar & Šokčević, 2010; Rabar & Blažević, 2011; Rabar, 2013; Škare & Rabar, 2014; Škrinjarić, 2018 and Rabar, 2020), whereas Požega-Slavonia county is the most efficient county in Eastern Croatia followed by Virovitica – Podravina county (Škuflić, Rabar & Šokčević, 2010; Rabar & Blažević, 2011; Rabar, 2013; Škare & Rabar, 2014; Rabar, 2020).

Slijepčević (2019), on the other hand, found that Osijek – Baranja had achieved the best ranking in Eastern Croatia's counties in terms of regional efficiency with the implementation of the DEA methodology taking into consideration six dimensions of performance of local government units at the regional level, whereas Požega – Slavonia and Virovitica – Podravina were ranked as most inefficient in Eastern Croatia. Hodžić & Muharemović (2019) found both Virovitica – Podravina and Vukovar – Sirmium counties to be relative efficient, and the most efficient counties in Eastern Croatia. Korent, Detelj & Vuković (2015) found Vukovar – Sirmium to be the most efficient in terms of decision-maker in entrepreneurship in 2009.

Rabar & Grbin (2019) found Slavonski Brod – Posavina County to be the most efficient county in Eastern Croatia. Borozan & Borozan (2018) highlight the fact that Eastern Croatia's counties are less-developed and relative inefficient in terms of energy efficiency.

The overall findings reveal that Eastern Croatia's counties note lower efficiencies than the City of Zagreb as well as the other Croatian counties. These findings could help the local authorities identify their weaknesses and areas for possible improvements as well as their ranking relative to the other Croatian counties, and thus, to undertake preventive and corrective measures.

## 5. Conclusion

This article implements an in-depth extensive literature review of studies implementing the DEA methodology in efficiency evaluation of Croatian counties. The conducted literature review has explored the Scopus, WoS (SSCI and SCI papers) and CROSBIB (Croatian Scientific Bibliography) databases using „Croatia“, „County“ and „Data Envelopment Analysis“ as keywords for the search with no limitations to the publication time. This approach resulted in 7 hits in Scopus, 15 on WoS and 11 on CROSBIB, which eventually resulted in analysis and a survey of a total of 12 papers. Thus, the main hypothesis that there is a literature gap regarding the efficiency evaluation of Croatian counties has been confirmed.

This paper's goal and imposed research questions were to identify all the previous work regarding the efficiency of Eastern Croatia counties as well as to provide an in-depth analysis of the used models, the variable set and their findings. Moreover, the different perspectives of efficiency evaluation of Croatian counties are presented and the findings reveal that most of the analysed studies have been published after the year 2010 but have included the time frame from the year 2000 onwards for the efficiency analysis. The longest study includes 14 years, whereas the shortest includes 1 analysed year. The findings of most of the surveyed studies show that Vukovar – Sirmium county is the least efficient county, whereas Požega-Slavonia county is the most efficient county in Eastern Croatia followed by Virovitica – Podravina county.

On a micro level, this study identifies the relative efficiency of each county in Croatia from a different perspective and gives new insights to the local authorities regarding their performance and ranking relative to the other Croatian counties. This way, the best practices' counties can be traced and their efforts could be copied and implemented in less efficient counties.

On a macro level, this article could serve as an incentive for greater use of the DEA methodology as a very suitable tool for efficiency and performance evaluation as well as a benchmarking tool in different industries, and thus, largely contributes to scholarly literature, the policymakers and the interested public. In future work, the authors will explore the environmental efficiency of different aspects of Croatian counties (as in Škrinjarić, 2018 and Rabar, 2020).

## REFERENCES

Bahovec, V. & Neralić, L. (2001): *Relative efficiency of agricultural production in county districts of Croatia*, Mathematical Communications - Supplement, 1 (1), 111-119.

- Banker, R.D., Charnes, A., Cooper, W.W. (1984): *Some Models for Estimating Technical and Scale Inefficiencies in Data Envelopment Analysis*, Management Science, 30(9), pp.1078-1092
- Borozan, Đ. & Borozan, L. (2018): *Analyzing total-factor energy efficiency in Croatian counties: evidence from a non-parametric approach*, Central European journal of operations research, 26 (3), 673-694 doi:10.1007/s10100-017-0493-8.
- Charnes, A; Cooper, W. W; Rhodes, E. L. (1978): *Measuring the efficiency of decision making units*, European Journal of Operational Research, 3(4), 429–444.
- Cooper, W., Seiford, L. and Tone, K. (2007): *Data Envelopment Analysis: A Comprehensive Text with Models, Applications, References and DEA-Solver Software*, 10.1007/978-0-387-45283-8.
- Cvetkoska, V. (2010): *The Quantitative Basis on The DEA Methodology - Its Models and Areas of Application*, Annu. Fac. Econ. 45. Pp.629-641
- Cvetkoska, V. (2011): *Data Envelopment Analysis Approach and Its Application in Information and Communication Technologies*. in: M. Salampasis, A. Matopoulos (eds.): Proceedings of the International Conference on Information and Communication Technologies for Sustainable Agriproduction and Environment (HAICTA 2011), Skiathos, 8-11 September, 2011. pp.421-430
- Cvetkoska, V., Fotova Čiković, K. (2021): *Efficiency Analysis of Macedonian and Croatian Banking Sectors with DEA*, Economy, Business & Development, 2 (2), 1-19 doi:10.47063/ebd.00003.
- Emrouznejad, A. and Yang, G. (2018): *A survey and analysis of the first 40 years of scholarly literature in DEA: 1978–2016*, Socio-Economic Planning Sciences, 61, pp.4-8, <https://doi.org/10.1016/j.seps.2017.01.008>.
- Farrell, M. (1957): *The measurement of productive efficiency*, Journal of the Royal Statistical Society, Series A (General), 120(3), 253-290. <https://doi.org/10.2307/2343100>
- Fidanoski, F.; Simeonovski, K.; Cvetkoska, V., (2021): *Energy Efficiency in OECD Countries: A DEA Approach*, Energies, 14, 1185. <https://doi.org/10.3390/en14041185>
- Fotova Ciković, K., and Cvetkoska, V. (2017): *Efficiency of the Macedonian banking sector: A nonparametric approach*, CEA Journal of Economics, 12(2), pp.17–26.
- Fotova Čiković, K., Lozić, J. (2022): *Application of Data Envelopment Analysis (DEA) in Information and Communication Technologies*, TEHNIČKI GLASNIK 16(1), pp.129-134. Accepted for publication.
- Fotova Čiković, K., Smoljić, M. & Lozić, J., (2021): *The Application of The Non-Parametric Methodology DEA in the Croatian Banking Sector*. In Book of Proceedings - 71st International Scientific Conference on Economic and Social Development, online, pp. 113-127



Hodžić, S., Muharemović, A., (2019): *Fiscal Decentralization and Efficiency of Regional Government in Croatia: A Data Envelopment Analysis*. LEX LOCALIS - JOURNAL OF LOCAL SELF-GOVERNMENT 17(3), pp. 453 – 470.

Jemrić, I. & Vujčić, B. (2002): *Efficiency of Banks in Croatia: A DEA Approach*, Comparative Economic Studies, 44 (2-3), pp.169-193, 10.1057/ces.2002.13.

Jorda, P., Cascajo, R., Monzón, A. (2012): *Analysis of the Technical Efficiency of Urban Bus Services in Spain Based on SBM Models*. ISRN Civil Engineering. 12. 10.5402/2012/984758.

Jubran, A. J., Jubran, L. M. P., Martins, J. R. M. & Silva, J. L. (2012): *Data Envelopment Analysis of the efficiency frontier for the results achieved by Formula 1 drivers and teams*. Proceedings of the 10th International Conference on DEA, August 2012, Natal, Brazil

Korent, D., Detelj, K. & Vuković, K. (2015): *Ocjenjivanje efikasnosti hrvatskih županija u poduzetništvu primjenom analize omeđivanja podataka*. In: Vuković, K., Brčić, R. & Klačmer Čalopa, M. (eds.) Entrepreneurial Society: Current Trends and Future Prospects in Entrepreneurship, Organization and Management, Book of Abstracts.

Lukač, Z., Neralić, L. (2012): *Operacijska istraživanja*, Element, Zagreb

Lupu, D., Tiganasu, R. (2022): *COVID-19 and the efficiency of health systems in Europe*, Health Econ Rev 12, 14. <https://doi.org/10.1186/s13561-022-00358-y>

Marošević, K. (2020): *Lagging regions: The case of Eastern Croatia*. Ekonomski vjesnik, 33 (1), 255-270

Paradi, J.C., Sherman, D.H., Fai Keung Tam, F.K. (2018): *Data Envelopment Analysis in the Financial Services Industry, International Series in Operations Research & Management Science*, Springer International Publishing AG, 266, [https://doi.org/10.1007/978-3-319-69725-3\\_1](https://doi.org/10.1007/978-3-319-69725-3_1)

Rabar, D. & Grbin, A. (2019): *Analiza regionalne efikasnosti u Hrvatskoj korištenjem fiskalnih pokazatelja – neparametarski pristup*. Ekonomski pregled: mjesečnik Hrvatskog društva ekonomista Zagreb, 70 (4), 627-649 doi:10.32910/ep.70.4.3.

Rabar, D. (2013): *Assessment of regional efficiency in Croatia using data envelopment analysis*, Croatian Operational Research Review (CRORR), 4(1); 76-88.

Rabar, D. (2020): *Efficiency of regions: Environmental vs. economic point of view*, Interdisciplinary management research, 1, 1757-1777.

Rabar, D., Blažević, S. (2011): *Ocjenjivanje efikasnosti hrvatskih županija u turizmu primjenom analize omeđivanja podataka*, Privredna kretanja i ekonomska politika, 21, 127; 25-55.

Santos, J., Negas, E.R., Santos, L.C. (2013): *Introduction to Data Envelopment Analysis*. In Mendes et al. (eds.), *Efficiency Measures in the Agricultural Sector: With Applications*, DOI 10.1007/978-94-007-5739-4 3

Škare, M. & Rabar, D. (2014): *Regional efficiency assessment using DEA window analysis*, *Journal of Economic Computation and Economic Cybernetics Studies and Research*, 48 (4), 39-61.

Škrinjarić, T. (2018): *Evaluation of environmentally conscious tourism industry: case of Croatian counties*, *Tourism: an international interdisciplinary journal*, 66 (3); 254-268.

Škuflić, L., Rabar, D., Šokčević, S. (2010): *Assessment of the efficiency of Croatian counties using data envelopment analysis*, *Ekonomika istraživanja*, 23(2); pp.88-101

Slijepčević, S. (2019): *Measuring efficiency at the regional level: a data envelopment analysis approach*, *Lex localis - Journal of Local Self-Government*, 17 (3), pp. 679-696 doi:10.4335/17.3.679-696.

Stancheva, N., Angelova, V. (2008): *Measuring the efficiency of University libraries using Data Envelopment Analysis*, In Mantri, J.K. *Research Methodology on Data Envelopment Analysis (DEA)*.

Thanassoulis, E., (2001): *Introduction to the Theory and Application of Data Envelopment Analysis: A Foundation Text with Integrated Software*, Springer-Verlag New York, LLC.

Tran, T.-V., Pham, T.P., Nguyen, M.-H., Do, L.-T. and Pham, H.-H. (2022): *Economic efficiency of higher education institutions in Vietnam between 2012 and 2016: a DEA analysis*, *Journal of Applied Research in Higher Education*, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/JARHE-06-2021-0238>

Wu, D., Li, H. & Wang, Y. (2022): *Measuring sustainability and competitiveness of tourism destinations with data envelopment analysis*, *Journal of Sustainable Tourism*, DOI: 10.1080/09669582.2022.2042699

*A scientific paper*

**Marina Gregorić, Ph. D., Assistant Professor**

University North

E-mail address: marinagregoric@unin.hr

**Martina Kovačević, mag.oec.**

Virovitica University of Applied Sciences

E-mail address: martina.kovacevic@vuv.hr

**Dejan Tubić, Ph. D., Senior lecturer**

Virovitica University of Applied Sciences

E-mail address: dejan.tubic@vuv.hr

## **CHALLENGES AND SOURCES OF ADVERTISING IN AGRITOURISM DURING THE COVID-19 PANDEMIC**

### **ABSTRACT**

*With the emergence of the COVID-19 pandemic, the tourism market faces many challenges, including the Agritourism business. Because of the necessary measures introduced to reduce the spread of the virus, travel and tourist movements have been reduced. Therefore, agritourism is forced to focus its advertising methods on online sources to attract tourist demand for its facilities, products, and services. This paper explores the challenges agritourism has faced in promoting and advertising and how they have adapted to new digital and online advertising opportunities. The paper aims to identify new advertising challenges during the pandemic and analyze the importance of internet sales and security as the most significant attractive factor caused by the pandemic outbreak. The survey was conducted on a sample of 83 holders/owners of Agritourism in the Republic of Croatia. Through empirical research, respondents were offered questions in three thematic units: general data of objects, advertising methods, and content of posts. In order to meet the objectives of the paper, three hypotheses were given. The validation of hypotheses is processed using the statistical method of measurement known as the McNemar's test and descriptive statistics and analysis. The research results indicate the presence of advertising challenges in the new business conditions, the weaker representation of the use of traditional sources of advertising (while online advertising remains without significant changes), the under-representation of internet sales, and security, whose importance is recognized but under-promoted. The contribution of the work is reflected in the presentation of the trend of online advertising as an indispensable tool for attracting more visitors and tourists. At the same time, this topic notices the emergence of new requirements and ways of communication with tourists during the COVID-19 pandemic outbreak.*

**Key words:** *advertising, Agritourism, COVID-19, tourism.*

### **1. Introduction**

The challenges of advertising nowadays have become more and more occupations for owners of economic operators, including owners of agritourism estates. Since agritourism primarily

implies agriculture as the primary activity and secondary tourism, it uses various advertising sources to improve the sale of agricultural products and promote the tourist activities offered on the agritourism estate. The challenges of meeting the increasingly demanding needs of modern tourists are becoming even more present in the business. Considering their motives and individual characteristics by age group, it is essential to direct and adapt advertising efforts to market segments. The challenges and the choice of advertising sources are becoming even more significant with the emergence of the ongoing COVID-19 pandemic. The pandemic conditions with various epidemiological measures, primarily reflected in reducing physical contact, significantly affect the number of arrivals and overnight stays of visitors within the destination. With the reduced mobility of visitors, the influence is also present in generating revenue.

This paper aims to define and determine advertising concepts, specific forms of tourism, agritourism, the COVID-19 pandemic, and events in tourism under the influence of the pandemic. Finally, empirical research was carried out aimed at holders owners of agritourism farms to meet the work's objectives. Given that owners face imposed measures when doing business with the pandemic outbreak, it is doubtful how much effort they have to make when advertising to continue to attract tourist demand. Insight has been made into the most frequently used advertising sources and messages sent to potential visitors through empirical research.

The research goal is to identify new challenges and sources in advertising in terms of adapting to the current situation of the COVID-19 pandemic, analyze security as the most significant attractive factor caused by the pandemic outbreak, and determine the importance of internet sales. The results are presented and discussed through primary and secondary research, collection, and data processing. In order to test hypotheses, descriptive statistics and analysis methods and statistical methods of measurement of the McNemar test (bivariate statistics) were used, and the results are presented in the chapter materials and methods.

## 2. Advertising and tourism

With digitalization, new trends are emerging conditioned by tourist consumers that imply the availability of information from 0 to 24 hours. Therefore, advertising as part of the promotion mix implies offline and online tools. Offline tools are reflected in the classic mode of advertising using printed materials, TVs, radio stations, and the like. In contrast, online advertising sources lead to a new level of access to visitors. With the introduction of the Internet, communication has risen to a higher level, involves more participants, and results in more easily accessible and faster information. In addition to reaching the users themselves faster, the information also stimulates visitors' interest to visit the destination, buy products, and use the services. In this sense, advertising is "a paid, mass form of communication of specific content to inform, remind and encourage the potential buyer to take action concerning a particular idea, product or service" (Kesić, 2003:236). From the definition, it is possible to understand the elemental abundance that determines the term advertising:

1. paid form of promotion (to achieve communication and/or economic impacts),
2. non-personal presentation (using mass media to communicate with unknown recipients),
3. ideas, products and services, and the famous sender of the message.

By studying the concept of advertising, authors Richards and Curran (2002) state that there is no generally accepted definition. However, in the recent literature, advertising is defined as paid, own and intermediary communication that is activated through a recognizable brand to instantly or future encourage changes in consumer awareness (Kerr and Richards, 2020). Furthermore, Percy and Rosenbaum-Elliott (2021) view advertising as a means of directing

them towards a product or service by providing information or creating positive feelings (a higher level than focusing attention). Thus, the consumer's emphasis and attitude toward the product or service are visible in recent literature. In addition to the essential characteristics, the functions of advertising, according to Antolović and Harami (2015), are:

1. encouraging the desire to buy a particular product,
2. influence on changing habits and customs,
3. impact on the redistribution of consumption,
4. helping companies guide production,
5. stimulation of new techniques and technology.

Understanding of the advertising process, according to Kesić (2003), arises from complex and straightforward communication models. AIDA is one of the simpler models, which can be explained as getting attention, encouraging interest, arousing the desire, and taking action, buying, or accepting a particular product or service. Complex communication models imply a broader view of the communication process, including how the sender's thoughts are translated to the recipient in terms of whether the transmitted message is understandable and in the context of the intention for which it was sent.

Weber and Boranic (2000) state that the promotional plot consists of the following elements: advertising, personal sales, sales promotion, public relations, and publicity and direct (direct) marketing. Due to frequent intertwining, the concept of advertising and public relations is identified. However, they differ, as is evident from the characteristics shown in Table 1.

**Table 1:** The main differences between advertising and public relations

ADVERTISING	PUBLIC RELATIONS
A paid form of impersonal presentation and promotion of ideas, goods, and services	A form of two-way communication is to establish a good reputation
Main goal – to transfer information about the offer to the target market and encourage the guest to choose the destination	Main goal – to achieve a positive image of a destination and attract the guests through dialogue
Disadvantages – impersonal, insufficiently convincing, even sometimes financially challenging	Activities: guest relations, fair organization, product launch, image creation, relations with sales intermediaries, creation of promotional materials
One-way communication	Two-way communication (supplier - guest)
Usage of different media: magazines, newspapers, television, radio.	Tools: publications, events, news.

*Source: Made by authors according to Jakovljević: Promotion of tourist destinations – advertising and (or) public relations? Acta turistica nova, Vol.6 No.1, 2012, p. 69-90*

Since tourism is closely related to humanistic functions, it is necessary to base it on the economic function and respect social developments and the trends they impose (Gavranović, 2015). The new approach to the guest implies expanded, enriched tourist facilities in the destination that make the most of free time (Gavranović, 2015). Bhagwat and DeBruine (2008) view advertising as a tool for making sales and profits in tourism and how a questionnaire can measure effective tourism advertising to examine image awareness and changes, relationships, and intentions to travel to a tourist destination. Advertising in tourism, according to Jakovljević (2012), is suitable for three reasons:

1. wider public coverage,
2. relatively simple communication and
3. flexibility.

Božić (2016) lists several tools used when communicating with a guest. Among the tools are e-mail and websites as the oldest source of internet communication and as newer social networks that are numerous and adapted to the same target group. Social networks include

Facebook, Instagram, Google +, Skype, Twitter, and LinkedIn. According to Gavranović (2015), social networks create virtual communities that impact services, products, companies, or individuals. Also, the role of social networks is reflected in the development of the economy and tourism. They achieve this by creating a new brand of the country (new image and emphasis on particular values), creating new attractive tourist offers for visitors, and appreciating cultural values promoted by tourism experts.

### 3. Mass tourism versus specific forms of tourism

The division of tourism can be explained according to various criteria such as the duration of the stay of tourists, the degree of mobility of tourism, the age structure of tourists, the national affiliations of tourists, the way of organizing travel, etc. (Čavlek et al., 2012). The complexity of the tourism division is due to various characteristics related to the weather, space, age of tourists, the market, and the like. The scientific and professional literature review shows the more frequent division of tourism into mass and alternative forms. Until recently, mass tourism, based on 3S (sun+sea+sand), was the basis of any tourist trip and a way to spend your vacation. However, in recent times, the aspiration of tourists has been directed in a different way of spending a holiday that involves gaining new experiences and achieving greater satisfaction than a classic holiday on the beaches. Characteristics, i.e., differences between these key terms, are reflected in Table 2.

**Table 2:** The characteristics of massive and alternative forms of tourism

MASS TOURISM	ALTERNATIVE TOURISM
Fast development	Slow development
Maximization	Optimization
Socially and environmentally reckless and aggressive	Socially and environmentally responsible
Short-term	Long-term
Weak management	Local management
Unstable	Stable
Price-conscious	Value conscious
Quantitative	Qualitative
Growth focused	Development focused
Seasonal vacation	Off-seasonal vacation
Development of all locations	Development of appropriate places
Large groups	Individuals, families, small groups
Fixed programs	Tourist-focused programs
Comfortable, passive, demanding, and active vacations	Tourists decide how they want to spend their vacation

*Source: Made by authors according to Cuculeski, Petrovska, Petrovska Mircevska: Emerging trends in tourism: the need for alternative forms in Macedonian tourism, Skopje, 2015, p. 107*

Based on the presented characteristics, specific forms of tourism can be defined as shown in Table 3.

**Table 3:** The definitions of specific forms of tourism

YEAR/PAGE	AUTHORS	DEFINITION
1998, 457	Jadrešić	"A form of tourism which balances the processes of societal, cultural, natural, ecological, infrastructural and ecological factors, and in which a person becomes the origin, measure, and function of any touristic thought."
2001, 347	Vukonić and Čavlek	"A form of tourism motivated by different reasons, and the term intends to demonstrate a wide variety of activities and content that motivates people to go on vacation."

YEAR/PAGE	AUTHORS	DEFINITION
2011, 40	Čavlek	“A special group of tourist movements conditioned by a particular dominant tourist motive motivates a tourism consumer to travel to a destination whose tourist offer is adjusted for achieving the experience connected with the dominant interest of the consumer.
2015, 298	Vidak and Sindik	“Stands in opposition to the term of massive tourism, and relates to different travel types: educational, adventure, hiking, single travels.”

*Source: Authors*

According to Čavlak et al. (2011), there are two primary groups of specific forms of tourism depending on whether they are more related to natural or social resources:

1. Specific forms of tourism based on natural resources are health tourism, sports tourism, nautical tourism, ecotourism, rural tourism, hunting and fishing tourism, naturism, Robinson tourism, and others.
2. Specific forms of tourism based on social resources are congress tourism (MICE tourism), cultural tourism, gastronomic and oenophile tourism, tourism events (event tourism), religious tourism, tourism at artificially created attractions, and casino tourism, and others.

Specific forms of tourism are viewed at a great distance from mass tourism, emphasizing adaptation to the specific wishes of modern visitors arising from personal interests and travel motives (Krcic Miodic, 2014). Today's modern tourist is increasingly distancing himself from mass tourism and is looking for his vacation and leisure in places not yet so well known on the global market and including peace, cleanliness, and security (Breslauer, Gregorić, Hegeduš, 2015). Specific forms of tourism are aimed at small groups and individuals who travel outside their usual destinations. Agritourism stands out as one of the specific forms of tourism.

### 3.1. Prerequisites for Agritourism in Croatia

Since the rural area occupies most of the Croatian territory, it is one of the opportunities to develop rural tourism. In addition, one of the prerequisites for the development of rural tourism is the rich natural and cultural heritage that makes a particular area authentic. Among other preconditions for development, rural tourism is based on numerous activities that complement the leisure time of the increasingly demanding tourist market. Such demand is characterized by modern tourists who: travel more and more often and go on shorter journeys, search for experience, strive for value for money, choose destinations with many amenities, are more environmentally conscious, and are active in open space. Many definitions of agritourism can be found in the available literature. Wicks and Merrett (2003) state that agritourism is a hybrid concept that includes agriculture and travel/tourism. As defined by the authors Yang, Cai, and Sliuzas (2010), agritourists decide to visit agritourism farms for pleasure, education, and/or active involvement in agricultural production and agricultural life. The connection with agricultural activity is also emphasized by Baćac (2011), who states that "agritourism exclusively relates to the type of tourism service complementary to an estate with active agricultural activity, within which products are sold that were produced, at the agritourism estate itself."

Further, Marques (2006, 151) defines agritourism as “a specific form of rural tourism where the host's house has to be integrated into the agricultural estate, making it possible for visitors to participate in agricultural or other complementary activities at the estate.” Franjić and Cunj (2007) present agritourism as an alternative form of tourism to mass tourism that is based on geographical features, traditions, culture, and local community customs. According to Barbieri (2013, 253), agritourism implies a “recreational, educational, or any other free-time

activity which is formed on a farm or any business facility connected with agriculture to attract visitors." Tubić (2019, 186) defines agritourism as an "emerging form of rural tourism which entails a temporary movement outside of the normal environment of the tourist's permanent residence. It involves short- and long-term visits to active or inactive agricultural, horticultural, or other similar business facilities in a rural environment with the goal of education and entertainment. In such facilities, the tourism offer complements agriculture as the primary activity by enriching it and creating higher value, and at the same time bringing many other benefits and possibilities of economic, socio-cultural, and ecological character to the owners, the local community, and the environment, while making it possible for tourists to gain unique experiences of agriculture and the everyday lives of the local population, and, in general, of the authentic rural area".

According to Trezner and Čorak (2014), tourism of special interests (in this context and agritourism) refers to the activities of tourists encouraged as a result of their hobbies, interests, and specifics of their profession. Agritourism demand, according to Zrakić, Grgić, Županac, and Guguć (2012), is exposed to several factors. We have the population, preferences, income, and similar on the demand side. In contrast, on the supply side, we have a location, destination distances, diversity of the offer, price, atmosphere, and hospitality of the hosts. Grgić, Zrakić, and Cerjak (2011, 49), according to Grgić (2008), characterize an agritourist as "a nature lover, a city dweller, a person fond of the village and old customs, an elderly person who prefers nature and healthy food or a person who wants peace." Tourism of special interests has a lower possibility of supplementation and therefore attracts less sensitive consumers, but also affects the prolongation of the season and the reduction of negative influences of the concentration of people on the coastal part.

Mesić and Cerjak (2015) suggest that service and product marketing are necessary for the successful operation of agritourism estates, whereby estates engaged in agritourism activities for many years are more likely to use classic forms of advertising than Internet marketing. Sudarić (2019) states that the online business of agritourism is necessary for participation in the global market, which, using new technologies, requires advertising predominantly through social networks. The research of Sudarić (2019) implies that agritourism is not sufficiently promoted online. However, online advertising is visible in better informing visitors about the services and products that a particular agritourism estate offers. Older age groups still under-monitor ads through online sources. In this aspect, the paper presents the relationship between advertising and agritourism and aims to strengthen online marketing due to the COVID-19 pandemic.

#### **4. Materials and methods**

Primary research was conducted as quantitative research using a survey as an instrument. The survey was conducted in August and September 2021 and aimed at agritourism estates on the territory of the Republic of Croatia. The questionnaire contained 16 open and closed questions to confirm or reject the three default hypotheses.

The survey was compiled using a Google Form, and 83 owners of agritourism estates participated in the survey. The questions are divided into three groups: general data on the data subject and agritourism estate, sources of advertising and the content of posts, and the possibility of online sales.

From the first set of questions and responses, it can be concluded that the average owner of an agritourism estate consists of a male of medium professional qualification, aged 41 to 60. The majority of respondents came from Dubrovnik-Neretva County (12%), followed by Bjelovar-Bilogora county (8.4%), Međimurje County (8.4%), and Varaždin County (8.4%). The majority of respondents (75.9%) have been engaged in agritourism for more than five years,



while the majority (17.7%) report about 11 years. Within the agritourism estate, the majority of respondents (50.6%) provide accommodation and food services, while to a slightly lesser extent, they provide only food services (38.6%) and only accommodation services (10.8%). From the above data collected, it can be concluded that accommodation facilities are less represented in the agritourism offer and agritourism offer mainly refers to food services. A positive result indicates that more than half of respondents offer both services: food and accommodation. Among the most outsourced services by the owners of agritourism estates, tasting rooms of domestic products stand out.

The default hypotheses for research purposes are:

H1: Due to the outbreak of the COVID-19 pandemic, security has become the primary tool/attribute of attracting visitors to the agritourism estate

H2: Social networks and websites are more resilient to the pandemic situation than other forms of advertising

H3: With the advent of the COVID-19 pandemic, owners of agritourism estates are introducing online sales of products and services

Explanation of the hypotheses given:

H1: The emergence of the COVID-19 pandemic has conditioned the observance of prescribed epidemiological measures to achieve the safety of all citizens of the Republic of Croatia and people in the world in general. At the same time, the measures are prescribed and valid for the performance of catering activities and thus affect the result of the development of tourist seasons.

H2: Conditional epidemiological measures reduce human contact. Since social networks and websites are accessible online, the assumption is that the owners of agritourism estates have opted for this way of communicating with guests and selling their products and services.

H3: Epidemiological measures aim to reduce physical contact, so sales of products are also limited, i.e., aimed at other channels such as online sales. It also applies to providing services, such as buy/charge accommodation services through various booking systems.

#### 4.1. Research results

In order to test the hypothesis "Safety gains more and more importance when attracting visitors to an agritourism estate," the following questions were asked:

3<sup>rd</sup> question group (question 1 - thesis 1): Security has become the primary tool/attribute for attracting visitors

3<sup>rd</sup> question group (question 1 - thesis 2): Your posts during the COVID-19 pandemic, more than usual, included the term 'security.'

Respondents could mark these theses with a score of 1 to 5, with a score of one implying the answer "I do not agree at all," a score of two "I disagree," a score of three "I neither agree nor agree," a score of four "I agree" and a score of five "I completely agree." The measurement of the hypothesis was done using descriptive statistics, the results of which are visible in the following Table 4, Table 5, and Table 6.

**Table 4:** Safety, as a factor of attractiveness

Statistics		
	Safety has become the primary tool/factor for attracting tourists	Advertising posts during the COVID-19 pandemic had more than usual involved the term "safety."
N	83	83
Valid	0	0
Missing	3,76	3,08
Mean	1,185	1,475
Std. Dev.		

Source: Authors

**Table 5:** Descriptive statistics for safety as a factor of attractiveness

<b>Safety has become the primary tool/factor for attracting tourists.</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Completely disagree	5	6,0	6,0	6,0
	Disagree	6	7,2	7,2	13,3
	Neither agree nor disagree	22	26,5	26,5	39,8
	Agree				
	Completely agree	21	25,3	25,3	65,1
Total		29	34,9	34,9	100,0
		83	100,0	100,0	

Source: Authors

**Table 6:** Usage of the term “safety” in advertising

<b>Advertising posts during the COVID-19 pandemic used the term "safety" more than usual.</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Completely disagree	19	22,9	22,9	22,9
	Disagree	11	13,3	13,3	36,1
	Neither agree nor disagree	15	18,1	18,1	54,2
	Agree				
	Completely agree	20	24,1	24,1	78,3
Total		18	21,7	21,7	100,0
		83	100,0	100,0	

Source: Authors

The results in Table 4, Table 5, and Table 6 show that the H1 hypothesis is confirmed. It can be determined that security has become the primary tool/attribute for attracting visitors to the agritourism estate. Although the estate owners have not so intensively included it in their advertising, it is evident that most respondents (34.9%) fully agree with this thesis.

To confirm or reject the hypothesis that "Social networks and websites are more resilient to the pandemic situation than other forms of advertising," the authors used 2<sup>nd</sup> question set (question 1): Choose the media you used to advertise before the COVID-19 outbreak (possibly more answers) and 2<sup>nd</sup> group of questions (question 3): Choose the media you used to advertise during the COVID-19 pandemic (possibly more answers).

The measurement of the H2 hypothesis was done using the McNemar test comparing the use of social media for pre-and post-pandemic advertising. The additions are presented in Table 7, showing that almost all study participants have maintained their behavior in this regard, i.e., that the pandemic has not affected them. Only two participants changed their behavior, but one began to advertise on social media, and the other stopped doing so. Therefore, it can be concluded that there is no statistically significant difference ( $p=1.00$ ), that is, that the study participants did not start using social networks more often for advertising as a result of the outbreak of the COVID-19 pandemic. A total of 55 (66.3%) out of 83 respondents use social networks for advertising purposes.

**Table 7:** Usage of social media advertising before and after the pandemic (McNemar test)

Before the pandemic	During the pandemic		Total
	No	Yes	
No	27	1	28
Yes	1	54	55
Total	28	55	83

p=1,00  
Source: Authors

The behavior changed by four participants, and the same number in both directions: two began to use the websites, and two stopped doing so. A total of 62 (74.7%) out of 83 respondents use the website for advertising purposes. The addendums are shown in Table 8.

**Table 8:** Usage of advertising on websites before and after the pandemic (McNemar test)

Before the pandemic	During the pandemic		Total
	No	Yes	
No	19	2	21
Yes	2	60	62
Total	21	62	83

p=1,00  
Source: Authors

If the data for other forms of advertising are compared, it can be seen that their frequency declined during the pandemic. Thus, brochures, leaflets, and posters are used much less frequently during the pandemic due to reduced physical contact and the inability to travel touristically. The 14 (35%) of the 40 people who used this form of advertising before the pandemic stopped doing so during the pandemic (Table 9).

**Table 9:** Usage of the brochure, leaflet, and poster advertising before and after the pandemic (McNemar test)

Before the pandemic	During the pandemic		Total
	No	Yes	
No	41	2	43
Yes	14	26	40
Total	55	28	83

p=0,00  
Source: Authors

When it comes to television, four out of nine people who used this type of advertising stopped doing so during the pandemic. There is no statistically significant difference in the change in this mode of promotion (p=0.13), as shown in Table 10.

**Table 10:** Usage of television advertising before and after the pandemic (McNemar test)

Before the pandemic	During the pandemic		Total
	Ne	Da	
No	74	0	74
Yes	4	5	9
Total	78	5	83

p=0,13  
Source: Authors

It is similar when using radio for promotion, although the behavior change ( $p=0.06$ ) cannot be confirmed with great certainty, as seen in Table 11.

**Table 11:** Usage of radio advertising before and after the pandemic (McNemar test)

	During the pandemic		Total
	No	Yes	
Before the pandemic			
No	71	0	71
Yes	5	7	12
Total	76	7	83

$p=0,06$   
 Source: Authors

Furthermore, it can be concluded that there has been a statistically significant change in the use of newspapers as a way of promotion and advertising. A significantly higher number of respondents have stopped using traditional advertising than the number of respondents who have started using it (Table 12).

**Table 12:** Usage of advertorials before and after the pandemic (McNemar test)

	During the pandemic		Total
	No	Yes	
Before the pandemic			
No	67	2	69
Yes	10	4	14
Total	77	6	83

$p=0,04$   
 Source: Authors

Consequently, social networks and websites are not used more frequently for promotion than before the pandemic, but their use has remained stable. In contrast, brochures, leaflets, posters, and newspaper articles are used less frequently, and with radio and television, this is probably the case. In other words, online social networks and websites have proven to be significantly more resilient to a crisis such as the current pandemic than other advertising methods, so the H2 hypothesis is confirmed.

To confirm the hypothesis "With the emergence of the COVID-19 pandemic, owners of agritourism estates prefer online sales of products and services," 3<sup>rd</sup> question set (question 2) was used: "Have you enabled/introduced a way to buy your products and services online (online) during the COVID-19 pandemic? (Through the order system and/or the interactive site on which the billing is also made)".

The measurement result is presented in the following Table 13, which shows that a minimal number of respondents (14 respondents - 16.9%) introduced online sales. However, when the answers "Yes" and "We have introduced this option before" are added up, it is still not exceeded at least half of the affirmative answers. Therefore, it can be concluded that the H3 hypothesis is rejected.

**Table 13:** Introduction of online shopping during the Covid-19 pandemic

Have you introduced online shopping of your products and services during the COVID-19 pandemic?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	14	16,9	16,9	16,9
	NO	56	67,5	67,5	84,3
	We already had that	13	15,7	15,7	100,0

<b>Have you introduced online shopping of your products and services during the COVID-19 pandemic?</b>				
	Frequency	Percent	Valid Percent	Cumulative Percent
possibility				
Total	83	100,0	100,0	

Source: Authors

## 5. Discussion

As one of the elements of the promotional mix, advertising plays a significant role in promoting agritourism products and services. Encouraging tourists to take action, i.e., coming to agritourism estates and buying certain services and products, is paramount today. In the age of technological development, advertising should be directed to carefully selected online advertising tools. In addition to technological developments and digitalization, the emergence of the COVID-19 pandemic focuses on online advertising and sales. Conditioned by the absence of physical contact, which through interpersonal communication was one of the main attractive factors of coming to agritourism estates, the estate owners are faced with new challenges and sources of advertising.

As a particular form of specific forms of tourism, agritourism is based primarily on agricultural activity and secondary on tourism activity. Its characteristics attract modern tourists to rural areas and generate revenue by selling services and domestic products. Since there is no generally accepted definition of agritourism, it can be described as a form of tourism closely related to people and the environment. It considers traditional features, implying certain activities and offering original products and services characteristic of a particular rural area in which it is located.

The survey conducted in 2017 by Matin shows that agritourism was not sufficiently promoted on the Internet, as per 83.2% of responses. The same survey states that online advertising is most effective through social networks, as confirmed by 73.3% of respondents. The research done by Sudarić in 2018, focused on online business in agritourism, aims to learn more about the promotion of agritourism estates online and the role of social networks in agritourism. The survey results indicate the Internet as the primary source of information about agritourism (43.6%), while television, radio, travel agencies, newspapers, and leaflets are less represented in advertising. As many as 73.3% of respondents said social media advertising is the most effective. In comparison, 83.2% of respondents believe that the offer of agritourism services and products should be promoted even more online. That the Internet is becoming increasingly popular as a source of information is evidenced by the TOMAS survey from 2019 (Croatian Tourist Board, available at: [https://www.htz.hr/sites/default/files/2020-10/TOMAS%20Hrvatska%202019\\_0.pdf](https://www.htz.hr/sites/default/files/2020-10/TOMAS%20Hrvatska%202019_0.pdf), accessed 12.10.2021). A significant increase in the number of tourists when using the Internet was observed year after year, especially in 2004, 2017, and 2019. Given that such growth is continuous, without falling, it is assumed that the demand for online information will continue to grow and those traditional ways of advertising will become increasingly neglected.

When comparing previous studies from respondents' perception, it can be concluded that agritourism is insufficiently promoted online. Also, insufficient promotion is visible through "classic advertising methods" such as radio, television, and printed materials. Therefore, the emphasis is placed on the Internet as the primary means of advertising, with social networks being singled out as the primary advertising tool. On the one hand, this is understandable given that today's world is surrounded by technology, and visitors are becoming increasingly technologically educated. However, on the other hand, market segments are still attached to the traditional advertising media. Therefore, it is necessary to maintain these sources of advertising.

Considering previous data from various studies can be compared with the research within this paper. Thus, the data are confirmed that internet usage is still current when collecting various tourist information and that websites and social networks are the most prevalent when choosing sources of information. Notwithstanding the current market crisis caused by the COVID-19 pandemic, the Internet remains the number one spot when gathering information, while traditional advertising sources are becoming less and less represented and accessible.

## 6. Conclusion

This paper presents an overview of the current state of advertising on agritourism estates through the theoretical framework and empirical research. Regardless of market changes such as the COVID-19 pandemic, the Internet is the most widely used source when informing tourists. Websites and social networks remain the primary tools when informing, while security becomes the main tool/attribute when attracting visitors to agritourism estates. Since the emergence of the pandemic conditions and new ways of doing business, it can be concluded that owners of agritourism estates did not engage in the introduction of online sales, which is certainly not good and not acceptable for the market in the age of digitization. A significant shortcoming in the operation of agritourism estates is also evident in the awareness that safety is essential, but it is not advertised enough. Namely, security advertising would better promote the entire agritourism estate and generate higher revenues from the sale of products and services. The impact of the pandemic, except in the reduced number of arrivals and overnight stays, is also evident in the reduced scope of the traditional way of advertising. As a result, specific market segments find it harder to get the necessary information about the agritourism estate.

Comprehensive analyses and conclusions can establish that owners of agritourism estates encounter new advertising challenges daily. The increasingly demanding tourist demand requires new efforts to be invested in advertising activities. In addition, the COVID-19 pandemic has inevitably changed the world and even established ways of doing business. It is a great responsibility for the owners of agritourism estates to quickly adapt to market conditions to successfully respond to new challenges, thus securing their market position and gaining a competitive advantage.

## REFERENCES

- Antolović, K., Haramija, P. (2015): *Odgovorno oglašavanje: Pravo i etika u tržišnom komuniciranju*, K & K Promocija i HURA, Zagreb
- Barbieri, C. (2013): *Assessing the sustainability of agritourism in the US: A comparison between agritourism and other farm entrepreneurial ventures*. Journal of Sustainable Tourism, Vol.21, No.2, str. 252-270.
- Bhagwat, Y. N., DeBruine, M. (2008): *Uspješnost oglašavanja u hotelskoj i turističkoj industriji*, Acta turistica, Vol.20, No.2, str. 200-218.
- Bolfek, B., Jakičić, D., Lončarić, B. (2013): *Mogućnosti razvoja turizma na ruralnom području Brodsko – posavske županije*, Oeconomica Jadertina, Vol.3, No.1, p. 73-87
- Božić, M. (2016): *Internet marketing u turizmu, Vodič za bolju popunjenost smještajnih kapaciteta*, PARADOX d.o.o., Rijeka

Breslauer, N., Gregorić, M., Hegeduš, I. (2015): *Održivi razvoj turizma u međimurskoj županiji*, Obrazovanje za poduzetništvo-E4E: znanstveno stručni časopis o obrazovanju za poduzetništvo, Vol. 5, No. 1, p. 99-109.

Cerjak, M., Mesić, Ž. (2015): *Marketing kao čimbenik uspjeha agroturizma u Hrvatskoj*, u: Hrvatski međunarodni simpozij agronoma, Zbornik radova, p. 184.-189.

Čorak, S., Trezner, Ž. (2014) *Destinacijske menadžment kompanije DMK*, Priručnik za uspješno poslovanje i marketing u turizmu posebnih interesa, Hrvatska turistička zajednica, Zagreb

Cuculeski, N., Petrovska, I., Petrovska Mircevska, T. (2015): *Emerging trends in tourism: need for alternative forms in Macedonian tourism*, Review of innovation and competitiveness: A journal of Economic and social research, Vol.1, No.1. p. 103-114.

Đurić, A., Čejvanović, F. (2008): *Mogućnosti razvitka agroturizma u regiji Brčko distrikta Bosne i Hercegovine*, Proceedings of the 43rd Croatian and 3rd International Symposium on Agriculture, Opatija, p. 18-21.

Erstić, M., Mikuš, O., Mesić, Ž. (2013): *Uloga agroturizma u socioekonomskom razvoju Zadarske županije – opažanja dionika ruralnih područja*, Agronomski glasnik, Vol.73, No. 4-5, p. 245-262.

Franić, R., Cunj, L. (2007): *Društveno-gospodarski preduvjeti razvitka agroturizma u Zagrebačkoj županiji*, Agronomski glasnik: Glasilo Hrvatskog agronomskog društva, Vol. 69, No. 5, p. 381-400.

Gavranović, A. (2015): *Mediji, turizam, javnost*, VPŠ Libertas, Zagreb

Grgić, I., Zrakić, M., Cerjak, M. (2011): *Agroturistička ponuda Zagrebačke županije: ograničenja i mogućnosti*, Agronomski glasnik: Glasilo Hrvatskog agronomskog društva, Vol. 73, No. 1-2, p. 41-58.

Hrvatska turistička zajednica, Informacije o tržištima, Informacije o statističkim pokazateljima, <https://www.htz.hr/hr-HR/informacije-o-trzistima/informacije-o-tijeku-sezone>, (accessed 2.7. 2021)

Hrvatska turistička zajednica, Informacije o tržištima, Informacije o statističkim pokazateljima, Stavovi i potrošnja turista - TOMAS istraživanje, [https://www.htz.hr/sites/default/files/2020-10/TOMAS%20Hrvatska%202019\\_0.pdf](https://www.htz.hr/sites/default/files/2020-10/TOMAS%20Hrvatska%202019_0.pdf), (accessed 7.10. 2021)

Ivković, M., Barković, Đ., Baćani, S. (2010): *Komasacija zemljišta i ruralni razvoj*, Geodetski list, Vol.64 (87), No.4, p. 297-312.

Jadrešić, V. (1998): *Turizam kao čimbenik novih oblika alijenacije*, Društvena istraživanja: časopis za opća društvena pitanja, Vol.7, No.3 (35), p. 447-459.

Jakovljević, M. (2012): *Promocija turističkih destinacija – oglašavanje i(li) odnosi s javnošću*, Acta turistica nova, Vol.6, No.1, p. 69-90.

Kerr, G., Richards, J. (2020): *Redefining advertising in research and practice*, International Journal of Advertising, p. 1-24.

Kesić, T. (2003): *Integrirana marketinška komunikacija*, Opnio d.o.o., Zagreb

Klarić, Z. (2020): *Širenje koronavirusa u svijetu i u hrvatski turizam*, Institut za turizam, <http://www.iztztg.hr/hr/utjecaj-pandemije-covid-19-bolestina-turizam>, (accessed 2.7. 2021)

Koronavirus.hr, Činjenice o koronavirusu, Najčešća pitanja i odgovori, <https://www.koronavirus.hr/>, (accessed 30.6. 2021)

Krce Miočić, B. (2014): *Povezivanje nautičkog s komplementarnim specifičnim oblicima turizma*, Acta turistica, Vol. 26, No. 2, p. 155-184.

Marques, H. (2006): *Searching for complementarities between agriculture and tourism – the demarcated wine-producing regions of northern Portugal*, Tourism Economics, Vol. 12, p. 147–155.

Matin, I. (2017): *Uloga internet i društvenih mreža u razvoju agroturizma*. Diplomski rad. Fakultet agrobiotehničkih znanosti Osijek, Osijek

Mehulić, D. (2020): *Pandemija ubrzava tempo digitalne transformacije, nitko nije imun*, Institut za turizam, <http://www.iztztg.hr/hr/utjecaj-pandemije-covid-19-bolestina-turizam>, (accessed 2.7. 2021)

Ministarstvo turizma i sporta, Turizam i Covid-19 - Pitanje od 1000 milijardi eura: Koliko će trajati kriza turizma uzrokovana COVID-19 pandemijom, <https://mint.gov.hr/vijesti/turizam-i-covid-19-pitanje-od-1000-milijardi-eura-koliko-ce-trajati-kriza-turizma-uzrokovana-covid-19-pandemijom/21889>, (accessed 30.6. 2021)

Percy, L., Rosenbaum-Elliott, R. (2021): *Strategic advertising management*, Oxford University Press, United Kingdom

Petračić, M. (2018): *Poduzetnički projekti u održivom razvoju ruralnog turizma*, Disertacija, Sveučilište u Rijeci, Fakultet za menadžment u turizmu i ugostiteljstvu, Opatija

Richards, J. I., Curran, C. M. (2002): *Oracles on “Advertising”: Searching for a Definition*, Journal of Advertising, Vol.31, No.2, p. 63-77.

Ružić, D., Biloš, A., Turkalj, D. (2014): *E – marketing*, Sveučilište Josipa Jurja Strossmayera u Osijeku, Ekonomski fakultet u Osijeku, Osijek

Singh, A., Tiwari, R. (2016): *Sustainable rural development through tourism practices: a case study of Ranakpur, Rajasthan*, Pacific business review international, Vol.7, No.5, p. 31-36.



Sudarić, T. (2018): *On – line poslovanje u agroturizmu*, Agroecnomia Croatica, Vol.8. No.1, p. 54-63.

Tubić, D. (2019): *Ruralni turizam: od teorije do empirije*, Visoka škola za menadžment u turizmu i informatici u Virovitici, Virovitica

Vidak, M., Sindik, J. (2015): *Pravci razvoja suvremenog turizma–pretpostavke za održivi turizam u Hrvatskoj*, Radovi Zavoda za znanstvenoistraživački i umjetnički rad u Bjelovaru, No. 9, p. 295-302.

Vukonić, B., Čavlek, N. (2001): *Rječnik turizma*, Masmedia, Zagreb

Weber, S., Boranić, S. (2000): *Marketing u turizmu*, Vadea, Varaždin

Wicks, B. E., Merrett, C. D (2003): *Illinois Institute for Rural Aff airs,” Agritourism: An economic opportunity for Illinois,”* Rural Research Report, Vol.14, No.9, p. 1-8.

Yang, Z., Cai, J., Sliuzas, R. (2010): *Agro-tourism enterprises as a form of multi-functional urban agriculture for peri-urban development in China*, Habitat International, Vol. 34, No. 4, str. 374-385.

Zineldin, M. (2000): *Beyond relationship marketing: technologicalship marketing*, Marketing intelligence & Planning, Vol.18, No.1, p. 9-23.

Zrakić, M., Grgić, I., Batelić, K., Tomić, M., Mesić, Ž. Gugić, J. (2015): *Mogućnosti i ograničenja razvitka agroturističkog gospodarstva–studij slučaja u Istri*, Agroecnomia Croatica, Vol. 5 No. 1, p. 66-74.

Zrakić, M., Grgić, I., Županac, G., Guguć, J. (2010): *Značajke agroturističke potražnje u odabranim županijama Hrvatske*, In Proceedings, 47th Croatian and 7th International Symposium on Agriculture, Opatija, Vol. 239, p. 243.

*A scientific paper***Sanja Gutić Martinčić, Ph. D.**

EFFECTUS – Entrepreneurial Studies, Zagreb, J.F. Kennedy Square No.2, Croatia

E-mail address: sguticm@effectus.com.hr

## **ABSENTEEISM AND STRESS OF EMPLOYEES IN THE CONDITIONS OF THE COVID-19 PANDEMIC**

### ***ABSTRACT***

*Relatively enough over the past year, research has been published confirming that the COVID-19 pandemic has led to stress in humans as general, and thus stress in employees. The emergence of the COVID-19 virus has changed the daily lives of many businesses, institutions and all people in general. Feelings are changing, but so is general social and economic well-being. Existential fears and insecurities of this kind are extremely stressful where in general economic insecurity is currently increasing and further emphasizes the experience of stress and the occurrence of mental disorders. This fact indicates and confirms how extremely difficult and unpredictable business forecasting is due to the action of several unknown factors. It has not yet been sufficiently addressed, however, how much such stress affects and leads to absenteeism. In this study, the main goal was to determine whether stress at work caused by a possible infection from this corona virus leads to increased absenteeism of employees? The method of regression analysis was applied on a quota sample of 140 employees. The results of the research confirm that the stress of employees caused by coronavirus significantly leads to an increase in absenteeism, but also that the fear of possible virus infection has become a key factor in the development of stress. This, in the current conditions, makes the management of stress and absenteeism not only complex, but also requires the need for a multidisciplinary approach. The results of the research can be a useful insight for managers in human resource management in these, extraordinary business conditions.*

**Key words:** *stress, absenteeism, pandemic, COVID-19.*

### **1. Introduction**

Today, the global economy is extremely affected by the corona virus pandemic. The economic shock is reflected in national economies, and thus the global economic picture of the whole world through two major cross-sections: macroeconomic and microeconomic. A major recession has been launched, so according to the World Bank, it will push large numbers of people into poverty (Dolton, P., 2020,78). One thing is for sure now: the current economic laws, rules and economic policies in both the macro and micro economies are going down in history and will no longer be applicable. At the moment, there are no clear alternatives, much less new solutions more appropriate to the new situation. Every day is flooded with multiple transfers of conflicting information (Carrol, N. et al., 2020,75).

Since its inception in China in the fall of 2019, the outbreak of the COVID-19 pandemic in the world has had a huge impact on people's lives, health and livelihoods. Many countries have set different levels of social restrictions. People were advised to stay at home, except for necessary food outings, to the pharmacy or hospital. Only key workers who performed

important tasks for society were allowed to go to their jobs. All other people should have worked from home, if they could. Many people have lost their jobs temporarily or permanently. Children could not go to school, and parents had to combine work at home and caring for their children. Workers significantly increased the rate of unplanned absences as they took more vacations due to infection or fear of infection for themselves and their family members. (Erygit, P., 2020).

The aim of the research is to determine the level and structure of stress caused by the COVID-19 pandemic on the mental and physical health of workers and does such stress lead to various forms of absenteeism? Research questions that arise in this regard are: Is stress at work the result of the COVID-19 pandemic? Does such stress have a significant effect on the physical and mental health of employees? If so: what does this action consist of? Does the fear of COVID-19 infection lead to increased absenteeism? Are there differences in stress between working men and women? Two hypotheses have been set: (1) COVID-19 causes more forms of fear in employees. (2) Fears among employees are the cause of increased absenteeism.

## **2. COVID-19**

In the capital of the province of Hubei - Wuhan in China, during December 2019, patients with severe pneumonia of unknown cause began to appear. All patients had in common that they had contacts with the local market in Huannan, which, after China notified the WHO (World Health Organization) of the outbreak on December 31, 2019, was closed a day later (Fu, W. et al. , 2020,6). The newly discovered corona virus was identified on January 7 and is named SARS-CoV-2. Very quickly, the COVID-19 disease pandemic becomes a global and multidimensional problem. The epidemic is exacerbated by mass migrations of Chinese during the Chinese New Year, and the disease occurs in other provinces of China, but also in other countries of the Asian continent (Fu, W. et al., 2020,5). Right at the beginning, and later during the epidemic and pandemic, it turned out to be the main form of human-to-human transmission. In addition to direct contact with the respiratory extremities of an infected person, transmission is also possible from objects where the virus has previously remained on those surfaces, also through the secretions of the infected person. The epidemic began to spread rapidly, in a short period of time, affecting virtually the entire world, but with the greatest impact in Europe and North America. The Director General of the World Health Organization (WHO) declares an epidemic of public health threat of international importance on January 30, 2020, and the COVID-19 pandemic on March 11, 2020. V. All of humanity, completely unexpectedly, found itself overnight in the midst of what the Secretary-General of the United Nations, Antonio Guterres, called the greatest world challenge since World War II.

## **3. COVID-19 and stress at work**

The emergence of the COVID-19 virus has changed the daily lives of many businesses, institutions and all people in general. Feelings are changing, but so is general social and economic well-being. Existential fears and insecurities of this kind are extremely stressful where in general economic insecurity is currently increasing and further emphasizes the experience of stress and the occurrence of mental disorders.

The negative effects of COVID-19 on mental health due to pandemic stress are the most common: difficulty sleeping (36%), difficulty eating (32%), increased alcohol consumption or substance use (12%), worsening of chronic conditions (12%), (Pieh, C et al., 2020,119). Family responsibilities are among the ten most important causes of long-term absence from work and the five main causes of short-term absence from work (Kerlinger, F.K., 2006,42).

Domestic and family responsibilities have become a greater burden for workers who are unable to work remotely and are a major contributing factor to absences.

Emotions of fear and anxiety as well as other negative emotions are incredibly often associated with self-maintenance in today's world. Their evolutionary mission is to protect us by preventing us from various dangerous situations (Öhman, A., 2000,584). One of the oldest fears is certainly the fear of disease, and it is already described in the Bible that society completely rejects and stigmatizes a sick person (Dodig, S., 2016,29). There are many sources of fear caused by this virus: fear of the unknown and constantly lurking "invisible enemy", constant fear of infection, fear of loved ones, phobias, depression due to isolation and self-isolation of people, panic when infected with the virus, general uncertainty in humans. But his main goal is not to upset us, but, on the contrary, to empower us and help us. To warn us of danger, show us the real situation, indicate hidden pitfalls so that we are ready for possible perceived difficulties (Carleton, R.N., 2016,17). It is necessary to find a grain of truth in these negative emotions. If they can be used for personal gain, these emotions can encourage our creative problem solving and motivate us to act productively (Kim.J.H.;Ganella,D.E.,2015,29). A poor and insufficiently skilled leader, especially if he is still untrained in emotional intelligence management skills, can generate even more emotions of fear among employees. Due to the fact that they face the unknown, there is often a mass panic among the workers, which is an intense, strong fear. The fear and anxiety that occur with the experience of the threat of coronavirus infection is often not a reflection based on epidemiological data, but a reflection of our personal experience of risk or danger (Schneier, T et al., 2002,762). The whole situation, and thus the uncertainty, is exacerbated by the fact that great economic insecurity is being created. Mental health is not only important for the benefits that employment brings in the form of money as an existential resource, but also for some other things that employment brings with it, such as social status, social inclusion, daily structure, sense of security, relative predictability and control, but also self-efficacy and self-esteem. When a person loses his job, he is left without an important part of his identity as an opportunity to meet basic psychological needs that are a prerequisite for mental health (Raito, P and Lahelma, E., 2015,724). employment and mental health, where declining employment has had an impact on the occurrence of psychosomatic symptoms, depression, impaired mental health, and decreased optimism (McKee-Ryan, F. et al., 2005,62).

#### **4. COVID-19 and absenteeism**

Perhaps it is best to say that with the advent of the COVID-19 virus everything is changing and that nothing will be the same as it was before. Probably no social activity and segment will remain untouchable in a certain way and in each one it will be necessary to design and offer an adequate response. This comes on top of the fact that we have to deal with the general worries and anxieties arising from the COVID-19 epidemic, deaths and the lack of available tests. Any symptoms that occurred and could be associated with COVID-19 could not be identified as COVID-19 during the first few months, resulting in entire families having to self-isolate for 1-2 weeks if a family member had type COVID-19 symptoms (Moriyama, M., et al., 2020,39). Psychological symptoms such as worries, physical symptoms due to stress, especially stress due to remote work and life circumstances can lead to lower labour productivity associated with the outbreak of COVID-19. This can be either absence due to illness, called absenteeism, or work with difficulty in performing tasks (Pieh, C et al., 2020,119).

Absenteeism associated with the corona pandemic is more complex in its manifestations than the usual existing theories and research of absenteeism (Pierce, M et al., 2020,572). There are at least seven causes of absenteeism caused by the COVID-19 virus. (1) an employee who is

ill but without symptoms of the disease, (2) an employee with symptoms of the disease, (3) an employee with a certified COVID-19, (4) an employee who had to stay home to care for children who have no one to look after, (5) an employee who had to stay home to care for children with symptoms of the virus, (6) an employee who was quarantined, (7) an employee who was in contact with an infected person. All of this requires a completely different model of absenteeism management in these extraordinary circumstances. What is specific about absenteeism in the COVID-19 pandemic is that one can speak of “hidden or silent absenteeism”. Namely, in this situation, absenteeism is not just a physical absence from work. Even the physically present employer at work, burdened and occupied by the fear of being infected with this virus, is mentally absent and unproductive. Managers today must redirect part of their activities to managing absenteeism caused by COVID-19. This indicates that absenteeism management in these circumstances is not only complex, but that there is no clear and reliable research on how to do it effectively.

## 5. Methodology

The primary data source was a structured survey questionnaire constructed for the purposes of this research. It is derivative and content constructed using the following six metric instruments: (1) for stress level (Visual analogue scale, VAS, Gould, D., 2001,702). (2) for perceived stress questionnaire (PSQ, Levenstein, S. et al., 1993), (3) for anxiety as a reflection of mental health (General anxiety disorder, GAD-7, Beard, C. et al., 2014), (4) for depression (Patient health questionnaire, PHQ-9, Inque, T. et al., 2012,4), (5) for physical health or somatic symptoms as a result of fear (Patient health questionnaire, PHQ-15, De Vroege, L. et al., 2011,53), (6) for absenteeism (Productivity cost questionnaire, iPCQ, Krol, M. et al, 2011,605).

The sample of respondents was selected by quota, size 140. Employees from several organizations from three counties were included: Krapina-Zagorje, Koprivnica-Križevci and Zagreb. The choice of organizations was randomly selected. Respondents were selected based on alphabetical lists of full-time employees in the organizations covered. Sample size was determined by a statistical formula for the stratified random sampling technique where the population is not homogeneous (Cooper, D.R. and Schindler, P.S., 2008,36). Among the respondents, 44.20% were men and 55.80% were women. Respondents were heterogeneous in terms of work experience, level of education, and age.

Most of them had a secondary education (68.45%), work experience of ten years or more (71.18%), and between the ages of 30 and 50 (67.44%).

An invitation to participate in the online survey was sent to all employees included in the sample. The survey was available via an anonymous link, distributed via email. Oral consent was obtained from each participant. The survey was open for one month from February 13, 2021 to March 20, 2021, and one reminder was emailed. In order to protect the identity of the participants in the survey, their names were not recorded. We explored demographic and other characteristics as factors that may contribute to resilience and vulnerability to the impact of COVID-19 on stress.

The method of multiple regression analysis was used (Hox, J., & Roberts, J. K., 2011,3). Cronbach alpha indicators (Cronbach, L.J., 1951,314) and convergent validity indicators (Hair, F.J.J. et al., 2010,17) were used to determine the reliability of the scales. The Microsoft Excell and SPSS software package (Statistical Package for Social Sciences, 21.0) was used in data processing. Regression analysis is a procedure for looking at the impact of the six independent variables involved on absenteeism. The analysis procedure is reduced to several steps: evaluation of the consistency of independent variables, evaluation of reliability and convergence of independent variables, evaluation of multicollinearity of independent

variables, calculation of regression coefficients, testing the significance of these coefficients. The Pearson linear correlation coefficient was used to determine the existence of correlations between the observed variables. The significance of the correlation coefficient was estimated at a significance level of 5%, i.e.  $p = 0.05$ . The dependent variable was absenteeism, and the six independent ones were: (1) fear of one's own illness / death caused by COVID-19, (2) fear of illness / death of a family member caused by COVID.19, (3) fear as a result of social isolation and exclusion; (4) fear of contact with co-workers, (5) fear of possible job loss and unemployment, (6) fear of business failure.

## 6. Results of research

Ninety-two percent of respondents filled out the survey. Of these, 76.30% worked remotely. 7% of respondents reported absence due to their own illness, 36% absence due to illness of a family member. 42% of respondents experienced a close encounter with an infected person and were in isolation. As many as 67% reported the results of the presence anxiety and depression. Subjects experienced high levels of stress due to COVID-19 (73.45%, marked as significantly vulnerable), and only 26.55% had low levels of stress (marked as elastic). Predictors of stress vulnerability due to fear for their own health and for a family member [OR = 2.47; CI (93) = 1.52–2.86], then social isolation [OR = 1.95; CI (92) = 1.41-2.63]. Differentiated by gender, men showed the lowest score of stress ( $M = -0.07 \pm 0.92$ ). Women showed higher levels of stress resistance ( $M = 0.03 \pm 0.90$ ). According to age, participants were divided into two groups; aged up to 30 years and aged 30 years and over. Younger adults were found to be more likely to suffer from stress caused by COVID-19. There was a significant difference in PHQ-9 between younger ( $M = 7.36$ ,  $SD = 4.821$ ) and older ( $M = 6.04$ ,  $SD = 3.870$ ). A significant difference was found in both younger ( $M = 6.88$ ,  $SD = 4.925$ ) and older ( $M = 6.27$ ,  $SD = 4.752$ ) for GAD-7. However, no significant difference was found for PSQ in younger ( $M = 0.481$ ,  $SD = 0.119$ ) and older ( $M = 0.445$ ,  $SD = 0.133$ ). The results of the regression analysis are presented in abbreviated form below.

**Table 1:** Cronbach's alpha consistency indicators of independent variables

Dependent variable: absenteeism caused by COVID-19

Independent variable	Calculated alpha	Rank	Reference alpha	Consistency
1	0,8114	2	$0,8 < \alpha < 0,9$	good
2	0,9359	1	$0,9 < \alpha < 1,0$	excellent
3	0,8013	3	$0,8 < \alpha < 0,9$	good
4	0,7268	5	$0,7 < \alpha < 0,8$	acceptable
5	0,8028	4	$0,8 < \alpha < 0,9$	good
6	0,6086	6	$0,6 < \alpha < 0,7$	questionable

Source: authors

1 = fear of one's own illness / death; 2 = fear of illness / death of a family member; 3 = fear of the consequences of social isolation and exclusion; 4 = fear of contact with co-workers; 5 = fear of possible job loss; 6 = fear of business failure

All six independent variables showed consistency. It is excellent for fear of illness / death of a family member. Good for three variables: fear of one's own illness / death, fear of social isolation and exclusion, fear of possible job loss. A variable of fear of contact with co-workers is consistently acceptable. Questionable consistency was demonstrated only for the variable,

which included aspects of fear of company failure as a result of market loss due to COVID-19. There were no inconsistent variables as all of their values were above 0.7.

**Table 2:** Reliability and convergent validity indicators of independent variables

Dependent variable: absenteeism caused by COVID-19

Independent variable	Composite reliability (CR)	Average isolated variance (AVE)	Factor weights
1	0,9250	0,8153	0,8315
2	0,9683	0,9107	0,9110
3	0,8805	0,7846	0,7822
4	0,7381	0,6635	0,6739
5	0,8126	0,7029	0,7304
6	0,7482	0,5738	0,5448

Source: authors

1 = fear of one's own illness / death; 2 = fear of illness / death of a family member; 3 = fear of the consequences of social isolation and exclusion; 4 = fear of contact with co-workers; 5 = fear of possible job loss; 6 = fear of business failure

Using factor analysis (PLS algorithm function), indicators of reliability and convergent validity of independent variables were extracted. The values of the factor weights of all six variables are above 0.5, which indicates that the indicators of the same converge well towards latent constructs. The convergent validity of the included variables is also satisfied since their composite reliability (CR) is greater than 0.7. All composite values are greater than the values of the average extracted variance (AVE).

**Table 3:** Correlation matrix of independent variables

Dependent variable: absenteeism caused by COVID-19

	1	2	3	4	5	6
1	1					
2	0,9204	1				
3	0,7128	0,6811	1			
4	0,860	0,7524	0,7140	1		
5	0,7481	0,6903	0,8026	0,5280	1	
6	0,5296	0,4831	0,5061	0,6913	0,4271	1

Source: authors

1 = fear of one's own illness / death; 2 = fear of illness / death of a family member; 3 = fear of the consequences of social isolation and exclusion; 4 = fear of contact with co-workers; 5 = fear of possible job loss; 6 = fear of business failure

To determine whether there is a statistically significant relationship between the independent variables, the degrees of linear dependence were determined. The Pearson coefficients shown (Table 4) indicate that all values obtained are statistically significant at the 0.05 significance level. The correlation is strongest between the variables fear of one's own illness / death and fear of illness / death of a family member. There is a very strong correlation between the variables fear of one's own illness / death and fear of contact with co-workers, as well as the variables of fear of the consequences of social isolation and exclusion and fear of possible job loss. The variables showed a strong correlation: fear of one's own illness / death and fear of the consequences of social isolation and exclusion, fear of one's own illness / death and fear of

possible job loss, fear of illness / death of a family member and fear of contact with co-workers. fear of the consequences of social isolation and exclusion and fear of contact with co-workers. The correlation of medium intensity was found in the variables: fear of illness / death of a family member and fear of the consequences of social isolation and exclusion, fear of illness / death of a family member and fear of possible job loss. Weak correlation strength was found for the variables: fear of own illness / death and fear of enterprise failure; fear of illness / death of a family member and fear of business failure, fear of the consequences of social isolation and exclusion and fear of business failure, fear of possible job loss and fear of contact with co-workers, fear of possible job loss and fear of business firms.

**Table 4:** Multicollinearity of independent variables

	1	2	3	4	5	6
<b>VIF</b>	0,3705	0,2741	0,4028	0,3915	0,2086	0,4372

Source: authors

1 = fear of one's own illness / death; 2 = fear of illness / death of a family member; 3 = fear of the consequences of social isolation and exclusion; 4 = fear of contact with co-workers; 5 = fear of possible job loss; 6 = fear of business failure

The values of the VIF coefficients (variance inflation factor) were calculated methodologically based on the appropriate procedure (Field, A., 2000,21). The determined values of all six independent variables are less than 5.00, which explains that the obtained data are suitable for the application of multiple regression analysis and that there is no problem of multicollinearity among the included variables.

**Table 5:** Results of multiple regression analysis

Dependent variable: absenteeism caused by COVID-19

<b>Independent variable</b>	$\beta$	t	p
1	0,0835	1,0362	<0,05
2	0,1572	0,7458	<0,05
3	0,0611	1,1364	<0,05
4	0,1103	0,5083	<0,05
5	0,0528	0,3722	<0,05
6	0,0310	0,6824	>0,05

Source: authors

- regression coefficients of independent variables; t - significance test of regression coefficients, p- significance of estimation of independent variable

1 = fear of one's own illness / death; 2 = fear of illness / death of a family member; 3 = fear of the consequences of social isolation and exclusion; 4 = fear of contact with co-workers; 5 = fear of possible job loss; 6 = fear of business failure

$$R^2 = 0,4173$$

The coefficient of determination shows that all six included independent variables in this study affect employee absenteeism with 41.73% variance. This percentage of the sum of the total squares of the deviation is interpreted by the relationship between the included independent variables and the dependent variable which can be accepted as a significant result.



Among the included independent variables, the most significant interrelation with absenteeism is the fear of illness / death of a family member 15.72% ( $\beta = 0.1572$ ,  $t = 0.7458$ ,  $p < 0.05$ ). This is followed by fear of contact with co-workers 11.03% ( $\beta = 0.1103$ ,  $t = 0.5083$ ,  $p < 0.05$ ). In third place is the fear of one's own illness / death 8.35% ( $\beta = 0.0835$ ,  $t = -1.0362$ ,  $p < 0.05$ ). Fear of the consequences of social isolation and exclusion correlates with absenteeism with 6.11% ( $\beta = 0.0611$ ,  $t = 1.1364$ ,  $p < 0.05$ ). There is little interconnected fear of possible job loss caused by COVID-19 5.28% ( $\beta = 0.0528$ ,  $t = 0.3722$ ,  $p < 0.05$ ). Symbolic association with absenteeism is the fear of corporate failure 3.10% ( $\beta = 0.0310$ ,  $t = 0.6824$ ,  $p > 0.05$ ). Five independent variables of fear have a statistically significant impact on absenteeism (since  $p < 0.05$ ), while only one variable (fear of business failure due to business difficulties brought by COVID-19) has no statistically significant impact ( $p > 0.05$ ) on absenteeism.

## 7. Discussion

The results of this research are based on actual rather than potential (assumed) absences from work, which is clearly confirmed as a consequence of several types of fear caused by the COVID-19 pandemic. The fact that the most significant interrelation with absenteeism is the fear of illness / death of a family member indicates several other obtained results. Thus, 76.30% of employees worked remotely, ie from home, and it is assumed that they were in daily contact with their family members. Thus, this form of fear was dominant in relation to other types of fear, even for the fear of one's own illness / death. This finding confirms the results obtained by Kerlinger where family responsibilities are among the ten most important causes of long-term absenteeism and among the five main causes of absenteeism. Domestic and family responsibilities have become a greater burden for workers who are unable to work remotely and are a greater contributing factor to absence which should be significant insights in human resource management in these extraordinary circumstances as pointed out by Kim and Ganella. It is quite realistic that a significant number of these respondents (42% of the total number) experienced a close encounter with an infected family member or were themselves in isolation. This primary association of absenteeism with the fear of illness / death of a family member is also accompanied by the realization that 67% of respondents showed the presence of anxiety and depression and experienced high levels of stress due to COVID-19. This confirms the findings of McKee-Ryan and co-workers about the existence of a strong link between employment decline and mental health, where employment decline has had an impact on the occurrence of psychosomatic symptoms, depression, impaired mental health, and decreased optimism. Women showed higher levels of stress resistance than men and were more represented than men in the structure of respondents (55.80%), but this higher level of stress resistance did not result adequately in positioning fear for their family members. Fear of the consequences of social isolation and exclusion is in the third place associated with absenteeism, which can be interpreted as a way that the incentive for social isolation as a measure of prevention COVID-19 respondents do not perceive as the need to be absent from work and thus believe that isolation can be achieved within jobs. This realization was also pointed out by Schneirer and co-workers, arguing that these forms of fear are a reflection of our personal experience of risk or danger. Fear of possible job loss and fear of possible collapse of organizations, respondents do not associate and perceive significantly with absenteeism and infection with the COVID-19 virus. Obviously, their priorities in preserving their own health and the health of their family members are much more important and priority. These forms of fear are more important to them than the fear of existing and

future material existence. In this research, the second-ranked fear of infection was found in contacts with co-workers, which is a valuable indicator that should be used to redefine the model of employee management. Managers should think more about empathic leadership of employees, because only in this way can they effectively act to reduce the fear of possible infection from co-workers by strengthening mutual trust among employees. Kim and Ganella also pointed this out, so the results of this research only confirm those reached by these two authors. Since Carleton in his research came up with several forms of possible perceived work difficulties caused by COVID, the same can also be usefully applied to the population in this study. Managers, using the links Carleton came up with, as well as other authors some of whom are cited in this paper, could use them to find motivating incentives that empower rather than upset employees. This would lead to a creative solution to the problems and working conditions during the COVID-19 pandemic instead of running away from work and increasing absenteeism. COVID-19 has thus clearly sent a signal to managers that the existing models of employee management must change and that in the future we must take into account possible other, new emergencies that need to be overcome and adopted in order to normalize the work and operations of companies.

## 8. Conclusion

The fact is, contained in the results of this study, that as many as 67% of respondents claim that due to the COVID-19 pandemic in the workplace experienced some form of depression and anxiety. This resulted in 73.45% of them positioning themselves as vulnerable, and only 26.55% that the stress caused by this pandemic indicated low levels of stress. Unlike men, women showed a higher limit of tolerance to this stress. The linear interdependence between fear for one's own health and the health of a family member is the strongest (0.9204), followed by fear of one's own infection with the virus and as a result of contact with co-workers is also highly ranked (0.860). Neither are they negligible. Results on the interdependence of fear for one's own life and health with other forms of fear. What is the result of that fear? 76.30% of respondents worked from home, so they were isolated from the work environment while doing their job. This is certainly a situation that is not only common, but also not desirable given that such a form of work is not built into the forms of accepted organizational behavior in the surveyed population. Due to a close encounter with an infected family member, working from home, 42% of employees were in isolation. So, it was a kind of absence from work, although not in the classical sense. The results of the presented research confirm both hypotheses. Insufficient knowledge and information about the infection and the spread of the infection with this virus generate and multiply different types of fear of infection. Employees preoccupied with fears are not expected to be productive, because instead of focusing on work, they turn to worries about their own health and the health of their family members. But also the results of this research clearly indicate the direction that managers need to go in human resource management. The COVID-19 pandemic has sent a clear signal that it is high time to put more emphasis on empathic leadership of employees. Only by empowering employees to allay fears of possible infection with this virus and learn to self-empower and not resort to isolation can lasting results be achieved. Only by empowering employees can the intensity of fear and removal of employees from jobs due to accumulated fears be reduced. It should not be forgotten that the results of this research, however, indirectly indicated that these accumulated fears among employees lead to mental and physical possible irreversible damage to human health, which then affects the quality of human capital as the most important capital of any organization. Numerous information and insights today constantly emphasize and warn that the future will be full of various surprises

that the COVID-19 pandemic warned us about and that nothing in the future will be the same as before.

## REFERENCES

Beard, C. & Björgvinsson T. (2014), “Beyond generalized anxiety disorder: psychometric properties of the GAD-7 in a heterogeneous psychiatric sample”, *Journal of Anxiety Disorders*, Vol. 28, No 1, pp. 547–552.

Carleton, R.N. (2016), “Fear of the unknown: One fear to rule them all?”. *Journal of Anxiety Disorders*. No 41, Vol. 7, pp. 5–21.

Carroll, N., Sadowski, A. & Laila, A. (2020), “The Impact of COVID-19 on health behavior, stress, financial and food security among middle to high income canadian families with young children”. *Nutrients*. Vol.12, No 5, pp. 72-84.

Cooper, D.R. & Schindler, P.S. (2008). *Business research methods (10th ed)*, Age International Publishers, Singapore, McGraw-Hill

Cronbach, L.J. (1951), “Coefficient alfa and the internal structure of test “, *Psychometrika*, Vol. 16, No 3, pp. 297-334.

De Vroege, L., Hoedeman, R. & Nuyen. J. (2011), “Validation of the PHQ-15 for somatoform disorder in the occupational health care setting”, *Journal of Occupational Rehabilitation*, Vol. 22, No 4, pp. 51-58.

Dodig, S. (2016). *Biblijska medicina – o zdravlju, bolesti i smrti u Bibliji*. Medicinska naklada, Zagreb

Dolton, P. (2020), *The Economics of the UK University System in the Time of Covid-19*”. National Institute of Economic and Social Research, London.

Erygit, P. (2020), “Absenteeism in the workplace: causes and costs, [www. COVID-19 and predictivesafety.com](http://www.COVID-19andpredictivesafety.com), (accessed March 12,.2021).

Field, A. (2000). *Discovering Statistics Using SPSS for Windows*, Thousand Oaks, Sage Publication, London

Fu, W., Wang, C., Zou, L., Guo, Y., Lu, Z. & Yan, S, (2020), “Psychological health, sleep quality, and coping styles to stress facing the COVID-19 in Wuhan, China, *Transworld Psychiatry*, Vol. 10, No 4, pp. 1–9.

Gould, D. (2001), “Visual Analogue Scale (VAS)”, *Journal of Clinical Nursing*, Vol.10, No 2, pp. 697-706.

Hair, F.J.J., Black, C.W., Babin, J.B. & Anderson, E.R. (2010). *Multivariate data analysis*, New York, Prentice-Hall, Inc.

- Hox, J., & Roberts, J. K. (2011). *Handbook of advanced multilevel analysis*, New York: Routledge
- Inoue, T.; Tanaka, T. & Nakagawa, S. (2012), ""Utility and Limitations of PHQ-9 in a Clinic Specializing in Psychiatric Care", *BMC Psychiatry*. Vol. 12, pp. 1–6.
- Kerlinger, F.K. (2006). *Foundations of Behavioral Research* (8th ed), London, Surjeet Publishers, New York
- Kim, J. H. & Ganella, D: E. (2015), "A review of preclinical studies to understand fear during adolescence", *Australian Psychologist*. Vol. 50, No 1, pp. 25–31.
- Krol, M., Papenburg, J., Koopmanschap, M. & Brouwer, W (2011), „Do productivity costs matter? The impact of including productivity costs on the incremental costs of interventions targeted at depressive disorders “, *Pharmacoeconomics*, Vol. 29, No 3, pp. 601-619.
- McKee-Ryan, F., Song, Z., Wanberg, C. R., & Kinicki, A. J. (2005), "Psychological and physical well-being during unemployment: A meta-analytic study". *Journal of Applied Psychology*, Vol. 90, No 3, pp. 53–76.
- Moriyama, M., Cui, Y., Kazawa, K., Nakaya, T. & Susanto, T. (2020), "Presenteeism among Chinese workers in Japan and its relationship with mental health and health-promoting lifestyles", *Industry Health*, Vol. 58, No 3, pp. 35–45.
- Öhman, A. (2000). Fear and anxiety: Evolutionary, cognitive, and clinical perspectives. In M. Lewis & J.M. Haviland-Jones (Eds.). *Handbook of emotions*. pp. 573–93. New York: The Guilford Press.
- Pieh, C., Budimir. S. & Probst T. (2020), "The effect of age, gender, income, work, and physical activity on mental health during coronavirus disease (COVID-19) lockdown in Austria", *Journal of Psychosomat Resistance*, Vol. 136, No 1, pp. 116-128.
- Pierce, M., McManus, S., Jessop, C., John, A., Hotop, f M. & Ford, T. (2020), "Says who? The significance of sampling in mental health surveys during COVID-19, *Lancet Psychiatry*, Vol. 7, No 2, pp. 567–578.
- Raito, P. & Lahelma, E. (2015), "Coping with unemployment among journalists and managers. Work", *Employment and Society*, Vol. 29, No 2, pp. 720–737.
- Schneier, T., Franklin, R., Blanco, E., Carlos, V., Antia, K., Smita, X., Liebowitz, F. & Michael R (2002), "The social anxiety spectrum", *Psychiatric Clinics of North America*. Vol. 25, No 4, pp. 757–774.

*A scientific paper*

**Zsuzsanna Győri, Ph. D., Associate Professor**

Budapest Business School, Faculty of Finance and Accounting, Centre of Excellence for Sustainability Impacts in Business and Society, Budapest, Hungary

E-mail address: gyori.zsuzsanna@uni-bge.hu

**Sára Csillag, Ph. D., Associate Professor**

Budapest Business School, Faculty of Finance and Accounting, Centre of Excellence for Sustainability Impacts in Business and Society, Budapest, Hungary

E-mail address: csillag.sara@uni-bge.hu

**Carmen Svastics, Assistant Lecturer**

Eötvös Loránd University, Bárczi Gusztáv Faculty of Special Needs Education, Budapest, Hungary

E-mail address: svastics.carmen@barczi.elte.hu

**Anna Laura Hidegh, Ph. D., Associate Professor**

Corvinus University of Budapest, Institute of Management, Budapest, Hungary

E-mail address: anna.hidegh@uni-corvinus.hu

**Edit Kóródi, Professional manager**

Napra Forgó Nonprofit Ltd.

E-mail address: korodi.edit@naf.hu

## **EXAMINING THE ENTREPRENEURIAL ECOSYSTEM AND THE ENTREPRENEURIAL LIFE CYCLE IN ENTERPRISES OF PEOPLE WITH DISABILITIES**

### **ABSTRACT**

*Our objective is to analyse the role of different ecosystem domains in fostering the entrepreneurial activities of people with disabilities (PWD), connected to the experiences of the different stages of the entrepreneurial lifecycle. By making a connection between these two theoretical concepts, our paper contributes to the entrepreneurship literature and the growing body of empirical research on entrepreneurs with disabilities (EWD). In our exploratory qualitative study in 2018-2020 we interviewed 29 entrepreneurs about their motivations, identity, barriers and supporting factors for being an entrepreneur. Analysing the ecosystem domains and actors that determine each stage of life, it seems that, alongside the difficulties and supporting factors experienced by entrepreneurs in general, EWD face additional difficulties. Much of these can be linked to the policy and culture domains of the ecosystem.*

**Key words:** *entrepreneurship, people with disabilities (PWD), entrepreneurs with disabilities (EWD), entrepreneurial ecosystem, lifecycle model*

### **Funding:**

This research was supported by the Ministry of Innovation and Technology of Hungary from the National Research, Development and Innovation Fund, financed under the *Tématerületi*

*Kiválósági Program 2021 (TKP2021-NKTA)* funding scheme (Project no. TKP2021-NKTA-44).

## 1. Introduction

Disability is a worldwide phenomenon: approximately 16% of the world's adult population aged 18 and above is disabled (Bagheri et al., 2015). WHO (2017) phrases disability as an umbrella term, covering impairments, activity limitations and participation restrictions. Evidently, disability has a wide-ranging effect on people's lives, impacting their academic and career prospects, independence, emotional well-being, and employment possibilities.

The labour market is one of the areas where people with disabilities (PWD) face serious difficulties, barriers and stereotypes, and as a result their employment rates are generally much lower than average. Evidence shows that the right of PWD to meaningful work is frequently denied, they face discrimination including conditions of recruitment, hiring and career advancement (Kulkarni, 2016) and there is often a lack of adequate vocational and professional rehabilitation, job retention and return-to-work programmes (Hästbacka *et al.*, 2016). One possible solution to this low labour market participation rates lies in the potential for PWD to become self-employed or to start and run their own businesses. Some argue that business ownership can be used as a potential means of vocational rehabilitation to achieve faster and better integration into the labour market and eventually social inclusion and a higher quality of life in general (Kitching, 2014). This loosely connects to one of the priorities of the EU: promoting entrepreneurship as part of the Europe 2020 strategy, leading to the smart, sustainable, and inclusive growth of the European economy (Pagán, 2009).

Despite an increased scientific interest in recent years regarding entrepreneurship and social minorities, there remains a significant lack of theoretical and empirical research on the topic of EWD, which Cooney (2008) calls the 'forgotten minority'. Studies have recently been conducted, focusing on the experiences of PWD as entrepreneurs (Ashley & Graf, 2018), barriers and supporting mechanisms (Csillag et al., 2019; Kitching, 2014; Renko et al., 2015; Yamamoto et al., 2012), entrepreneurial motivation (Cooney, 2008; De Clercq & Honig, 2011; Dhar & Farzana, 2017a), coping with stress and uncertainty (Miller & Le Breton-Miller, 2017; Saxena & Pandya, 2018), entrepreneurial competences (Bagheri et al., 2015; Bagheri & Abbariki, 2017), self-image and self-efficacy (Martin & Honig, 2019). Some studies connect the entrepreneurial experiences of PWD to the experiences of other minority groups, such as women, ethnic minorities or elderly entrepreneurs (Cooney and Licciardi 2019; Williams and Patterson 2019). The common learning point of the studies is that the wider and narrower environment surrounding the disabled entrepreneur plays a crucial role in the development and survival of the enterprise. Within this context, some factors are more powerful than for other entrepreneurs, and there are also specific characteristics.

In our paper, we would like to contribute to the growing body of empirical research on EWD, highlighting the results of our exploratory qualitative research project, with a focus on 29 Hungarian entrepreneurs with disabilities. We connect two theories related to the different roles and activities, internal processes, and external adaptation of entrepreneurship, similar to the work of Mack and Mayer (2016). In the theoretical part, we identify the two main concepts: Adizes' entrepreneurial lifecycle model (1979) and Isenberg's (2011) ecosystem domains. Afterwards, we present our results and their implications to the general entrepreneurial literature and the empirical research on EWD.

## 2. Theoretical background

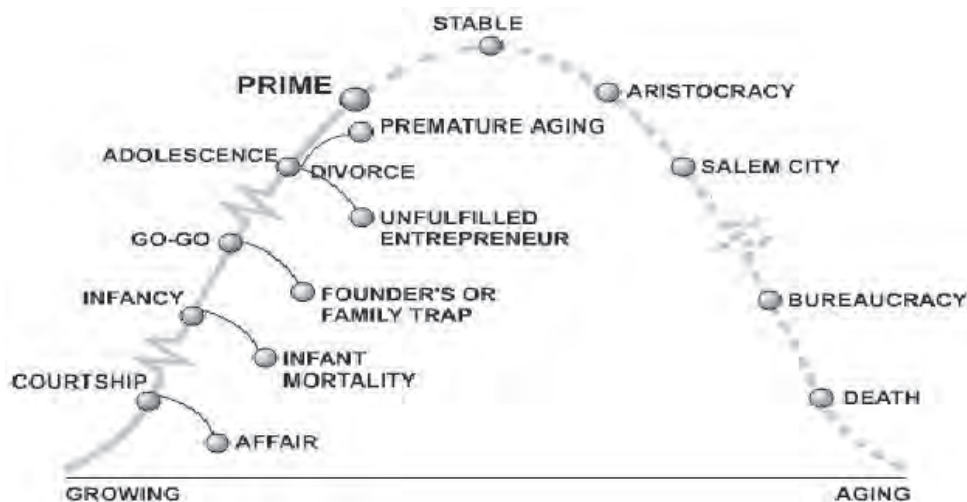
### 2.1 Entrepreneurial lifecycles

Lifecycle models draw a parallel between the stages of entrepreneurial and human life stages. Here we categorize the models according to the number of stages they comprise and the main perspectives (entrepreneurial or organizational/managerial) they employ.

The model of Lippitt and Schmidt (1967) suggests a three-phase development path based on critical managerial concerns: birth (creation of the system as a base of survival), youth (gaining stability) and maturity (when the enterprise is strong enough to respond to diverse societal needs). Among the stages there are crises which should be solved in order to progress to the next developmental level (Greiner, 1972). In Greiner's entrepreneurship-focused model, the stages of growth are: creativity (followed by a leadership crisis), direction (followed by an autonomy crisis), delegation/decentralization (followed by a control crisis), coordination/harmonization (followed by an officiality crisis) and cooperation/collaboration (may be followed by other undetermined crises). Lyden (1975) emphasizes the functional challenges: adaptation to the external environment, resource acquisition, goal attainment/efficient production and institutionalization. In their summarizing model, Quinn and Cameron (1983) make a connection between the stages and organizational effectiveness and use four stages: entrepreneurial, collectivity, formalization and control, as well as elaboration of structure.

Adizes (1979) builds his model upon the changes of main activities, namely producing results (P), administering formal rules and procedures (A), entrepreneurial activity (E), and integration of individuals into the organization (I). Besides the complexity of activities, this is the only model which uses ten different stages (providing three stages just for the early life of a venture), includes both maturity and decline, and thus shows the strongest resemblance with human life. While most of the mentioned models use mainly organizational and managerial perspectives, the Adizes model emphasizes the entrepreneurial roles and characteristics e.g., adaptive changes, creativity and risk-taking in each and every stage. Moreover, Adizes identified the main supporting factors ("specific treatments") for every stage. That is why – besides the above-mentioned reasons - in our analysis with an entrepreneurial focus and a connection to the entrepreneurial ecosystem, we have chosen this model.

**Figure 1: Stages of lifecycle**



Source: Lupu & Lupu, 2009 based on Adizes, 1979

In Figure 1, the 'x' axis shows time, while the 'y' axis indicates the size and maturity of the enterprise. At the beginning of life (courtship, infancy, and go-go stages), the main emphasis is on entrepreneurial activity, and Adizes claims relevant differences among these starting phases. In the courtship stage, main processes and activities are related to creating ideas and reinforcing commitment. As the infant venture does not have resources to pay for external help, every actor who has and can provide the necessary know-how is very relevant. At the next stage, the infant stage expenses must be paid which indicates the beginning of taking risks. The new venture needs external help in the form of operating capital. As another significant feature, in this stage decision-making is mainly short-term, highly centralized and "*best described as a one-person show*" (Adizes, 1979, p. 5). In the third go-go stage, strategic thinking is established with a clear mission and fast growth. For achieving and surviving this stage, decentralization and institutionalization are needed. The founder has to delegate some of the fundamental activities for organizational growth to reach the next level. For this process a group of different experts are needed.

Then (in adolescence and prime organization stages) administrative roles and producing results are the most relevant. With aging, maturity (stability and aristocracy) can be described as the stage of formal rules, procedures, and the integration of members, while decline occurs because of an over-emphasis on these organizational activities (related stages are recrimination, bureaucracy, and death). This means that decline can be avoided with a cautious handling of mental activity, market share and functionality of the organization during aging. The proactive preventive managerial processes help the venture to arrive and stay or step back to the prime stage, which is the most productive, effective, and efficient stage of the lifecycle.

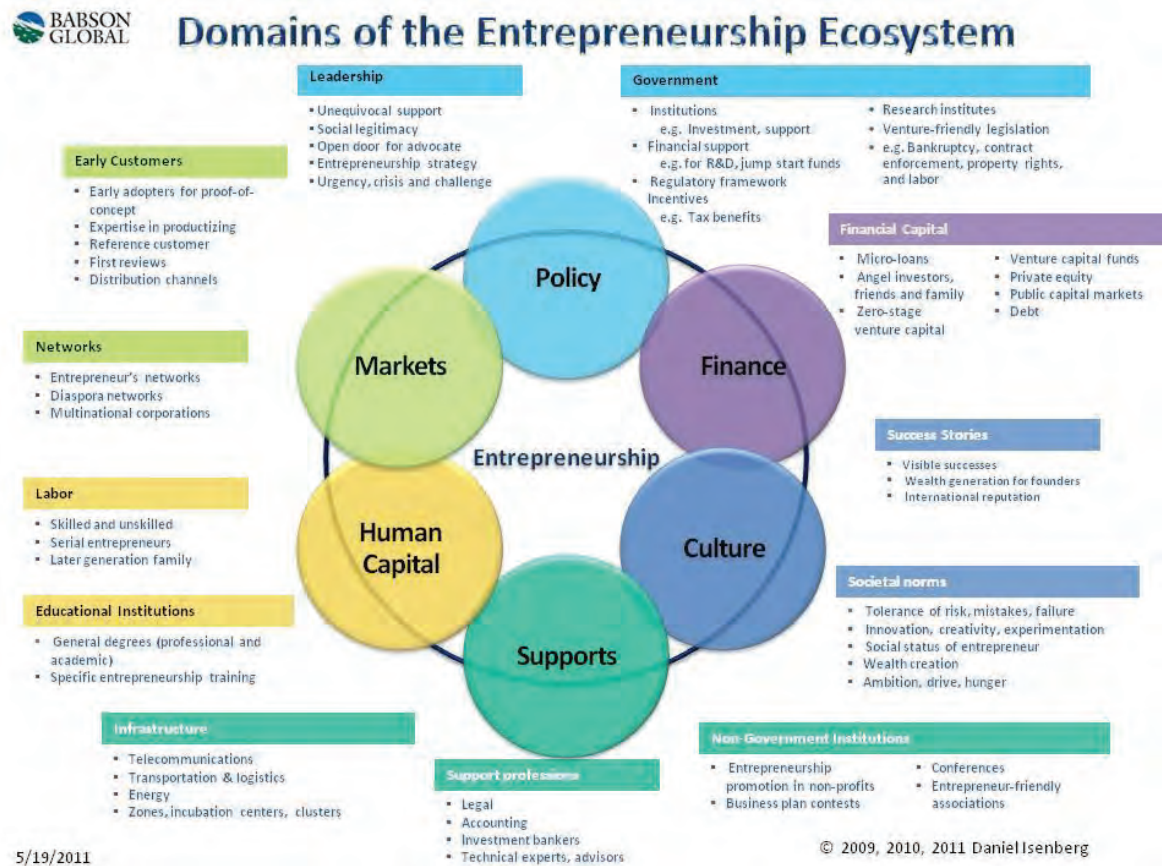
## 2.2. Entrepreneurial ecosystem

For entrepreneurship, innovation and development and an environment supporting this – the entrepreneurial ecosystem (Maroufkhani et al., 2018; Csákné Filep & Radácsi, 2019) – is essential. "*The concept of an 'entrepreneurial ecosystem' refers to the interaction that takes place between a range of institutional and individual stakeholders so as to foster entrepreneurship, innovation and SME growth.*" An ecosystem generates optimal use of ideas, concepts, and business models through the interaction of its actors: in fact, it is the actors who determine the performance of the entrepreneurs (Bennett, 2014; Cowell et al., 2017). Due to the diversity of actors, it is difficult to capture the complexity of the ecosystem. Moreover, it is part of the national culture, legal and institutional environment (Maroufkhani et al., 2018). It is important that in the case of EWD, dimensions are expanded with additional actors, issues, and dimensions.

Here we rely on Isenberg's (2011) model, which divides the sustainable and even self-sustaining enterprise ecosystem into six areas and dimensions. We will present the individual dimensions and their sub-dimensions (see Figure 2), complementing them with what is important for EWD, and linking them to the literature. In its totality, few sources associate the topics of EWD and ecosystems directly, but rather indirect mentions have been found.



**Figure 2: Domains of the Entrepreneurship Ecosystem**



Source: Isenberg, 2011

### 2.2.1. Policy

Leadership as one aspect of policy is the clear support and social legitimacy of businesses for EWD, and is emphasised by major political and economic leaders on PWD entering this form of labour market participation. The other component, governance, covers business-friendly government regulations, related institutions, the tendering system, as well as available financial support. In order to be favourable, legislation should promote not only business in general, but also the business activities of PWD (Kitching, 2014). Furthermore, there is a need to launch and maintain programmes specifically tailored to businesses of PWD (Parker Harris et al., 2014). A major financial obstacle to becoming an entrepreneur is the so-called benefit trap: the economic risks of becoming an entrepreneur are intensified by the possible withdrawal of existing state disability or social benefits due to self-employment income (Dhar & Farzana, 2017b). The phenomenon used to exist in Hungary as an obstacle to the growth of domestic organizational employment as well (Scharle, 2011), until it was abolished by the government in early 2021.

### 2.2.2. Finance

Financial resources related to the business lifecycle (Sági, 2007) are micro-loans, private capital, business angels, venture capital, and the general financing environment, i.e., banking and other available financial resources. For EWD, finances may be supporting factors (e.g.,

subsidized credit facility) or obstacles (e.g., low credit score) (Bagheri et al., 2015; Walls et al., 2002; Rizzo, 2002; Miller & Le Breton-Miller, 2017; (Adams et al., 2019). For PWD the lack of funding opportunities is a substantial issue due to the lack of resources in general and they might in fact need positive discrimination and out-of-the-box support because of the multiple disadvantages in everyday market processes and the fact that they are often not taken seriously by financiers (Parker Harris et al., 2014).

### 2.2.3. Culture

Culture includes societal norms related to businesses (social status of entrepreneurs, risk tolerance, innovation, creativity, well-being), as well as social norms, acceptance or even prejudices related to disability (e.g., the entrepreneur is skilful, loves and takes risks while PWD are vulnerable, lack self-confidence, are unable to take responsibility). At the same, to conduct business one must meet all the challenges regardless of physical and mental conditions and according to existing power structures and normative expectations (Clerq and Honig 2011).

The other area under culture is success stories: is it in the collective stories of a given culture that it is good to do business? Is it possible to do business with a disability in public communication? According to the literature, a significant motivation is having credible role models for young people, adults or even EWD (Atkins, 2013; Kitching, 2014; Adams et al., 2019).

### 2.2.4. Human capital

Here Isenberg treats the characteristics of the labour market separately from the point of view of the enterprise: whether the workforce is sufficient and of quality; what is the perception of serial entrepreneurs; and how typical multigenerational family businesses are. For EWD, a supporting family or enterprising family members seem especially important (Renko et al., 2015). Self-confidence and willpower are qualities that help you become an entrepreneur (Kasperova et al., 2018), as well as the ability to make autonomous decisions (Kitching, 2014). At the same time, in the case of people – especially women – with disabilities, it can often be observed that a loving, overprotective family may in fact hinder the development of these competences (Kálmán & Köncezi, 2002).

Education, the system of general training and entrepreneurship training in particular also provide sources of human capital. A well-designed education system – either in an integrated or segregated way, as well as vocational rehabilitation – is motivating and supportive. In contrast, inaccessible systems that do not accommodate special needs or segregate in major ways create a serious obstacle to becoming entrepreneurs (Miller & Le Breton-Miller, 2017; Renko et al., 2015; Bagheri et al., 2015; Parker Harris et al., 2013). Although an enterprise may require a different mix of skills and competencies, depending on the type and severity of the impairment, or, for example, the industry, the right combination of personal qualities (attitude, knowledge, and experience) and business knowledge is also required (Bagheri & Abbariki, 2017). However, the underutilisation of skills and abilities, and the lack of adequate motivation and development greatly hinder or even prevent the development of human resources beneficial in the labour market and in the entrepreneurial sphere.

### 2.2.5. Markets

Isenberg considers here specifically the customers and consumers of the company's products and services, as well as the entrepreneurial relationships and networks from which orders can be made. Consumer relationships including services for and ties with peers as well as

professional relationships and social capital beyond direct consumer and supplier relationships are crucial for EWD (Atkins, 2013; Miller & Le Breton-Miller, 2017; (Renko et al., 2015); Bagheri et al., 2015; Parker Harris et al., 2013). Therefore, both business development and disability organisations ought to be responsible for facilitating, strengthening, establishing, and maintaining professional and support networks.

#### 2.2.6. Supports

Isenberg lists three sub-areas, the first being organisations supporting businesses that organise, inter alia, trainings and conferences. For people with various types of disabilities, accessibility and financial availability are crucial (Heath & Reed, 2013; Parker Harris et al., 2014). The provision of advice on self-employment and entrepreneurship by other disability-related organisations, such as those involved in vocational rehabilitation, are also vital. Other articles emphasize the prominent role of rehabilitation agencies (Bagheri et al., 2015; Walls et al., 2002; Rizzo, 2002; Miller & Le Breton-Miller, 2017; Kitching, 2014).

The next sub-area is professional support. Rizzo (2002) stresses the importance of mentoring services for PWD from disability organisations and from business actors, claiming that entrepreneurs are well aware of the challenges of business and entrepreneurship.

The third sub-area is infrastructure: the level of telecommunications and information technology, the existence of incubator programmes specifically aimed at the development of transport and enterprises, as well as clusters for cooperation. For EWD, physical and communication accessibility is a key infrastructure issue.

The diverse and complementary support initiatives and policies that Yamamoto et al. (2012) call a "patchwork of resources" are extremely important both for enabling and encouraging businesses on the one hand and to compensate for the challenges and obstacles to the personal, social, or business environment, on the other. Disability organisations and rehabilitation agencies are also considered as actors of the enterprise ecosystem, especially if they have the appropriate entrepreneurship knowledge and openness to profit-making. If properly designed and used, this complex multi-stakeholder system becomes one of the few viable paths to labour market participation for PWD (Rizzo 2002).

### 3. Methodology

The study employs a qualitative research method generally used for investigating complex and multifaceted social phenomena, since research on EWD is still at an exploratory stage (Bagheri et al., 2015). Previous studies on EWD have also applied qualitative methods (Ashley & Graf, 2018; Bagheri et al., 2015; Heath & Reed, 2013; Jammaers et al., 2016, 2019).

A snowball sample selection strategy (Silverman, 2008) was followed in two phases between 2018 and 2020, and twenty-nine semi-structured in-depth interviews were conducted. We were looking for participants who claimed to be EWD, had experience of entrepreneurship for at least three years (Atkins, 2013; Bagheri et al., 2015) and/or had at least three employees (Parker Harris, Caldwell, et al., 2014). In the first phase (2018/19), ten interviewees were involved based on the recommendations of various stakeholders (e.g., rehabilitation agencies, disability advocacy organisations, etc). In the second phase (2019/20), an EWD database was built, based on recommendations, and interviewees were selected, taking into consideration the diversity of the sample regarding gender, type and onset of disability, starting year and field of entrepreneurship. Table 1 presents background information on the sample.

**Table 1:** Sample of the study

Pseudo-nyms	Gender	Onset of the disability	Type of disability	Field of business, activity	Starting year of business
Ottó	M	consequence of accident	physical (para)	medical industry (wheelchairs)	2007
Viktor	M	born with the impairment, gradual deterioration, in the last 15 years blind	blind	construction industry, project management	1989
Bence	M	consequence of accident	physical (tetra)	ICT, cross fit room and sport event organizing	2004
Róbert	M	consequence of accident	physical (tetra)	catering, sales	2004
Roland	M	born with the impairment, gradual deterioration	sight loss	ICT services, software development	2004
Rebeka	F	born with the impairment	blind	sales	2008
Richárd	M	consequence of accident	physical	accounting services, clothing industry	1989
Antal	M	born with the impairment	blind	ICT industry	2016
Tamás	M	consequence of accident	physical	car sales, agriculture, construction industry	2014 (2000)
Ágoston	M	consequence of accident	physical (para)	architecture, construction, advertising	1999
Ábel	M	acquired by illness, gradual deterioration	blind	legal services, sport instructor	1997 (2019)
Vince	M	consequence of accident	physical	teacher, dance instructor, motivational speaker	2001
Maja	F	born with the impairment, gradual deterioration	sight loss	masseur	2013
Levente	M	consequence of accident	physical	sales (electronic devices)	2016

Marcell	M	consequence of accident	physical	film director	2003
Lilla	F	born with the impairment	blind	masseur	2007
Adél	F	acquired by illness, gradual deterioration	physical, chronic illness	clothing industry	2018
Bea	F	acquired by illness, gradual deterioration	blind	teacher, language school	2001
Jakab	M	consequence of childhood illness	physical (para)	cleaning industry	1987
Rita	F	acquired by illness at the age of 16	blind	OD consultant	2010
Detre	M	born with the impairment, gradual deterioration	physical (para)	accessibility consultant	1989
Milán	M	born with the impairment, gradual deterioration	sight loss	ICT services	2005
Emma	F	acquired by illness at the age of 12	blind	blogger, trainer (awareness-raising), publishing	2010
Valter	M	consequence of childhood illness	blind	attorney, legal services	2004
Gréta	F	acquired by illness, gradual deterioration	physical	medical industry (sales of wheelchairs)	2012
Vendel	M	consequence of accident	physical (tetra)	sales, pizza restaurant, sport event organising	2002
László	M	born with the impairment, gradual deterioration	deaf	ICT industry	2016
Miklós	M	consequence of accident	physical	baker, sales (wheelchairs)	2000
Dominik	M	consequence of medical malpractice	blind	coach	2015

Source: Authors

Interviews were one and three hours long. Due to the COVID pandemic, in the second phase some of the interviews were conducted online. The first, unstructured half of the interview concerned the life story of the entrepreneur, the second part contained open-ended questions about freedom, autonomy, and relationship with other entrepreneurs. Interviews were recorded and transcribed word-for-word.

During the data analysis, NVivo software was applied. After a sample coding (all five members of the research team coded the same interview, compared and discussed themes and the process of coding), a double coding protocol was followed. That is, each interview was coded by at least two persons from the research team in order to support the validity of the coding process (Creswell, 2003). In the second phase, emerging sub-themes were identified, contradictions and ambiguities were revealed accompanied by several group discussions. A condensed text (Kvale, 2007) was produced about each intersection with the aim of exploring typical patterns and interconnections. The anonymity of the participants was ensured by using pseudonyms. Informed consent was obtained before the interview as the respondents were informed of the aim of the study and the potential risks of participation (Kvale, 2007).

#### 4. Research questions

Connecting the two theoretical concepts, research questions are the following:

- (1) What are the general and the disability-specific challenging and supporting factors in the different stages of the entrepreneurial lifecycle?
- (2) Which ecosystem domains are key to EWD and which should be developed for better support?
- (3) What are individual solutions in response to missing ecosystem services?

In the Results section, we present the main *ecosystem domains* found in the different *lifecycle stages*. The various quotations highlight the opinion of the entrepreneurs themselves.

#### 5. Results

In the **courtship stage**, before the actual birth of the enterprise, the market is not a relevant factor, but *culture* is decisive in whether people even think about being an entrepreneur as an employment option. Respondents highlighted that the perception of entrepreneurs in Hungary in general is ambivalent. This may be due to the high number of need-driven entrepreneurs: *“In Hungary, I don’t think that even ‘healthy people’ have a good understanding of entrepreneurship, so a very high percentage of entrepreneurs in Hungary are probably forced entrepreneurs. So, they are entrepreneurs because they had no better option.”* (Bence).

The general preconceptions and prejudices about disability further complicate the perception of EWD as disability seems to exclude the possibility of a competitive labour market position or the production of a marketable product. *“What I see in Hungary is that most people have a prejudice (not a prejudice, but I don’t know a better word) against those who look physically different. A kind of you’re not capable of doing it anyway.”* (Rebeka)

To break down these barriers, paradoxically, it would be necessary to have more successful EWD who can serve as good examples, but there are hardly any entrepreneurial role models, successful individuals, “heroes” who can legitimately represent the issue and demonstrate the possible results and business success. It would be important to make it part of the culture that a person with a disability is of equal value to everyone else. *“Well, it’s us, our confidence and our abilities that need to be enhanced, that we are helped in this, to know early enough or in time what we are capable of and not what we are not.”* (Emma) *“And when a disabled person says to his/her disabled peers, that listen, I’m going to do business, and as I calculate, it is*

worth starting it, it sounds different than from the mouth of an average person who is healthy.” (Lilla)

In terms of **policy**, respondents were critical and mostly reported shortcomings in the area of financial and non-financial support and assistance. In fact, they wonder why they do not receive any support in becoming self-employed or an employer themselves who creates jobs for others. This shortcoming is particularly important in terms of entrepreneurial motivation, since disability-related state benefits do not even come close to ensuring the cost of living, they are “pocket money” (Gréta); “you cannot make a living” (Vendel); “I would starve to death with it” (Adél). The job opportunities available are not always adequate, and the information necessary to become self-employed or an entrepreneur is missing: “I said I don’t understand how they imagine this, to, give me the help (I need). Somebody ought to sit down with me and then we can do the business plan, because I don’t see how it could happen otherwise.” (Adél)

Within **supports**, partly linked to policy and partly linked to **infrastructure**, the lack of accessibility and difficulties in accessing appropriate rehabilitation is an issue that affects all stages of life. These are difficulties linked to everyday life and, although not directly, they also indirectly determine entrepreneurship. “If we look at transport, because in my case one of the issues is transport when I have to go to someone’s house [to provide business services], Budapest is very behind in terms of accessibility, it is very behind.” (Milán)

In terms of **finance**, entrepreneurs know that there are general financing opportunities to support starting a business “there are business loans that help the starting phase” (Ottó), but they perceived them as difficult to access due to administrative burdens. “Even for a ‘healthy person’, it is a huge challenge.” (Adél)

In the field of **human capital**, on the one hand family, and on the other hand education are crucial before starting a business. As the family of birth is the primary medium for the formation of norms and basic attitudes, several entrepreneurs we interviewed pointed to the positive role played by the family in the development of their own attitudes. The entrepreneurial skills and characteristics were said to be learned in the family, partly from parents who were entrepreneurs themselves: willingness to learn, ability to work under pressure, customer focus, persistence, courage, adaptability, consistency, autonomy, flexibility. In relation to education, teacher role models were highlighted. “Now, the fact that Peter [head teacher] said something like that to me, and only to me alone, was a sign to me that he saw a lot in me.” (Lilla). To some, participating in integrated education was crucial, even if this meant that they had to face challenges. “Being partially blind, not being able to see, that was not part of my life in my youth. I wasn’t living among blind people and I wasn’t learning as a blind person, so for me, I had to develop the necessary methodology myself.” (Bea) At the same time, there were explicit difficulties that limited and hindered the life chances of future entrepreneurs already during their education. “They welcomed me, it was really good, really. But if the teacher puts 652 million things on the board, it is not sure I can make sense of it. It is not sure that the person sitting next to me can whisper it all the way. I always needed someone to whisper (the missing bits), there was always some kind of disadvantage. We always have a handicap. For a long time, I used to say that you can have a great life with these disadvantages. Well, not beyond a point. Or it is very difficult.” (Milán)

In addition to education, in many cases the knowledge and experience that led to entrepreneurship were acquired in their previous jobs as employees. Sometimes it was negative experiences that paved the way to choosing entrepreneurship. “Until 2016 I worked as an employee in different places, and I couldn’t really fit in because of my hearing loss, and also my stuttering, which sometimes surfaced when I was very, very tired.” (László).

In the **infancy stage**, there are huge administrative burdens, which may be why **policy and finance** related issues were mentioned by several people. “What is negative, for example, is that as a blind entrepreneur, I don’t get any financial support from the state, no tax benefits,

*for employing myself, although it is a very big help to the state that there are people with any kind of disability, and yet they employ themselves. And they don't live off the state, they earn their own living.”* (Antal).

In the domain of **human capital**, the issue of whether the entrepreneur has the necessary entrepreneurial knowledge and skills, as well as the necessary information, comes into focus. Here, formal educational institutions still have room for improvement, the interviewees acquired the knowledge in a rather self-taught way or from different people, mainly entrepreneurs. In this sense they are mostly self-made entrepreneurs. *“I studied IT, not entrepreneurship. And what you pick up here, there and everywhere, you can make use of.”* (Milán), *“I learnt things from my boss, the head of the company”* (Viktor).

In the **go-go stage**, the domain of the **market** reveals itself. On the one hand, positive market feedback is a key motivator, and on the other hand, the revenue from sales is ideally the basis for financing the business's continued operations. Both effects catalyse the further development of the business - which is what this stage is about. *“It was very well received, and we practically had our first customers in about a month.”* (Detre) *“I was surprised, in terms of a positive welcome, when there was a company where a new boss came and... he declared to be very proud to have IT professionally done by a company run by a visually impaired person.”* (Roland).

However, not all market players can let go of their prejudices about disability. This is fundamentally linked to the domain of **culture**, but also has a crucial impact on market opportunities. *“There are huge prejudices. So, I haven't been contacted much through my website since I had posted this.”* (László) *“Disadvantage. What's important to show is that I have professionals on my team, who will do the work that I can't do because of my blindness. Otherwise, I won't be taken seriously... So those who can, prefer to hide their disability for as long as they can. Of course, this doesn't work in all professions, in my profession it's difficult, even if you can send a substitute sometimes, there are levels where you have to participate in person.”* (Viktor) Moreover, in the domain of culture, role models and partners with whom ideas can be realised together are still decisive: *“I learned a lot from him [business partner], so to this day I am very grateful to him for everything that I had learned from the sales side, especially sales, and so on.”* (Detre)

The development of entrepreneurial knowledge is still not linked to formal organisations, but rather to practice and individual learning: *“(It happened) practically on the go, as I learned about drones, I picked up entrepreneurial knowledge in a self-taught way.”* (Levente). This **human capital** problem is related to the **policy** and **supports** (infrastructure) domains through the lack of accessibility. This is a challenge at every stage of the business lifecycle, yet it is important to highlight that in the go-go stage, the lack of a solution is preventing the exploitation of opportunities: *“So let's say the chamber of commerce keeps sending out invitations to training courses that you can go to, but they are always organised in a place that is not accessible. And then although I would like to learn, I'll have to let it go.”* (Gréta)

With **adolescence**, there is a growing sense of confidence. This is reflected, for example, in the domain of **finance**, entrepreneurs are increasingly able to take advantage of opportunities. *“Regarding tax, small taxpayers have a lot of room for manoeuvre. So, I think it's not big problem.”* (Gréta).

Within **culture**, the role of prejudice is diminishing, as entrepreneurs have something to prove to themselves. *“Then I experienced it as, well, that I'm included in this community, in the team, that well, I'm an entrepreneur too... So, now it sounds so stupid, that they 'raised me to themselves' No, they are not 'higher', but because I am a disabled person, I often feel that my position is 'lower' for some reason. I don't know, so you often experience this and if you have such a (positive) gesture, then 'Wow!'”* (Emma) At the same time there are new challenges in terms of **human capital**, of staff, who have to be employed because of the natural growth of the



firm and also because of the disability: *“I am an independently-working lawyer, so I am basically alone. Well, of course, I need visual assistance because of the infrastructure, so let’s just say that the electronic process and so on is not at all accessible at the moment. So, a blind person alone can’t do it... We definitely need help.”* (Detre). As another challenge, regarding the attitude and reliability of employees, as well as of contractors in general, many negative comments were made by respondents *“We hired someone, who lasted a week, and he said he couldn’t stand the work schedule, the flexibility, not working from eight to four, so it was a bit of a mess. So not everyone is suited for this kind of work.”* (Roland)

In the **prime** stage, problems with the general entrepreneurial **culture** are becoming more apparent. *“One bad practice example is public procurement tenders, where companies may simply win by entering prices that cannot be met if all the taxes and contributions are actually paid. Some people have a good reputation, others don’t... Anyway, nowadays you can be cheated even with a contract, you have to be careful.”* (Viktor).

However, there is also a strong narrative of differentiation from other PWD. *“They do not seek cooperation with others. How about seeking cooperation, not enmity? I think that in Hungary, in my opinion, the same applies to entrepreneurship as in general: if my cow dies, so should my neighbour’s cow too. [among PWD] I think it is even more so. I see it as even more multiplied. I have as many friends from outside as I have enemies inside.”* (Rebeka). They have problems with disability organizations as well. *“...in many areas, I feel that the disabled are being exploited, brutally.”* (Vince)

In the **human capital** domain, the situation may improve with co-workers whose approach is compatible with small businesses. *“I like employees who have an ownership perspective, because they can contribute to a business, to a project.”* (Rita) Also, the increase in people’s skills, communication skills, confidence and other entrepreneurial competences over the years can cause relationships with customers and the **market** to develop. *“I picked this up from a marketing material... you have to learn to communicate very well, you have to be convinced yourself. And then they will give you the price. And if somebody doesn’t, that’s fine, he’s not a good buyer. You must target the buyers who are happy to buy from you.”* (Emma)

In the **stable** stage of an enterprise, an increasingly secure market links with growing self-confidence. *“Basically, I’m proud of the fact that even with all my handicaps, starting from minus one, I’m already well in the plus by now.”* (Antal) Responsibility for changing the **culture** is also revealed: *“I think that the best way to do awareness-raising work is... to show that we can provide this level of service. So that speaks for itself. In this situation, we shouldn’t talk about how equal or not equal we are or what we are or are not capable of, because the guest will come and see.”* (Rita) *“In addition to its entrepreneurial activities, the company is also working on a number of social projects, including a number of e-books for visually impaired people situated on its website.”* (Roland) At the same time, the criticisms against disability and business organisations are even stronger - as time goes on, the entrepreneur becomes more and more aware of the help he needs, which he has not received from either public or non-public organisations. *“There are business associations, or I don’t know, chamber of commerce, but I haven’t seen anything from them that makes sense. We pay them some kind of tax-like money ... you can apply for this and that, but it’s not really of any help. So, it’s more of an expense, but I’ve never actually seen anything from them.”* (Dominik)

## 6. Discussion

Findings have made clear how the crucial domains change with lifecycle stage changes, and how strong the interdependencies between the different domains are, even in an ecosystem that has been expanded with new actors due to disability. The main findings are summarized in Table 2.

First, we found that it is precisely because of disability that some ecosystem actors play a crucial role in the early stages of PWD, long before the birth of the enterprise. These actors do not affect EWD in an entrepreneurial or economic sense, but in terms of determining their basic life chances. They should therefore be treated separately from those manifestations that are specifically linked to economic activity and entrepreneurship. More generally, childhood experiences, education and family patterns and norms acquired or at least established in the early stages of life have an impact on everyone's later career. However, starting from a disadvantaged position, because of prejudices and lack of accessibility, means specific challenges for EWD, as they hinder the of personal qualities and business knowledge required (Bagheri & Abbariki, 2017).

Second, prejudices and lack of accessibility in Hungary affect all ecosystem domains (mainly policy, infrastructure, but first of all culture) and fundamentally determine the situation of EWD, from childhood, education, financing and access to markets. According to the interviewees, accessibility should be primarily the responsibility of the government, on the one hand by providing resources, and on the other hand with regulations. The state should support disability-awareness and a disability-friendly culture, but primarily as an actor that determines the scope and possibilities of the whole ecosystem. In education, whether in special or mainstream schools, it is important to ensure quality training, and in higher education and adult education programmes to provide basic entrepreneurial skills alongside vocational skills. An important aspect is the need to define entrepreneurship as a relevant employment option, also by providing the necessary training opportunities for PWD in organisations dealing with entrepreneurship development. The role of support organisations, rehabilitation and disability institutions should also be reconsidered in the light of changing economic and market conditions. These findings are largely in line with the international literature (Adams et al., 2019; Dhar & Farzana, 2017b; Kitching, 2014; Parker Harris, Renko, et al., 2014).

Third, we found that in responding to the problems of the culture domain (prejudices and unethical entrepreneurial behaviour) interviewees use individual solutions. They felt a responsibility to reduce disability prejudice through their activities and businesses and aimed to inspire others to follow the law and to provide high quality and fair work and services.

In this context, it is important to note that disability can be a positive factor for the enterprise at many points, helping it to develop. On the one hand, the entrepreneurs we interviewed have particularly high-quality expectations of themselves and their employees, which may be because, as PWD, they have experienced that they have to perform better for similar results or recognition. On the other hand, for those who sell products specifically to PWD, credibility is given by the fact that they themselves are genuinely familiar with the consumer problems to be solved. At the same time, we also saw examples of customers positively evaluating their own 'openness' to working with an EWD. Thirdly, knowing they are performing special in a certain sense is also an important factor in defining their own identity and positive self-image.

Table 2: Connection of lifecycle stages and ecosystem domains in the case of EWD

Stages of lifecycle Domains of ecosystem	Courtship	Infancy	Go-go	Adolescence	Prime	Stable
Policy	lack of allowances for early-EWD, and accessibility					
Finance	low level of disability allowances	lack of special financing	lack of state applications	usage of general financing opportunities		
Culture	prejudices against entrepreneurs and PWD – need to prove the ability to perform the job					
Human capital	family patterns, positive and negative education experiences	lack of entrepreneurship education	lack of entrepreneurial knowledge and education lack of role models	employment of personal assistants, high quality standards	employees and business partners with a proven track record who are good to work with + confidence	shaping of culture, personal responsibility
Markets	possible niche because of economic situation	possible market of fellow PWD	positive market, consumer feedback	trust, credibility	established, increasingly secure market relationships	self-confidence because of value-creation
Supports	lack of accessibility					
				lack of accessibility + no real support from disability organisations		
				trusted relationships with other entrepreneurs, supporting professionals		

Source: Authors

## 7. Conclusion

Looking at the ecosystem domains and actors that determine each stage of life, we can see that next to the difficulties (e.g., administrative burdens, motivating and retaining employees) and supporting factors (e.g., financing opportunities, market linkages, family and teacher patterns, role models) experienced by entrepreneurs in general, EWD face additional difficulties. Much of these can be linked to the policy and culture domains of the ecosystem.

The impact of some ecosystem actors (e.g., parents, teachers, trainers) may have already been made on EWD in early life stages before they even decide to pursue a career in business, by determining basic life opportunities and providing or depriving them of the necessary entrepreneurial mindset, as well as competences and skills. Starting from a disadvantaged situation inhibits precisely the basic qualities, skills, and attitudes that, according to the literature and practice, are part of entrepreneurial aptitude. The most important ecosystem dimension at all stages is culture, and within this, preconceptions and prejudices related to disability.

These findings suggest challenges and problems to solve for all ecosystem actors in practice. Policymakers and financial institutions need to deal with accessibility in physical and financial terms as well to provide equal treatment for PWD and EWD. The actors of support domain also need to substitute their tools and issues with disability-related services. Education and social awareness-raising have to diminish existing prejudices and barriers and avoid creating new ones. Market and social players have to revise and consciously change their attitudes towards PWD and EWD. These responsibilities are extremely high in early stages of enterprises' lives, while at later stages EWD themselves can also work for the changes. In the earlier stages of life mainly the disadvantages and missing opportunities are emphasized, in later stages personal roles and responsibilities for developing the ecosystem as well as contentment with one's situation become more and more important.

## 8. Contribution, limitations, further research directions

The paper linked two well-known theoretical models: the entrepreneurial ecosystem and the lifecycle models. In the literature, life stages relate to different forms of financing, but other ecosystem domains have not been linked to them, instead of the work of Mack and Mayer (2016), but with the usage of the model of Adizes, we identified six stages until the stable stage while they defined just two stages for reaching it. Our study contributes to the general entrepreneurial literature, and especially to the EWD literature and point some new theoretical opportunities. As a further research direction, the concept could be elaborated upon by making longitudinal research with EWD to more precisely outline the exact stages of the lifecycle. Besides Adizes' model, it may be worth looking at other models as well, such as Greiner's model based on crisis resolution. The connections of lifecycle stages and ecosystem domains can be investigated in the case of other minority enterprise groups and generally as well.

## REFERENCES

Adams, L., Cartmell, B., Foster, R., Foxwell, M., Holker, L., Pearson, A., & Kitching, J. (2019). *Understanding self-employment for people with disabilities and health conditions*. Government Social Research (Gov.UK). <https://www.gov.uk/government/publications/self-employment-for-people-with-disabilities-and-health-conditions/summary-understanding-self-employment-for-people-with-disabilities-and-health-conditions>

- Adizes, I. (1979). *Organizationak Passages—Diagnosing and Treating Lifecycle Problems of Organizations*. *Organizational Dynamics*, Summer.
- Ashley, D., & Graf, N. M. (2018). *The Process and Experiences of Self-Employment Among People With Disabilities: A Qualitative Study*. *Rehabilitation Counseling Bulletin*, 61(2), 90–100. <https://doi.org/10.1177/0034355216687712>
- Atkins, S. (2013). *A Study into the Lived Experiences of Deaf Entrepreneurs: Considerations for the Professional*. *Journal of the American Deafness & Rehabilitation Association (JADARA)*, 47(2), 222–236.
- Atkins Susan. (2013). *A Study into the Lived Experiences of Deaf Entrepreneurs: Considerations for the Professional*. *Journal of the American Deafness & Rehabilitation Association (JADARA)*, Winter 47(2), 222-236.
- Bagheri, A., & Abbariki, M. (2017). *Competencies of disabled entrepreneurs in Iran: Implications for learning and development*. *Disability & Society*, 32(1), 69–92. <https://doi.org/10.1080/09687599.2016.1268524>
- Bagheri, A., Azizi, M., & Fard, F. M. (2015). *Managerial Skills Required by Entrepreneurs with Physical and Mobility Disabilities*. *International Journal of Management Sciences*, 5(8), 571–581.
- Bennett, R. J. (2014). *Entrepreneurship, Small Business and Public Policy: Evolution and revolution (1 edition)*. Routledge.
- Cooney, T. (2008). *Entrepreneurs with Disabilities: Profile of a Forgotten Minority*. *Irish Business Journal*, 4(1), 119–129.
- Cooney, T. M., & Licciardi, M. (2019). *The same but different: Understanding entrepreneurial behaviour in disadvantaged communities*. In M. McAdam & J. Cunningham (Eds.), *Entrepreneurial Behaviour* (pp. 317–345). Palgrave Macmillan.
- Creswell, J. W. (2003). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*.
- Csákné Filep, J., & Radácsi, L. (2019). *Magyar start-up közösség iránytű*. In *Kőszegi, Irén Rita (szerk.) III. Gazdálkodás és Menedzsment Tudományos Konferencia: Versenyképesség és innováció* (pp. 945–950). Neumann János Egyetem.
- Csillag, S., Győri, Z., & Svastics, C. (2019). *Long and winding road? Barriers and supporting factors as perceived by entrepreneurs with disabilities*. *Journal of Enterprising Communities: People and Places in the Global Economy*, 13(1–2), 42–63. <https://doi.org/10.1108/jec-11-2018-0097>
- De Clercq, D., & Honig, B. (2011). *Entrepreneurship as an integrating mechanism for disadvantaged persons*. *Entrepreneurship & Regional Development*, 23(5–6), 353–372.
- Dhar, S., & Farzana, T. (2017a). *Entrepreneurs with Disabilities in Bangladesh: An Exploratory Study on Their Entrepreneurial Motivation and Challenges*. *European Journal of Business and Management*, 9(36), 103–114.
- Dhar, S., & Farzana, T. (2017b). *Entrepreneurs with disabilities in Bangladesh: An exploratory study on their entrepreneurial motivation and challenges*. *European Journal of Business and Management*, 9(36), 103–114.
- Greiner, L. (1972). *Evolution and Revolution as Organizations Grow*. *Harvard Business Review*, July-August, 37–46.

- Heath, K. L., & Reed, D. L. (2013). *Industry-Driven Support (IDS) model to build social capital and business skills of low-income entrepreneurs with disabilities*. *Journal of Vocational Rehabilitation*, 38(2), 139–148.
- Isenberg, D. (2011). *The Entrepreneurship Ecosystem Strategy as a New Paradigm for Economic Policy: Principles for Cultivating Entrepreneurship*. The Babson Entrepreneurship Ecosystem Project. <http://www.innovationamerica.us/images/stories/2011/The-entrepreneurship-ecosystem-strategy-for-economic-growth-policy-20110620183915.pdf>
- Jammaers, E., Zaroni, P., & Hardonk, S. (2016). *Constructing positive identities in ableist workplaces: Disabled employees' discursive practices engaging with the discourse of lower productivity*. *Human Relations*, 69(6), 1365–1386. <https://doi.org/10.1177/0018726715612901>
- Jammaers, E., Zaroni, P., & Williams, J. (2019). *“Not all fish are equal: A Bourdieuan analysis of ableism in a financial services company”*. *The International Journal of Human Resource Management*, 1–26. <https://doi.org/10.1080/09585192.2019.1588348>
- Kálmán, Zs., & Könczei, G. (2002). *Taigetosztól az esélyegyenlőségig*. Ozirisz.
- Kasperova, E., Kitching, J., & Blackburn, R. (2018). *Identity as a causal power: Contextualizing entrepreneurs' concerns*. *The International Journal of Entrepreneurship and Innovation*, 19(4), 237–249. <https://doi.org/10.1177/1465750318763213>
- Kitching, J. (2014). *Entrepreneurship and self-employment by people with disabilities* (Background Paper for the OECD Project on Inclusive Entrepreneurship, p. 25 p.) [Working Paper]. OECD. <http://www.oecd.org/cfe/leed/background-report-people-disabilities.pdf>
- Kulkarni, M. (2016). *Organizational career development initiatives for employees with a disability*. *The International Journal of Human Resource Management*, 27(4), 1662–1679. <http://dx.doi.org/10.1080/09585192.2015.1137611>
- Kvale, S. (2007). *Doing interviews*. Sage.
- Lippitt, G. L., & Schmidt, W. H. (1967). *Crises in a developing organization*. *Harvard Business Review*, November(45), 102–112.
- Lupu, A. G., & Lupu, F. A. (2009). *Factors for a successful sales force during the corporate life cycle*. *Economia Seria Management*, 12(1), 98–110.
- Lyden, F. J. (1975). *Using Parsons' Functional Analysis in the Study of Public Organizations*. *Administrative Science Quarterly*, 20(1), 59–70.
- Mack, E., & Mayer, H. (2016). *The evolutionary dynamics of entrepreneurial ecosystems*. *Urban Studies Journal*, 53(10), 2118–2133.
- Maroufkhani, P., Wagner, R., & Wan Ismail, W. K. (2018). *Entrepreneurial ecosystems: A systematic review*. *Journal of Enterprising Communities: People and Places in the Global Economy*, 12(4), 545–564. <https://doi.org/10.1108/JEC-03-2017-0025>
- Martin, B. C., & Honig, B. (2019). *Inclusive Management Research: Persons with Disabilities and Self-Employment Activity as an Exemplar*. *Journal of Business Ethics*, 1–23.
- Miller, D., & Le Breton-Miller, I. (2017). *Underdog Entrepreneurs: A Model of Challenge-Based Entrepreneurship*. *Entrepreneurship Theory and Practice*, 41(1), 7–17. <https://doi.org/10.1111/etap.12253>
- Parker Harris, S., Caldwell, K., & Renko, M. (2014). *Entrepreneurship by any other name: Self-sufficiency versus innovation*. *Journal of Social Work in Disability & Rehabilitation*, 13(4), 317–349. <https://doi.org/10.1080/1536710X.2014.961115>

- Parker Harris, S., Renko, M., & Caldwell, K. (2013). *Accessing social entrepreneurship: Perspectives of people with disabilities and key stakeholders*. *Journal of Vocational Rehabilitation*, 38(1), 35–48. <https://doi.org/10.3233/JVR-120619>
- Parker Harris, S., Renko, M., & Caldwell, K. (2014). *Social entrepreneurship as an employment pathway for people with disabilities: Exploring political–economic and socio-cultural factors*. *Disability & Society*, 29(8), 1275–1290. <https://doi.org/10.1080/09687599.2014.924904>
- Quinn, R. E., & Cameron, K. (1983). *Organizational Life Cycles and Shifting Criteria of Effectiveness: Some Preliminary Evidence*. *Management Science*, 29(1), 33–51.
- Renko, M., Harris, S. P., & Caldwell, K. (2015). *Entrepreneurial entry by people with disabilities*. *International Small Business Journal*, 1–24. <https://doi.org/10.1177/0266242615579112>
- Rizzo, D. C. (2002). *With a little help from my friends: Supported self-employment for people with severe disabilities*. *Journal of Vocational Rehabilitation*, 17, 97–105.
- Sági, J. (2007). *Banktan*. Saldo Pénzügyi Tanácsadó és Informatikai Rt.
- Saxena, S. S., & Pandya, R. S. K. (2018). *Gauging underdog entrepreneurship for disabled entrepreneurs*. *Journal of Enterprising Communities: People and Places in the Global Economy*, 12(1), 3–18. <https://doi.org/10.1108/JEC-06-2017-0033>
- Scharle, Á. (2011). *Foglalkoztatási rehabilitációs jó gyakorlatok Magyarországon. Kutatási jelentés*. Budapest Szakpolitikai Elemző Intézet.
- Silverman, D. (2008). *Doing Qualitative Research: A Practical Handbook*. SAGE.
- Walls, R. T., Dowler, D. L., Cordingly, K., Orslene, L., & Gleer, J. D. (2002). *Microenterprising and People with Disabilities: Strategies for Success and Failure*. *Journal of Rehabilitation*, 6(2), 29–35.
- Williams, J., & Patterson, N. (2019). *New directions for entrepreneurship through a gender and disability lens*. *International Journal of Entrepreneurial Behavior & Research*, 25(8), 1706–1726. <https://doi.org/10.1108/IJEER-12-2017-0499>
- World Health Organization. (2017). *World Health Statistics 2017*.
- Yamamoto, S., Unruh, D., & Bullis, M. (2012). *The viability of self-employment for individuals with disabilities in the United States: A synthesis of the empirical-research literature*. *Journal of Vocational Rehabilitation*, 35(2), 117–127. <https://doi.org/10.3233/JVR-2011-0559>

*A scientific paper*

**Kristina Hodak, M. A.**

University of Josip Juraj Strossmayer in Osijek, Faculty of Economics in Osijek

E-mail address: kristina.hodak@efos.hr

**Adela Has, Ph. D.**

University of Josip Juraj Strossmayer in Osijek, Faculty of Economics in Osijek

E-mail address: adela.has@efos.hr

**Marinela Mokriš, M. S.**

University of Josip Juraj Strossmayer in Osijek, Faculty of Economics in Osijek

University of Zagreb, Faculty of Organization and Informatics

E-mail address: marinela.mokris@efos.hr

## **CLUSTER ANALYSIS FOR PROFILING PUBLIC SECTOR BUILDINGS OF CONTINENTAL CROATIA AS A SUPPORT FOR REGIONAL DEVELOPMENT**

### ***ABSTRACT***

*Public sector buildings are significant energy consumer and therefore the subject of numerous national energy strategies and programs. In order to achieve the set goals of energy saving and rational energy consumption, institutions responsible for energy management have been established. Thus, an information system for energy management was introduced, which contains construction, energy, geospatial and other data on public buildings in Croatia. These data can be a valuable resource in the decision-making process and in creating public policies to increase energy efficiency. Therefore, the aim of this paper is to obtain profiles of public buildings of continental Croatia using the clustering method in order to provide an information base for the implementation of the necessary measures. Clustering of buildings according to the similarities of their characteristics will be used in future research, where models for predicting energy costs based on the above characteristics will be developed separately for each group of buildings. It is assumed that the models would be more accurate if they were built separately for each cluster. Building profiles based on real data could be a valuable tool for the government in making energy retrofit decisions for public sector buildings. Moreover, it could promote entrepreneurial behaviour in the public sector and regional development of continental Croatia.*

**Key words:** *public sector buildings, cluster analysis, energy retrofit, entrepreneurial behaviour, regional development.*

### **1. Introduction**

Energy security and efficient management of end-use energy consumption are an important part of many countries' national strategies. Buildings are recognized as one of the largest energy consumers in the EU, accounting for nearly 43% of total final energy consumption (Rousselot and Pinto Da Rocha, 2021). Non-residential buildings are on average 60% more energy



intensive than residential buildings (Rousselot and Pinto Da Rocha, 2021). Heterogeneity is the term that best describes the non-residential building stock. The non-residential building stock consists of different building types with different purposes, sizes, and energy characteristics (D'Agostino et al., 2017). Non-residential building consumption is considered under tertiary sector consumption, which according to the *Statistical Classification of Economic Activities in the European Community - NACE* - includes hotels and restaurants, financial and insurance activities, health and education, public administration, other business activities, arts, entertainment and recreation, real estate and other service activities. For non-residential buildings, energy use is observed for heating, cooling, water heating, appliances, ventilation, and lighting of the building. In both non-residential and residential buildings, the majority of energy is used for space heating. The energy used for space heating accounts for 61% of the total consumption at the EU level and, together with the energy needed for water heating, covers 75% of the final energy demand in the tertiary heating sector (European Commission, Directorate General for Energy, 2016). In the Republic of Croatia, thermal energy takes the largest share in final energy consumption. In continental Croatia, this share is 80% on average, while in coastal Croatia it is 51% on average. In educational institutions, the share of thermal energy in final energy consumption is 85% on average, and in hospitals it is 78% on average (Government of the Republic of Croatia, 2017). This research focuses on public sector buildings in continental Croatia, as buildings in this part of Croatia consume more energy and have great potential for energy savings.

At the EU level, the potential of public buildings to increase energy efficiency has been recognized. According to the Energy Efficiency Directive 2012/27/EU, all Member States must "*renovate 3% of the total area of heated and/or cooled buildings owned and occupied by the central government*" (Government of the Republic of Croatia, 2017). In addition, the directive states that public sector buildings must be leader in the implementation of energy efficiency and energy renovation programs. To take a leadership role in promoting energy efficiency, the public sector must change existing patterns of employee and management behavior and establish an effective system to monitor and manage energy consumption. For many public sector buildings in Croatia, energy performance and energy efficiency are unknown. Building profiling is important to identify commonalities and differences in the public sector building stock. These data can be a valuable resource in the decision-making process and in the formulation of public policies to increase energy efficiency. In addition, they can be used to improve existing models for predicting energy use.

The aim of this paper is to obtain profiles of public sector buildings of continental Croatia in order to provide an information base for the implementation of the necessary measures. For that purpose, in this research clustering was conducted. Clustering of data is of great importance in many business processes and it is widely used. It refers to the division of data observations (in this case – public sector buildings) into two or more mutually disjoint groups (clusters) that are non-empty sets and whose union includes all observations (Scitovski et al., 2020). The goal is that the elements in the same cluster are as "similar" to each other and at the same time as "different" from the elements from other clusters as possible. Some examples of the application of clustering in business processes include segmenting customers by common characteristics (e.g., by the type of items purchased, loyalty, purchase frequency and other characteristics), recognising shapes in medical images, determining the most acceptable number of constituencies, their composition, allocation and others (Scitovski et al., 2016).

The following sections provide an overview of existing research in this area and describe the data that has been used to profile public sector buildings using clustering methods. Then, the

results are presented and analysed. In the last part, a synthesis is made and conclusions are drawn.

## 2. Previous research

In the midst of growing advocacy for energy conservation and increasing the share of renewable energy sources, energy efficiency has become a topic of great interest among researchers and practitioners. According to Singh (2018), the public sector as a whole can lead by example in several areas: Improving efficiency in other sectors, stimulating energy efficiency markets, lowering costs for other energy consumers, reducing emissions, and freeing up funds for investment in other development priorities. However, implementing an energy efficiency project in the public sector is challenging with a number of barriers. Barriers to increasing energy efficiency in the public sector can be divided into universal barriers and barriers specific to the public sector (Gynther, 2016). According to Gynther (2016), the universal problem of energy efficiency is the marginalization of the importance of energy projects and increasing energy efficiency, the lack of professional staff for energy management and a very high perceived risk of new efficient technologies, mistrust in energy audits and measures based on them. Specific to the public sector are decisions that are often politically motivated and short-term, public sector priorities in financing, and complicated public procurement (Gynther, 2016). Cibinskiene et al. (2020) emphasise one of the barriers to energy conservation in the workplace, which is the lack of financial benefit of energy conservation - the bill for energy cost are paid by the employer, not the employee.

The Croatian public sector is no exception and also faces a number of barriers to increasing energy efficiency such as legislative and legal, technical and organizational, financial, and other social barriers (Government of the Republic of Croatia, 2017). Users and owners of public sector buildings cannot directly influence on the legislative, legal and financial barriers. However, they can very well influence on organizational and technical barriers. Organizational and technical barriers, as defined in the document titled *Decision of the Public Sector Energy Efficiency Program*, include: insufficient documentation of public sector buildings, lack of a schedule for program implementation, establishment of rules for verification of savings, unused opportunities for "soft" measures, undefined obligations under public sector procedures, and insufficient education of users about public sector procurement procedures (Government of the Republic of Croatia, 2017). The role and potential of "soft" measures are often marginalized. Soft measures are those that cannot be directly (mathematically) linked to the energy retrofit of a building, but that have an impact on more rational energy management or behaviour of building users (Government of the Republic of Croatia, 2017).

The literature reveals different approaches to address the energy efficiency of public sector buildings and find ways to reduce energy consumption in the future. Ma & Reynders (2019) analysed public sector buildings in the Flanders region of Belgium. The public sector building database contained more than 9000 buildings with specific building energy performance data, including year of construction, building type, geometric characteristics, measured final energy consumption, geospatial information, etc. A cluster analysis was performed to identify typologies of non-residential buildings. The relative energy savings potential was then quantified and it was determined that some regions have a relative energy savings potential of up to 66.5% and should be prioritised in the retrofit plan. Herrando et al. (2022) presented a strategy to help local authorities create an action plan for the retrofit of public sector buildings in the province of Teruel in Spain. The energy action plan includes 96 measures whose implementation would save 1.3 MWh/year and 245 tonnes of CO<sub>2e</sub>/year to reduce CO<sub>2</sub>

emissions, including an investment of 1.2 million euros. Marrone et al. (2018) focused on the Italian school building stock and classified it using cluster analysis. The cluster analysis of retrofitted buildings resulted in two clusters, from which two representative buildings were identified. Representative buildings can serve as models of good practice and help in the selection of a building stock to be retrofitted from a cost-effectiveness point of view. Lara et al. (2015) also applied cluster analysis to a sample of about 60 schools in northern Italy and identified reference buildings within the cluster, reducing the number of buildings to be analysed in order to optimise energy retrofit measures. Scitovski et al. (2018) used a real dataset of 3766 public sector buildings in Croatia. The buildings from the dataset serve different purposes: education, healthcare, administration, sports, and other public services, containing construction and energy-related characteristics of the buildings. The cluster analysis resulted in three clear clusters whose centroids were used to identify and describe the profiles of the buildings and to serve future modeling procedures.

In addition to retrofitting, some authors emphasized the importance of occupancy and usage data (Mangold et al., 2015; Wang & Ding, 2015). Related to this, García et al. (2017) have shown that public sector building occupants can adopt and maintain good energy habits and reduce energy consumption. Moreover, Cibinskiene et al. (2020) surveyed employees of three public sector buildings in Greece and found that employees believe that energy conservation is important in the workplace. Ultimately, regression analysis showed that willingness to save energy at work to a significant extent is higher when employees have higher personal norms, i.e., feel morally obligated to care about the environment and their daily behaviour. According to Van Dronkelaar et al. (2016), users have a significant impact on a building's energy consumption in terms of lighting management, windows, office equipment, and even their presence. They point out the problem of energy consumption at night because equipment is left on and assumptions about working hours and extended working hours were not considered in the modeling. Shi et al. (2019) note that user movement and fluctuation has a significant impact on energy consumption. Based on building types and space functions, energy models assume a certain number of users and work hours. However, these assumptions can be completely different when the building is actually in use. Morton et al. (2020) presented the results of a project aimed at empowering building end-users to reduce their energy consumption. The study involved twelve case study buildings in three EU countries, most of which were public. Lighting, inefficient HVAC (Heating, Ventilation, and Air Conditioning) controls, and wasteful use of equipment were found to be commonalities. All building types also had in common the user's need for energy-saving advice.

A brief review of the literature shows the potential for increasing the energy efficiency of public sector buildings in European countries characterized by an older building stock (Singh, 2013; Herrando et al., 2022). The majority of the papers above demonstrates various purposes of cluster analysis to address the energy efficiency of public sector buildings. Following previous research, we hereby provide clusters that are used to determine the profiles of public sector buildings in the continental Croatia. The profiles of public sector buildings could help to direct public policies towards the development of this Croatian region.

### **3. Methodology**

In this research, secondary data on the characteristics of public sector buildings in continental Croatia were used. Firstly, in order to understand the data, a descriptive statistical analysis was performed. Then, in order to identify the characteristic groups, i.e. profiles, of buildings in

continental Croatia, clustering was performed. The following subsections describe the data and the methodology used for clustering.

### 3.1. Data

The real dataset containing the characteristics of 1441 public sector buildings of the continental Croatia was used. The dataset was obtained from the Energy Management Information System (EMIS) and managed by the Agency for Legal Trade and Real Estate Agency (APN) in Croatia. The following eight variables (characteristics) were selected based on previous research and used in clustering to identify the profiles of public sector buildings of the continental Croatia:

- factor of shape (ratio between external surface area and heated volume)
- number of employees
- number of users
- number of working hours per year
- heated volume area
- useful area surface
- purpose
- year of completion of construction.

Descriptive statistics of variables are shown in Table 1.

**Table 1:** Descriptive statistics of variables

Numerical variables					
Variable name	Minimum	Mean	Median	Maximum	Standard deviation
Factor of shape [m <sup>-1</sup> ]	0.072	0.735	0.726	1.837	0.309
Number of employees	1	58.2	30	1996	108.1
Number of users	1	1027	175	840576	22157.6
Number of working hours per year	2080	2696	2496	8736	1328.7
Heated volume area [m <sup>3</sup> ]	116.0	6322.5	2976.0	89062.9	8480.1
Useful area surface [m <sup>2</sup> ]	50.4	1569.1	887.2	28500.1	2062.2
Categorical variables					
Variable name	Categories and their proportions				
Purpose	1 (administrative): 25 %, 2 (cultural): 2.2 %, 3 (educational): 67.9 %, 4 (general): 1.87 %, 5 8 (military): 8.32 %, 6 (social): 3.54 %				
Year of construction	1 (>2000): 15.8 %, 2 (1991-2000): 6.8 %, 3 (1981-1990): 10.4 %, 4 (1971-1980): 14.6 %, 5 (1946-1970): 24.8 %, 6 (1919-1945): 8.5 %, 7 (<1919): 19.0 %.				

Source: Authors

### 3.2. Clustering

Since the database used in this study consists of both numerical and categorical variables, which is quite common nowadays, the *k-prototypes* algorithm is described and used as one of the algorithms for grouping data of mixed type (Huang, 1998, Szepannek, 2018). Clustering buildings with the *k-prototypes* algorithm will result in the division of buildings into groups of similar buildings. Furthermore, a characteristic building, a so-called prototype, can be identified for each group of buildings.

The *k-prototypes* algorithm is based on the paradigm of the *k-means* algorithm, which is one of the most famous clustering algorithm intended for numerical variables. However, the *k-prototypes* algorithm removes the *k-means* restriction to numerical variables while maintains its efficiency (Szepannek, 2018). Namely, it defines a distance function that takes into account both numerical and categorical variables and is obtained by combining a quadratic Euclidean distance measure and a simple matching. Suppose there are two categorical objects  $X$  and  $Y$  consisting of variables  $V_1, \dots, V_m$ , of which the first  $p$  are numerical variables and second  $m-p$  are categorical variables. The measure of the difference between these two objects can be defined as follows:

$$d(X, Y) = \sum_{j=1}^p (x_j - y_j)^2 + \gamma \sum_{j=p+1}^m \delta(x_j, y_j),$$

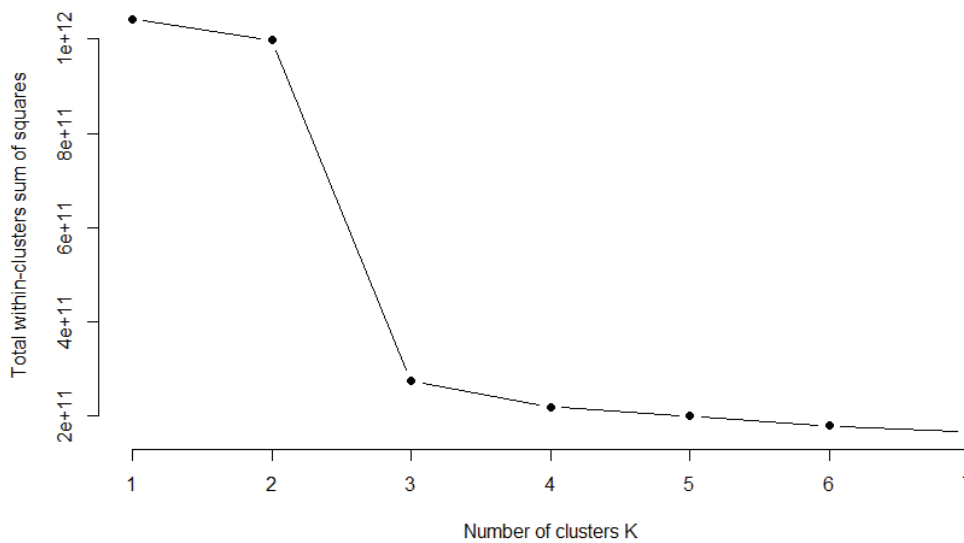
where the first expression is the square of the Euclidean distance measure for numerical variables and the second expression is simply matching for categorical variables (Huang, 1998). After initial random determination of the cluster prototypes using a previous defined measure, an algorithm iteratively calculates cluster prototypes and assigns the observations to the clusters. Furthermore, the number of clusters also needs to be determined in advance.

Clustering was performed with the *k-prototypes* algorithm, for which the R programming language was used with the *clustMixType* package and the *kproto()* function (Szepannek, 2018). The number of clusters was determined by the "elbow" method. Namely, an "elbow" is found on the graph containing the sum of the distances of all observations to the corresponding cluster prototype, for the number of clusters  $k$  ranging from a minimum to a maximum number of clusters given by the user (Huang, 1998, Szepannek, 2018). Obtained results are given in the following section.

### 4. Results

The maximum number of clusters was set to 7. According to the graph that shows the sum of the distances of all observations to the corresponding cluster prototype, the elbow was determined at  $k = 3$  and thus the number 3 is taken as the number of clusters.

**Figure 1:** Graph that shows the sum of the distances of all observations to the corresponding cluster prototype



Source: Authors

The buildings were then clustered into these three clusters. Table 2. shows how many buildings belonged to each cluster.

**Table 2:** Number of buildings in each cluster

	Cluster 1	Cluster 2	Cluster 3
Number of buildings	918	415	108

Source: Authors

The following table shows the cluster prototypes, i.e. profiles of each cluster characteristic buildings.

**Table 3:** Cluster prototypes – values for each variable

Variable name	Cluster 1 prototype	Cluster 2 prototype	Cluster 3 prototype
Factor of shape [m <sup>-1</sup> ]	0.808	0.640	0.473
Number of employees	32.1 ~ 32	72.1 ~ 72	226.7 ~ 227
Number of users	230.8 ~ 231	2603.2 ~ 2603	1738.5 ~ 1739
Number of working hours per year	2619.3	2737.6	3189.3
Heated volume area [m <sup>3</sup> ]	2798.9	8268.7	28794.6
Useful area surface [m <sup>2</sup> ]	767.3	2051.8	6528.6
Purpose	3 (educational)	3 (educational)	3 (educational)
Year of construction	5 (1946-1970)	4 (1971-1980)	5 (1946-1970)




Source: Authors

## 5. Discussion and conclusion

Rising energy prices and irrational management of energy consumption are a challenge for owners and users of public sector buildings. Many users and owners of public sector buildings face high energy costs and the inability to pay for them. Investing in increasing the energy efficiency is a time-consuming and costly process. However, many authors have recognized the role of occupants in energy consumption, and a small change in occupant behavior can result in significant savings. Soft measures such as user education, awareness of energy use, and the potential personal benefits of becoming more energy efficient are an excellent first step to increasing energy efficiency in public sector buildings. Energy efficiency is not only saving in energy consumption there are multiple benefits of energy efficiency on different areas such as: macroeconomic development, public budgets, health and well-being, industrial productivity, and energy delivery (International Energy Agency – IEA, 2014).

The lack of information on the energy performance of many buildings in continental Croatia was the motive for profiling public sector buildings in order to get an overview of the public sector building stock and base for further analysis and predictive analytics modeling. The collected sample is dominated by buildings for education, followed by administrative buildings. Profiling of public buildings was conducted using the clustering method. This paper describes the *k*-prototypes algorithm as an approach for clustering mixed-type data, i.e., data consisting of numerical and categorical variables. Moreover, the described algorithm was applied to actual data in order to identify characteristic groups of public buildings in the Republic of Croatia in relation to their construction characteristics, usage characteristics, purpose and others. Three characteristic groups of buildings were identified.

**Figure 2:** Identified buildings profiles (i.e. cluster prototypes)

		
<b>Building profile 1</b>	<b>Building profile 2</b>	<b>Building profile 3</b>
Factor of shape: 0.808	Factor of shape: 0.640	Factor of shape: 0.473
No. of employees: $\approx 32$	No. of employees: $\approx 72$	No. of employees: $\approx 227$
No. of users: $\approx 231$	No. of users: $\approx 2603$	No. of users: $\approx 1739$
Working hours per year: 2619.3	Working hours per year: 2737.6	Working hours per year: 3189.3
Heated volume area: $2798.9 \text{ m}^3$	Heated volume area: $8268.7 \text{ m}^3$	Heated volume area: $28794.6 \text{ m}^3$
Useful area surface: $767.3 \text{ m}^2$	Useful area surface: $2051.8 \text{ m}^2$	Useful area surface: $6528.6 \text{ m}^2$
Purpose: Educational	Purpose: Educational	Purpose: Educational
Year of construction: 1946-1970	Year of construction: 1971-1980	Year of construction: 1946-1970

*Source: Authors*

The first cluster is the largest with 918 elements, i.e. the public sector buildings. This cluster is characterized as follows: factor of shape is 0.808, the number of employees (32) and the use (231 users) is low. This building is in operation 2619.3 working hours per year, heating volumen

area is 2798.9 m<sup>3</sup>, while useful area surface is smaller with 767.3 m<sup>2</sup>, and the building was built in the period between 1946 and 1970. The second cluster consists of 415 elements. For the second cluster is characteristic: *factor of shape is 0.640, the number of employees (72) and the large number of users (2603)*. This building is in operation 2737.6 working hours per year, heating volumen area is 8268.7 m<sup>3</sup>, the usable area is 2015.8 m<sup>2</sup>, and the building was built between 1971 and 1980. The smallest cluster is cluster 3. For cluster 3 is characteristics following: *factor of shape is 0.473, 227 employees and a large number of users (1739)*. This building is in operation 3189.3 working hours per year, heating volumen area is 28794.6 m<sup>3</sup>, useful area is 6528.6 m<sup>2</sup> and the building was built in the period between 1946 and 1970. Larger factor of shape suggest on poorer energy performance. Accordingly, cluster 3 has the best energy performance. In all clusters, period of construction of buildings is all most the same. The buildings are all older than 50 years and this is also an indicator of energy consumption, i.e. older buildings do not meet today's energy standards. The purpose of the buildings is also the same in all three clusters, namely education. The resulting clusters are useful not only for discovering knowledge in the data, but also for predictive modeling where models for predicting energy costs would be created separately for each cluster of buildings based on the mentioned characteristics. It is assumed that the models would be more accurate if created separately for each cluster. These models are extremely important for decision makers to better plan the renovation of public buildings supported by EU directives.

## REFERENCES

- Cibinskiene, A., Dumciuviene, D., Andrijauskiene, M. (2020): *Energy consumption in public buildings: The determinants of occupants' behaviour*, Energies, Vol. 13, No. 14, 3586.
- D'Agostino, D., Cuniberti, B., & Bertoldi, P. (2017). *Energy consumption and efficiency technology measures in European non-residential buildings*, Energy and Buildings, 153, 72-86.
- European Commission, Directorate-General for Energy. (2016). *Mapping and analyses of the current and future (2020 - 2030) heating/cooling fuel deployment (fossil/renewables)*.
- García, Ó., Alonso, R. S., Prieto, J., Corchado, J. M. (2017). *Energy efficiency in public buildings through context-aware social computing*, Sensors, Vol. 17, No. 4, 826.
- Government of the Republic of Croatia. (2017). *Odluka o donošenju programa energetske obnove zgrada javnog sektora za razdoblje 2016. – 2020*. NN 22/2017
- Gynther, L. (2016). *Energy Efficiency and the Public Sector*, Policy brief, Odyssee-Mure
- Herrando, M., Gómez, A., Fueyo, N. (2022). *Supporting Local Authorities to Plan Energy Efficiency in Public Buildings: From Local Needs to Regional Planning*, Energies, Vol. 15, No. 3, 907.
- Huang, Z. (1998). *Extensions to the k-Means Algorithm for Clustering Large Data Sets with Categorical Variables*, Data Mining and Knowledge Discovery, Vol. 2, pp. 283-304.
- International Energy Agency – IEA (2014). *Capturing the Multiple Benefits of Energy Efficiency*, Report. <https://www.iea.org/reports/capturing-the-multiple-benefits-of-energy-efficiency>



- Lara, R. A., Pernigotto, G., Cappelletti, F., Romagnoni, P., Gasparella, A. (2015): *Energy audit of schools by means of cluster analysis*, Energy and Buildings, Vol. 95, Special Issue, pp. 160-171.
- Ma, Y., Reynders, G. (2019): *Data-driven statistical analysis of energy performance and energy saving potential in the Flemish public building sector*, in: Journal of Physics: Conference Series, Proceedings, Ecole Polytechnique Fed Lausanne, Solar Energy & Building Phys Lab, Lausanne, Switzerland, September 4-6, 2019, Vol. 1343, 012051.
- Mangold, M., Österbring, M., Wallbaum, H. (2015): *Handling data uncertainties when using Swedish energy performance certificate data to describe energy usage in the building stock*, Energy and Buildings, Vol. 102, pp. 328-336.
- Marrone, P., Gori, P., Asdrubali, F., Evangelisti, L., Calcagnini, L., Grazieschi, G. (2018): *Energy benchmarking in educational buildings through cluster analysis of energy retrofiting*, Energies, Vol. 11, No. 3, 649.
- Morton, A., Reeves, A., Bull, R., Preston, S. (2020): *Empowering and Engaging European building users for energy efficiency*, Energy Research & Social Science, Vol. 70, 101772.
- Rousselot, M., & Pinto Da Rocha, F. (2021). *Energy efficiency trends in buildings in the EU*, Odyssee - Mure
- Scitovski, R., Briš Alić, M. (2016): *Grupiranje podataka, Sveučilište u Osijeku, Odjel za matematiku*, Osijek
- Scitovski, R., Sabo, K. (2020): *Klaster analiza i prepoznavanje geometrijskih objekata*, Sveučilište u Osijeku, Odjel za matematiku, Osijek
- Scitovski, R., Sušac, M. Z., Has, A. (2018): *Searching for an optimal partition of incomplete data with application in modeling energy efficiency of public buildings*, Croatian Operational Research Review, Vol. 9, No. 2, pp. 255-268.
- Singh, J. (2018). *Energy Efficiency in the Public Sector*, Live Wire;2018/94. World Bank, Washington, DC. © World Bank. <https://openknowledge.worldbank.org/handle/10986/31023>  
License: CC BY 3.0 IGO
- Singh, M. K., Mahapatra, S., Teller, J. (2013): *An analysis on energy efficiency initiatives in the building stock of Liege, Belgium*, Energy policy, Vol. 62, pp. 729-741.
- Szepannek, G., (2018): *clustMixType: User-Friendly Clustering of Mixed-Type Data in R*, The R Journal, Vol. 10, No. 2, pp. 200-208.
- Wang, Z., Ding, Y. (2015): *An occupant-based energy consumption prediction model for office equipment*, Energy and Buildings, Vol. 109, pp. 12-22.

*A scientific paper*

**Larisa Hrustek, M. Econ.**

Faculty of Organization and Informatics, University of Zagreb

E-mail address: lhrustek@foi.unizg.hr

**Ana Kutnjak, M. Econ.**

Faculty of Organization and Informatics, University of Zagreb

E-mail address: akutnjak@foi.unizg.hr

**Lucija Tomašek, M. Econ.**

Ministry of Physical Planning, Construction and State Assets

E-mail address: luctomase@foi.unizg.hr

## **CONTRIBUTION OF DIGITAL MARKETING ACTIVITIES TO THE SUSTAINABILITY OF SMART PRODUCTS AND SERVICES**

### **ABSTRACT**

*The development of digital technologies influences consumer behaviour and causes changes in their preferences. The creation of product and service innovations, new business models and interactive consumer relationships are increasingly emphasized with the presence of digital technologies. Consumers' expectations from products and services, influenced by digital innovations and disruptions, have become more complex and unique. A new paradigm, digital transformation (DT) has enabled the collaboration between ecosystem stakeholders and the interaction between sellers and consumers takes place through several different digital channels. Consumers have thus been given a new role and become co-creators of value in the domain of products and services, creating a competitive advantage for sellers. Smart products and services are a new generation of innovations characterized by servitization and sustainability care. These innovations make it possible to create a digital representation of almost every physical entity and its characteristics in unlimited time and place. The sustainability of smart products and services requires the supporting role of marketing activities due to the constant needs of consumers for new functionalities. The aim of this paper is to identify marketing activities that contribute to the sustainability of smart products and services, but also the technologies used in recognized activities. Secondary data from databases relevant to the research field were used for this research. Qualitative analysis was conducted based on a literature review of selected papers that strongly contribute to the achievement of set research aims. Research results show a set of marketing activities, which in changing market conditions, ensure the sustainability of smart products and services. In addition to marketing activities, the results show technologies that support their implementation. Ultimately, a summary of activities and technologies contributes to the creation of guidelines by authors, focused on the sustainability of smart products and services.*

**Key words:** *smart products, marketing activities, sustainability, digital technologies.*

## 1. Introduction

The digital age and market disruptions are forcing organizations to fully focus on the end consumer and create value for them, in order to survive in the marketplace. Technological development and servitization make a significant contribution in the communication, collection, processing and production of information (Zheng et al., 2019; X. Li et al., 2021; Ng et al., 2021), but also in the development of relationships and cooperation in an increasingly complex and dynamic environment. Interactive stakeholder relationships in the digital ecosystem (for example, between producers and consumers) are the basis for the process of creating value by consumers (C. Z. Li et al., 2021), with the consumer taking on a whole new role in their interaction. Resources in the ecosystem are shared between stakeholders resulting in innovative, smart products and services (Chowdhury et al., 2018) represented in different industrial areas (Liu et al., 2020; T.-L. Chen et al., 2021; Najlae et al., 2021; Wang et al., 2019). The ubiquity of technologies and technological opportunities, as well as resources, enables organizations to develop, but at the same time makes it difficult to retain loyal consumers because many opportunities and alternatives are open to them.

Digital innovations inevitably influence consumer behaviour and the creation of preferences, which can result in rapid saturation of certain products or services by consumers and the creation of their new needs. The issues analysed in this research start from the changing nature of consumer habits in a dynamic environment of diverse technological solutions. With technological trends, it is becoming increasingly difficult for organizations to ensure the sustainability of smart products and services, as well as retain consumers with their constant need for innovative improved solutions (Alam & Porras, 2018). The contribution of this research is focused on observing the efforts and activities that organizations must invest to ensure the sustainability of smart products and services in the marketplace with changing preferences and consumer expectations. Meeting the individual requirements of consumers are becoming more and more emphasized, and with such a personalized approach, organizations provide themselves with a competitive advantage over other market entities. In order for organizations to use their full potential enabled by contemporary technology (Zawadzki & Zywicki, 2016), it is necessary to move away from traditional business models that focus on the product, to models aimed at offering personalized combined smart products and services (Zheng et al., 2019; Chowdhury et al., 2018). Organizations in different industries face the challenge of innovating their own business models (Raff et al., 2020) to achieve business sustainability. By building long-term consumer relationships, organizations ensure the sustainability of smart products and services exposed to constant change and improvement actions.

Sustainability in the context of product development and product life cycle management can be viewed in three aspects, namely environmental sustainability, economic sustainability, and social sustainability (X. Li et al., 2021; Alam & Porras, 2018). Environmental sustainability is defined as product performance related to lower consumption of materials or energy sources, carbon emissions, and pollution. Economic sustainability includes enabling easy component upgrades at a minimal cost. Social sustainability includes shared value for ecosystem stakeholders, consumer loyalty, and improving human well-being. To ensure the sustainability of smart products and services in the market, key processes, such as design, production, logistics, usage, and recycle, should be enriched and expanded with servicing capabilities and technologies that enable the management of transdisciplinary information and knowledge (X. Li et al., 2020). In addition to products and services features, which need to include three key aspects of sustainability, activities and processes should be meaningfully and tactically

planned in the same direction in order for products and services to retain their place in the market competition. In the Sustainable Development Agenda, one of the prominent goals is responsible production and consumption which implies sustainable economic models where products and services are designed in such a way that they can be reused, remanufactured, recycled, or recovered and thus maintained in the economy as long as possible (United Nations Environment Programme, 2021).

Smart products and smart services are an increasingly current research topic in academia and in the wider community, but also their sustainability on the market (X. Li et al., 2021; X. Li et al., 2020). Encouraged by advances in digital technology (Zheng et al., 2018), they disrupt traditional market supply and create significant value for end consumers (Chowdhury et al., 2018; Zheng et al., 2020). Technology solutions such as the Internet of Things (IoT), Cloud Computing, Artificial Intelligence (AI) (Ng et al., 2021), Big Data (Zheng et al., 2018), Blockchain technology (C. Z. Li et al., 2021), enable their multifunctionality and innovation. Thus, digital technologies guarantee the adaptation of smart products and services to individual users (Zheng et al., 2018; Pirola et al., 2020; C. Z. Li et al., 2021), but also provide an opportunity to improve the process of managing smart products and services in a sustainable and appropriate way for the consumers and the organization. The adjustment would not be possible without different marketing activities that affect consumer preferences.

The aim of this paper is twofold. First, the authors seek to identify which are the marketing activities that contribute to the sustainability of smart products and services. Second, the contribution of digital technologies and servitization in achieving the sustainability of smart products and services in a dynamic market with many alternatives for consumers is explored. Accordingly, the following research questions (RQ) have been defined: (RQ1) What marketing activities do organizations in the customer journey phases undertake to contribute to the sustainability of smart products and services? (RQ2) What technologies do the organizations use in undertaking marketing activities focused on smart products and services? (RQ3) How can digital technology-driven marketing activities help create a sustainable business model for smart products and services?

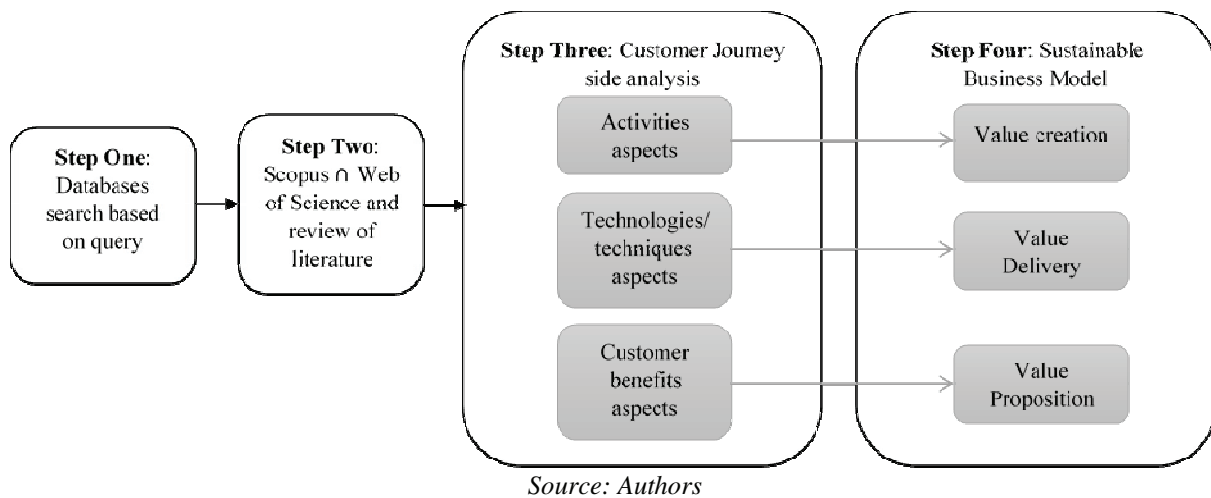
The paper is structured as follows. Following the introduction, the research methodology used to achieve the research objectives is summarized. Distinguishing the terminology of smart products and smart services, considering sustainable business models that support the offer of smart products and services, but also the sustainability of smart products and services is the topic of the next section. Next, research results are presented, as well as research implications. In the end, the authors concluded the research topic and defined future steps in the research.

## **2. Methodology**

Innovative digital trends have changed the customer journey, which can be observed through activities, technologies and ways of working, as well as through the interpretation of value for consumers. The main goal of this paper is to identify activities by which organizations ensure the sustainability of smart products/services in a way that consumers remain loyal. The technologies that contribute the most to the analysis of consumer behavior and the direction of customized actions towards end users with an emphasis on ensuring sustainability for smart products and services have been identified. The research in this paper is divided into four steps shown in Figure 1.

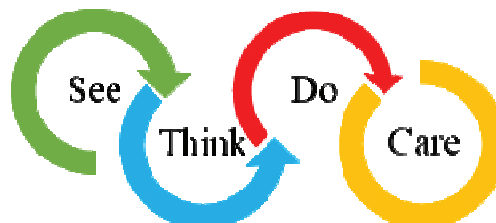
The first step of the research involved searching the databases Scopus and Web of Science. The search was performed according to the following query: "smart product" OR "smart services" AND "marketing activities" OR "marketing" OR "business processes". The analysis included papers published in the last three years, from 2019 to January 2022, considering that in that period the interest in this field increased significantly, which is marked by the rise in the number of published papers. In the second step, based on a cross-section of papers in Scopus and Web of Science, all were included in the further analysis of content to get answers to the research questions. The articles selected in the second step provided input for further analysis. The papers were analyzed by the research team according to defined research questions.

**Figure 1: Methodology approach**



The third step included an analysis of marketing activities according to the See-Think-Do-Care framework, developed in 2015 by Avinash Kaushik (Kvitkova, 2017). This framework encourages sustainable thinking through the model where the first step is the identification of potential problems related to the product or service, the second step is thinking about alternative solutions, the third step includes implementing actions and the last step includes taking care of consumers (Ylitalo, 2021). To ensure the sustainability of smart products and services, organizations need to be active in all these phases and carefully choose the approach and create a business model with activities for consumers on their journey.

**Figure 2: See-Think-Do-Care Framework**



Furthermore, the technologies and techniques used to conduct marketing activities related to smart products and services, as well as the benefits for consumers, were identified. As consumers in the market today become very saturated with a variety of offer options, creating

a business model has become a very difficult venture. Therefore, the fourth step shows how to create a Sustainable Business Model based on customer journey projection. Several authors mention and use the Sustainable Business Model (Bocken, 2021; Bocken et al., 2018) as a guide in creating a model, which includes the elaboration of the values of all stakeholders in the environment, which is actually the goal of product-service systems. The starting point in model development should be a clear classification of the type of business model that the company plans to develop. Potentially, a clearly oriented business model, with a focus on usage and results, has a positive impact on sustainability. The business model goes beyond the offer of products and services and implies a change in the way of doing business, which includes activities, values and processes (Bocken, 2021). In the following, a simplified version will be applied where the business model is observed in blocks and focuses on activities for supply of products and services, value creation and delivery, while the cost structure is omitted from the analysis.

### **3. State of the art**

At the very beginning, it is necessary to precisely define the basic concepts in this research paper, namely those that relate to contemporary knowledge about the research subject. The chapters below explain the concepts of smart products and smart services, with the authors trying to analyze the differences or overlaps between them. Furthermore, the authors consider the requirements for the sustainability of business models in the context of smart products and smart services, but also explain the sustainability of smart products and services.

#### **3.1. Smart products vs smart services**

There are no criteria that would contribute to a uniform demarcation of the notion of the smart product (Raff et al., 2020). It is important to look at them in the context of the connection with smart services (Ferreira Junior et al., 2022) or it is necessary to identify slight differences between the two concepts. Existing definitions agree with the fact that smart products operate consciously and connectedly based on embedded intelligence. Such products are physical elements, characterized by intelligence based on embedded technology (Grandinetti, 2020; Pardo et al., 2020; Najlae et al., 2021), with the technology providing a more convincing offer created for specific consumers (Sivakumar & Mahadevan, 2021; Classen & Friedli, 2021). The addition of technological features enabled their interaction, communication and connection with the environment (Pardo et al., 2020). Smart products use data obtained from interaction with the environment, and based on the data obtained in this way, they take proactive steps addressed to consumers (Grandinetti, 2020). They learn from experiences in the wider ecosystem (Pardo et al., 2020; Nikulin & Bagautdinova, 2019), which further influences adaptations and improvements in end product performance (Zhang et al., 2022). Some authors state that smart products are new types of products with already built-in services (Ferreira Junior et al., 2022).

Smart services most often complement smart products (Raff et al., 2020). If smart products are seen as platforms for providing services, such services are characterized by high adaptability to the user (Grandinetti, 2020). Physical products, equipped with sensors, connectors and software, collect, process and share data (Raff et al., 2020); (Cedeño et al., 2019), and this data is further used to provide personalized services, but also for value creation (Zhang et al., 2022; Sivakumar & Mahadevan, 2021; L. Gao, 2021; T.-L. Chen et al., 2021). The concept of smart services considers data as a raw material for their initial development, therefore smart services are considered data-driven services (Cedeño et al.,

2019). It can be concluded that smart products and related services go beyond traditional value creation, creating indispensable relationships between people and tangible objects in the wider ecosystem (Pardo et al., 2020; Ferreira Junior et al., 2022; Classen & Friedli, 2021).

### **3.2. Sustainable and smart business models**

The offer of smart products and services in B2C (business-to-consumer) and B2B (business-to-business) environments can be observed through the types of business models where is included only smart product, only smart service or digital service and business model as a combination of smart product and service.

The business model of offering a smart product is based on the physical object and the value that usage of that product brings. A smart product should meet all or at least most of the technical features such as unique identity, location, connectivity, sensors, data storage and processing capabilities, and interactive interfaces (Beverungen et al., 2020). These technical features enable the documentation of data obtained from consumers, their analysis in order to improve technical specifications and monitor habits in the application of products and improve the user experience (Beverungen et al., 2020; Kropp & Totzek, 2020). Examples of such products are smartphone, smart TV, smart watch, smart washing machine and more. The primary role of such products is to fulfil their basic purpose. Most of these products perform tasks independently and, based on algorithms, bring partially or completely autonomous decisions. These features individualize product performance and increase utility for each individual user (Kropp & Totzek, 2020). The secondary role of such products is to collect data for the purpose of creating improved and innovative products and services, based on connecting the smart product with the resources of the business entity (Beverungen et al., 2020).

The offer of digital services implies the establishment of a connection with the information system, i.e. database, without the presence of smart products. An example of such a service is ordering a product through an application and package location tracking services where it is possible to first track the order within the company and then, track the package in delivery using the code (Beverungen et al., 2020). Offering a smart service means providing information to consumers that are the result of collected data and their analysis, connection and optimization.

An offer that combines a product and a service implies that the consumer can use a smart product with its physical capabilities and data is collected for further purposeful analysis to increase or supplement product features, such as monitoring and maintenance services (Beverungen et al., 2020). This integrated model is designed to provide consumers with integrated value proposals. Owners of original equipment and devices can use the data collected in the databases as leverage for new reactive and proactive offers and actions (Boldosova, 2020).

### **3.3. Sustainability of smart products and services**

Increasing attention of the academic community, practitioners and policymakers in the field of product design and development is focused on sustainable development (X. Li et al., 2021; X. Li et al., 2020; Forte et al., 2022). Promoting sustainability in this field is based on a circular system with redesign and recycling, thus reducing the consumption of non-renewable resources and mitigating the impact on the environment. By using advanced technologies, it

was expected that the conventional approach to products and services would be transformed into a sustainable approach to smart products and services. Research shows that the conventional perspective is still retained, moreover, under the influence of constant technological changes, consumer demands are increasing, which makes sustainable access to smart products and services on the market more difficult. In order to achieve greater sustainability in product design/development, 4R strategies have been proposed, which include reconfiguration, re-production, reuse and recycling (X. Li et al., 2021; X. Li et al., 2020). For this purpose, an overall sustainable smart product-service system framework with a closed-loop Plan-Do-Check-Adjust approach in their design/development has been developed and proposed (X. Li et al., 2021; X. Li et al., 2020). Since the application of smart products and services largely depends on the individual requirements of consumers and how much it meets and monitors their daily needs, loyalty is increasingly difficult to maintain. Therefore, it is proposed the application of the See-Think-Do-Care framework in all phases of the customer journey in order to ensure the sustainability of smart products and services in the market through timely and appropriate activities.

#### **4. Research results**

A search based on a complex query resulted in a total of 46 papers in Scopus and 24 papers in Web of Science. A cross-section of all papers was made to avoid duplication and the total number of papers for analysis was 59. For further analysis, 43 of them were available. By analyzing these papers, the results are presented, i.e. the marketing activities of smart products and services that are carried out in the phases of the customer journey, and technologies that support these activities were identified.

##### **4.1. Marketing activities aspects**

Marketing activities in the See and Think phases relate to the pre-purchase period and they are shown in Table 1. First of all, these are activities that enable the identification and see of smart products and services on the market. Storytelling activities in sales present a sensemaking instrument that supports individual interpretations of products and communicates socially constructed meanings to others through stories (Boldsova, 2020). Sensemaking is a concept that is defined as an interpretive process of trying to influence the meaning and sense construction of smart products or services by others according to the preferred redefinition of the organization (Boldsova, 2020).



**Table 1:** Marketing activities in See and Think phase

See phase → activities before the purchase process
Storytelling activities in sales (Boldosova, 2020)
Sensemaking activities (Boldosova, 2020)
Activities of deriving business value (Boldosova, 2020)
Implementing omnichannel strategies (T.-L. Chen et al., 2021; Beverungen et al., 2021)
Selling services proactively (Classen & Friedli, 2021; Najlaj et al., 2021; Henkens et al., 2021)
Cooperation with third parties (T.-L. Chen et al., 2021; Henkens et al., 2021; Bădică & Mitucă, 2021)
Social media analytics; sentiment analysis; knowledge based on user reviews (Zhang et al., 2022; Park & Hwang, 2019)
Think phase → activities before the purchase process
Co-creation activities (B. Gao & Huang, 2019; Beverungen et al., 2020; Pardo et al., 2020; Sivakumar & Mahadevan, 2021; Roy et al., 2019; Paluch & Tuzovic, 2019)
Activities of design of product and services based on data (Ferreira Junior et al., 2022)
Value identification activities - Value potential identification, Value research, Value proposition development (Classen & Friedli, 2019)
Presentation of product performance (Michler et al., 2020)
Activities of preference specification (Grandinetti, 2020; Classen & Friedli, 2021)
Operationalize product/service lines (Sivakumar & Mahadevan, 2021)
Price analysis and revenue model (Classen & Friedli, 2019; Ferreira Junior et al., 2022; Classen & Friedli, 2021; Nikulin & Bagautdinova, 2019)
Sharing best practice cases (C.-L. Chen, 2020; T.-L. Chen et al., 2021)
Skimming activities and initiation of novel co-production systems (e.g. touch kiosks, mobile apps, etc.) (Sivakumar & Mahadevan, 2021)
Providing self-service guides (self-promotion in marketing activities) (Zhan & Ning, 2021; T.-L. Chen et al., 2021; Liu et al., 2020; Paluch & Tuzovic, 2019)
Defining the degree of personalization (B. Gao & Huang, 2019; Mani & Chouk, 2019; Bădică & Mitucă, 2021)
Data Triangulation activities (Cedeño et al., 2019)

*Source: Authors*

Marketing and sales business processes include multiple communication channels and performance strategies (Beverungen et al., 2021), as well as include multiple or third parties (T.-L. Chen et al., 2021) that proactively perform all interaction activities (Classen & Friedli, 2021; Najlaj et al., 2021). Various tools for analyzing the behavior of target groups and more efficient methods for collecting and integrating data enable meaningful analysis of process data in order to define tailored activities to potential consumers (Troisi et al., 2019; Zhang et al., 2022). When the consumer recognizes the product or service on the market, the Think phase about buying it begins, and activities are carried out to prove that products or/and services are just right for them. Potential consumers are involved in the co-creation activities of products and services (B. Gao & Huang, 2019; Beverungen et al., 2020; Pardo et al., 2020; Sivakumar & Mahadevan, 2021; Roy et al., 2019) and actively participate in the design (Ferreira Junior et al., 2022), which is made possible through data they provide to organizations. The performance of products and services are actively presented, especially to emphasize their "smart" side (Michler et al., 2020; Grandinetti, 2020; Classen & Friedli, 2021). The organization's efforts are focused on presenting the value of smart products and/or services (Classen & Friedli, 2019) and operationalizing those that the consumer really wants (Sivakumar & Mahadevan, 2021). In this phase, the price model is determined, which is easier to monitor and adjust in the digital age than it was before (Classen & Friedli, 2019; Ferreira Junior et al., 2022; Classen & Friedli, 2021; Nikulin & Bagautdinova, 2019). Pricing models are more flexible and more customized to the consumer. Skimming activities and initiation of novel co-production systems (e.g. touch kiosks, mobile apps, etc.) involves the application of sales channels that generate higher cash flows in the short term. This skips the

meeting between the seller and the buyer, but this role is taken over by co-production systems with a consumer database (Sivakumar & Mahadevan, 2021). By defining the degree of personalization, the service provider determines the appropriate degree of customization (B. Gao & Huang, 2019) and based on data triangulation activities (Cedeño et al., 2019) can develop a broader understanding of consumers.

**Table 2:** Marketing activities in Do phase

Do phase → activities during the purchase process
Virtual shopping assistance, human computer interaction (Tokody et al., 2019; Grandinetti, 2020; J. Li et al., 2020)
Activities of autonomous shopping systems; two-way communication; interactive communication platform (B. Gao & Huang, 2019; Zhan & Ning, 2021; Najlaj et al., 2021; Nikulin & Bagautdinova, 2019; Schweitzer et al., 2019; Henkens et al., 2021; Lucia-Palacios & Pérez-López, 2021a; Lucia-Palacios & Pérez-López, 2021b)
Activities of onboarding and information, smart platform (Michler et al., 2020; Cedeño et al., 2019; Zhan & Ning, 2021; Liu et al., 2020; Henkens et al., 2021; Bădică & Mitucă, 2021)
Intrusiveness activities - the surveillance of the consumer and his/her daily life (Lucia-Palacios & Pérez-López, 2021a; Lucia-Palacios & Pérez-López, 2021b; Bădică & Mitucă, 2021)
Value quantification activities - baseline assessment, performance evaluation (Classen & Friedli, 2019)
Activities of mass customization (Tokody et al., 2019; Nikulin & Bagautdinova, 2019)
Transparency activities for collecting data (Michler et al., 2020; Cedeño et al., 2019; Nikulin & Bagautdinova, 2019; Paluch & Tuzovic, 2019; Bădică & Mitucă, 2021)
Establishment relationship network (defining types of partners, relationship type, sharing and coordination activities) (Ferreira Junior et al., 2022; Nikulin & Bagautdinova, 2019)

Source: Authors

In the Do phase (Table 2), there is a buying of smart products or services. The buying process is often done with the help of a virtual assistant, autonomous shopping systems, or using digital platforms. Virtual shopping assistants offer personalized recommendations for smart products or services based on algorithmic performance (de Bellis & Venkataramani Johar, 2020). Activities of autonomous shopping systems go beyond providing suggestions and recommendations to the consumer by actively taking over shopping processes without the consumer’s intervention (de Bellis & Venkataramani Johar, 2020). Two-way communication is one of the essential characteristics of smart services and there is a need to connect with consumers in real time in order to achieve continuous communication and information sharing (B. Gao & Huang, 2019). The marketing process includes activities of managing consumer needs and mass adaptation to consumers with the help of intelligent interfaces (products, robots, software) capable to interact (Tokody et al., 2019). Very significant activities in this phase are onboarding and information for building understanding, knowledge transfer, and introduction to the use of the products (Michler et al., 2020). Accordingly, transparent data collection activities are carried out when selling smart products and services. A transparent approach requires informing consumers about what data is being collected, what is the source of the collection and for what purpose it will be used (Michler et al., 2020).

**Table 3:** Marketing activities in Care phase

Care phase → activities after the purchase process
Value Communication - selecting sales force, consumer-facing interaction, value communication, value verification (Classen & Friedli, 2019)
Activities of value creation through cross-disciplinary collaboration (C.-L. Chen, 2020; Liu et al., 2020; Gummerus et al., 2019)
Optimizing the interactive user experience (C.-L. Chen, 2020; Vendrell-Herrero et al., 2021)
Monitoring user experience (Cedeño et al., 2019; L. Gao, 2021; Liu et al., 2020; Vendrell-Herrero et al.,

Care phase → activities after the purchase process
2021)
Monitoring user behavior on social networks (Zhang et al., 2022)
Self-service for condition monitoring (Beverungen et al., 2020; Cedeño et al., 2019; Gummerus et al., 2019; Paluch & Tuzovic, 2019; Vendrell-Herrero et al., 2021)
Activities of product handling (Michler et al., 2020)
Activities for defining of range of control options (Michler et al., 2020; Mani & Chouk, 2019; Paluch & Tuzovic, 2019)
Retention strategy with offers maximum coproduction benefits to consumers (Sivakumar & Mahadevan, 2021)
Branding activities and motivational campaign (Michler et al., 2020; Ferreira Junior et al., 2022; T.-L. Chen et al., 2021; Lucia-Palacios & Pérez-López, 2021b; Bădică & Mitucă, 2021)
Sustainability activities (Ferreira Junior et al., 2022)
Warranty policy and activities (Bhuniya et al., 2021)
Emergency support activities (Wang et al., 2019)

*Source: Authors*

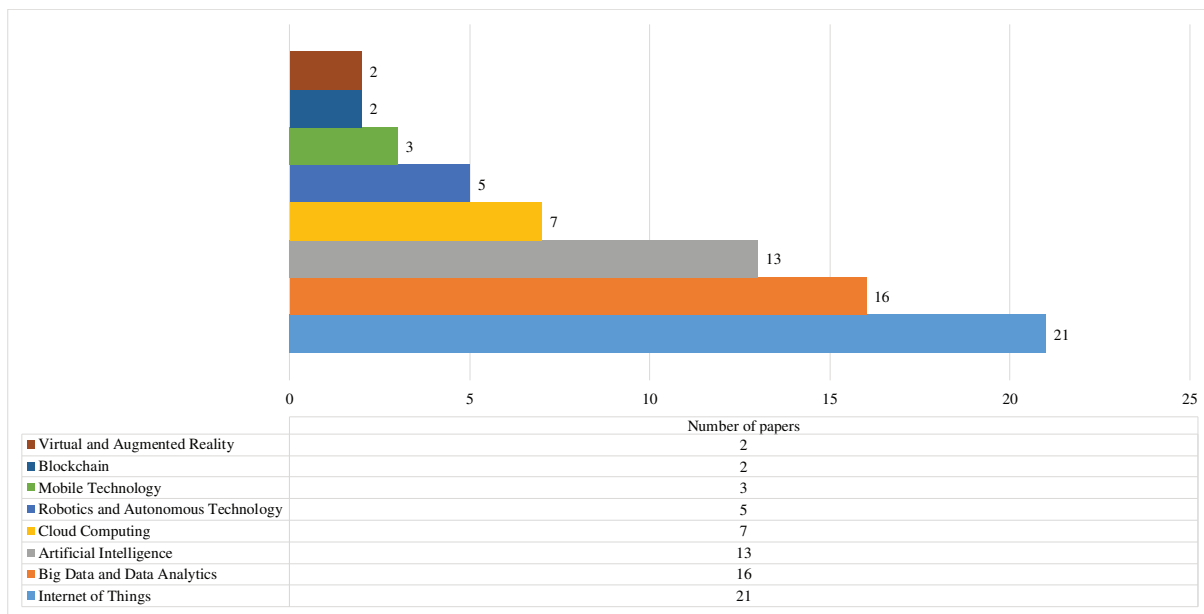
The Care phase (Table 3) of the customer journey involves marketing activities after purchasing a smart product and service. Further consumer care is essential to ensure the sustainability of smart products and services, and digital technologies have unique capacities to interact and thus create new consumer experiences. Value communication activities include the choice of communication channels, forms of cooperation and access strategy preferred by the consumer (Classen & Friedli, 2019). Appearing to the consumers requires carefully selected steps accompanied by content that interests them and that can improve and upgrade their experience of using smart products and services (C.-L. Chen, 2020). The experience and satisfaction of consumers with smart products and services (Cedeño et al., 2019; L. Gao, 2021; Liu et al., 2020) need to be constantly monitored and analysed, as well as further consumer behaviour (Zhang et al., 2022). Activities of product handling include support and guidance for usability and ease-of-use of adequate smart product functionality with perceived enjoyment in usage (Michler et al., 2020). Consumers should at all times be provided with insight and control over the data that condition the use of smart products and services (Beverungen et al., 2020; Cedeño et al., 2019), as well as monitoring of other conditions and the independent possibility of changing them (Michler et al., 2020). Retention strategy defines activities with the purpose of offering maximum coproduction benefits to consumers. This practice prevails among providers of continuous services such as financial, health and telecommunications where continuous effort is required through numerous activities aimed at improving the consumer experience, in order to maintain mutual relationships and influence consumer loyalty (Sivakumar & Mahadevan, 2021). Sustainability activities include increasing the life cycle of smart products and services offered with an emphasis on intangible and non-measurable characteristics, elaboration of sustainability and product reuse (Ferreira Junior et al., 2022). Branding activities and motivational campaigns need to be grounded by consumers can transfer positive experiences (Cedeño et al., 2019). Warranty policy and support activities for smart products and services play an essential role in this competitive market because this policy increases consumer satisfaction and the excellent reputation of the company. The warranty policy makes the products reliable on the market, therefore each smart products and services industry should offer advanced functionalities and improve its warranty policy (Bhuniya et al., 2021).

#### **4.2. Technology aspects and consumer value based on technology**

Digital technologies play a significant role in the production, but also in the supply of smart products and services. Their role is evident in the sales process but also after it through the

improvement, research and practice of smart services and products. Technology is no longer important only for manufacturers, but also for consumers because it empowers them to make better decisions and allows them to be more independent of service providers. The activities identified in the previous chapter showed that technological advances have significantly improved marketing processes. Smart products and services, i.e. gadgets, quickly become a part of the everyday life of consumers and accompany it in everyday activities, but they are also changing rapidly (Gummerus et al., 2019). Technological advances will enable the functionalities of smart products and services to go to extremes and penetrate the most intimate spheres of human life. Figure 3 shows which are the most important technologies and techniques that enable the implementation of sustainable marketing activities in the phases of the customer journey.

**Figure 3:** The most significant technologies/techniques for sustainable marketing activities



Source: Authors

Research has shown that the most significant technologies in the customer journey phases are the Internet of Things, Big Data and Data Analytics, Artificial Intelligence and Cloud Computing. Each of these technologies has a number of opportunities that contribute to the improvement of marketing activities. Using Big Data and Data Analytics allows to collect, process, and visualize large amounts of data to generate descriptive, predictive, and prescriptive results to support decision-making (Boldsova, 2020). Networking via the Internet of Things technology is key to collecting and transmitting data in real-time (Beverungen et al., 2021; Sang et al., 2020). Products equipped with smart components, such as sensors, microprocessors, embedded operating systems and improved user interfaces, connect the physical and digital worlds by collecting data during the product life cycle (Kropp & Totzek, 2020). The personalization approach in the customer journey goes a step further than customization, so it is necessary to determine the appropriate degree of customization and thus anticipate what the user needs. Smart systems based on Artificial Intelligence, supported by machine learning, based on a large amount of data, can identify the habits and needs of consumers and influence their perception (B. Gao & Huang, 2019).

### **4.3. Sustainable business model for smart products and services**

The digital transformation paradigm has encouraged the development of innovative business models supported by digital technologies and servitization (Classen & Friedli, 2019), based on smart and sustainable thinking (Troisi et al., 2019; Tokody et al., 2019). Technological advances have led to disruptive innovations and shifts in the focus of industrial marketing, and academic and managerial interests are focused on integrating technologies into business processes, developing and offering innovative products and services, and tailored value presentation (C.-L. Chen, 2020; Kropp & Totzek, 2020). The philosophy of dematerialized exchange of values (Troisi et al., 2019) and the intangible nature of products and services complicate the sales process (Boldosova, 2020), which requires adjustment and improvement of business processes and actions, in order to present hard-to-see value and benefits for consumers. The constant presence, in the conditions changing nature of consumer and producer's relationship and interactions, facilitates sales performance and reduces consumer uncertainty (Boldosova, 2020). The creation of an appropriate sustainable business model is a difficult task in the dynamic digital age. Different variations of product and service combinations have raised the question of how to create a successful sustainable business model in a turbulent environment.

Identified marketing activities must be carried out continuously and meaningfully. Digital technologies such as the Internet of Things, Big Data, Artificial Intelligence and Cloud Computing need to be served, not only to create new products and services but also to ensure business sustainability and consumer care. Customer journey analysis shows what the key activities that enable Value Creation are. Technology is a guide to Value Delivery. Consumer centricity and planned consumer benefits should guide Value Proposition. This enables the creation of a sustainable business model with a clear plan and procedure for the improvement and upgrade of smart products and services, with potential benefits for all stakeholders in the ecosystem. The interactive role of smart products and services provides consumers significant value. The value for the consumers is reflected in the monitoring of his daily activities, the assistant's role through reports, reminders and suggestions for the next step. It makes decision-making and action in the environment easier for consumers.

## **5. Research implication**

The impetus for this research came under the influence of interest in continuous digital innovations in the market that occupy consumers with new functionalities and force them to follow trends. The fast-paced digital world has made gadgets an integral part of all human activities, and consumer needs are constantly looking for more and better. This has undermined the sustainability of smart products and services, which, with the presence of digital technologies, are aging much faster than before. In order for consumers to stay loyal to smart products and services, they need constant care about them before, during and after the purchase. Marketing activities should be smartly and precisely designed and carried out with the support of digital technologies. It should be emphasized that the process of consumer care does not stop, but becomes the basis for the sustainability of smart products and services. The contribution of this research is reflected in the application of the See-Think-Do-Care framework in the customer journey phases with the implication of implementing the identified key activities. Some of the activities of particular importance are explained below.

Activities with the support of digital technologies with an emphasized active role of the consumer are becoming an extended hand of a sustainable business model. In the creation of a

sustainable business model of smart products and services, some elements have been revealed that need to be paid attention to in order to retain loyal consumers. Consumers are becoming active participants in designing and defining the performance that smart products and services need to meet (Vendrell-Herrero et al., 2021). They have a much greater impact on price and defining payment models. However, there are concerns about the private data they need to provide to get the service they want (Mani & Chouk, 2019; Paluch & Tuzovic, 2019). The purchasing process is completely tailored to the consumer and more and more often communication takes place via interactive platforms or virtual assistants. Also, consumer requirements in these activities are focused on transparency in data collection and optimization of cooperation. After the purchase, it is important for consumers to be able to change the conditions and control the options, and also, that they can control the data provided at any time.

## **6. Conclusion and future work**

Technological advances have led to a new digital era in the business processes of manufacturing and selling smart products and services, but also in the phases of the customer journey. Consumers use a large number of smart products and services, which are connected to a multitude of technologies, and enable mutual communication, collaboration, or execution of actions at any time and from any place. The current market situation shows the drastic speed of the emergence of digital innovations, and thus the needs of consumers become subject to following trends and embracing innovations. Commercial companies offer a large number of smart products and services in combination or separately, but the question is how to ensure loyalty in such conditions.

In this study, it is proposed to monitor the customer journey of smart products and services through the See-Think-Do-Care framework. This approach will help organizations to recognize what the consumers need and how to improve the functionality of smart products and services by applying digital technologies and servitization. The paper identifies marketing activities that need to be emphasized through the stages of customer journey to ensure the sustainability of smart products and services and maintain consumer loyalty. Activities are categorized as those carried out before, during and after the purchase. The emphasis in before purchase activities, which marks the See and Think phase, is on individual consumer requirements where they are provided with assistance in creating products and even defining payment models. With these activities, organizations try to maximally adapt to consumers and offer them the most favourable offer and thus provide them the most acceptable model. During purchase, shopping assistance activities are essential while providing a maximum commitment to getting to know smart products and services. At this stage, communication channels and transparency rules are clearly defined. This builds a relationship full of trust, which is very important for the sustainability of smart products and services. After the purchase, the activities carried out in the Care phase include the simple implementation of additional functionalities according to consumer needs, meeting and adapting to new needs, as well as involving them in the company's business through additional benefits. The customer journey involves a process of cooperation and consumer care that never stops. The most important technologies identified, such as Artificial Intelligence, Big Data, Internet of Things and Cloud Computing, should become an integral part of the implementation of customized activities for the consumer, also should enable consumers' privacy and protection of their data. The values achieved by sharing in the ecosystem are multiple and allow for a fair redistribution of benefits. Future work will be based on a more detailed elaboration of sustainable business models for smart products and services while researching case studies

from practice. The emphasis in future research will be on technological, process and value analysis based on the results of this research.

## REFERENCES

Alam, M. T., & Porras, J. (2018): *Architecting and Designing Sustainable Smart City Services in a Living Lab Environment*. Technologies, 6(4), 99. <https://doi.org/10.3390/technologies6040099>

Bădică, A. L., & Mitucă, M. O. (2021): *IOT-Enhanced Digital Marketing Conceptual Framework*. BRAIN. Broad Research in Artificial Intelligence and Neuroscience, 12(4), 509–531.

Beverungen, D., Buijs, J. C. A. M., Becker, J., Di Ciccio, C., van der Aalst, W. M. P., Bartelheimer, C., vom Brocke, J., Comuzzi, M., Kraume, K., Leopold, H., Matzner, M., Mendling, J., Ogonek, N., Post, T., Resinas, M., Revoredo, K., del-Río-Ortega, A., La Rosa, M., Santoro, F. M., Wolf, V. (2021): *Seven Paradoxes of Business Process Management in a Hyper-Connected World*. Business & Information Systems Engineering, 63(2), 145–156. <https://doi.org/10.1007/s12599-020-00646-z>

Beverungen, D., Kundisch, D., & Wunderlich, N. (2020): *Transforming into a platform provider: Strategic options for industrial smart service providers*. Journal of Service Management, 32(4), 507–532. <https://doi.org/10.1108/JOSM-03-2020-0066>

Bhuniya, S., Pareek, S., Sarkar, B., & Sett, B. K. (2021): *A Smart Production Process for the Optimum Energy Consumption with Maintenance Policy under a Supply Chain Management*. Processes, 9(1), 19. <https://doi.org/10.3390/pr9010019>

Bocken, N. (2021): *Sustainable Business Models* (pp. 963–975). [https://doi.org/10.1007/978-3-319-95867-5\\_48](https://doi.org/10.1007/978-3-319-95867-5_48)

Bocken, N., Boons, F., & Baldassarre, B. (2018): *Sustainable business model experimentation by understanding ecologies of business models*. Journal of Cleaner Production, 208C, 1498–1512. <https://doi.org/10.1016/j.jclepro.2018.10.159>

Boldosova, V. (2020): *Telling stories that sell: The role of storytelling and big data analytics in smart service sales*. Industrial Marketing Management, 86, 122–134. <https://doi.org/10.1016/j.indmarman.2019.12.004>

Cedeño, J. M., Hannola, L., & Ojanen, V. (2019): *Knowledge Requirements for Sustainable Smart Service Design* (p. 202). <https://doi.org/10.5220/0008069201950202>

Chen, C.-L. (2020): *Cross-disciplinary innovations by Taiwanese manufacturing SMEs in the context of Industry 4.0*. Journal of Manufacturing Technology Management, 31(6), 1145–1168. <https://doi.org/10.1108/JMTM-08-2019-0301>

Chen, T.-L., Chang, C.-Y., Yao, Y.-C., & Chung, K.-C. (2021): *Constructional Cyber Physical System: An Integrated Model*. Intelligent Automation & Soft Computing, 28, 73–82. <https://doi.org/10.32604/iasc.2021.015980>

- Chowdhury, S., Haftor, D., & Pashkevich, N. (2018): *Smart Product-Service Systems (Smart PSS) in Industrial Firms: A Literature Review*. *Procedia CIRP*, 73, 26–31. <https://doi.org/10.1016/j.procir.2018.03.333>
- Classen, M., & Friedli, T. (2019): *Value-Based Marketing and Sales of Industrial Services: A systematic literature review in the age of digital technologies*. *Procedia CIRP*, 83, 1–7. <https://doi.org/10.1016/j.procir.2019.02.141>
- Classen, M., & Friedli, T. (2021): *Eight organizational enablers of digital service-sales ambidexterity in industrial firms*. *Journal of Business & Industrial Marketing*. <https://doi.org/10.1108/JBIM-02-2021-0080>
- de Bellis, E., & Venkataramani Johar, G. (2020): *Autonomous Shopping Systems: Identifying and Overcoming Barriers to Consumer Adoption*. *Journal of Retailing*, 96(1), 74–87. <https://doi.org/10.1016/j.jretai.2019.12.004>
- Environment, U. N. (2021, June 2): *GOAL 12: Sustainable consumption and production*. UNEP - UN Environment Programme. <http://www.unep.org/explore-topics/sustainable-development-goals/why-do-sustainable-development-goals-matter/goal-12>
- Ferreira Junior, R., Scur, G., & Nunes, B. (2022): *Preparing for smart product-service system (PSS) implementation: An investigation into the Daimler group*. *Production Planning & Control*, 33(1), 56–70. <https://doi.org/10.1080/09537287.2020.1821402>
- Forte, S., Dickopf, T., Weber, S., & Göbel, J. C. (2022): *Towards Sustainable Systems Reconfiguration by an IoT-driven System of Systems Engineering Lifecycle Approach*. 105, 654–659. Scopus. <https://doi.org/10.1016/j.procir.2022.02.109>
- Gao, B., & Huang, L. (2019): *Understanding interactive user behavior in smart media content service: An integration of TAM and smart service belief factors*. *Heliyon*, 5(12), e02983. <https://doi.org/10.1016/j.heliyon.2019.e02983>
- Gao, L. (2021): *Development of all-for-one smart tourism platforms*. 251, 01059. <https://doi.org/10.1051/e3sconf/202125101059>
- Grandinetti, R. (2020): *How artificial intelligence can change the core of marketing theory*. *Innovative Marketing*, 16, 91–103. [https://doi.org/10.21511/im.16\(2\).2020.08](https://doi.org/10.21511/im.16(2).2020.08)
- Gummerus, J., Lipkin, M., Dube, A., & Heinonen, K. (2019): *Technology in use – characterizing customer self-service devices (SSDS)*. *Journal of Services Marketing*, 33(1), 44–56. <https://doi.org/10.1108/JSM-10-2018-0292>
- Henkens, B., Verleye, K., & Larivière, B. (2021): *The smarter, the better?! Customer well-being, engagement, and perceptions in smart service systems*. *International Journal of Research in Marketing*, 38(2), 425–447. <https://doi.org/10.1016/j.ijresmar.2020.09.006>
- Kropp, E., & Totzek, D. (2020): *How institutional pressures and systems characteristics shape customer acceptance of smart product-service systems*. *Industrial Marketing Management*, 91, 468–482. <https://doi.org/10.1016/j.indmarman.2020.10.008>



- Li, C. Z., Chen, Z., Xue, F., Kong, X. T. R., Xiao, B., Lai, X., & Zhao, Y. (2021): *A blockchain- and IoT-based smart product-service system for the sustainability of prefabricated housing construction*. Journal of Cleaner Production, 286, 125391. <https://doi.org/10.1016/j.jclepro.2020.125391>
- Li, J., Xie, W., Zhu, K., & Gu, W. (2020): *SCMF: A Service-Oriented Cloud Manufacturing Framework for Smart Product Customization*. 2020 3rd International Conference on Advanced Electronic Materials, Computers and Software Engineering (AEMCSE), 145–149. <https://doi.org/10.1109/AEMCSE50948.2020.00037>
- Li, X., Wang, Z., Chen, C.-H., & Zheng, P. (2021): *A data-driven reversible framework for achieving Sustainable Smart product-service systems*. Journal of Cleaner Production, 279, 123618. <https://doi.org/10.1016/j.jclepro.2020.123618>
- Li, X., Wang, Z., Zheng, P., Peng, T., & Chen, C.-H. (2020): *A Closed-Loop Context-Aware Framework for Sustainable Smart PSS Development*. 2020 Ieee 16th International Conference on Automation Science and Engineering (Case), 311–316. <https://www.webofscience.com/wos/woscc/full-record/WOS:000612200600044>
- Liu, Y., Yang, Z., & Yuan, J. (2020): *Embracing Service Innovation and Emerging Technologies: Smart System in World Heritage*. 407–412. <https://doi.org/10.1109/ICBDIE50010.2020.00102>
- Lucia-Palacios, L., & Pérez-López, R. (2021a): *Effects of Home Voice Assistants' Autonomy on Intrusiveness and Usefulness: Direct, Indirect, and Moderating Effects of Interactivity*. Journal of Interactive Marketing, 56, 41–54. <https://doi.org/10.1016/j.intmar.2021.03.005>
- Lucia-Palacios, L., & Pérez-López, R. (2021b): *How can autonomy improve consumer experience when interacting with smart products?* Journal of Research in Interactive Marketing. <https://doi.org/10.1108/JRIM-02-2021-0031>
- Mani, Z., & Chouk, I. (2019): *Impact of privacy concerns on resistance to smart services: Does the 'Big Brother effect' matter?* Journal of Marketing Management. <https://doi.org/10.1080/0267257X.2019.1667856>
- Michler, O., Decker, R., & Stummer, C. (2020): *To trust or not to trust smart consumer products: A literature review of trust-building factors*. Management Review Quarterly, 70(3), 391–420. <https://doi.org/10.1007/s11301-019-00171-8>
- Najlae, A., Sedqui, A., & Lyhyaoui, A. (2021): *A Product Driven System to Facilitate FEFO Application in Warehouses*. Procedia Computer Science, 191, 451–456. <https://doi.org/10.1016/j.procs.2021.07.056>
- Ng, K. K. H., Chen, C.-H., Lee, C. K. M., Jiao, Roger J. & Yang, Z.-X. (2021): *A systematic literature review on intelligent automation: Aligning concepts from theory, practice, and future perspectives*. Advanced Engineering Informatics, 47, 101246. <https://doi.org/10.1016/j.aei.2021.101246>

- Nikulín, R., & Bagautdinova, N. (2019): *Formation of the Company's Competitive Advantages in the Supply Chain Management and Digital Economy*. International Journal of Supply Chain Management, 8(6), 820–824.
- Paluch, S., & Tuzovic, S. (2019): *Persuaded self-tracking with wearable technology: Carrot or stick?* Journal of Services Marketing, 33(4), 436–448. <https://doi.org/10.1108/JSM-03-2018-0091>
- Pardo, C., Ivens, B. S., & Pagani, M. (2020): *Are products striking back? The rise of smart products in business markets*. Industrial Marketing Management, 90, 205–220. <https://doi.org/10.1016/j.indmarman.2020.06.011>
- Park, G., & Hwang, C. (2019): *Online Adjustment of Two-stage Inference for Knowledge Caching*. 2019 7th International Conference on Robot Intelligence Technology and Applications (RiTA), 1–5. <https://doi.org/10.1109/RITAPP.2019.8932779>
- Pirola, F., Boucher, X., Wiesner, S., & Pezzotta, G. (2020): *Digital technologies in product-service systems: A literature review and a research agenda*. Computers in Industry, 123, 103301. <https://doi.org/10.1016/j.compind.2020.103301>
- Raff, S., Wentzel, D., & Obwegeser, N. (2020): *Smart Products: Conceptual Review, Synthesis, and Research Directions\**. Journal of Product Innovation Management, 37(5), 379–404. <https://doi.org/10.1111/jpim.12544>
- Roy, S. K., Singh, G., Hope, M., Nguyen, B., & Harrigan, P. (2019): *The rise of smart consumers: Role of smart servicescape and smart consumer experience co-creation*. Journal of Marketing Management, 35(15–16), 1480–1513. <https://doi.org/10.1080/0267257X.2019.1680569>
- Sang, G. M., Xu, L., de Vrieze, P., Bai, Y., & Pan, F. (2020): *Predictive Maintenance in Industry 4.0*. Proceedings of the 10th International Conference on Information Systems and Technologies, 1–11. <https://doi.org/10.1145/3447568.3448537>
- Schweitzer, F., Belk, R., Jordan, W., & Ortner, M. (2019): *Servant, friend or master? The relationships users build with voice-controlled smart devices*. Journal of Marketing Management, 35, 1–23. <https://doi.org/10.1080/0267257X.2019.1596970>
- Sivakumar, S., & Mahadevan, B. (2021): *Configuring and pricing smart coproductive services*. European Journal of Operational Research, 294(2), 779–789. <https://doi.org/10.1016/j.ejor.2021.01.041>
- Tokody, D., Papp, J., Iantovics, L. B., & Flammini, F. (2019): *Complex, Resilient and Smart Systems* (pp. 3–24). [https://doi.org/10.1007/978-3-319-95597-1\\_1](https://doi.org/10.1007/978-3-319-95597-1_1)
- Troisi, O., Grimaldi, M., & Monda, A. (2019): *Managing Smart Service Ecosystems Through Technology: How ICTs Enable Value Cocreation*. Tourism Analysis, 24, 377–393. <https://doi.org/10.3727/108354219X15511865533103>
- Vendrell-Herrero, F., Bustinza, O., & Vaillant, Y. (2021): *Adoption and optimal configuration of smart products: The role of firm internationalization and offer*

**hybridization.** Industrial Marketing Management, 95, 41–53.  
<https://doi.org/10.1016/j.indmarman.2021.04.001>

Wang, Z., Wu, H., Zhu, J., Zhang, R., Song, H., Wang, J., & He, Z. (2019): **CAPACITY BUILDING FOR GEO-INFORMATION DRIVEN EMERGENCY RESPONSE IN CHINA.** ISPRS - International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, XLII-3/W8, 447–453. <https://doi.org/10.5194/isprs-archives-XLII-3-W8-447-2019>

Ylitalo, F. (2021): **Development of digital sales processes with help of the See-Think-Do-Care model.** <http://urn.kb.se/resolve?urn=urn:nbn:se:umu:diva-185555>

Zawadzki, P., & Zywicki, K. (2016): **Smart Product Design and Production Control for Effective Mass Customization in the Industry 4.0 Concept.** Management and Production Engineering Review, 7(3), 105–112. <https://doi.org/10.1515/mper-2016-0030>

Zhan, L., & Ning, K. (2021): **Minority Tourist Information Service and Sustainable Development of Tourism under the Background of Smart City.** Mobile Information Systems, 2021, e6547186. <https://doi.org/10.1155/2021/6547186>

Zhang, H., Zang, Z., Zhu, H., Uddin, M. I., & Amin, M. A. (2022): **Big data-assisted social media analytics for business model for business decision making system competitive analysis.** Information Processing & Management, 59(1), 102762. <https://doi.org/10.1016/j.ipm.2021.102762>

Zheng, P., Lin, T.-J., Chen, C.-H., & Xu, X. (2018): **A systematic design approach for service innovation of smart product-service systems.** Journal of Cleaner Production, 201, 657–667. <https://doi.org/10.1016/j.jclepro.2018.08.101>

Zheng, P., Wang, Z., Chen, C.-H., & Khoo, L. (2019): **A Survey of Smart Product-Service Systems: Key Aspects, Challenges and Future Perspectives.** Advanced Engineering Informatics. <https://doi.org/10.1016/j.aei.2019.100973>

Zheng, P., Wang, Z., Chen, C.-H., & Pheng Khoo, L. (2019): **A survey of smart product-service systems: Key aspects, challenges and future perspectives.** Advanced Engineering Informatics, 42, 100973. <https://doi.org/10.1016/j.aei.2019.100973>

Zheng, P., Xu, X., & Chen, C.-H. (2020): **A Data-Driven Cyber-Physical Approach for Personalised Smart, Connected Product Co-Development in a Cloud-based Environment.** Journal of Intelligent Manufacturing, 31. <https://doi.org/10.1007/s10845-018-1430-y>

*A scientific paper***Auwal Isah**

Bayero University Kano, Kano

E-mail address: amisah.bus@buk.edu.ng

**Mirna Leko Šimić, Ph. D., Full Professor**

J.J. Strossmayer University of Osijek, Faculty of Economics in Osijek

E-mail address: lekom@efos.hr

**WOMEN ENTREPRENEURSHIP IN NIGERIA – A NATIONAL CULTURE PERSPECTIVE****ABSTRACT**

*Entrepreneurship is a global phenomenon developing all around the world. However, different countries differ in characteristics of entrepreneurship development: level and intensity of entrepreneurial activities, entrepreneurial behavior, women participation in entrepreneurial activities, and many others. Several studies have indicated that these differences can be ascribed to national culture characteristics. However, there is a notable lack of studies on both culture impact on entrepreneurship in developing countries, especially in Africa, and on women entrepreneurship in developing countries. The aim of this study is to bridge this gap and provide a deeper understanding of women entrepreneurship in Nigeria in the context of its national culture. There are several national culture models and here we use Hofstede national culture model. The research is based on qualitative approach. Using available secondary data and existing research results, we analyze them according to the Hofstede national culture profile of Nigeria. Nigeria scores very high on power distance, indulgence and masculinity and very low on individualism and long-term orientation. These characteristics are also reflected in some specific characteristics of women entrepreneurship thus confirming the relation between national culture and women entrepreneurship development in Nigeria.*

**Key words:** *women entrepreneurship, Nigeria, national culture.*

**1. Introduction**

Entrepreneurship as a business and life philosophy characterized by opportunity recognition, creativity and innovativeness, proactiveness and high risk taking propensity is a global phenomenon. No matter of development level, it is an important part of each and every economy. Despite these universal traits, characteristics of entrepreneurship seem to be very different in different countries, as it is shown in several studies (Hayton et al, 2002; Eroglu and Picak, 2011; Ozgen, 2012; Vershinina et al., 2017, Indarti et al. 2020, and others). For example, a comparison between British and Swiss technopreneurs' characteristics reveal that some entrepreneurial characteristics such as autonomy, propensity for risk, and locus of control are higher among UK techno-entrepreneurs while other characteristics such as achievement need, tolerance for ambiguity, innovativeness, and confidence are higher among Swiss techno-entrepreneurs (Tajeddini and Mueller, 2009). Shane and Venkataraman (2000) emphasize that entrepreneurship cannot be explained without considering the context and

environment in which entrepreneurs operate, which seem to be of the same relative importance as individual characteristics.

Some of these studies have indicated that differences in entrepreneurial characteristics in different countries can be, at least partly, ascribed to national culture characteristics. Although the link between culture and entrepreneurship is not straightforward, Bosma and Schutjens (2011) claim that national aggregation of attitudes, beliefs, values and norms influences culture at the individual level and, as a consequence, impacts entrepreneurial behaviors.

National culture as defined by Hofstede (1980) represents a complex set of shared values, beliefs and expected behaviors. According to such definition and having in mind the fact that entrepreneurship is a complex socio-economic and cultural phenomenon, it can be expected that national culture impacts also characteristics of entrepreneurship.

Entrepreneurship is generally perceived as a man's domain and women often face number of discriminatory issues when becoming entrepreneurs. (Panda, 2018). His study identifies seven broad constraints faced by women entrepreneurs: constraints due to gender discrimination, work-family conflict, financial constraints, lack of infrastructural support, unfavourable BEP environments, lack of entrepreneurship-related training and personality-based constraints. GEM Women Entrepreneurship Report (2019) emphasizes the need to address stereotypes of who and what is entrepreneurship by expanding societal views to a more inclusive vision of entrepreneurship, particularly referring to women entrepreneurship.

Even in developed countries women are under-represented among the population of entrepreneurs. They tend to operate smaller and less dynamic businesses than men, and are more likely to operate in non-capital intensive sectors which often have lower potential for generating a high and sustainable income. The challenges that women identify in starting a business include discouraging social and cultural attitudes, lower levels of entrepreneurship skills, greater difficulty in accessing start-up financing, smaller and less effective entrepreneurial networks and policy frameworks that discourage women's entrepreneurship (Halabisky, 2018).

Women are particularly sensitive social group in developing countries. These mostly traditional societies often place the women inside home – her major role is to take care of the house and children, while men are responsible for financial resources provision. On the other hand, women's entrepreneurship is a fundamental promoting factor of inclusive economic growth in developing economies. Over half of women in developing countries see entrepreneurship as a path to a better future, compared to only 25 percent in high-income countries (GEM, 2021). Therefore it seems interesting and important to analyze women entrepreneurship characteristics in Nigeria, which is one of the African developing countries to get an insight and better understanding of the role of national culture in such a context.

The paper is organized in the following way. After introduction, the paper gives an overview of existing studies on the role of national culture in entrepreneurship development, women entrepreneurship in developing countries and describes Hofstede model of national culture with its six dimensions: uncertainty avoidance, power distance, masculinity/femininity, individualism/collectivism long-term orientation and indulgence/restraint. In the qualitative research we give an overview of women entrepreneurship characteristics in Nigeria and Nigerian national culture characteristics. We analyze those in the context of women

entrepreneurship characteristics from different existing data sources and finally conclude on the impact of national culture on women entrepreneurship in Nigeria.

## **2. Theoretical framework**

Theoretical framework gives a short overview of main issues discussed in the study: the relation between national culture and entrepreneurship, women entrepreneurship in developing countries and Hofstede model of national culture.

### **2.1. National culture and entrepreneurship**

Differences in entrepreneurship characteristics can be, among other, ascribed to characteristics of national culture. In-depth study of the relation between the two concepts by Hayton et al. (2002) has identified three ways, i.e. research focuses of these studies: impact of national culture on aggregate measures of entrepreneurship, relationship between national culture and characteristics of individual entrepreneur, and the impact of national culture on corporate entrepreneurship. Regarding the first topic, several researchers have confirmed the relation between cultural values and beliefs and new venture formation (Davidsson and Wicklund, 1995), individualism and power distance with national rates of innovation (Shane 1992) and entrepreneurial values and new venture formation (Davidsson, 1995). Regarding the relation between national culture and characteristic of individual entrepreneurs, most studies focus on cross-cultural comparisons and find significant differences between entrepreneurs' characteristics in different cultural settings (Shane, Kolvereid and Westhead, 1991; Mueller and Thomas, 2000; Thomas and Mueller, 2000). These studies reveal that the biggest differences between different cultures are the motives to start business and entrepreneurial orientation. Regarding the relationship between national culture and corporate entrepreneurship, most studies concentrate on cultural characteristics and strategic decisions, for example entry mode (Kogut and Singh, 1988; Shane, 1994(a), Makino and Neupert, 2000) or innovation strategies (Shane, 1994(b); Shane and Venkataraman, 2000).

### **2.2. Women entrepreneurship in developing countries**

The globally traditional social role of women as housewife and mother has significantly changed starting with WWII where women had to work while men were soldiers. According to OECD study (2012), women of today choose to become entrepreneurs more often than men, and they usually emphasize is a better work – life balance as the major reason. According to GEM Women entrepreneurship report (2019) globally, the TEA rate for women is 10.2%, approximately three-quarters of that seen for men. However, low-income countries show the highest rates of women's TEA at 15.1%. these countries report the smallest TEA gender gap, in which women's TEA is over 80% of that of men.

However, despite the fact that women are one of the fastest rising populations of entrepreneurs and that they make a significant contribution to innovation, job, and wealth creation in economies across the globe, they are vastly understudied (De Bruin, Brush & Welter, 2006), although in recent years women entrepreneurship comes into focus of increasing number of studies (Cardella et al. 2020). This is however not completely true for Africa and other underdeveloped regions (Dana et al. 2022).

Goyal and Yadav (2014) report that in developing countries female entrepreneurs face challenges of higher magnitude as compared to their male counterparts. These challenges are

unique and more complex than for women living in developed countries, and include struggle to gain access to finance, face socio-cultural biases and experience low self-esteem. Women may be deterred from entrepreneurship not because they do not see entrepreneurship as consistent with feminine characteristics, but because resource providers (e.g., lenders, suppliers, customers) and men in their lives (their partner, husband, father, and/or sons) do not associate entrepreneurship with feminine characteristics and, consequently may not support them in starting their own business (Gupta et al. 2009). Interestingly, women entrepreneurs in Nigeria were found to almost unanimously (93.9%) agree on significant impact of culture on their entrepreneurial performance (Ugwa et al. 2019). Ogundana et al (2021) study determined that socioeconomic and cultural factors, mainly gender-related, and household issues not only affected business development but also inhibited women entrepreneurs' access and utilization of money, management, and markets and shaped their business development actions.

### 2.3. Hofstede model of national culture

National culture can be defined as the values, beliefs and expected behaviours that are sufficiently common across people within (or from) a given geographic region. It influences almost all aspects of life, starting from people's mentality, mindsets and behaviors. Therefore, national cultures are given increasing attention in business studies. In the context of entrepreneurial studies, to the extent that cultural values lead to an acceptance of uncertainty and risk taking, they are expected to be supportive of the creativity and innovation underlying entrepreneurial action (Hayton and Cacciotti, 2013).

Geert Hofstede is the author of one of the most influential treatises on national culture (Kirkman et al., 2006). His model is based on six major dimensions: power distance, individualism/collectivism, masculinity/femininity, uncertainty avoidance, long term orientation and indulgence. Hofstede (2011) defines them as follows:

**POWER DISTANCE** deals with the fact that all individuals in societies are not equal – it expresses the attitude of the culture towards these inequalities amongst us. Power Distance is defined as “the extent to which the less powerful members of institutions and organisations within a country expect and accept that power is distributed unequally”.

**INDIVIDUALISM** addresses the issue of interdependence between members of a society. It shows whether people's self-image is defined in terms of “I” or “We”. In individualist societies people are supposed to look after themselves and their direct family only, whereas in collectivist societies people belong to ‘in groups’ that take care of them in exchange for loyalty.

**MASCULINITY** indicates that the society is driven by competition, achievement and success. On the other hand, femininity means that the dominant values in society are caring for others and quality of life. A Feminine society is one where quality of life is the sign of success and standing out from the crowd is not admirable.”The fundamental issue here is what motivates people; wanting to be the best (Masculine) or liking what you do (Feminine)”.

**UNCERTAINTY AVOIDANCE** shows the way in which society deals with the fact that the future is unknown: should we try to control the future or just let it happen? “The extent to which the members of a culture feel threatened by ambiguous or unknown situations and have created beliefs and institutions that try to avoid these is reflected in this dimension”.

**LONG TERM ORIENTATION** describes “how society maintains links with its own past while dealing with the challenges of the present and future”. Normative societies, which score low on this dimension, for example, prefer to maintain time-honoured traditions and norms while viewing societal change with suspicion. Those with a culture which scores high, on the

other hand, take a more pragmatic approach - they encourage thrift and efforts in modern education as a way to prepare for the future.

**INDULGENCE** is defined as “the extent to which people try to control their desires and impulses”, based on the way they were raised. Relatively weak control is called “Indulgence” and relatively strong control is called “Restraint”.

All these dimensions of national culture are found to be related to entrepreneurship. Some of the studies published within last decade are presented in the table below. It clearly shows the wide scope of potential influences of national culture on entrepreneurship.

**Table 1:** National culture and entrepreneurship – literature overview

<b>NATIONAL CULTURE DIMENSIONS STUDIED</b>	<b>STUDY</b>	<b>FINDINGS</b>
Power distance	Kreiser et al. (2010)	significant negative impact on risk-taking in small and medium-sized enterprises
	Antoncic et al. (2018)	in high power distance countries, it may be wise to enhance risk-taking propensity, risk-taking attitudes and risk taking behavior in order to foster engagement of people in innovative and entrepreneurial activities
	Radziszewska (2014)	high power distance makes access to resources and entrepreneurial opportunities restricted hence fewer entrepreneurs emerge.
Individualism	Çelikkol, Kitapçı & Döven (2019)	individualism positively influences entrepreneurial attitudes, entrepreneurial abilities, entrepreneurial aspirations and overall entrepreneurial success
	van der Marel (2018)	when a country has a higher score on the individualism dimension it displays on average lower entrepreneurial activity
	Liñán., Moriano & Jaén (2016)	individualist values such as achievement, pleasure, self-direction, and an exciting and stimulating life are related to entrepreneurial intention and activity
Masculinity	Jakubczak & Rakowska (2014)	strong correlation between masculinity index and perception of knowledge and skills that one has that are necessary to become entrepreneur
	Rubio-Banon & Esteban-Lloret (2016)	no clear relation between country masculinity and gender entrepreneurship breach
	Gupta et al. (2009)	individuals who perceive themselves as having more masculine characteristics are more likely to have higher entrepreneurial intentions; both men and women see entrepreneurship as a male-typed occupation
Uncertainty avoidance	Bowen and De Clerq (2008)	strong relationship between uncertainty avoidance and low appreciation of



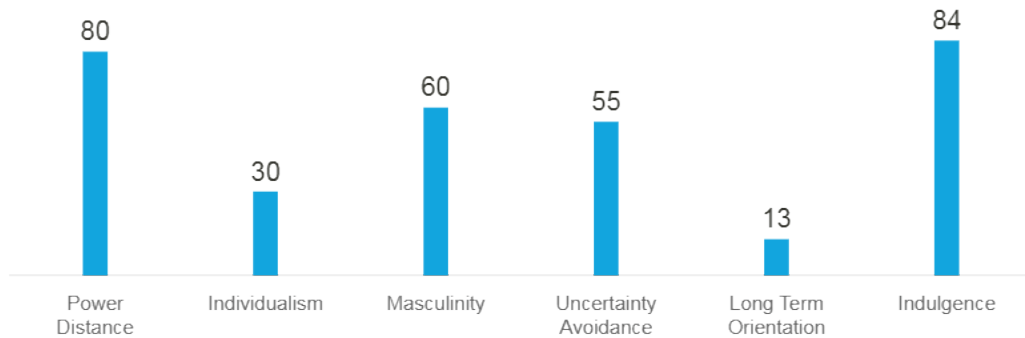
NATIONAL CULTURE DIMENSIONS STUDIED	STUDY	FINDINGS
		entrepreneurial behavior
	Dodd, Jack & Anderson (2013)	higher uncertainty avoidance seems to construct more positive metaphors of the entrepreneur
	Kreiser et al. (2010)	negative relationship between uncertainty avoidance and risk taking
Long term orientation	van der Marel (2018)	culture scoring high on the long-term orientation dimension may be expected to have higher entrepreneurial activity compared to cultures scoring low on this dimension.
	Lortie (2012)	the more a nation or region is long-term oriented, the higher the subsequent entrepreneurial activity will be
	Lumpkin, Brigham & Moss (2010)	Long term orientation is positively associated with innovativeness, proactiveness, and autonomy but negatively associated with risk taking and competitive aggressiveness
Indulgence	Lucian & Sergiu (2021)	a positive link between indulgence and attitudes, entrepreneurial skills and overall success as an entrepreneur.
	Achim, Borlea & Văidean, (2021)	uncertainty avoidance and indulgence have the highest influence upon the level of entrepreneurship
	Tehseen, Deng, Wu & Gao (2021)	positive and significant impacts of indulgence on entrepreneurial innovativeness

*Source: authors' research*

Literature analysis indicated that high power distance, collectivism, high uncertainty avoidance, short term orientation and restraint culture have negative impact on different characteristics of entrepreneurship and its development, while masculinity/femininity dimensions impact can't be unambiguously determined.

### 3. Findings and discussion

Since the aim of this study is to analyze the women entrepreneurship in the context of Nigerian cultural context, Graph 1 illustrates Nigerian national culture described by Hofstede model of national culture. The six dimensions model was defined in 2011 and it is based on previous theoretical concepts (political systems, economic development, mental health, national wealth, national income distribution, World Value Survey) ( Hofstede, 2011).

**Graph 1 . Hofstede model of national culture – Nigeria**

Source: Hofstede cultural deprivers, adopted from Hofstede ([hofstede-insight.co/country/Nigeria](http://hofstede-insight.co/country/Nigeria))

Nigeria scores high on Power Distance, Indulgence and Masculinity, low on Long-term orientation and Individualism and neutral (score of 55) on Uncertainty avoidance.

It means that people accept a hierarchical order in which everybody has a place and which needs no further justification. Nigerian collectivistic society is characterized by a close and long-term commitment to the group (family, extended family, or extended relationships) in which loyalty is a most important social value. With score of 60, Nigeria is a Masculine society. In Masculine countries like Nigeria people “live in order to work”, the emphasis is on equity, competition and performance and conflicts are resolved by fighting them out. Short-term orientation defines Nigeria as a normative society with great respect for traditions, a relatively small propensity to save for the future, and a focus on achieving quick results. Indulging culture of Nigeria is represented by willingness to realize impulses and desires with regard to enjoying life and having fun, positive attitude and a tendency towards optimism.

Gbadamosi (2004) asserts that Nigerian culture generally is highly characterized by conservatism as against openness to change. Such conservative cultures limit the desire and quest for change. It is shown that the most conservative cultures/tribes in Nigeria are the least entrepreneurial. It is particularly case with women entrepreneurs. This corroborates with Nigerian short-term orientation and normative society characteristics.

Entrepreneurship in Nigeria has been an old practice since before the colonials arrived in 1914, but it has been a male dominated up to today. This caused gender imbalance and exclusively relegated female becoming house wives only. However, shortly after the independence in 1960, the level of literacy started soaring and female gender access to western education started rising. With increased social status as a result of increase in women literacy rate, women started owning businesses, thus giving birth to the rise of few female entrepreneurs (Oluwatomipe et al., 2015).

The question is if these characteristics are reflected in women entrepreneurship characteristic in Nigeria. According to the national culture profile of Nigeria, it can be expected that women entrepreneurship is characterized by the following:

- a) women are significantly less involved in entrepreneurial activities than men
- b) women entrepreneurship is dominantly necessity-based
- c) women entrepreneurs are mainly self-employed in traditional activities (crafts) that allow them to work at home, mostly in the informal sector

d) women entrepreneurs choose activities that need no or only little external financing and expensive technology-based innovation.

The next step was to find evidence of these characteristics in the available studies.

**a)** According to GEM (2013) results, male TEA (total entrepreneurial activity) is 29%, while female TEA is 41%, which is very high and untypical difference, even in comparison to most of other developing countries. More recent study states that although women constitute almost 60% of the Nigerian population and, out of this, only about 35% of them are involved in entrepreneurship (NBS, 2020). The same source recently released the “2021 Poverty and Inequality in Nigeria” report which highlights that 40% of women (mostly in northern Nigeria) live below the country’s poverty line which is related to the denials of social rights for women to own and run businesses. The most recent statistical data (Gender Statistics Newsletter of the NBS, 2021) state that a total of 61.63 million women are in the working population (15 – 64 years of age) accounting for 50.5% of the total working population. Unemployed females account for 43.30% of female population which shows that significant number of females in the working population in Nigeria are either unable or unwilling to work. Iyola and Uzah (2014) state that female in Nigeria are a potential reservoir of entrepreneurial innovation and talent, but they often face several gender-specific barriers. Another study (Woldie and Adersua, 2004) identifies that the major factor that hinders women entrepreneurship in Nigeria is lack of recognition, while attainment of control of working life is the most important reward.

**b)** Aderemi et al. study (2008) of female entrepreneurs in Nigeria shows that 53.1% of respondents confirm non-satisfactory economic situation before becoming entrepreneurs. Meeting the financial needs and supplementing the family income were found to be the most important motivational factors for Nigerian women to start a business, with 80 and 66% of respondents respectively agreeing on the choice (Rathna, Badrinath and Anushan, 2016). Both are necessity-based motivations. It might be the result of the fact that women entrepreneurs are not afforded the same opportunities as their male counterparts, due in part to deep rooted discriminatory socio-cultural norms which perceive them primarily as wives and mothers (Adesua Lincoln, 2012). In such a context they do not start working unless they are forced to. The same has been identified in a form of lack of family (mainly husband) support for any entrepreneurial activities that might impact women household duties (Oluwatomipe et al., 2015). Similar results are obtained in recent study (Nwachukwu et al., 2021), where 60% of women entrepreneurs have ventured into entrepreneurship in order to provide additional support for themselves and their homes.

**c)** Women entrepreneurship in Nigeria is common in the informal sector and activities in this sector seem to be invisible, along with their contributions and needs (Aderemi et al., 2008). Businesses that operate in the informal sector of the economy are characterized by low productivity as a result of lack of access to technology, markets, information, financial assets, low irregular earnings as well as low level of skills (Granstrom, 2009) . Some five years ago only 18% of women were employed in the formal sector (Ukommi and Agha, 2016). Although the latest data of National Business Statistics (NBS, 2021) show an increase to 23% of females operating formal SME businesses, it still indicates that majority of them are employed in the informal sector. Most of the business activities Nigerian women engage in are petty trading, dressmaking, hairdressing, food processing and small-scale manufacturing (Aderemi et al. 2008). Provision stores and supermarkets are the most common types of businesses women engage in as entrepreneurs, alongside with piggery (agriculture),

hairdressing, sales of shoes and clothes, electronics and building materials, as well as small restaurants (Nwachukwu et al., 2021) . In the same study, 40% of participants have not their business registered, which classifies them into informal sector, which might hinder them to facilitate easy access to funding and support. Also, women entrepreneurs tend to be more concerned with balancing work and family, thus, deliberately choosing to keep their businesses small and easily controllable.

**d)** Almost all studies on women entrepreneurship in Nigeria analyze the issue of access to finance as one of the major barriers to entrepreneurial growth (Ademiluyi, 2019; Obi, Okechukwu & Egbo, 2017; Adesua Lincoln, 2012, Lawan, 2017; and many others). For example, Baalbak study (2015) shows that 42% of women's finance requirements in Nigeria are met by informal sources such as family and friends, and only 2% are met by formal financial institutions. It is emphasized that women entrepreneurs in Nigeria do not have equal opportunities as male entrepreneurs in terms of access to finance (Lincoln, n.d.). A qualitative study by Egbo et al. (2020) found that women face considerable barrier to financial access with 50% of the participants asserting that lack of necessary deposit and financial literacy were the major constraints they faced in accessing funds from financial institutions. Initiatives such as the provision that 60% of loans from the Small and Medium Scale Enterprises Guarantee Scheme should go to female-led ventures, are to be encouraged as they face additional constraints in securing finance (<https://gemconsortium.org/economy-profiles/nigeria>). A study by Lawan (2017) found that only a few among the female entrepreneurs in Nigeria have the ability to implement relevant technology in a timely fashion, which is partly due to insufficient financing possibilities and partly to lack knowledge of technology upgrade in their businesses. Consequently, most of the female entrepreneurs are not competitive. However, the government's attitude towards the funding of small-scale business in Nigeria, especially those run by women has not been encouraging. Similar to the provision of infrastructure, many of the women noted that the government is not doing enough to help them. Although there are quite a few structures in place to help SMEs, their effect on women entrepreneurship has not been felt (Oboh & wachukwu, 2018).

#### **4. Conclusion**

The aim of this paper was to analyze women entrepreneurship in Nigeria from a national culture perspective and bridge the gap in academic literature on women entrepreneurship in developing economies on one side and on cultural issues affecting entrepreneurial characteristics on the other. Hofstede model of national culture describes Nigeria as a country of high Power distance, Indulgence and Masculinity, short-term oriented and collectivistic society. All these characteristics, as analyzed previous research shows, are negatively correlated with various aspects of entrepreneurial development. If the traditional society with gender inequality with significantly subordinated women is added to a picture, women entrepreneurship is expected to be significantly less present than men, to be necessity-based, mainly in the informal sector and relied upon self or informal financing. All the assumptions were confirmed through analysis of existing research on women entrepreneurship in Nigeria, thus confirming the crucial role of national culture in entrepreneurship development.

#### **5. Limitations and further research**

This study is based on review of existing literature and research results on women entrepreneurship in Nigeria, which turned out to be its major limitation. As it was mentioned above there is limited recent research on this topic available. Moreover, most of the studies

conducted are of qualitative nature, based on very limited and mostly local samples which makes them hard to generalize conclusions. It was also noticed that the research results of these studies significantly vary across different geographical areas and specific tribal cultural issues. Therefore, this study identified the need for quantitative studies on the topic of Nigerian women entrepreneurship with special attention paid to sample representativeness.

## REFERENCES

- Achim, M. V., Borlea, S. N., & Văidean, V. L. (2021). *Culture, entrepreneurship and economic development*. An empirical approach. *Entrepreneurship Research Journal*, 11(1).
- Ademiluyi, L. F. (2019). *Institutional Inhibitions to Female Entrepreneurship in Nigeria: Implications for Entrepreneurship Education*. *Business Education Innovation Journal*, 11(2):92-99.
- Aderemi, H. O., Ilori, M. O., Siyanbola, W. O., & Adegbite, S. A. (2008). *An assessment of the choice and performance of women entrepreneurs in technological and non-technological enterprises in southwestern Nigeria*. *African Journal of Business Management*, 2(10), 165.
- Adesua Lincoln, Adebimpe, *Prospects and Challenges of Women Entrepreneurs in Nigeria* (November 28, 2012). Available at SSRN: <https://ssrn.com/abstract=2181943> or <http://dx.doi.org/10.2139/ssrn.2181943>
- Antoncic, J. A., Antoncic, B., Gantar, M., Hisrich, R. D., Marks, L. J., Bachkirov, A. A., ... & Kakkonen, M. L. (2018). Risk-taking propensity and entrepreneurship: The role of power distance. *Journal of Enterprising Culture*, 26(01), 1-26.
- Bosma, N., & Schutjens, V. (2011). *Understanding regional variation in entrepreneurial activity and entrepreneurial attitude in Europe*. *Annals of Regional Science*, 47(3), 711-742.
- Bowen, H.P. and De Clerq, D. (2008). *Institutional context and the allocation of entrepreneurial effort*, *Journal of International Business Studies*, 39(4), 747-768
- Cardella, G. M., Hernández-Sánchez, B. R., & Sánchez-García, J. C. (2020). *Women entrepreneurship: A systematic review to outline the boundaries of scientific literature*. *Frontiers in psychology*, 11, 1557.
- Çelikkol, M., Kitapçı, H., & Döven, G. (2019). *Culture's impact on entrepreneurship and interaction effect of economic development level: an 81 country study*. *Journal of Business Economics and Management*, 20(4), 777-797.
- Dana, L. P., Nziku, D. M., Palalic, R., & Ramadani, V. (2022). *Women Entrepreneurs in North Africa: Historical Frameworks, Ecosystems and New Perspectives for The Region*, World Scientific Publishing Company, Incorporated
- Davidsson, P. (1995). *Culture, structure and regional levels of entrepreneurship*, *Entrepreneurship and Regional Development*, 7: 41-62

- Davidsson, P. and Wicklund, J. (1997). *Values, beliefs and regional variations in new firm formation rates*, *Journal of Economic Psychology*, 18: 179-199
- De Bruin, A., Brush, C. G., & Welter, F. (2006). *Introduction to the special issue: Towards building cumulative knowledge on women's entrepreneurship*. *Entrepreneurship Theory and Practice*, 30(5), 585-593.
- Dodd, S. D., Jack, S., & Anderson, A. R. (2013). *From admiration to abhorrence: the contentious appeal of entrepreneurship across Europe*. *Entrepreneurship & Regional Development*, 25(1-2), 69-89.
- Egbo, O. P., Ezeaku, H., Igwemeka, E., & Okeke, O. M. (2020). *Financial literacy and access: revisiting the bridges and barriers to women entrepreneurship in Nigeria*. *Amazonia Investiga*, 9(29):436-444.
- Elam, A. B., Brush, C. G., Greene, P. G., Baumer, B., Dean, M., Heavlow, R., & Global Entrepreneurship Research Association. (2019). *Women's Entrepreneurship Report 2018/2019*.
- Eroglu, O. and Picak, M. (2011). *Entrepreneurship, national culture and Turkey*, *International Journal of Business and Social Science*, 16(2):146-151
- Gbadamosi, M. (2004). *Culture and organization*. *Journal of Management Science*. 1(7):88-102
- GEM (2013). Available at: <https://gemconsortium.org/economy-profiles/nigeria>
- GEM 2020/2021 *Women Entrepreneurship Report*. Available at: <https://gemconsortium.org/reports/womens-entrepreneurship>
- Goyal, P., and Yadav, V. (2014). *To be or not to be a woman entrepreneur in a developing country? Psychosociological Issues in Human Resource Management*, 2(2):68-78.
- Granstrom, S. C. (2009). *The Informal Sector and Formal Competitiveness in Senegal*. Minor Field Study Series No. 194.
- Gupta, V. K., Turban, D. B., Wasti, S. A., & Sikdar, A. (2009). *The role of gender stereotypes in perceptions of entrepreneurs and intentions to become an entrepreneur*. *Entrepreneurship theory and practice*, 33(2), 397-417.
- Halabisky, D. (2018), "*Policy Brief on Women's Entrepreneurship*", *OECD SME and Entrepreneurship Papers*, No. 8, OECD Publishing, Paris
- Hayton, J.C., George, G. and Zahra, S.A. (2002). *National culture and entrepreneurship*, *Entrepreneurship Theory and Practice* 26(4):33-52
- Hayton, J. C., & Cacciotti, G. (2013). *Is there an entrepreneurial culture? A review of empirical research*. *Entrepreneurship & Regional Development* 25(9-10):708-731.

Hofstede, G. (1980). *Culture's consequences: International differences in work-related values*, Beverly Hills, CA, Sage

Hofstede, G. (2011). *Dimensionalizing Cultures: The Hofstede Model in Context*. *Online Readings in Psychology and Culture*, 2(1). Available from: <https://scholarworks.gvsu.edu/orpc/vol2/iss1/8/>

Indarti, N., Hapsari, N., Lukito-Budi, A. S., & Virgosita, R. (2020). *Quo vadis, ethnic entrepreneurship? A bibliometric analysis of ethnic entrepreneurship in growing markets*. *Journal of Entrepreneurship in Emerging Economies*, 13(3):427-458.

Iyola, O. and Uzah, D. (2014). *Women entrepreneurs as SME operators and their role in socio-economic development in Ota, Nigeria*, *International Journal of Economics, Business and Finance* 2(1):1-10

Jakubczak, J., & Rakowska, A. (2014). *Cultural values and entrepreneurship: Pilot study*. In *Human capital without borders: Knowledge and learning for quality of life: Proceedings of the Management, Knowledge and Learning International Conference* (pp. 529-536).

Kirkman, B.L., Lowe, K.B. and Gibson, C.B. (2006). *A quarter century of Culture's Consequences: a review of empirical research incorporating Hofstede's cultural values framework*, *Journal of International Business Studies*, 37(3):285-320.

Kogut, B. and Singh, K. (1988). *The effect of national culture on the choice of entry mode*, *Journal of International Business Studies* (Fall): 411-432

Kreiser, P.M. et al. (2010). *Cultural influences on entrepreneurial orientation: the impact of national culture on risk taking and proactiveness in SMEs*, *Entrepreneurship Theory and Practice* 34(5): 959-983

Lawan, U. (2017). *Female entrepreneurship in Nigeria: an investigation*, Robert Gordon University, Ph.D Thesis. Available from: <https://openair.rgu.ac.uk>

Liñán, F., Moriano, J. A., & Jaén, I. (2016). *Individualism and entrepreneurship: Does the pattern depend on the social context?*. *International Small Business Journal*, 34(6), 760-776.

Lincoln, A. (n.d.). *Prospects and Challenges of Women Entrepreneurs in Nigeria*. Cardiff School of Management, Cardiff Metropolitan University, Cardiff, UK, 1–17. Available at: <http://ssrn.com/abstract=2181943>

Lortie, J. (2012). *National and Regional Long-Term Orientation Effects on Entrepreneurship*. In: *Academy of Management Proceedings* 2012(1):17934. Briarcliff Manor, NY 10510: Academy of Management.

Lucian, I. F., & Sergiu, R. (2021). *Entrepreneurship, cultural diversity and context*. *Agricultural Management/Lucrari Stiintifice Seria I*, 23(1).

Lumpkin, G. T., Brigham, K. H., & Moss, T. W. (2010). *Long-term orientation: Implications for the entrepreneurial orientation and performance of family businesses*. *Entrepreneurship & Regional Development*, 22(3-4), 241-264.

McClelland, D.C. (1961), *The Achieving Society*, Princeton, NJ: D. van Nostrand Company Inc.

Makino, S. and Neupert, K.E. (2000). *National culture, transaction costs and the choice between joint venture and wholly owned subsidiary*, *Journal of International Business Studies*, 31: 705-713

Mueller, S.L. and Thomas, A.S. (2000). *Culture and entrepreneurial potential: a nine country study of locus of control and innovativeness*, *Journal of Business Venturing*, 16:51-75

NBS Newsletter, Vol. 2, 2020. ISSN2734-2034

Nwachukwu, C., Fadeyi, O. Paul, N. and Vu, H.M. (2021). *Women Entrepreneurship in Nigeria Drivers, Barriers And Coping Strategies*. In: I3CAC 2021 Proceedings, Bharath University, Chennai, India.

Obi, A. V, Okechukwu, E. U. & Egbo, D. E. (2017). *Overcoming socio-cultural barriers on economic empowerment of rural women through entrepreneurship in agriculture in South East State, Nigeria*. *International Journal of Academic Research in Economics and Management Sciences*, 6(4):199-224.

Oboh, I. & Nwachukwu, C.E. (2018). *Entrepreneurial support in Nigeria: A review paper*. *Management Strategies*, 2(40):45-51

OECD (2012). *Gender equality in education, employment and entrepreneurship*. Final Report to the Meeting of the OECD Council at Ministerial Level 2012 Paris, 23-24 May 2012.

Ogundana, O. M., Simba, A., Dana, L. P., & Liguori, E. (2021). *Women entrepreneurship in developing economies: A gender-based growth model*. *Journal of Small Business Management*, 59(sup1), S42-S72.

Oluwatomipe, A. P., Adebanye, O. I., Babatunde, A. A., & Paul, S. O. (2015). *Exploring the hindrances to women entrepreneurship, development and prosperity in Nigeria*. *Journal of Entrepreneurship: Research & Practice*, 3-13.

Ozgen, E. (2012). *The effect of national culture on female entrepreneurial activities in emerging economies*, *International Journal of Entrepreneurship*, 16, Special Issue: 69-92

Radziszewska, A. (2014). *Intercultural dimensions of entrepreneurship*. *Journal of Intercultural Management*,6(2): 35-47.

Panda, S. (2018), "*Constraints faced by women entrepreneurs in developing countries: review and ranking*", *Gender in Management*, 33(4), 315-33.

Rathna, C., Badrinath, V., & Anushan, S. S. S. (2016). *A study on entrepreneurial motivation and challenges faced by women entrepreneurs in Thanjavur district*. *Indian Journal of Science and Technology*, 9(27):1-10.

Rubio-Banon, A., & Esteban-Lloret, N. (2016). *Cultural factors and gender role in female entrepreneurship*. *Suma de Negocios*, 7(15): 9-17.



- Shane, S., Kolvereid, L. and Westhead, P. (1991). *An exploratory examination of the reasons leading to new firm formation across country and gender*, *Journal of Business Venturing*, 6:431-446
- Shane, S. (1992). *Why do some societies invent more than others?*, *Journal of Business venturing*, 7:29-46
- Shane, S. (1994a). *The effect of national culture on the choice between licensing and direct foreign investment*, *Strategic Management Journal*, 15: 627-642
- Shane, S. (1994b). *Cultural values and the championing process*, *Entrepreneurship Theory and Practice*, 18: 25-41
- Shane, S. and Venkataraman, S. (2000). *Renegade and rational championing strategies*, *Organization Studies*, 17:751-777
- Tajeddini, K., Mueller, S.L. (2009). *Entrepreneurial characteristics in Switzerland and the UK: A comparative study of techno-entrepreneurs*. *Journal of International Entrepreneurship* 7:1-25.
- Tehseen, S., Deng, P., Wu, B., & Gao, Y. (2021). *Culture values and entrepreneurial innovativeness: a comparative study of Malaysian ethnic entrepreneurs*. *Journal of Small Business Management*, 1-34.
- Thomas, A.S., and Mueller, S.L. (2000). *A case for comparative entrepreneurship: Assessing the relevance of culture*, *Journal of International Business Studies*, 31: 287-301
- Ugwa, M., Okonkwo, C. J., & Igwegbe, D. O. (2019). *Influence of Culture on Women Entrepreneurship in Nigeria*. *Forshen Hub International Journal of Economics and Business Management*, 1(1):1-12.
- Ukommi, A.S. and Agha, E.O (2016). *Women entrepreneurship in Nigeria: A study of Women in Uyo metropolis*, *International Journal of Social Sciences* 10(4):92-110.
- Van der Marel, T. (2018). *Cross-country differences in social and traditional entrepreneurship: The role of national culture*. MSc Thesis, University of Groningen, Faculty of Economics and Business, available at: [https://feb.studenttheses.ub.rug.nl/21171/1/MT\\_T.D.van.der.Marel.pdf](https://feb.studenttheses.ub.rug.nl/21171/1/MT_T.D.van.der.Marel.pdf)
- Vershinina, N., Kassa Woldensbet, B. and Murithi, W. (2018). *How does national culture enable or constrain entrepreneurship? Exploring the role of Harambee in Kenya*, *Journal of Small Business and Enterprise Development*, 25(4): 687-704.
- Woldie, A. and Adersua, A. (2004). *Female entrepreneurship in a transitional economy, Business women in Nigeria*, *International Journal of Social Sciences* 31(1):78-93

*A scientific paper***Hatidža Jahić, Ph. D.**

School of Economics and Business, University of Sarajevo

E-mail address: hatidza.jahic@efsa.unsa.ba

**Alka Obadić, Ph. D., Full Professor**

Faculty of Economics and Business, University of Zagreb

E-mail address: aobadic@efzg.hr

**INVESTIGATION OF SOCIAL AND EMOTIONAL LIFE AND GENDER DIFFERENCES OF UNIVERSITY STUDENTS IN BOSNIA AND HERZEGOVINA AND CROATIA DURING THE COVID-19 PANDEMIC****ABSTRACT**

*The COVID-19 pandemic as accurately a historical and unique event causing a paradigm shift in ways how we live but also how business function. In addition to the health system, the education system was the first “under treat” since the beginning of the pandemic. Universities were forced to completely switch to remote teaching that was later characterized as “emergency remote teaching”. Parallel to this, governments imposed severe measures of distancing among everyone, including both students and staff. This has brought numerous changes to students’ lives. Thus, the main aim of this paper is to investigate how the COVID-19 pandemic affected the social and emotional life of university students in Bosnia and Herzegovina (BiH) and Croatia. For this purpose, the article uses data available from a comprehensive Global Student Survey “Impacts of the COVID-19 Pandemic on Life of Higher Education Students” which was carried out among 30 000 higher education students coming from 129 countries during the period May – June 2020 via the open-source web. The Survey was conducted through two waves however since data on BiH is available only from the first wave, the paper employs the dataset from the first one. Thus, BiH’s sample includes 409 responses while Croatian sample includes 673 responses. Gender and field of study effect is significant in few segments i.e., female students tend to be more worried about certain issues. Students of natural and technical sciences tend to feel significantly more hopeful and ashamed compared to their colleagues who were studying arts and social sciences. This paper also provides recommendations for education authorities and other relevant stakeholders for improving student’s engagement and their mental health and well-being.*

**Key words:** COVID-19, social, emotional, students, gender, university.

**1. Introduction**

The COVID-19 pandemic that has unfortunately become our daily routine in the last two years is for sure a historical and unique event causing a paradigm shift in ways how we live but also how business function. When it comes to education, significant and fast changes have taken place due to the COVID-19. Technological change is considered as one of the drivers of development of universities since universities across the globe started with the implementation of different learning models such as distance learning, online learning, mobile learning, hybrid

learning and others however COVID-19 pandemic was a big push for the entire process of technological change making technology a central part of students' life today. Emergence of the pandemic has forced universities to completely switch to online teaching. Several authors have coined a term “emergency remote teaching” since universities have been forced to completely switch to remote work (Hodges et al., 2020; Milman, 2020; Rapanta et al., 2020). To put it precisely remote teaching is a “response to a crisis and is a temporary shift of instructional delivery that involves the use of fully remote models of instruction” (Hodges, et al., 2020).

The year 2020 will undoubtedly go down in history as the year of the COVID-19 pandemic, which tremendously reshaped the socio-economic situation all over the world (Ravšelj et al., 2021: 245). Government and their health authorities focused on the measures to fight the pandemic and social distancing proved to be one of the most effective measures to prevent the spread of COVID-19. This meant minimizing contact and the distance between everyone, including both students and staff. Thus, this caused a serious in-person time lost at all education levels globally. The COVID-19 pandemic has started a debate, globally on the issues of mental health, emotional life and well-being of all age groups. Closing of schools and universities, continuous implementation of distancing measures and isolation have brought numerous changes to students' lives. Thus, the main aim of this article is to explore how the COVID-19 pandemic affected the social and emotional life of university students in Bosnia and Herzegovina (BiH) and Croatia. For this purpose, paper uses data available from a comprehensive Global Student Survey “Impacts of the COVID-19 Pandemic on Life of Higher Education Students” which was carried out among 30 000 higher education students coming from 129 countries during the period May – June 2020 via the open-source web. The Survey was conducted through two waves however since data on BiH is available only from the first wave, the paper employs the dataset from the first one. Thus, Croatian sample includes 673 responses while BiH's sample includes 409 responses.

In the context of the COVID-19 pandemic, this study examines the following research questions:

- R1: How did the COVID-19 pandemic affected social and emotional life of university students in Bosnia and Herzegovina and Croatia
- R2: Are there any gender difference in the COVID-19 effect on social and emotional life of university students in Bosnia and Herzegovina and Croatia?
- R3: Are there any differences in the effects of the COVID-19 on students within different field of study of university students in Bosnia and Herzegovina and Croatia?

The paper is organized as follows: after introduction, literature review provides an overview of the most recent literature on the effects of COVID-19 pandemic on mental health and emotional life of students. The detailed explanation of methodology and data used is provided in the third part of the paper. This is followed by the presentation of results and the discussion. Concluding remarks and recommendations are provided at the end of the paper. Lastly, the reference list is provided at the end.

## 2. Literature review

After two years of fighting and living with the COVID-19 pandemic, “social distancing” is one of the most important measures used and it aims to reduce interpersonal contact and thus minimizing the community transmission that could easily develop in highly dense social networks such as university campuses (Weeden & Cornwell, 2020). Social distancing meant no

or very low social relations and interactions and Richardson et al. (2017) identifies these two as a key factors for student's positive experience and satisfaction in online learning.

Contemporary literature discusses several aspects of online learning environment. First set of literature analyzes the effects and the importance of different relationships that students have. Authors such as Weidlich & Bastiaens (2018) and Zhao et al. (2005) put in the center the students relationships with teachers and their peers and they consider these as the most relevant for learning process. Even in the online learning environment students have to feel that they are engaged, that they are able to develop more personal relationships and that they belong to a community (Joksimovic, et al., 2015; Lowenthal & Snelson, 2017; Oh et al., 2018). This has proven to be possible in previous studies where authors have shown that online learning is able to create a feeling of belonging to a community and a feeling of connection with other students and use these to learn and grow (Cho & Tobias, 2016; Akcaoglu & Lee, 2016). Without a doubt this demand serious coordination and collaboration of all stakeholders within the education system.

Students easily start to feel isolated and teacher should make themselves easily available in the online learning environment and this has been proven as a significant factor for student's engagement and learning outcomes (Joksimovic et al., 2015; Hall & Villareal, 2015; Hunt, 2015; Israel, 2015; Tomas et al., 2015). "The emergency remote learning" caused by the COVID-19 pandemic certainly did not provide enough preparation time for teachers and professors globally. This combined with severe lockdowns and continues social distancing has impacted the social and emotional state of university students. The COVID-19 pandemic is characterized as a stress test for education system (Hodges et al., 2020) but also an overall stressful event (Zhang & Ma, 2020; Ahorsu et al., 2020; COSMO, 2020). Due to social distancing, authors such as Newmark (2020) and Courtet et al. (2020) have referred to the pandemic as a loneliness pandemic caused by the global loneliness virus. Loades et al. (2020) reports that there is a clear association between loneliness and mental health among children and adolescents during the pandemics. Thus, this article focuses on social and emotional aspects of university students' life in emergency remote learning environment.

### **3. Methodology**

#### **3.1. Procedure**

This article uses the database from the comprehensive Global Student Survey "Impacts of the COVID-19 Pandemic on Life of Higher Education Students" which was carried out among 30 000 higher education students coming from 129 countries during the period May – June 2020. The survey was distributed via the open-source web. Its main aim was to examine students' perceptions on the impacts of the first wave of the Covid-19 pandemic on various aspects of their lives globally. It was launched by the Faculty of Public Administration, University of Ljubljana, Slovenia in May 2020, after the first wave of the COVID-19 pandemic.

#### **3.2. Instrument and sample**

The Survey was conducted using a questionnaire where the questions were mostly based on the "The European Students' Union Survey (2020)" with some added new or adopted questions from other recent COVID-19 surveys. The survey focused on the higher education students aged 18 or more covering areas such as: Socio-demographic and academic characteristics, Academic life, Infrastructure and skills for studying from home, Social life, Emotional life,

General circumstances and General reflections. Primarily, the questionnaire was designed in English language and followed by Italian, North Macedonian, Portuguese, Romanian, Spanish and Turkish (Aristovnik at al., 2020; 2021).

The final sample for Croatia includes 673 responses while in case of BiH it includes 409 responses. This makes 2.2% and 1.3% of all responses from the dataset respectively.<sup>1</sup> The survey in BiH has covered five public universities (University of Sarajevo, University of Tuzla, University of Mostar, University of Banja Luka, Džemal Bijedić University of Mostar) and three private universities (International University Sarajevo, Sarajevo School of Science and Technology, Herzegovina University) and one private college (CEPS Centre for Business Studies). In Croatia, six public universities (University of Zagreb, Juraj Dobrila University of Pula, University of Osijek, University of Rijeka, University of Split, and University of Zadar) and one private (Zagreb University of Applied Sciences) university were covered in the survey (Obadić, 2021).

### 3.3. Sample characteristics

This paper focuses on the social and emotional aspects of students' lives during the COVID-19 pandemic in Bosnia and Herzegovina and Croatia. Table 1 below gives socio-demographic characteristics of the sample (international level) and for Bosnia and Herzegovina and Croatia. The selected characteristics include: age, gender, citizenship, student status, level of study, field of study, scholarship, ability to pay and relevant information on the cancellation of onsite classes.

**Table 1:** Socio-demographic characteristics - number (%)

Age	Total sample	Bosnia and Herzegovina	Croatia
Mean (SD)	23.6 (5.8)	21.5 (3.3)	22.3 (3.7)
Under 20	6211 (26.9)	75 (18.4)	27 (4.0)
20-24	12670 (54.9)	308 (75.7)	576 (84.3)
25-30	2269 (9.8)	15 (3.7)	58 (8.5)
Over 30	1934 (8.4)	9 (2.2)	22 (3.2)
<b>Gender</b>			
Male	10210 (34.4)	147 (35.9)	187 (27.5)
Female	19495 (65.6)	256 (62.9)	493 (72.5)
<b>Citizenship</b>			
Yes	28273 (94.1)	395 (69.6)	654 (95.8)
No	1758 (5.9)	13 (3.2)	29 (4.2)
<b>Status</b>			
Full-time	26418 (88.1)	394 (96.3)	600 (87.7)
Part-time	3575 (11.9)	14 (3.4)	84 (12.3)
<b>Level of study</b>			
First	23986 (80.5)	359 (97.8)	410 (60.0)
Second	4408 (14.8)	43 (10.5)	266 (38.9)
Third	1386 (4.7)	5 (1.2)	7 (1.0)
<b>Field of study</b>			
Arts and humanities	2998 (10.2)	7 (1.7)	52 (7.6)
Social sciences	10878 (37.0)	284 (69.4)	588 (86.5)
Applied sciences	9157 (31.1)	14 (3.4)	12 (1.8)

<sup>1</sup> The number of respondents may differ due to missing values.

Age	Total sample	Bosnia and Herzegovina	Croatia
Natural and life sciences	6392 (21.7)	100 (24.4)	28 (4.1)
<b>Scholarship</b>			
Yes	5769 (29.2)	84 (20.5)	116 (22.1)
No	13976 (70.8)	212 (51.8)	409 (77.9)
<b>Ability to Pay*</b>			
Yes	10374 (52.6)	160 (53.9)	275 (52.2)
No	9349 (47.4)	137 (46.1)	252 (47.8)
<b>Cancelled Onsite Classes</b>			
Yes	22758 (86.7)	301 (73.6)	529 (83.6)
No	3486 (13.3)	75 (18.3)	104 (16.4)

Note: Final dataset consist of 30,838 respondents with 673 and 409 in Croatia and Bosnia and Herzegovina respectively. The number of respondents may differ across sections due to missing values. \* Refers to respondents being able to pay overall costs of study before the Covid-19 pandemic quite easily, easily or very easy.

Source: Authors

In the sample, at the international level, the average age of higher education students was 23.6 years which is higher than the average in two analysed countries, 21.5 years in Bosnia and Herzegovina and 22.3 years in Croatia. From the gender perspectives females make more than 60% of total student internationally and in both analysed countries. When it comes to respondents' level of study 80.5% globally were first cycle students while 60.3% and 87.8% in Croatia and Bosnia and Herzegovina respectively were students of first cycle. Regarding the field of study majority of respondents in both, Croatia and Bosnia and Herzegovina were social sciences students (86.5% and 69.4%) while on the global level 37.0% were social sciences and 31.1% applied sciences students (Obadić, Jahić, 2022).

Different aspects of student's emotional and social life (such as emotions, personal worries, communication with other people) were measured on a 5-point Likert-type scale ranged from 1 (lowest value) to 5 (highest value). Students have stated their satisfaction with different aspects of life during the first lockdown on an ordinal scale (1 - very dissatisfied; 2 - dissatisfied; 3 - neutral; 4 - satisfied; 5 - very satisfied), measuring satisfaction, agreement or frequency. Where relevant, an additional option was offered: "not applicable" (Aristovnik et al, 2020: 6). An Independent samples t-test and Two-way ANOVA were performed in order to answer research questions. Next section provides results that are reported as average values of responses for both countries and percentages, where appropriate.

#### 4. Results and discussion

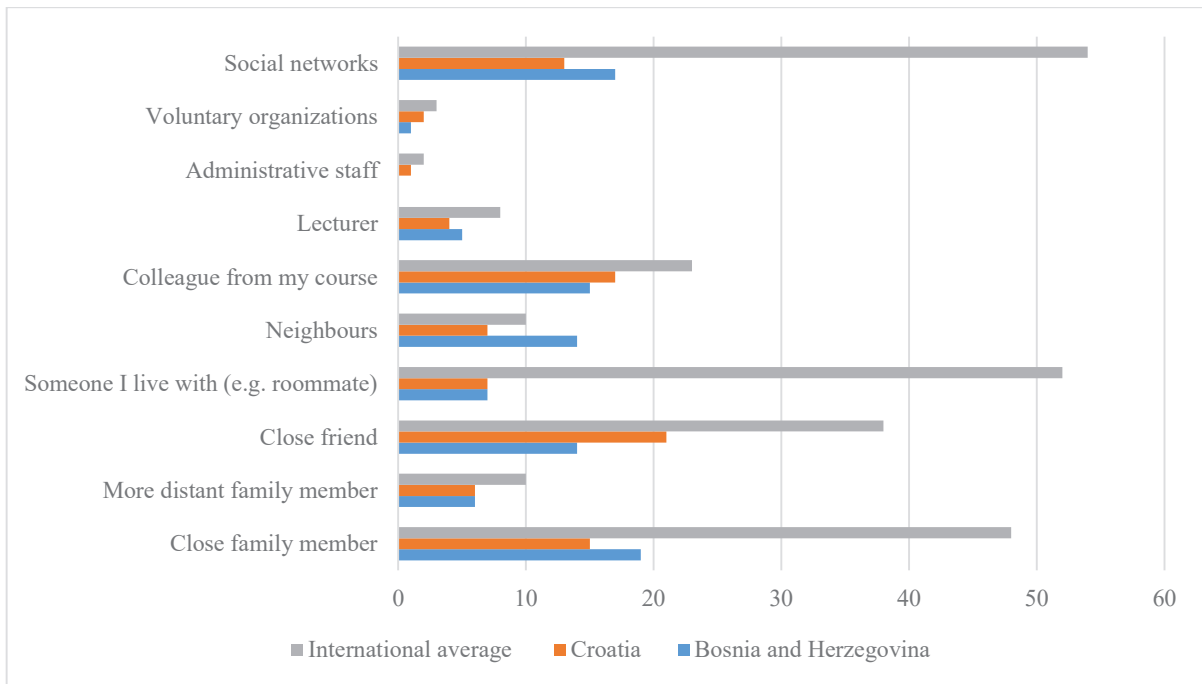
The COVID-19 pandemic which caused global lockdowns and forces education systems to switch to "emergency remote learning" was also a stress for students. Their life which was full of social interaction with peers, teachers and professor changed overnight.

##### 4.1. Social and emotional life

Switching to remote learning at university levels demanded the change in both, patterns and tools of communication. In the global lockdown, education was home-based, remote activity with zero physical contact (Harris, 2020:1). Figure 1 below shows student's communication with selected social groups (once a day, several times a day) during the first wave of COVID-19 pandemic. Internationally, 54% of students were communicating and using social networks, 52% with someone with whom they lived and close family member (48%). This pattern is

similar in both analysed countries, Bosnia and Herzegovina and Croatia. Students in Bosnia and Herzegovina said that top three social groups were: close family member (19%); social networks (17%) and colleagues (15%). Their peers in Croatia during the pandemic were communicating once a day or several times a day mostly with close friends (21%), colleague from the course (17%) and close family member (15%).

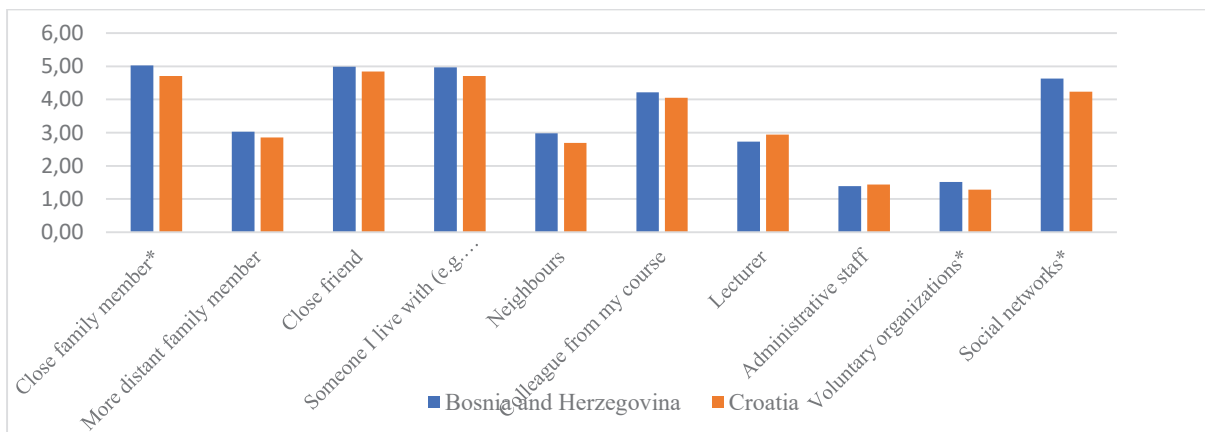
**Figure 1:** How often have you communicated with the following people online since the COVID-19 pandemic? (% of students)



Source: CovidSocLab, 2020 and Author's calculations

Figure 2 below shows the average answers of students from Bosnia and Herzegovina and Croatia.

**Figure 2:** Student's communication with different social groups



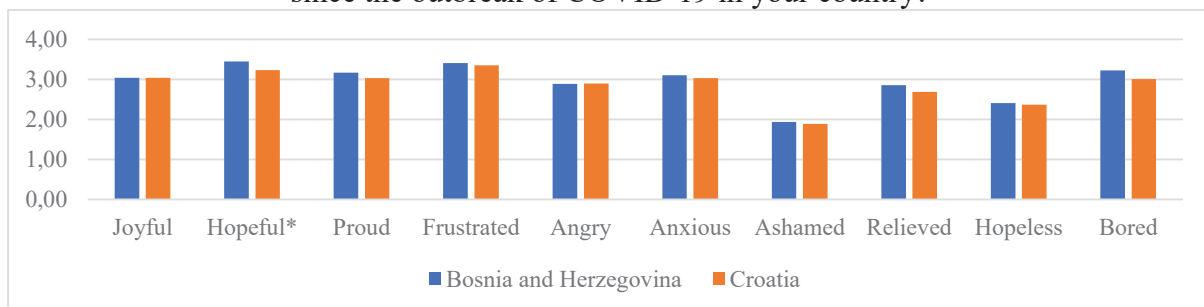
Note: Measurement with a 5-point Likert scale (1 –two or three times a month to 6 – several times a day); \*p<0.05

Source: CovidSocLab, 2020 and Author's calculations

Statistically significant difference between two analysed countries, Bosnia and Herzegovina and Croatia exists in communication with close family members, voluntary organizations and social networks. University students in Bosnia and Herzegovina were communicating more on average with close family members, voluntary organizations and social networks compared to students in Croatia.

In Global Student Survey “Impacts of the COVID-19 Pandemic on Life of Higher Education Students”, student was also asked about their feelings while attending classes during the outbreak of COVID-19. Figure 3 shows the average student’s answers regarding their feelings. Globally, the frequency of the positive emotions felt by the students were as follows: hopeful (40%), joyful (30%), proud (27%), relieved (18%). On the other side, the negative emotions were boredom (45%), anxiety (40%), frustration (39%), anger (26%), hopelessness (19%) and shame (10%) (Aristovnik at al., 2020).

**Figure 3:** How did you feel while attending your classes and studying and preparing for them since the outbreak of COVID-19 in your country?



Note: Measurement with a 5-point Likert scale (1 - never to 5 - always); \* $p < 0.05$

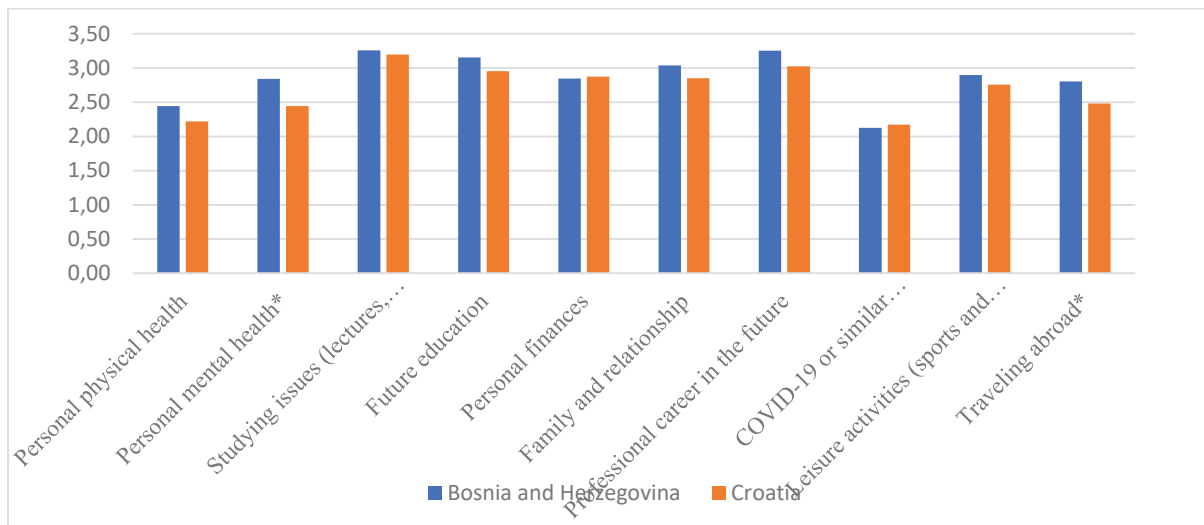
Source: CovidSocLab, 2020 and Author's calculations

Statistically significant difference between BiH's and Croatian students exists among those who felt hopeful. NESET (2021, p. 7) shows that children and youth feel more engaged, happy, and resilient and connected when they are involved in evidence based educational activities. This enables them to create and maintain social contact even during the periods of physical distancing. Implementing these types of educational activities shows a positive effect on emotional stability (Joosten et al., 2020); relaxing effect on students (Alvarez-Guerrero, at al., 2021) and children felt very happy (Branquinho et al., 2020). Different age groups react differently, however NESET (2021) reports that negative emotions increase with age thus previously mentioned studies could give an important input even for the university level students.

#### 4.2. General circumstances and support measures

The COVID-19 pandemic and its lockdowns (full and partial), followed by on-and-off periods of strict epidemiological measures has without a doubt brought high levels of uncertainty and new worries for everyone. Figure 4 shows how worried BiH's and Croatian students were during the pandemic. Students in both countries were mostly worried about studying issues, future education and professional career in the future. Globally, during the lockdown, students were 'most of the time' or 'all of the time' worrying about their professional career in the future (42%) and studying issues, e.g., lectures, seminars, practical work (40%). They were least worried about traveling abroad (22%) and personal physical health (22%), which is expected for that group of population (Aristovnik at al., 2020).

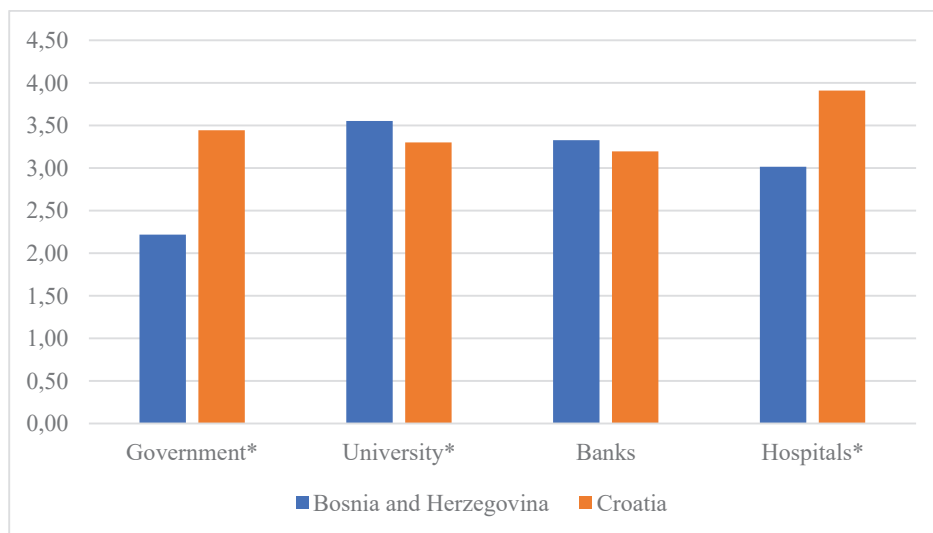


**Figure 4:** How often do you have worries about the following personal circumstances?

Note: Measurement with a 5-point Likert scale (1 –a little of the time to 5 – all the time); \* $p < 0.05$

Source: CovidSocLab, 2020 and Author's calculations

Statistically significant difference between BiH's and Croatian student's counterparts regarding the worries during the COVID-19 pandemic exists in terms of personal mental health issues and travelling abroad. BiH's students were more worried about these than their peers in Croatia. An important factor influencing not only worries that students have but also of the rest of population within the country is how relevant institutions are dealing with the situation caused by the COVID-19 pandemic. Figure 5 below shows the level of student's satisfaction with government, university, banks and hospitals in dealing with the pandemic.

**Figure 5:** Assess the satisfaction in dealing with the COVID-19 pandemic with institutions

Note: Measurement with a 5-point Likert scale (1 - very dissatisfied to 5 - very satisfied), \* $p < 0.05$

Source: CovidSocLab, 2020 and Author's calculations

Croatian students were significantly more satisfied with the work of their government and hospitals while BiH's students were more satisfied with how their university dealt with the COVID-19 pandemic. When it comes to the work of banks, there was no statistically significant difference. Study by Burke & Dempsey (2020) showed that Irish students were not satisfied

with how their universities handled the situation with remote learning by pointing out the need for specific policies that would regulate this specific form of class delivery.

**4.3. Gender perspective and field of study effect**

In order to answer the second research question regarding the possible gender difference in social and emotional life of university students in Bosnia and Herzegovina ad Croatia, Two-way ANOVA analysis was conducted. This has enabled us to see if there is statistically significant difference between countries and gender. Statistically significant results ( $p < 0.05$ ) are presented in Table 2 and Table 3 below.

**Table 2:** Emotional life through gender lenses during COVID-19

	Frustrated			Angry			Anxious		
	Mean Square	F	Sig.	Mean Square	F	Sig.	Mean Square	F	Sig.
Country	1.420	1.537	.215	1.751	1.701	.192	1.410	.916	.339
Gender	8.105	8.771	.000*	4.450	4.324	.003*	23.128	15.038	.000*
Country*Gender	2.979	3.223	.040	1.470	1.429	.240	1.294	.841	.432
	a. R Squared = .045 (Adjusted R Squared = .038)			a. R Squared = .020 (Adjusted R Squared = .013)			a. R Squared = .058 (Adjusted R Squared = .051)		

Note: \* $p < 0.05$

Source: Author's calculations

Gender has a significant effect in terms of three emotions as seen from the Table 2. Meaning that females in both countries tend to, significantly be more frustrated, angry and anxious.

**Table 3:** Gender perspectives of student's personal circumstances

	Personal mental health			Studying issues (lectures, seminars, practical work)			Future education		
	Mean Square	F	Sig.	Mean Square	F	Sig.	Mean Square	F	Sig.
Country	.000	.000	.993	1.281	1.097	.295	.869	.631	.427
Gender	12.673	7.786	.000*	11.029	9.440	.000*	7.958	5.777	.001*
Country*Gender	1.408	.865	.421	4.397	3.764	.024	5.070	3.680	.026
	a. R Squared = .054 (Adjusted R Squared = .047)			a. R Squared = .051 (Adjusted R Squared = .044)			a. R Squared = .043 (Adjusted R Squared = .036)		

Note: \* $p < 0.05$

Source: Author's calculations

As it can be seen from Table 3 gender has a significant effect on three worries that students had, i.e., personal mental health, studying issues and future education. Female students tend to be more worries about these issues compared to their male colleagues.

**Table 4:** Field of study effect on students' emotions

	Hopeful			Ashamed		
	Mean Square	F	Sig.	Mean Square	F	Sig.
Country	.002	.002	.963	3.439	3.338	.068
Field of study	5.016	4.937	.002*	5.086	4.936	.002*
Country*Field of study	1.948	1.917	.125	1.744	1.693	.167
	a. R Squared = ,037 (Adjusted R Squared = ,029)			a. R Squared = ,023 (Adjusted R Squared = ,015)		

Note: \* $p < 0.05$

Source: Author's calculations

Regarding the field of study, it had no significant effect on communication patterns with selected social groups, personal worries and satisfaction with institution in dealing with the pandemic however, the analysis has shown a significant effect of field of study on expressing certain feelings such as feeling hopeful and ashamed. The result show that students of natural and technical sciences tend to feel significantly more hopeful and ashamed compared to their colleagues who were studying arts and social sciences.

## 5. Concluding remarks and recommendations

Higher education system needs to serve the goal of creating a 21st century society based on competitive knowledge and information. This is possible only if the education system is focused on inquiry and evidence-based education activities opposite to dominantly facts-learning systems. Contemporary literature shows that the students who are involved in these types of activities feel happier, engaged, connected and resilient (Joosten et al., 2020; Alvarez-Guerrero, et al., 2021; Branquinho et al., 2020; NESET, 2021). The COVID-19 pandemic has shown that education system needs more flexibility and an open innovation approach in developing the curriculum and teaching methods.

This paper uses Global Student Survey "Impacts of the COVID-19 Pandemic on Life of Higher Education Students" in investigating social and emotional life of university students in Bosnia and Herzegovina and Croatia. The results show very similar patterns of communication with different social groups in BiH and Croatia. University students were communicating mostly with close friends, close family members and colleagues. In terms of emotions, students in both countries shared almost the same feelings during the beginning of the COVID-19 pandemic with the exception of feeling hopeful. BiH's students felt significantly more hopeful than their Croatian peers. Student's worries were also similar with the exceptions of personal mental health issues and travelling abroad, where BiH's students were on average more worried than those in Croatia. Globally, students were least worried about traveling abroad (22%) and personal physical health (22%), which is expected for that group of population (Aristovnik et al., 2020). Gender and field of study effect is significant in few segments i.e., Female students tend to be significantly more frustrated, angry and anxious and more worried about certain issues. Students of natural and technical sciences tend to feel significantly more hopeful and ashamed compared to their colleagues who were studying arts and social sciences.

The pandemic has been a big push for change in both public and private sectors. Education is no exception and the pandemic is also an opportunity for countries to reorganize education systems, their human and technological resources in order to improve their efficiency and effectiveness. The results of this research show the potential thus the following recommendations are formulated: educational and other relevant authorities should work

together on developing wider national surveys on mental health and student's well-being. This would enable continuous assessment and gathering the feedback for policy improvements. Universities should develop mechanism within their curriculums for engagement of students in cases of remote learning and possible isolation. These changes within curriculum should include implementation of evidence-based activities which would enable students to be more engaged, connected and resilient during remote learning.

### **Acknowledgement**

The results used in this article are part of Global student survey "Impacts of the COVID-19 pandemic on life of higher education students" provided by University of Ljubljana, Faculty of Public Administration (CovidSocLab), where the Faculty of Economics and Business participated as a partner institution.

### **REFERENCES**

- Ahorsu, D. K., Lin, C. Y., Imani, V., Saffari, M., Griffiths, M. D., & Pakpour, A. H. (2020): *The fear of COVID-19 scale: Development and initial validation*, International Journal of Mental Health and Addiction, <https://doi.org/10.1007/s11469-020-00270-8>.
- Akcaoglu, M., & Lee, E. (2016): *Increasing social presence in online learning through small group discussions*, The International Review of Research in Open and Distributed Learning, Vol. 17, No.03. <https://doi.org/10.19173/irrodl.v17i3.2293>
- Alvarez-Guerrero, G., de Aguilera, A.L., Racinero-Plaza, S. & Flores-Moncada, L.G. (2021): *Beyond the School Walls: Keeping Interactive Learning Environments Alive in Confinement for Students in Special Education*, Frontiers in Psychology, Vol. 12.
- Aristovnik, A., Keržič, D., Ravšelj, D., Tomaževič, N., & Umek, L. (2021): *Impacts of the Covid-19 Pandemic on Life of Higher Education Students: Global Survey Dataset from the First Wave*. Data in Brief, 39, 107659. <https://doi.org/10.1016/j.dib.2021.107659>
- Aristovnik, A., Keržič, D., Ravšelj, D., Tomaževič, N., & Umek, L. (2020): *Impacts of the COVID-19 pandemic on life of higher education students: A global perspective*. Sustainability, 12(20), 8438. <https://doi.org/10.3390/su12208438>
- Burke, J. & Dempsey, M. (2020): *Covid.19 practices in primary schools in Ireland report*, <https://www.into.ie/app/uploads/2020/04/Covid-19-Practice-in-Primary-Schools-Report-1.pdf> (accessed 14 December 2021)
- Branquinho, C., Kelly, C., Arevalo, L.C., Santos, A. & Gaspar de Matos, M. (2020): *Hey, we also have something to say": A qualitative study of Portuguese adolescents' and young people's experiences under COVID-19*, Journal of Community Psychology, Vol. 48, No. 8, pp. 2740- 2752, <https://onlinelibrary.wiley.com/doi/full/10.1002/jcop.22453> (accessed 14 December 2021)
- Cho, M. H., & Tobias, S. (2016): *Should instructors require discussion in online courses? Effects of online discussion on community of inquiry, learner time, satisfaction, and achievement*, The International Review of Research in Open and Distributed Learning (IRRODL), Vol. 17, No. 2, <https://doi.org/10.19173/irrodl.v17i2.2342>

COSMO (2020): *COVID-19 Snapshot Monitoring (COSMO)*, <https://www.sonar-global.eu/covid-19-projects/covid-19-snapshot-monitoring-cosmo/> (accessed 14 December 2021)

Courtet, P., Oli\_e, E., Debien, C., & Vaiva, G. (2020): *Keep socially (but not physically) connected and carry on: Preventing suicide in the age of COVID-19*, *Journal of Clinical Psychiatry*, Vol. 81, No. 3, pp. 1–3. <https://doi.org/10.4088/JCP.20com13370>

CovidSocLab (2020): *A Global Student Survey „Impacts of the COVID-19 Pandemic on Life of Higher Education Students“Global Database*. <http://www.covidsoclab.org/global-student-survey/global-database/> (accessed 14 December 2021)

Hall, S., & Villareal, D. (2015): *The hybrid advantage: Graduate student perspectives of hybrid education courses*, *International Journal of Teaching and Learning in Higher Education*, Vol. 27, No. 1, pp. 69–80

Harris, A. (2020): *Leading a school during lockdown*, <https://my.chartered.college/wp-content/uploads/2020/04/Harris.pdf> (accessed 14 December 2021)

Hodges, C., Moore, S., Lockee, B., Trust, T., Bond, A. (2020): *The difference between emergency remote teaching and online learning*. <https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning> (accessed 14 December 2021)

Hunt, A. M. (2015): *Blended online learning in initial teacher education: A professional inquiry into pre-service teachers' inquiry projects*, *Journal of Open, Flexible and Distance Learning*, Vol. 19, No. 2, pp. 48–60

Israel, M. J. (2015): *Effectiveness of integrating MOOCs in traditional classrooms for undergraduate students*, *The International Review of Research in Open and Distributed Learning*, Vol. 16, No. 5, pp. 102–118. <https://doi.org/10.19173/irrodl.v16i5.2222>

Joksimovic, S., Gasevic, D., Kovanovic, V., Riecke, B. E., & Hatala, M. (2015): *Social presence in online discussions as a process predictor of academic performance*, *Journal of Computer Assisted Learning*, Vol. 31, No. 6, pp. 638–654. <https://doi.org/10.1111/jcal.12107>

Loades, M.E., Chatburn, E., Higson-Sweeney, N., Reynolds, S., Shafran, R., Brigden, A. & Crawley, E. (2020): *Rapid systematic review: the impact of social isolation and loneliness on the mental health of children and adolescents in the context of COVID-19*, *Journal of the American Academy of Child & Adolescent Psychiatry*, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7267797/> (accessed 14 December 2021)

Lowenthal, P. R., & Snelson, C. (2017): *In search of a better understanding of social presence: An investigation into how researchers define social presence*, *Distance Education*, Vol. 38, No. 2, pp. 141–159. <https://doi.org/10.1080/01587919.2017.1324727>

Milman, N. B. (2020): *This is emergency remote teaching, not just online teaching*, *Education Week*, March 30, 2020., <https://www.edweek.org/leadership/opinion-this-is-emergency-remote-teaching-not-just-online-teaching/2020/03> (accessed 14 December 2021)

NESET (2021). *Distance learning from a student perspective*. No. 3/2021. European Commission. [https://nesetweb.eu/wp-content/uploads/2021/08/NESET\\_AHQ3\\_Distance\\_Learning-3.pdf](https://nesetweb.eu/wp-content/uploads/2021/08/NESET_AHQ3_Distance_Learning-3.pdf) (accessed 14 December 2021)

Newmark, Z. (2020): *We can stop loneliness while we stop coronavirus: Dutch King*, <https://nltimes.nl/2020/03/20/can-stop-loneliness-fight-coronavirus-dutch-king> (accessed 14 December 2021)

Obadić, A. (2021): *Impacts of the COVID-19 pandemic and digitalisation on higher education in Croatia*, Conference proceedings of the International Conference on the Economics of the Decoupling (ICED) / Družić, Gordan; Sekur, Tomislav - Zagreb: Croatian Academy of Sciences and Arts; Faculty of Economics & Business University of Zagreb, 2021, pp. 503-518.

Obadić, A., Jahić, H. (2022): *How wide is the digital divide? Covid-19 pandemic and the higher education digitalization in Croatia and Bosnia and Herzegovina*; u Družić, G., Sekur, T. (ur.), Conference Proceedings of the International Conference on the Economics of Decoupling (ICED)/Zbornik radova međunarodne znanstvene konferencije Ekonomija razdvajanja; Croatian Academy of Sciences and Arts and Faculty of Economics and Business University of Zagreb, Zagreb, 30. studenog – 1. prosinca 2021. (*forthcoming*)

Oh, C. S., Bailenson, J. N., & Welch, G. F. (2018): *A systematic review of social presence: Definition, antecedents, and implications*, *Frontiers in Robotics and AI*, Vol. 5, pp. 114, <https://doi.org/10.3389/frobt.2018.00114>

Rapanta, C., Botturi, L., Goodyear, P., Guardia, L., & Koole, M. (2020): *Online university teaching during and after the covid-19 crisis: Refocusing teacher presence and learning activity*, *Postdigital Science and Education*, pp. 1–23, <https://doi.org/10.1007/s42438-020-00155-y>

Ravšelj, D., Obadić, A., Aristovnik, A. (2021): *Digital transformation of higher education during COVID-19: Croatia and Slovenia in comparative perspective*, Conference proceedings of the International Conference on the Economics of the Decoupling (ICED) / Družić, Gordan; Sekur, Tomislav - Zagreb: Croatian Academy of Sciences and Arts ; Faculty of Economics & Business University of Zagreb, 2021, pp. 234-247.

Richardson, J. C., Maeda, Y., Lv, J., & Caskurlu, S. (2017): *Social presence in relation to students' satisfaction and learning in the online environment: A meta-analysis*, *Computers in Human Behavior*, Vol. 71, pp. 402–417. <https://doi.org/10.1016/j.chb.2017.02.001>

Tomas, L., Lasen, M., Field, E., & Skamp, K. (2015): *Promoting online students' engagement and learning in science and sustainability preservice teacher education*, *Australian Journal of Teacher Education*, Vol. 40, No. 11., <https://doi.org/10.14221/ajte.2015v40n11.5>

Weeden, K. A., & Benjamin, C. (2020): *The small-world network of college classes: implications for epidemic spread on a university campus*, Sociological Science, Vol. 7, pp. 222–241.

Weidlich, J., & Bastiaens, T. J. (2018): *Technology matters – The impact of transactional distance on satisfaction in online distance learning*, The International Review of Research in Open and Distributed Learning, Vol. 19, No. 3, <https://doi.org/10.19173/irrodl.v19i3.3417>

Zhang, Y., & Ma, Z. F. (2020): *Impact of the COVID-19 pandemic on mental health and quality of life among local residents in Liaoning Province, China: A cross-sectional study*, International Journal of Environmental Research and Public Health, Vol. 17, No. 7, pp. 2381, <https://doi.org/10.3390/ijerph17072381>

Zhao, Y., Lei, J., Yan, B., Lai, C., & Tan, H. S. (2005): *What makes the difference? A practical analysis of research on the effectiveness of distance education*, Teachers College Record, Vol. 107, No. 8, pp. 1836–1884.

*A scientific paper*

**Željka Kadlec, univ. spec. oec.**

Virovitica University of Applied Sciences, Department of Economics

J. J. Strossmayer University of Osijek, Faculty of Economics in Osijek / Ph.D. candidate

E-mail address: zeljka.kadlec@vuv.hr; zeljka.tai@gmail.hr

**Tony Dvoržak, struč. spec. oec.**

City Grubišno polje, Administrative Department for Economy

Virovitica University of Applied Sciences, student

E-mail address: tdvorzak@gmail.com; tony.dvorzak@vuv.hr

**Marijana Lovrenović, Master of Economics**

Drava Pulp d.o.o.

E-mail address: marijana3108@gmail.com

## **SUSTAINABLE DEVELOPMENT OF SMALL TOWNS IN THE REPUBLIC OF CROATIA**

### ***ABSTRACT***

*The aim of this paper is to get insight into the concept of sustainable development of small towns and identify the implementation of sustainable development into the Croatian urban space by explaining the structure of small towns. The aim of this paper is to consider the factors (financial, economic, technological, sociological, transport) that affect the sustainability of small towns, highlighting the challenges that small towns face in introducing, maintaining and developing the concept of sustainability. The analysis of the current situation in Croatia and in the world will highlight examples of successful and sustainable towns in Croatia and the world and give an overview of the future of sustainable development of small towns. The research uses qualitative methodology (content analysis) of small towns in Croatia related to sustainable development. The quantitative method, which was used in the questionnaire survey, consisted of several sets of questions, which allowed the assessment of the subjective perception of sustainable development of small towns. The total sample consisted of an intentionally chosen sample of actors from the administration of small towns. Descriptive analysis will be used for interpreting quantitative data to determine differences in the sample. Based on the perception of actors from the administration of small towns, possible solutions and recommendations for the successful implementation of the concept of sustainability in small towns will be highlighted. Along with concrete proposals, the paper will present the theoretical contribution to the importance of applying the concept of sustainable development in small towns of the Republic of Croatia.*

**Key words:** *sustainability, sustainable development, small towns, Croatia.*

### **1. Introduction**

Excessive use of resources and not caring about the environment in which we live in has brought us to the limits of sustainability. Given that the concentration of population is much higher in cities, the question of survival and further expansion of cities arises, primarily



through their sustainable development. Regardless of the size of cities, more precisely the number of inhabitants, all cities face serious challenges of urban sustainability, some of which are more important for large and some for small cities. Small cities, on the other hand, most often encounter issues related to financial, technological, managerial-organizational, or political factors of sustainability. Adding to this the general situation in the Republic of Croatia when it comes to the development of rural or less urban areas, it can be pointed out that the sustainable development of small cities is very important for balanced development. The issues of this paper emphasize the analysis of sustainable development, both in the world and in the Republic of Croatia, highlighting examples of sustainable development and finding links between them to define best practices and make suggestions and recommendations for improvement. Defining sustainable development and determinants of sustainable development of small cities, the main challenges in sustainability will be presented, and the degree of their sustainability will be presented on the examples of good practices of Novigrad, Koprivnica, and Ludbreg. The analysis of attitudes towards the sustainability of cities will establish whether small cities in the Republic of Croatia apply the concept of sustainable development and which sustainable development activities are carried out in cities.

## **2. Perspective of sustainable development of small cities**

Each EU country independently decides on individual programs depending on the specifics of their settlements. It is extremely important to use the targeted funds of the Rural Development Program of the Republic of Croatia for the period 2014-2020 for Croatian rural and urban settlements, i.e. municipalities, and small and medium-sized cities. Sustainable urban development at EU level can be monitored through other programs, such as “Cities of Tomorrow - Challenges, Visions, Ways Forward, European Commission”, which emphasizes the importance of a holistic model of sustainable urban development (European Union, 2011). Regardless of the negative demographic trends, a planned and implemented more balanced development is the only model for preserving the vitality of life in small and medium-sized cities and their surrounding areas (Svirčić Gotovac, 2016). The United Nations Sustainable Development Program until 2030, which is considered a universal development plan and represents a global platform for addressing the most important challenges of today in terms of economic, social, and environmental dimensions, should certainly be included in the issue of sustainable urban development. Objective 11 “Make cities and settlements inclusive, safe, adaptable and sustainable” (Croatian Government, 2019) should be emphasized. It is clear that the problem of more balanced development involves many factors and cannot be solved in a short time, but the overall increase in population, especially in Asia, Africa or South America, does not support the sustainability of small cities on the European continent.

### **2.1. Analysis of the application of sustainable development in the world**

Some of the “smartest cities” in the world are located in Europe and can make progress in terms of connectivity and efficiency in the use of renewable and non-renewable energy sources. The main challenge in the future could be greater involvement and accessibility of urban environments in order to meet the diverse needs of the population (European Union, 2017). The Regional Development Strategy until the end of 2020 states, among other things, that the sustainability of cities is a complex process that requires implemented and coordinated engagement of all involved parties at the local level (Eurostat, 2016; Ivić, 2017). “Development and environmental issues of small cities in developing countries have largely been overlooked although these settlements are of global demographic importance and often face a “triple challenge”. That is, they have limited financial and human resources to address

growing environmental problems that are related to both development (e.g., pollution) and under-development (e.g., inadequate water supply)." (Veron, 2010, p. 2833). Shalina, Stepanova and Drozdova (2020) also talk about the development of small towns and settlements, emphasizing that was the rate of development of small towns very low. A step toward sustainable development of small cities has been determined of basic requirements for sustainable smart cities like land, people, infrastructure and governance. On the other hand, an integrated approach toward smart cities requires dimensions for smart cities such as smart people, smart living, smart environment, smart governance, smart economy and smart mobility (Kumar et al., 2022). On that trail Sdrali (2020) emphasized the importance of creativity in transforming small towns into smart cities. According to them "while creative strategies are mainly developed in big cities, it has been also stressed the important role of strategies based on creativity in small cities. Small cities that need to be reviewed should include the interlinked components of creative industries, creative space, and creative class. Due to the unique endogenous characteristics of small cities that are able to attract people and retain the residents (natural landscapes, cultural heritage, symbolic amenities, and social capital), creativity was crucial to the sustainable development of small cities. Local leadership is a significant factor in promoting strategies based on creativity. Local leaders can be promoters or facilitators of the development of creative ecosystems if they are proactive and future-oriented and embrace institutional change for development." The empirical research of Bruzzone, Dameri, Demartini (2021, p. 18) "on resilience reporting issued by pioneer cities in Europe allowed to discuss how to formulate effective resilience frameworks that are able to integrate within the city governance processes: a strategic vision and citizen involvement, planning, measurement, and reporting. The most interesting and complete implementations of a resilience framework issued by the city of Athens, Barcelona, Lisbon, and London."

Hameed (2019, p. 11) points out that "the infrastructure of telecommunications is the cornerstone of smart cities, but it is not enough to create a smart city without the rest of the elements (citizen, management, the economy, environment and living). The transformation of cities into intelligence requires the development of vision, goals, and strategies translated into smart projects, followed by the development of communications infrastructure (data - networks) to build a range of applications that are the most intelligent color of the city (intelligent economy, intelligent infrastructure and smart living)." Oborin and Sheresheva (2018, p. 748) also states that networking of small cities is of high importance for social and economic regional development. "Key areas of small cities networking are trade, transport, recreation, and agriculture, since there are prerequisites for further strengthening these types of specialization as profile ones. Networking of small cities with more developed centers is a promising direction, as it allows them to participate in mutually beneficial allocation and exchange of resources, to increase the attractiveness and accessibility, to modernize the infrastructure taking into account peculiarities of demand, as well as current and prospective specialization of each city." According to Guzhavina (2021) digitalization has become a significant trend in the development of modern humanity. The pandemic has accelerated the digitalization of most countries. They contribute to the development of new practices, open up new opportunities for communication. They also require certain skills and competencies, education. But digital environment affects people in different ways. It creates new problems and restrictions, increases risks, including increasing social inequalities. According to Kumar et al., (2022, p.14) "technologies for a smart city are the crucial parameter to monitor and solve the city problems. Technology is the sole tool that can boost the journey of cities toward future smart cities. In daily life, different types of technologies are being used by the residents. technologies like intelligent transport systems, smart health systems, smart security systems, rapid information exchange, and smart waste management systems are operated

using a combination of AI, sensors, and IoT, etc. “Smartness” is not about deploying sensors and modern communications, but it is about using the data and technology purposefully to enhance quality of life and making better decisions.”

According to Dril, Galkin and Bibik (2016, p. 46) there is a need to form both national and local city marketing strategies. Because, applying city marketing as a tool is to support sustainable development in small cities. In the modern world, with rapidly developing technologies and exponential increase in competition - not only between enterprises, but also between territories – implementation of up-to-date approaches to city logistics and development is of crucial concern. While trying to be on the top of the ranking of cities in the region, the country or the world, most cities do not always use all available resources and competitive advantages. City marketing is considered by the Seisdedos (2004) as one of the modern tools for forming and strengthening a city brand worldwide.”

The analysis of sustainable development of cities in the world leads to the realization that such development is conditioned by economic and technological changes. Smaller cities have an advantage in terms of agility, flexibility, and faster response to change. Building sustainable cities stimulates growth and new employment and represents a constructive investment in the European future based on a sustainable and environmentally friendly economy with the aim of placing Europe at the forefront of renewable energy production (Grubić, 2009). In addition to the above issues that should be included in the process of analysis of sustainable development of cities in the world, there are several scales and indices which links the quality of life, sustainable development or intelligence of cities, the so-called category of "smart cities". Among the most accepted are: the Mercer scale, the Sustainable Cities Index conducted by Arcadis in collaboration with the British Center for Economic and Business Research (Cebr), and the Smart City Index conducted by The Institute for Management Development in collaboration with Singapore University of Technology and Design (SUTD)

## **2.2. Analysis of the application of sustainable development in the Republic of Croatia**

Uneven dispersion of cities, uneven economic development, depopulation, lack of financial resources, lack of educated workforce, and concentration of power in the capital are just some of the problems that hinder the sustainable development of small cities in the Republic of Croatia (Perišić, 2013). However, this does not mean that there are no bright examples of successful sustainable cities in Croatia that manage to implement sustainable development despite many problems. If we look at the general economic situation in Croatia, in the past period we have achieved much more stable economic growth than before the global financial crisis. In terms of budgetary responsibility, for the first time in history, Croatia recorded a budget surplus for three years in a row (2017-2019). This has led to a significant reduction in public debt, from 84.3% of GDP in 2015 to 72.7% of GDP in 2019. The credit rating in 2019 was restored to the investment level. In addition, the living standard of Croatian citizens in 2019 reached 65.2% of the European Union average. Unfortunately, this economic trend was interrupted by the emergence of the crisis that resulted in a global pandemic. According to the National Development Strategy of the Republic of Croatia until 2030, Croatia has responded better to this crisis, primarily due to the flexible labor market model and product market control, and significantly better fiscal position. The Economic Recovery Plan is contained in the National Development Strategy of the Republic of Croatia until 2030, according to which in this decade Croatia must overcome the consequences of the corona crisis and improve cooperation with other EU member states (Croatian Parliament, 2021).

According to the Croatian Institute for Spatial Development (2017), in order to successfully connect the city and its surroundings, urban development needs to be balanced, primarily in terms of establishing functional urban-suburban transport, oversight of city outskirts, and preventing urban sprawl. As a precondition for the development of smart and sustainable cities, it is necessary to invest in people, efficient management, environmentally friendly transport, a high-tech economy, environmental protection, and quality of life. In addition, it is necessary to create conditions for the development of systematic creative solutions that will address the most important social challenges in cities (Croatian Parliament, 2021). The future of sustainable development of small cities in the Republic of Croatia will primarily depend on the timely, quality, and consistent implementation of activities. The basic precondition for successful development and progress is the interest of all stakeholders who in every possible way participate in its implementation, and this is where the foundation should be built for all future activities aimed at sustainable development. Milanović Glavan (2021) states that a smart city should provide an urban environment that provides residents with a high quality of life, while generating economic growth. Smart cities today are not just a global trend, they are becoming a necessity. The success of a smart city requires cooperation with civic authorities, as coordination between different levels of government is often the biggest challenge for smart cities. He also points out that the future of cities lies in merging new technologies with existing infrastructure to address tangible, urgent issues such as environmental sustainability and economic opportunities. Successful smart cities will build a strong, flexible, digital infrastructure that integrates new technology into the existing structure.

### **3. Methodology of research of sustainable development of selected cities**

The research in this paper is based on a combination of qualitative and quantitative analysis. As part of the quantitative analysis, a survey was conducted through a questionnaire to determine the perception of small cities in the Republic of Croatia, more precisely their employees, on the application of the concept of sustainable development and related activities carried out in cities. The collected data were processed by descriptive statistical method and presented in the form of charts. A comparative method was used in the qualitative analysis to identify similarities and differences in sustainable development and to determine in what way and which activities are the most frequent, and how their position changes over time on scales and indices that measure sustainable urban development. The research methodology is based on two fundamental goals. The first goal is to establish whether small cities in the Republic of Croatia apply the concept of sustainable development. The second goal is to establish which sustainable development activities are carried out in cities. The general hypothesis based on the objectives of the research is defined and reads H0: Small cities in the Republic of Croatia are successfully implementing activities on which the concept of sustainable development is based.

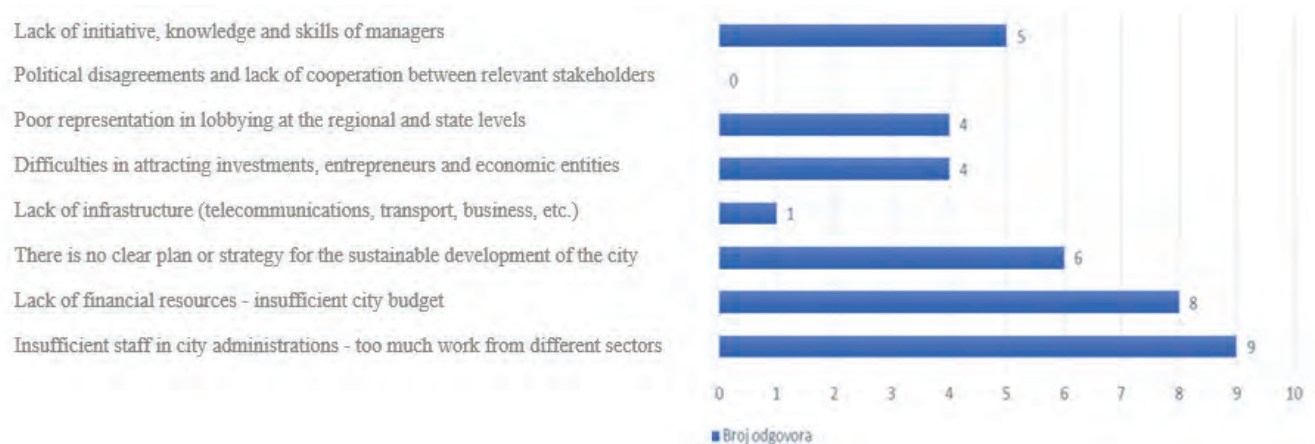
#### **3.1. Interpretation of quantitative research results and discussion**

The survey was conducted in July 2021 through a questionnaire sent to employees employed in city administrations, departments, and services in charge of sustainable development in order to collect data, information, views, and opinions on the subject of the research. 40 cities participated which have less than 35,000 inhabitants according to the latest census of the Central Bureau of Statistics. Although the population of the target group consist all cities of Croatia, due to the short time for conducting the survey, the population of randomly selected small towns was made up. Therefore, the survey questionnaire was sent to the following cities: Dugo Selo, Jastrebarsko, Donja Stubica, Oroslavje, Hrvatska Kostajnica, Novska, Duga

Resa, Ozalj, Ludbreg, Ivanec, Koprivnica, Đurđevac, Garešnica, Grubišno Polje, Delnice, Krk, Novalja, Senj, Orahovica, Virovitica, Lipik, Pleternica, Nova Gradiška, Biograd na Moru, Nin, Belišće, Đakovo, Našice, Drniš, Vodice, Ilok, Županja, Komiža, Vrgorac, Novigrad – Cittanova, Umag, Opuzen, Metković, Mursko Središće, Prelog. Feedback was received from 14 small towns or 35% of those who filled out the survey questionnaire, which is a satisfactory response. It should certainly be noted that this is a limitation of research since it is a very small sample of Croatia, but can be used as a prerequisite in future research and discussion.

50% of respondents are familiar with the concept of sustainable development but do not work on its implementation, while the remaining 50% of respondents said they are familiar with this concept and are actively involved in its implementation. Given that more than 70% of respondents answered that they spend less than 25% of their work time on sustainable development, it is concluded that those employees for whom sustainable development is one of the main work tasks spend too little time for it. Therefore, it is clear that the overload of small-city employees with a wide range of jobs from various segments creates a problem in the quality implementation of sustainable development activities. In addition, quality and long-term implementation of sustainable development is a process that is continuous and complex and cannot be done superficially, without a significant investment of time, knowledge, skills, and creativity. 78.6% of respondents think so and are aware that small cities are initially at a disadvantage compared to large cities in the Republic of Croatia.

**Chart 1:** Challenges/obstacles for quality implementation of the concept of sustainable development in cities



Source: Authors

In addition to Chart 1, respondents were able to offer multiple answers, at least 1 and at most 3. By analyzing the answers of the respondents, it is concluded that the main challenge or obstacle to quality implementation of sustainable development in cities is lack of employees and overload of existing employees, then the lack of financial resources and the lack of a plan or strategy for the sustainable development of the city. A plan, strategy, or other act of sustainable development was drafted by 50% of the surveyed local self-government units, which shows that some units take the importance of sustainable development more seriously than others. At the same time, 64.3% of the cities that participated in the survey implement urban planning and development measures that correspond to the principles of sustainable development. This means that most cities take care of urban spatial planning and thus facilitate activities related to it. Also, 57.1% of respondents effectively encourage public-

private partnerships, which should be improved and defined as one of the priorities for starting and developing an economy that is significantly dependent on private entrepreneurship. The analysis of withdrawals from ESI funds leads to the conclusion that there are no local governments that did not withdraw funds from the EU, and as many as 50% of them withdrew funds for more than five projects during the financial period 2014-2020. This is an indicator of the successful withdrawal of funds from the EU, regardless of the existing problems of small cities.

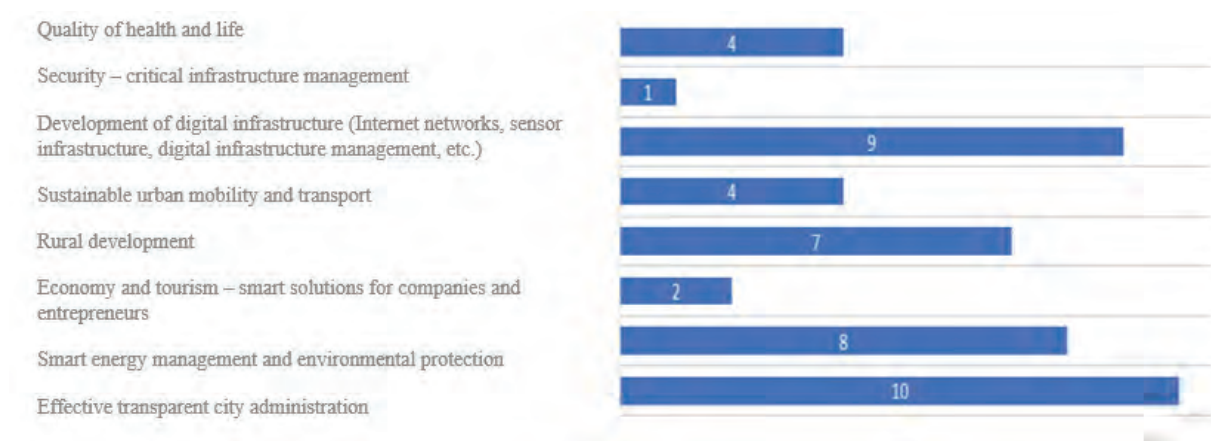
**Chart 2: Smart city plan/strategy**



Source: Authors

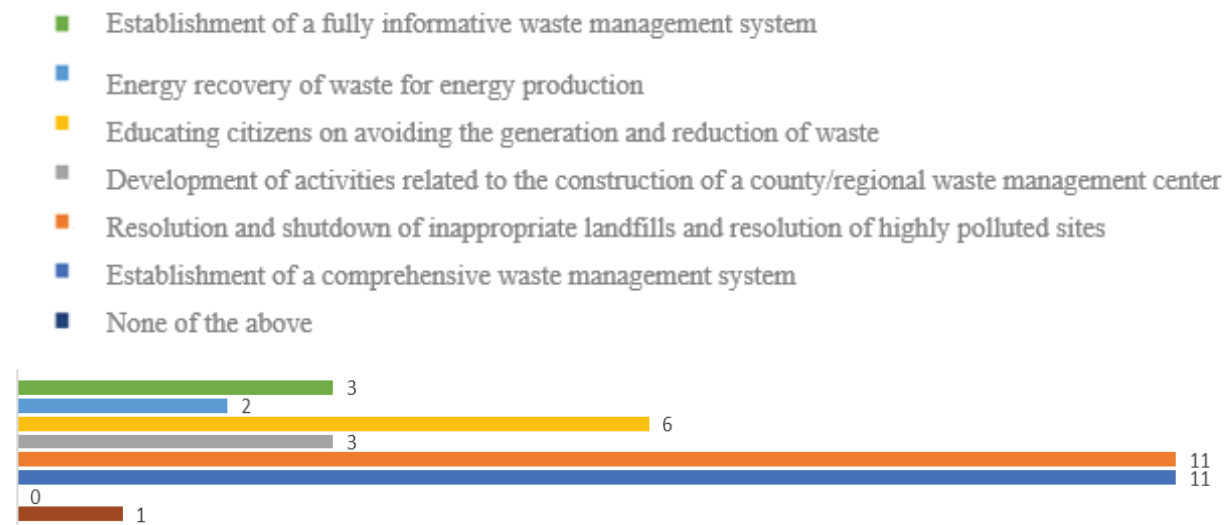
The answers to the question related to the smart city plan/strategy (Chart 2) show that 14.3% of cities have such a document, while the same percentage of cities do not have such a document and do not plan to draft it. The largest percentage of cities, 42.9%, do not have a smart city plan or strategy but plan to develop it within a period of 2 years. The answers to this question lead to the conclusion that cities understand the importance of such documents, and if they do not have them, they plan to draft them in a shorter period of time.

**Chart 3: Strategic areas within the smart city concept**



Source: Authors

The most frequently implemented strategic areas within the smart city concept (Chart 3) are efficient and transparent city administration, digital infrastructure development (internet networks, sensor infrastructure, digital infrastructure management, etc.), smart energy management, and environmental protection. It is a positive indicator that cities have recognized the importance of efficient and transparent city administration, given that it is one of the main stakeholders in the implementation of the concept of a smart and sustainable city.

**Chart 4:** What measures are being implemented for successful waste management?

Source: Authors

It is extremely important that no answer (Chart 4) was recorded according to which cities would state that they do not implement any of the above measures in the field of waste management. In terms of inclusion in the SGE energy management program, less than half of the cities (42.9% of respondents) are actively involved in the SGE program, which means that fewer cities aim to improve energy efficiency and sustainable management of public sector resources. Regarding the inclusion of the EU initiative to mitigate climate change through the adoption of the Covenant of Mayors and membership in the Energy Cities Association, 35.7% of cities joined the initiative and became members of the Energy Cities Association. This percentage should be higher, however, it should be borne in mind that 11 cities (78.6%) belonging to the category of cities with less than 10,000 inhabitants participated in the survey. Therefore, their negative impact on climate change is significantly smaller compared to larger cities, which, unfortunately, did not recognize the importance of the mentioned initiative for climate change mitigation. Interestingly, 35.7% of respondents do not have an established supply of energy from renewable sources, which is a high percentage and does not provide hope for energy independence of such urban areas in the near future. The remaining respondents stated that they invest the most in solar energy (35.7%), hydropower (28.6%), biomass (21.4%), and slightly less in geothermal energy (14.3%) and wind energy (7.1 %)

**Chart 5:** Establishing local indicators to measure progress in achieving sustainable development goals

Source: Authors

14.3% of cities failed to find local indicators for measuring progress in achieving sustainable development goals (Chart 5), while 35.7% did not monitor progress. These results show that 50% of cities cannot monitor how and to what extent the achievement of sustainable development goals affects the development and progress of their city. In addition, they cannot analyze or control the implementation of the concept of sustainable development in order to identify priority areas and areas for growth and progress. Successfully implementing the activities of the concept of sustainable development can help in the overall development and progress of cities. 28.6% of respondents chose grade 5 in terms of successful implementation of activities, while 50% of respondents chose grade 4, which sends a positive connotation in the implementation of these activities. 21.4% of respondents believe that the successful implementation of the activities of the concept of sustainable development is mediocre (grade 3) and can help in the overall development and progress of their city.

From this, it is evident that the respondents are aware of the importance of implementing the activities of the concept of sustainable development and their direct connection with the overall development and progress of the city. Regarding the biggest obstacles in the implementation of sustainable development, the respondents singled out the lack of financial resources (too small budget to monitor all planned and desired activities), lack of employees who are competent and educated to implement sustainable development activities, local isolation, lack of public interest, harmonization in achieving common goals of sustainable development, over-standardized (spatial planning, strategic planning, sectoral planning, environmental planning, etc.). Respondents also stressed the need to insist on constant education of employees in this area, pay more attention to a detailed and impartial analysis of the current situation, and invest in staff to implement the concept of sustainable development. Namely, the analysis of published documents on the official websites of cities in the Republic of Croatia shows that small cities do not have sustainability reports published. Such a situation indicates a lack of information on the activities carried out by cities, which results in incomplete insight into the current situation and makes it difficult to plan future activities, which confirms the views of respondents on this issue. This is made difficult by the lack of financial resources, which indicates an inadequate financial structure defined at the state level. Financial assistance to small cities should be directed through the provision of a stable and sufficient budget for monitoring investments or the possibility of financing projects with favorable loans or credits. Another reason for the failure of small cities is the general over-standardization that results in a multitude of strategies and plans that are often just a theory that does not result in their practical implementation.

### **3.2. Qualitative analysis of the application of sustainable development of cities in the world and the Republic of Croatia**

Sustainable urban development as a concept includes a number of indicators however, there is no single index, scale, or standard in the world that defines sustainable cities. Among the criteria included in most studies, housing and infrastructure, economic, cultural, social and health, and environmental conditions stand out (Kičinja, 2017). Qualitative analysis of sustainable development of selected cities will be based on the Mercer scale, Arcadis and Cebr research, and Institute for Management Development (IMD) research, in collaboration with Singapore University for Technology and Design (SUTD). It should be noted that the situation related to the coronavirus pandemic was reflected in regular annual research in the field of urban sustainability, so it was conducted in 2020 only by the IMD Institute in cooperation with SUTD (Institute for Management Development, 2020).



According to Mercer's scale published for 2017, among the ten best cities (Vienna, Zurich, Auckland, Munich, Vancouver, Dusseldorf, Frankfurt, Geneva, Copenhagen, Basel) in the world, there are as many as seven Western European cities. The ranking is based on a comparison of forty parameters, including infrastructure, environment, political stability, education, culture, health, recreation, crime, etc. The city of Zagreb was ranked 98th out of 231 cities as the only Croatian city. Of the surrounding cities, Ljubljana was ranked 76th, Belgrade 138th, and Sarajevo ranked 159th (Mercer, 2017). According to Mercer's research in 2019, the City of Vienna has once again been named the best city to live in (for the tenth time in a row). In the 2019 survey, Zagreb again ranked 98th, which means that it has not made progress in terms of sustainable development compared to the past two years, which is certainly not commendable (Mercer, 2019; Quality of Living City Rankings, 2019)

This research (Ecurbanhub, 2016) covered one hundred of the most important cities on the planet and compiled a scale of the fifty most sustainable. The assessment is based on three "pillars of sustainability" (3P - people, planet, profit). The highest scores were achieved by those cities that have a greater balance between these factors, managing to best balance the needs of people, the environment, and economic activities (Majsonjardin.net, 2021). According to the aforementioned research, in 2016 Zurich was the most sustainable city globally, followed by Singapore and Stockholm. On this scale, Europe stands out in all indicators, as many as eight cities are among the top ten (Zurich, Stockholm, Vienna, London, Frankfurt, Hamburg, Prague, Munich). If we compare the results of the same research conducted in 2019, we come to the conclusion that the scale has changed and London is in the first place, followed by Stockholm, Edinburgh, Singapore, Vienna, New York, Madrid, Vancouver, Barcelona, and Tokyo in tenth place. The decisive factor for placing Stockholm at the second place of this scale was the GrowSmarter initiative, as a project of European smart cities. This project is funded by EU funds and has been run by the Swedish capital since the beginning of 2015, in partnership with Cologne and Barcelona. The project, worth more than 25m euros, introduced 12 smart solutions related to sustainability and energy efficiency. Stockholm has revitalized more than 130,000 m<sup>2</sup> of public spaces in an energy-efficient way, implemented 72 sustainable vehicles, and carried out a number of other sustainability-oriented activities (Majsonjardin.net, 2021). In addition, Sweden's most important city tops the environmental management scale thanks to investment in sustainable infrastructure, low emissions, and good air quality. Both Stockholm and Frankfurt have successfully combined economic development with demanding environmental standards, making the quality of life of their communities the best in the world (European Commission, 2019).

Finally, we come to the third survey on sustainable urban development. The Smart City Index survey gives us results for 2020, as well as a comparison with the results from 2019. This index ranks cities based on economic and technological indicators, as well as based on their citizens' perceptions of how "smart" their cities are. In April and May 2020, hundreds of citizens from 109 cities were interviewed and asked about the technological factors of their city in five key areas: health and safety, mobility, activities, opportunities, and governance. According to this survey, Singapore, Helsinki, and Zurich were in the top three of the 2020 Smart Cities Index, a year in which many European cities dropped in the rankings. Auckland, Oslo, Copenhagen, Geneva, Taipei, Amsterdam, and New York were also in the top ten. Comparing the 2019 rankings, Singapore retained first place, while Helsinki jumped six places in 2020 and Zurich dropped one place. Given the results, Singapore has managed to maintain its position and deserves to have its concept of a smart sustainable city studied (Institute for Management Development, 2020).

Mercer's research and the research of Arcadis and Cebr ranked European cities first, while the Smart City Index survey ranked Singapore in Asia first. One of the main reasons for this sequence is the health and safety criterion according to which this city is developing people-centered models, such as the Health City Novena health project. Namely, a healthy population is transformed into a resilient workforce and citizens. Through the widespread use of modern technologies such as remote monitoring devices and digital service platforms, the authorities have also established health facilities for the elderly population. In addition, with over half a million police surveillance cameras and online police portals, Singapore is one of the safest cities in the world (Institute for Management Development, 2020). Singapore also boasts the idea of providing advanced and efficient mobility solutions to all citizens in the form of public transport. The city's transit networks are very efficient, accessible, and environmentally sustainable. This has encouraged people to lead a relatively active lifestyle through cost-effective and comfortable transportation (Tourism Review, 2019). According to a 2018 McKinsey report, Singapore has the best transportation system in its class. Technology plays a key role in Singapore's smart mobility initiatives. City leaders proactively built and implemented smart and connected traffic solutions. The emergence of shared bicycles without stations such as Ofo, Mobike, or oBike and electric car connection services such as BlueSG have further complemented public transport in Singapore, with infrastructure construction and administrative support (McKinsey Global Institute, 2018). Possessing a free market economy with the third largest GDP per capita in the world to attract foreign investors, Singapore has developed an environment free of corruption and low taxation. The credit goes to the country's strong government agencies and their pragmatic administrative policies. Certain crucial national projects such as SingPass, PayNow, and Moments of Life are giving Singapore such momentum. Data mining, advances in technology, and the rise of digitalization are the foundations of Singapore to become the smartest city in the world. Support for public-private collaboration and the startup ecosystem has enabled Singapore to innovate and design cutting-edge digital technology solutions. Increased quality of life and smart mobility are standard indicators of the quality of life of residents. With continued investment in mobility, health, citizens' safety, business development, and energy, Singapore is undoubtedly among the world's smartest cities (GetMyParking, 2020).

From the previous examples of sustainable cities in the world, it is possible to conclude that these are multimillion-dollar cities and that they cannot be considered small cities. In the global context, it is impossible to study the sustainable development of small cities in this way, because unfortunately the categorization of small cities in global terms will not be close to the level of the Republic of Croatia, and there is no research on sustainable development of small cities globally. The concept of sustainable development of small cities at the level of EU programs is primarily reflected on the basis of the concept of smart sustainable cities. The role of information technology in the framework of smart sustainable cities strategies should have a coordination task, harmonized with the development vision of the city and its character and specifics, as well as the urban development plan. To better understand the application of the concept of a smart sustainable city, it is possible to seek detailed elaboration in two European Union Strategies (Territorial Agenda and Territorial Cohesion 2014-2020). Emphasis is placed on sustainability and efficiency (European Commission, 2010). These two previous Strategies are related to the activities carried out by the Environmental Protection and Energy Fund, which is of great importance in financing and technical assistance in the implementation of smart sustainable urban projects in Croatia. Namely, in the territory of the Republic of Croatia, there are several examples (Fund for Environmental Protection and Energy Efficiency, 2019) that successfully implement this concept in order to make life in cities more environmentally and economically acceptable. The following analysis presents

some examples of sustainable smart cities in the Republic of Croatia, with the choice reduced to cities with less than 35,000 inhabitants. An attempt was also made to include more diverse projects implemented by cities in order to get a broader picture of possible directions for the improvement of small cities.

As a positive example of sustainable smart cities in the Republic of Croatia, *Novigrad* has been a priority for more than ten years supporting ecologically sustainable development and environmental protection within which it implements projects. A number of projects have been implemented, such as environmentally friendly and energy-efficient public lighting, energy efficiency for buildings, promoting sustainable mobility and environmentally friendly forms of transport, waste sorting, wastewater treatment, etc. Regarding wastewater management, the Jadran Project (HRK 33 million) in 2006 build a new sewerage network. Thus, over 90% of households and industries are connected to the sewage system. As part of the same project, in 2010 they procured a new wastewater treatment plant that produces water of the first stage of purification. However, they still plan to further improve and adapt the system to achieve wastewater treatment to the third stage of treatment for reuse, for example for watering green and agricultural areas. In cooperation with the Fund for Environmental Protection and Energy Efficiency, in 2013 and 2015 Novigrad co-financed projects for citizens. Novigrad also carried out the energy renovation of the Rivarela primary school and the 'Tičići' kindergarten, which is also planned for the city cinema and library building. From 2011 to 2014, Novigrad implemented the EU project of sustainable mobility Adria. MOVE IT! which enabled the construction of two bicycle-pedestrian paths, the installation of equipment for chaining bicycles, and benches for rest. In addition, very important strategic documents for the area of the City of Novigrad (sustainable mobility plan, traffic study) were adopted. A charging station for electric vehicles has been set up with the possibility of charging two vehicles at the same time. It should certainly be added that Novigrad in 2016 during the tourist season provided free parking for all-electric vehicles, all with the aim of further encouraging environmentally-friendly vehicles. The city of Novigrad carried out a pioneering public lighting project in 2006, for which it received recognition from the International Dark-Sky Association (IDSA), which explicitly takes care of the fight against the so-called light pollution. On this track, since 2007 they have been holding the Astro party Lunas event, without public lighting, with the natural lighting of candles and torches, as a symbol of an active ecologically sustainable city. Novigrad is one of the first cities in Croatia to accept the very ambitious initiative "Covenant of Mayors" of the European Commission related to the response to the challenges of global climate change (Novigrad, 2019). Considering the mentioned agreement, in 2015 Novigrad drafted the Action Plan for Sustainable Development of the City of Novigrad - Cittanova (Matosović et al., 2015), which is extremely important for the development of Novigrad. It is important to point out that the initiator of all these initiatives in Novigrad is the city leadership, which is well aware of the importance of such projects for the overall development of the region (Central Bureau of Statistics, 2011).

Based on the quality of life indicators, *Koprivnica* was awarded the ISO certificate 37120: Sustainable Development - indicators of urban services and quality of life. It is the first city in the region to receive this award and the seventh city in Europe (ePodravina.hr, 2016). The certificate enables them to use the results to compare the quality of life in the city and city services, to better communicate with citizens, to plan the city budget, to improve transparency, to support ICT smart city solutions, and to harmonize public and private infrastructure investments. In addition, the city is a leader in electromobility in Croatia due to the implementation of the Civitas Dynamo project, which should, in addition to strategic

planning, solve the problem of public transport, which often occurs in small cities. As part of the project, 8 charging stations for electric vehicles were built in the area of Koprivnica, and the need for such charging stations was stimulated by the previous procurement of 5 electric and 2 hybrid vehicles for the needs of the city administration and institutions. An additional 3 electric vehicles were procured for the needs of the public utility company. In addition, it is one of the first cities to include 2 electric buses in public transport that offer free transport, and a few years ago a system of public bicycles was established, numbering 70 bicycles, 10 of which are electric (Association of Cities, 2016; Smart Rovinj- Rovigno, 2016). Koprivnica categorized its services on which smart sustainable development is based as Smart governance and services to citizens, Smart mobility and Energy, and the environment (Vidaček, 2019). With the construction of a new recycling yard, Koprivnica in 2019, according to the choice of the portal Gradonačelnik.hr, Hanza Media and Ipsos Puls for the best city, took the leading position in the Eco-city group. Koprivnica can also be a model when it comes to waste, because all households have the conditions for separate waste collection, and in the city area, as much as 56% of waste is collected separately. The city is increasingly using renewable energy sources, and efficiency is also encouraged in the field of public lighting (Fund for Environmental Protection and Energy Efficiency, 2019). Energy-efficient LED lighting covers an area of about 20 percent of the city, and more than 70% is covered by the most modern generation of efficient sodium lighting (Fond za zaštitu okoliša I energetske učinkovitost, 2019). The Action Plan for Sustainable Energy Development adopted by Koprivnica in 2011 for the period up to 2020 is based on energy efficiency. Undoubtedly, Koprivnica has a vision that it successfully achieves with the help of strategic documents as the backbone of sustainable development.

The City of **Ludbreg** recognized the importance of projects involved in achieving economic progress and improving life, such as the modernization of the city's transport infrastructure and landscaping. Thus, it modernized the city's sewage network and city lighting (eco lighting) and encouraged the construction of a recycling yard. In addition, they have generally placed emphasis on energy efficiency and renewable energy projects, adapting public transport by implementing smart, sustainable, and automated systems with low CO<sub>2</sub> emissions and less environmental impact (T&MC Group, 2015). One of the most important projects of Ludbreg is the restoration of the Otok Mladosti (*eng.* The Island of Youth) and the pond into the "bio-top natural swimming pool", in order to create biodiversity for tourism purposes. The importance of renewable energy sources in Ludbreg was recognized through the project of renovation, construction, and operation of the hydropower plant on the river Bednja (mHE Zelena) with an effective power of 277 kW. The Eco-Smart City project, implemented by Ludbreg since 2017 in partnership with the City of Zalaegerszeg in Hungary, aims to create a smart and sustainable waste management system in the cross-border area, reduce waste levels and educate and raise public awareness of the public sector and citizens. Along with the City Development Strategy and the Action Plan for Sustainable Energy Development, they enable the implementation of sustainable development activities.

From the above-selected examples of successful cities that implement sustainable development activities, it is clear that all three cities have strategic documents for sustainable development. They base their activities on them and are successful in doing so. By analyzing their projects and activities, it is possible to conclude that the basis for implementation was a strategic document, and the similarities are significant. Namely, all three selected cities improved the waste management system, public lighting, public transport, and improved energy efficiency in buildings, and invested in renewable energy sources.

### 3.3. Limitations and recommendations for improvements of small cities

For more successful implementation of the concept of sustainable development of small cities in the Republic of Croatia, it is necessary to conduct training and invest in human resources, determine indicators of sustainable development, conduct an analysis of the situation in accordance with them, and prepare sustainability reports. It is important to find a compromise and model of cooperation between residents, economy, environment, infrastructure, transport, administration, education, health, etc. that will be the driver of sustainable development of small cities. They should also strive for new models of joint cooperation in EU programs that seek to apply examples of so-called good practices in a specific local area. The vast majority of Croatian cities do not have an elaborate Sustainable Urban Mobility Plan, which is one of the necessary preconditions. In addition to infrastructure, education and information related to sustainable waste management is very important and should be represented in all cities. Furthermore, the social sustainability component reinforces the major issue of small-city sustainability. Local authorities need to work harder to reduce unemployment, create better employment conditions, including for the hard-to-employ and disabled, and provide assistance to entrepreneurs while creating a positive entrepreneurial climate. If the concept of sustainable development can be embedded in the thinking, behavior, and attitudes of each individual, all activities will be much easier, more efficient, and faster to implement at all levels and in the environment.

## 4. Conclusion

Strategic urban planning needs to find a balance between different specific ecological and social elements of the city, its priority activities, and historical features and specifics in order to become more sustainable. Faced with numerous challenges such as inadequate infrastructure, lack of finances, adequate management staff, and citizens' initiatives, it is necessary to implement activities with the help of local authorities and technical solutions that will contribute to the development of small cities. Using smart technology will enable the smart and sustainable development of cities and a better quality of life in them. Which is possible on the basis of reflection of Kumar et al. (2022) and the reflections of Hameed (2019). Kumar et al. (2022) emphasizes the importance of the dimensions of smart cities through smart people, smart living, smart environment, smart governance, smart economy and smart mobility and Hameed (2019) states that the cornerstone of smart cities is precisely the infrastructure of telecommunications based and developed on new and smart technologies. Considering the short time of conducting the survey through a questionnaire, the survey included a very small number of cities analyzed, 14/40 (which is 35% satisfactory percentage of completed surveys), which is one of the limitations of the survey for this paper. And thus even more taking into account that the Republic of Croatia has far more small towns that could be included in the research, which can certainly be a proposal for future research and analysis. The paper highlights examples of small cities that respond to challenges in the urban environment through sustainable management and projects. Change requires the support of the umbrella institutions of the state (financial, logistical, and administrative), and at the local level, the active initiative and interaction of citizens, local, regional, and state authorities, and the economic sector is unavoidable. Given the need for continuous learning and training in the field of sustainable development, while improving the ability to apply sustainability, the issue of the paper was aimed at better understanding of the implementation of the concept of sustainable development and education. According to the hypothesis, it can be said that it is partially confirmed by questionnaire survey and fully confirmed through the analysis of selected cities in quantitative research. Recording the survey, the respondents stated that

14.3% of cities have such a document (smart city plan or strategy), while the 42.9% do not have a smart city plan or strategy but plan to develop it within a period of 2 years. Also implement activities in strategic areas within the smart city concept. Research results also show that 50% surveyed respondents cannot monitor how and to what extent the achievement of sustainable development goals affects the development and progress of their city. On the other hand, the observed cities in quantitative research according to measurement scales and key elements successfully implement activities leading to development of smart cities in Croatia. All this suggests that cities are recognized of the importance of implementing these activities and development in the direction of smart cities, and education of human resources and implementation of strategic areas within the smart city concept are necessary. The contribution of the paper is evident through proposals for improvement and development. Respondents pointed out the need to educate stakeholders in the implementation of the concept of sustainable development of small cities, which will result in knowledge and experience in the application of processes for sustainable development and the creation of smart cities.

## REFERENCES

- Association of Cities (2016): *Koprivnica – grad visoke kvalitete života*, <https://www.udruga-gradova.hr/inpuls/koprivnica-grad-visoke-kvalitete-zivota/> (accessed 20 April 2021)
- Bruzzone, M., Dameri, R.P., Demartini, P. (2021): *Resilience Reporting for Sustainable Development in Cities*, *Sustainability* 2021, 13, 7824. <https://doi.org/10.3390/su13147824>, (accessed 11 May 2022)
- Croatian Government (2019): *Dobrovoljni nacionalni pregled o provedbi Programa UN-a za održivi razvoj 2030.*, <https://www.hgk.hr/documents/dobrovoljni-nacionalni-pregled-ciljevi-odrzivog-razvoja-hrvatska5d2daef212fdc.pdf> (accessed 23 March 2021)
- Croatian Parliament (2021): *Nacionalna razvojna strategija Republike Hrvatske do 2030. godine*, NN br. 13/21, [https://narodne-novine.nn.hr/clanci/sluzbeni/2021\\_02\\_13\\_230.html](https://narodne-novine.nn.hr/clanci/sluzbeni/2021_02_13_230.html) (accessed 13 April 2021)
- Dril, N., Galkin, A., Bibik, N. (2016): *Applying city marketing as a tool to support sustainable development in small cities: case study in Ukraine*, 2nd International Conference "Green Cities - Green Logistics for Greener Cities", 2-3 March 2016, Szczecin, Poland, <https://www.sciencedirect.com/science/article/pii/S2352146516306202>, (accessed 11 May 2022)
- Ecourbanhub (2016): *Sustainable Cities Index 2016 – 100 of the World's Leading Cities*, <https://ecourbanhub.com/sustainable-cities-index-2016-arcadis-cebr> (accessed 5 April 2021)
- European Commission (2019): *Stockholm wins World Smart City Awards for European Project*, Cordis EU research results, <https://cordis.europa.eu/article/id/411609-stockholm-wins-world-smart-city-awards-for-european-project> (accessed 19 April 2021)
- European Union (2011): *Cities of Tomorrow – Challenges, Visions, Ways Forward*, DG Regional Policy, [https://ec.europa.eu/regional\\_policy/sources/docgener/studies/pdf/citiesoftomorrow/citiesoftomorrow\\_final.pdf](https://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/citiesoftomorrow/citiesoftomorrow_final.pdf) (accessed 11 April 2021)

European Union (2017): *Dokument za razmatranje o socijalnoj dimenziji Europe*, [https://eur-lex.europa.eu/resource.html?uri=cellar:cea6403b-2b4c-11e7-9412-01aa75ed71a1.0023.02/DOC\\_1&format=PDF](https://eur-lex.europa.eu/resource.html?uri=cellar:cea6403b-2b4c-11e7-9412-01aa75ed71a1.0023.02/DOC_1&format=PDF) (accessed 12 April 2021)

Eurostat (2016): *Urban Europe: Statistics on cities, towns and suburbs*. Luxembourg: Publications Office of the European Union, <https://ec.europa.eu/eurostat/documents/3217494/7596823/KS-01-16-691-EN-N.pdf/0abf140c-ccc7-4a7f-b236-682effcde10f?t=1472645220000> (accessed 12 April 2021)

Fond za zaštitu okoliša i energetska učinkovitost (2019): *Fondzin, Pametni gradovi*, [https://www.fzoeu.hr/docs/fondzin\\_broj\\_4\\_2019\\_v1.pdf](https://www.fzoeu.hr/docs/fondzin_broj_4_2019_v1.pdf) (accessed 23 April 2021)

GetMyParking (2020): *Top 3 Reasons That Make Singapore The Smartest City*, <https://blog.getmyparking.com/2020/10/13/top-3-reasons-that-make-singapore-the-smartest-city/> (accessed 19 April 2021)

Grubić, N. (2009): *Održivi urbani razvoj i ekološka ravnoteža*, Građevinsko-arhitektonski fakultet u Nišu vol. 12.1, pp. 35-38

Guzhavina, T.A. (2021): *Digitalization for Sustainable Development of Small Towns in Russia*, European Journal of Sustainable Development (2021), 10, 3, 401-410 ISSN: 2239-5938 Doi: 10.14207/ejsd.2021.v10n1p401, (PDF) Digitalization for Sustainable Development of Small Towns in Russia (researchgate.net), (accessed 11 May 2022)

Hameed, A.A. (2019): *Smart city planning and sustainable development*, 2<sup>nd</sup> International Conference on Sustainable Engineering Techniques (ICSET 2019), IOP Conf. Series: Materials Science and Engineering 518 (2019) 022042, doi:10.1088/1757-899X/518/2/022042, <https://www.coursehero.com/file/93677365/Smart-city-planning-and-sustainable-developmentpdf/>, (accessed 11 May 2022)

Hrvatski zavod za prostorni razvoj (2017): *Strategija prostornog razvoja Republike Hrvatske*, [https://mgipu.gov.hr/UserDocsImages/Zavod/Publikacije/SPRRH\\_e-knjiga.pdf](https://mgipu.gov.hr/UserDocsImages/Zavod/Publikacije/SPRRH_e-knjiga.pdf) (accessed 5 April 2021)

Institute for Management Development (2020): *Singapore, Helsinki and Zurich triumph in global smart city indeks*, <https://www.imd.org/smart-city-observatory/smart-city-index/> (accessed 19 April 2021)

Ivić, T. (2017): *Uključivi gradovi*, <https://urn.nsk.hr/urn:nbn:hr:137:887801> (accessed 7 April 2021)

Kičinja, E. (2017): *Održivi razvoj gradova*, <https://zir.nsk.hr/islandora/object/unipu:1465/preview> (accessed 7 April 2021)

Kumar, A., Kapoor N.R., Arora, H., Kumar, A. (2022): *Smart Cities: A Step toward Sustainable Development*, DOI: 10.1201/9781003287186-1, (PDF) Smart Cities: A Step toward Sustainable Development (researchgate.net), (accessed 11 May 2022)

Ljevar, A. M. (2020): *Analiza strategija i mjera Planova održive urbane mobilnosti*, <https://zir.nsk.hr/islandora/object/fpz%3A2123/datastream/PDF/view> (accessed 19 April 2021)

Majsonjardin.net (2021): *Indeks održivih gradova 2021: ovdje su najodrživiji gradovi na svijetu*, <https://hr.majsonjardin.net/6663254-sustainable-cities-index-2021-here-are-the-most-sustainable-cities-in-the-world> (accessed 22 April 2021)

Matosović, M., Pešut, D., Prebeg, F., Jurić, Ž., Rogulj, I., Rodik, D. (2015): *Akcijski plan održivog razvoja Grada Novigrada – Cittanova*, [https://www.novigrad.hr/documents/SEAP\\_-\\_Grad\\_Novigrad\\_-\\_Cittanova\\_02.12.2015..pdf](https://www.novigrad.hr/documents/SEAP_-_Grad_Novigrad_-_Cittanova_02.12.2015..pdf) (accessed 19 July 2021)

McKinsey Global Institute (2018): *Smart cities in southeast Asia*, <https://www.mckinsey.com/~media/mckinsey/business%20functions/operations/our%20insights/smart%20cities%20in%20southeast%20asia/mgi-smart-cities-in-southeast-asia.pdf> (accessed 9 April 2021)

Mercer (2017): *Mercerova ljestvica / Beč najbolji grad za život, a Zagreb je na 98. mjestu*, <https://100posto.hr/news/bec-najbolji-grad-za-zivot-a-zagreb-je-na-98-mjestu-pogledajte-gdje-se-nalazi-beograd.html> (accessed 5 April 2021)

Mercer (2019): 10 najboljih gradova za život u 2019., <https://lider.media/aktualno/10-najboljih-gradova-za-zivot-u-2019-bec-je-broj-jedan-otkrijte-kako-stoji-zagreb-26800> (accessed 5 April 2021)

Milanović Glavan, LJ. (2021): *Razvoj pametnih gradova u Republici Hrvatskoj*, Zbornik radova Veleučilišta u Šibeniku, 2021, Vol. 15(3-4), pp. 101-108, <https://hrcaak.srce.hr/file/388974>, (accessed 11 May 2022)

Novigrad (2019): *U ekologiju i održivo upravljanje u 15 godina uložili 200 milijuna kuna*, <https://gradonacelnik.hr/vijesti/vijesti-novigrad-u-ekologiju-i-odrzivo-upravljanje-u-15-godina-ulozili-200-milijuna-kuna/> (accessed 20 April 2021)

Oborin, M.S., Sheresheva, M.Y. (2018): *Networking of small cities as a contribution for sustainable regional development*, Economics, Business and Management Research (AEBMR), volume 39, Competitive, Sustainable and Secure Development of the Regional Economy: "Response to Global Challenges" (CSSDRE 2018), (PDF) Networking of small cities as a contribution for sustainable regional development (researchgate.net), (accessed 11 May 2022)

Perišić, A. (2013): *Multivarijatna klasifikacija jedinica lokalne i regionalne samouprave prema socioekonomskoj razvijenosti*, Društvena istraživanja: časopis za opća društvena pitanja vol. 23 (2), pp. 211-231

*Quality of Living City Rankings* (2019): <https://mobilityexchange.mercer.com/Insights/quality-of-living-rankings> (12.4.2021.)

Sdrali, D. (2020): *Creative Strategies for Sustainable Development in Small Cities, Decent Work and Economic Growth*, DOI:10.1007/978-3-319-71058-7\_67-1, (PDF) Creative Strategies for Sustainable Development in Small Cities (researchgate.net), (accessed 11 May 2022)



Shalina, D.S., Stepanova, N.R., Drozdova, A. V. (2020): *Integrated Sustainable Development of Small Towns and Settlements*, International Science and Technology Conference (FarEastCon 2020), IOP Conf. Series: Materials Science and Engineering 1079 (2021) 052084, doi:10.1088/1757-899X/1079/5/052084, Integrated Sustainable Development of Small Towns and Settlements - IOPscience, (accessed 11 May 2022)

*Smart Rovinj-Rovigno* (2016): <https://www.udruga-gradova.hr/inpuls/smart-rovinj-rovigno/> (accessed 15 June 2021)

Svirčić Gotovac, A. (2016): *Uvod u komparaciju urbanih sustava glavnih gradova Zagreba i Podgorice*, [https://www.researchgate.net/publication/310774742\\_UVOD\\_U\\_KOMPARACIJU\\_URBANI\\_H\\_SUSTAVA\\_GLAVNIH\\_GRADOVA\\_ZAGREBA\\_I\\_PODGORICE](https://www.researchgate.net/publication/310774742_UVOD_U_KOMPARACIJU_URBANI_H_SUSTAVA_GLAVNIH_GRADOVA_ZAGREBA_I_PODGORICE) (accessed 24 March 2021)

T&MC Group (2015): *Strategija razvoja grada Ludbrega za razdoblje 2014. -2020. g.*, <https://ludbreg.hr/wp-content/uploads/2015/02/strategija2014-2020.pdf> (accessed 21 April 2021)

Tourism Review (2019): *Top 10 most sustainable cities in the world*, <https://www.tourism-review.com/sustainable-cities-around-the-world-news11202> (accessed 22 April 2021)

Urbact II Capitalisation (2015): *Sustainable Regeneration in Urban Areas*, [http://urbact.eu/sites/default/files/04\\_sustreg-web.pdf](http://urbact.eu/sites/default/files/04_sustreg-web.pdf) (accessed 5 April 2021)

Veron, R. (2010): *Small Cities, Neoliberal Governance and Sustainable Development in the Global South: A Conceptual Framework and Research Agenda*, Sustainability 2010, 2, 2833-2848; doi:10.3390/su2092833, <https://www.mdpi.com/2071-1050/2/9/2833>, (accessed 11 May 2022)

Vidaček, M. (2019): Održivi razvoj malih inteligentnih gradova na odabranom primjeru, <https://repositorij.unin.hr/islandora/object/unin:2502> (accessed 7 April 2021)

*A scientific paper*

**Domagoj Karačić, Ph. D.**

Josip Juraj Strossmayer University in Osijek, Faculty of Economics in Osijek

E-mail address: domagoj.karacic@efos.hr

**Mladena Bedeković, Ph. D.**

Virovitica University of Applied Sciences

E-mail address: mladena.bedekovic@vuv.hr

**Marija Iles, Ph. D. student**

Josip Juraj Strossmayer University in Osijek, Faculty of Economics in Osijek

E-mail address: marija.iles@efos.hr

## REGIONAL INEQUALITIES AND NON-TAX REVENUES IN THE REPUBLIC OF CROATIA

### *ABSTRACT*

*Non-tax revenues are revenues collected by state administration, local government units, associations, chambers of public enterprises. Sources of non-tax revenues are linked to individual territorial units. Non-tax revenues generated by local and regional government units include various administrative and governmental fees, revenues under special regulations as well as utility contributions and fees. The development of regions in the Croatia depends on institutional and economic development, while the differences that can be seen in regional development additionally affect the competitiveness of region. Purpose of this paper is to prove that the non-tax revenues are positively related to the development of a particular region in Croatia. Non-tax revenues are measured as the share of non-tax revenues in the total revenues of local and regional government units, while the development of each region is measured by using the development index which is a composite indicator of weighted socio-economic indicators. This paper includes comparative analysis of non-tax revenues for the period from 2010 to 2018, as well as the analysis of non-tax revenues by county and analysis of the county development index according to the existing model in the period from 2014 to 2018. Additionally, the connection between regional development and non-tax revenues for period from 2014 to 2018 was tested. Conclusions and recommendations were made based on the comparative analysis of non-tax revenues of local and regional government units, addressing the issue of regional underdevelopment as well as more specific effects of non-tax revenues. Despite the fact that non-tax revenues will increase the autonomy of local and regional government units, finding of this research is that the process of non-tax revenue data collecting is not transparent, especially in the segment of financial and civic reporting.*

**Key words:** *non-tax revenues, local and regional government units, regions, development index.*

### **1. Introduction**

Units of local and regional government (LRGU) within the theory of fiscal federalism belong to the lower levels of government which, in the Republic of Croatia, consist of counties, cities

and municipalities. Counties, cities and municipalities represent the regional and local level of government that focuses on local public services to the population. In most countries, local public services are defined by law in terms of scope, implementation and sources of funding.

All budget and extra-budgetary users of local and regional government units are obliged to draw up financial plans. In their financial plans, budget users should include planned revenues and receipts expressed by type, plan of expenses and expenditure sorted according to budget classifications and explanations of the financial plan proposal (Ministry of Finance, 2019a). In relation to the budget process and reporting on non-tax revenues, all budget and extra-budgetary users of local and regional government units have fiscal autonomy in the segment of planning and decision-making, which in the segment of budget transparency is not transparent to the population in terms of expectations and benefits from local public services charged through non-tax revenues. The analysis of budget transparency of municipalities, cities and counties is carried out by the Institute of Public Finance of the Republic of Croatia in order to influence, among other things, the most efficient collection of revenues from taxpayers. The methodology for determining budget transparency is based on key budget documents that should be published on the official websites of counties, cities and municipalities in accordance with the Right to Access Information Act (NN 25/13, 85/15) and the Budget Act (NN 87/08, 136/12, 15/15). According to research by Ott et al. (2016) conducted in the period from November 2015 to March 2016, it was found that there is an unsatisfactory level of average transparency of the budgets of all local units, but with a tendency to improve compared to previous periods, which according to Ott et al. (2017) was also shown by the latest research. Furthermore, Ott et al. (2019) point out that of all local units, counties fully comply with the law, however, three counties still do not comply with the recommendations of the Ministry of Finance (publication of draft budgets and guides for citizens).

In order to reduce regional inequalities between rich and poor regions and achieve competitive advantage in the form of regional progress, non-tax revenues play an important role in building financial sovereignty, but there is a continuous trend of financial indiscipline in the segment of non-tax revenue management. The paper focuses on the segment of monitoring non-tax contributions at the level of individual regions in the Republic of Croatia, investigating the timeliness and purpose of collecting non-tax contributions and the degree of transparency at the level of local and regional government units.

## **2. Non-tax Revenues and Fiscal Aspects of Regional Development**

The basis for the study of non-tax revenues starts from the budget of local government units, given the powers, fiscal autonomy and scope of activities of local government units. In the structure of local budgets, the most important budget revenues of local government units include tax and non-tax revenues (Šimović, 1999; Ott and Bajo, 2001; Rogić Lugarić and Maksimovska Veljanovski, 2011), i.e. as stated by Bajo et al. (2020) there are three basic groups of local government units' revenues, namely: tax, non-tax and capital revenues. Bajo and Jurlina Alibegović (2008) point out that non-tax revenues (so-called hidden levies or revenues under special regulations) are paid by entrepreneurs and citizens in accordance with legal regulations. Local non-tax revenues are collected by local units, state administrative services, public companies, chambers and associations, and that is why it is important to differentiate between state fees and fees paid directly for services rendered. Some of these fees, according to the powers, belong to state administrative bodies, and the other part belongs to the powers of public companies. According to Bajo et al. (2020) own revenues from non-tax sources of lower units of government can be easily linked and identified with economic activity and function of

beneficiaries, where the collection falls into the administrative and fiscal domain of lower units of government. The most important source of own non-tax revenues at lower state levels are user fees, although other revenues such as fees, fines, parafiscal revenues, capital revenues and receipts from financial and non-financial assets are not negligible. Ott and Bajo (2001) believe that non-tax revenues should be investigated more systematically as well as their dedicated use, given that there are no specific systematic analyses of non-tax revenues in the Republic of Croatia. Independent determination of tax bases and independent determination of tax rates is the basis for the formation of non-tax revenues. Based on the same, but also the basic characteristics of fiscal federalism, non-tax revenues represent a type of revenue whose fiscal autonomy is the responsibility of local governments. Ebel and Yilmaz (2002, 36) state that “the positive sign of the indicators of non-tax autonomy of lower levels of government leads to the conclusion that increasing non-tax revenues of lower levels of government has a negative impact on their fiscal positions”.

## 2.1. Non-tax Revenues

Based on a historical overview of the development of non-tax revenues, Jurlina Alibegović (2002) states that after the independence of the Republic of Croatia, non-tax revenues include revenues from: administrative fees, county or city fees, numerous other contributions and utility fees. In the case of local and regional government units, within the non-tax revenues of the budget, among many others, there are a number of smaller revenues that were introduced on the basis of special laws and decisions, and include revenues from fees and charges. The author also states that in the analyses dealing with the issue of financing local units, there are a number of different names for non-tax revenues, but they all have the same purpose, and that is that these revenues are used for the purpose for which they were introduced. According to Bajo and Bronić (2004), the role of the central government in non-tax revenues arises from determining the maximum rate of non-tax revenues. Kesner-Škreb (2009) points out that non-tax revenues have a predetermined purpose, they represent autonomous revenues of local units, while the amount and collection are independently determined by local units. Šimović (2000) also points out that non-tax revenues represent a significant source of budget revenues of local units as an important instrument for financing the public needs of local units. Ott and Bajo (2001) state that one of the most important problems on the revenue side of local government budgets is the problem of over-reliance on non-tax revenues.

Ott et al. (2007) believe that since local units determine the amount of non-tax revenues and collect them independently, consequently, non-tax revenues increase the autonomy of local units in accordance with the principle of tax utility, but their collection is often not sufficiently transparent, and that is also the weakness of the existing system of non-tax revenues. Namely, payers of non-tax revenues are confused and uninformed, because in most cases taxpayers cannot link the fee paid with the service received.

Šimović and Rogić-Lugarić (2006) state that non-tax revenues of local government units can be divided into several groups, as follows:

- income from property and entrepreneurial activity (interest income, fees for concessions, hunting rents, rental income, fees for the use of public areas, fees for the exploitation of mineral resources)
- revenues from administrative fees (administrative fees and accommodation tax)
- revenues under special regulations (fines, forest contributions, utility fees and contributions, public road fees), and
- income from performing their own activity.

According to Kesner-Škreb (2009), the powers of local and regional government units depend on the public services that are financed, the adequacy of revenues collected to finance them, the allocation of budgetary resources, and the determination of user fee and local tax rates, according to the authority. Certain public expenditures at the local level, in addition to being financed by financial transfers and local taxes, are also financed by non-tax revenues. Since non-tax revenues are autonomous revenues of local units with a predetermined purpose, the main non-tax revenue that is important for the budget of local units is the revenue from utility fees. Utility fees are a form of financing important expenditures, as they include local utility infrastructure that includes financing of sewerage, public transport and water supply. Bajo and Bronić (2004) believe that in the structure of city and municipal budgets, among the most generous non-tax revenues are utility fees and contributions aimed at financing the construction and maintenance of utility infrastructure. Also, “local units with lower fiscal capacities collect more non-tax revenues per capita than local units with higher fiscal capacities” (Bajo and Bronić, 2004, 457). Vujeva (2016) agrees with this and adds that non-tax revenues should include financing of communal activities such as: maintenance of cemeteries and crematoria, public lighting, maintenance of unclassified roads, as well as communal contributions intended for financing construction and arrangement of facilities and communal infrastructure. Bajo (2006) concludes, however, that the complexity of the existing system of non-tax revenues confuses taxpayers and leads to inefficiency because the amount of fees paid can most often not be linked to any service received.

## **2.2. Regional Development and Achieving Competitiveness**

Within the framework of European Union policies, regional development and competitiveness represent important factors in the economic policies of countries aimed at reducing economic inequalities between regions. The Republic of Croatia has a complex and dispersed structure of regional areas and a large number of cities and municipalities, and precisely for territorial and administrative reasons, a large number of non-tax revenues are present.

According to Tijanić (2010), when measuring regional competitiveness, a number of variables, methods of analysis, indicators and models must be considered, given that data are not equally available in all regions. In general, measurement of competitiveness at the regional level in the Republic of Croatia has not been sufficiently researched. According to Šimović (2012), the role of fiscal policy and the fiscal system is not crucial for building competitiveness, although fiscal policy measures can improve the competitiveness of individual sectors. If there is a coherence of fiscal policy measures with industrial or structural policy, then the highest level of efficiency and competitiveness is achieved. The degree of regional inequalities between individual local government units, Bajo and Bronić (2004) also analyse based on the relationship between indicators of tax revenues, non-tax revenues and regional GDP.

Among the most important indicators for diagnosing regional differences are GDP per capita, net income per capita, general population trends, average employment rate, own budget revenues per capita, the share of the educated population over 15, and the population density (Ministry of Regional Development, Forestry and Water Management (2010a)). Due to the problem of demographic aging, emigration of the population from the homeland, mostly from Continental Croatia, regional inequality, unequal population density, number of employees per capita, educational structure of the population, and other indicators, there are different levels of regional competitiveness.

Competitiveness is also influenced by the development index, which is a composite indicator, and is calculated as a weighted average of socio-economic indicators with the aim of measuring the degree of development of local and regional government units in a certain period. The regional competitiveness index is measured using qualitative (survey sub-index consisting of 9 pillars of competitiveness) and quantitative (statistical sub-index consisting of 8 pillars of competitiveness) data related to the business sector and business environment. The ranking of counties according to the value of GDP per capita and the development index coincides with the ranking of counties according to competitiveness. Based on the development index, assisted areas are determined as areas in the Republic of Croatia that lag behind the average national values according to the level of development, i.e. their index value is less than 75% of the national average (Government of the Republic of Croatia, 2017a). All the necessary indicators are calculated on the basis of data for the three years preceding the evaluation procedures. The calculated development index is interpreted in such a way that local and regional government units with an index value greater than 100 are classified as areas of above-average level of development, and units with an index value less than 100 are classified as areas of below-average level of development. A unique system for assessing the development of all territorial units has contributed to the simplicity and transparency of the entire system (Government of the Republic of Croatia, 2017).

### **3. Methodology and data analysis**

Given the highlighted problem of non-tax revenues and the development of individual regions, a study was conducted aimed at analyzing non-tax revenues at the level of local and regional government units (LRGUs). The aim of this paper is to prove that the amount of revenues collected from non-tax benefits is positively related to the development of a particular region in the Republic of Croatia. The amount of non-tax revenues was measured as the share of non-tax revenues in the total revenues of local and regional government units, while the development of each region was measured by the development index which is a composite indicator of weighted average socio-economic indicators. The non-tax revenues for the period from 2010 to 2018 were analyzed by comparative analysis. An analysis of non-tax revenues by individual county and an analysis of the county development index according to the existing model at the county level in the period from 2014 to 2018 were made. To determine the relationship and level of correlation between the variables, a correlation coefficient was derived by Pearson. Statistically significant correlation coefficients greater than 0.4 were taken into account. Multiple regression analysis tested the relationship between regional development and the amount of non-tax revenues for the period 2014-2018.

### **4. Analysis of Non-tax Revenues at the Level of Local and Regional Government Units**

Bratic et al. (2012) state that there are at least twenty different non-tax levies (fees, charges and contributions) that local government units introduce based on their own decisions, differing in number and size between various cities and municipalities. Mandatory collection of non-tax levies at the local level is performed by local government units, so it is difficult for tax authorities to determine the taxpayer and the amount of payments based on income under special regulations due to lack of insight into actual taxpayers and types of fees or charges. Given that local and regional government units generate about twenty non-tax revenues according to special regulations, the share of non-tax revenues in total local budget revenues is significant (Institute of Public Finance, 2015). The Act on the Financing of Local and Regional Government Units (NN 127/17) regulates, among other things, the sources of funds and

financing of operations, as well as the distribution of revenues of local and regional government units.

For the purposes of this paper, a comparative analysis of non-tax revenues at the level of local and regional government units was made, based on revenues from administrative fees, fees under special regulations and charges according to the economic classification for the period from 2010 to 2018. According to the available data of the Ministry of Finance (2019), among the highest non-tax revenues in the observed period (2010-2018) are still utility fees, which in 2018 amounted to 72.44% of all utility contributions and fees, or 59.13% of total non-tax revenues from administrative fees, fees under special regulations and charges. If the data of local and regional government units are analysed in more detail, then the most generous non-tax revenues from communal contributions and fees are generated in the area of cities and municipalities, while counties do not generate this type of non-tax revenues. Thus, for example, in 2018, cities generated HRK 2.7 billion (84.86%) from communal contributions and fees in total revenues from administrative fees, fees under special regulations and city charges, while municipalities generated HRK 662 million (77.64%) of non-tax revenues from communal contributions and fees in total revenues from administrative fees, fees under special regulations and municipal charges. Also, according to the data in the period from 2014 to 2018, the share of the increase in non-tax revenues based on utility contributions and fees at the city level averaged 3.45% (Ministry of Finance, 2019). Jurlina Alibegović (2012) concludes that in the area of non-tax revenues local government expect reform-like shifts, while Bajo et. al. (2020) point out that there are over 80 different types of fees, contributions and charges that reduce the economic strength of legal and natural persons, and for that reason the reform of non-tax revenues should be implemented. Some forms of non-tax revenues are not purposeful or generous, and some non-tax revenues limit the fiscal independence of local units.

According to the processed data of the Ministry of Finance (2019) and the analysis of revenues from administrative fees and revenues under special regulations and charges at the level of local and regional government units in accordance with the economic classification of revenue sources in the period from 2010 to 2018 (Table 1), it is clear that the highest values in revenues from administrative fees were recorded for county, city and municipal fees and charges ( $\bar{x}$  = 120,926,266.11), and in revenues under special regulations for other unmentioned revenues ( $\bar{x}$  = 441,923,280.66). The highest arithmetic mean in the category of non-tax revenues on the basis of utility contributions and fees was recorded for utility fees ( $\bar{x}$  = 1,923,184,384.44).

**Table 1:** Results of the analysis of revenues from administrative fees and revenues under special regulations and charges, as well as utility contributions and fees at the level of local and regional government units for the period from 2010 to 2018 according to the economic classification of revenue sources

	$\bar{x}$	Sd	Min	Max
<b>Administrative fees</b>	<b>314,615,720.00</b>	<b>15,485,327.20</b>	<b>291,781,715.00</b>	<b>337,986,695.00</b>
State administrative and court fees	9,264,095.11	3,516,222.90	4,278,373.00	15,548,366.00
County, city and municipal fees and charges	120,926,266.11	9,706,518.43	105,716,433.00	135,413,306.00
Other administrative fees and charges	96,136,928.88	21,940,182.83	59,004,901.00	135,869,379.00
Other fees and charges	88,288,429.88	12,698,925.91	70,525,826.00	105,166,491.00

	$\bar{x}$	Sd	Min	Max
<b>Revenues under special regulations*</b>	<b>876,238,546.00</b>	<b>1,136,838,369.76</b>	<b>444,190,964.00</b>	<b>3,903,132,432.00</b>
Revenues of state administration	989,750.00	575,828.37	595,809.00	2,352,617.00
Water management revenues	29,102,590.55	5,713,771.37	18,459,912.00	35,376,731.00
Forest management contributions	53,330,119.33	7,391,625.24	43,351,179.00	70,897,997.00
Local self-contribution	3,258,644.88	1,418,504.87	1,530,454.00	5,625,928.00
Other unmentioned revenues	441,923,280.66	130,800,797.60	339,757,841.00	733,144,235.00
Fees from financial assets	4,868,153.88	7,075,608.40	.00	15,411,457.00
<b>Utility contributions and fees**</b>	<b>3,063,406,199.77</b>	<b>183,943,252.29</b>	<b>2,801,675,728.00</b>	<b>3,334,032,627.00</b>
Utility contributions	773,344,986.33	301,457,277.02	.00**	972,071,988.00
Utility fees	1,923,184,384.44	737,018,512.58	.00**	2,415,051,546.00
Connection charges	24,110,822.22	29,612,950.93	.00**	73,253,186.00
<b>Total</b>	<b>3,911,494,459.11</b>	<b>191,124,351.73</b>	<b>3,618,620,316.00</b>	<b>4,222,440,735.00</b>
<b>Total revenues of LRGUs</b>	<b>22,904,561,733.33</b>	<b>1,764,229,074.72</b>	<b>21,047,657,029.00</b>	<b>26,966,141,340.00</b>

Note:

\* According to the Ministry of Finance, Sector for Preparation of the State Budget and Financing of Local and Regional Government Units at the State Treasury, due to the application of different methodology compared to the methodology used from 2011 and later, recorded total Revenues under special regulations in 2010 amounted to HRK 3,903,132,432

\*\* According to the methodology for 2010, Utility contributions and fees are not analytically elaborated by items Utility contributions, Utility fees and Connection charges as shown from 2011 and later

Source: Bedeković (2021)

Table 2 shows the values of total revenues and non-tax revenues of local government units and regional government units for the period from 2010 to 2018 according to the economic classification of revenue sources. The share of non-tax revenues in total revenues of LRGUs in the period from 2010 to 2018 tended to decrease from 19.17 % in 2010 to 15.24% in 2018, although in the same observed period total revenues LRGUs tended to grow by more than 20 % in 2018 compared to 2010.

**Table 2:** Results of the analysis of revenues from administrative and administrative fees and revenues from special regulations and fees at the level of LRGUs for the period from 2010 to 2018

Revenues from administrative and administrative fees and revenues under special regulations and fees (non-tax revenues)	2010.	2011.	2012.	2013.	2014.	2015.	2016.	2017.	2018.
Overall (in billions)	4,2	3,9	3,6	3,7	3,7	3,8	3,9	4,0	4,1
Total LRGUs revenues (in billions)	21,9	21,0	21,3	22,9	22,7	22,2	23,2	23,8	26,9
Share of non-tax revenues in total revenues (%)	19,17	18,57	16,90	16,15	16,29	17,11	16,81	16,80	15,24

Source: Authors



Furthermore, by analysing total revenues from administrative fees, fees under special regulations and charges at the level of individual counties (Table 3), it was observed that the City of Zagreb is far above all other counties in terms of collected non-tax revenues on this basis, with more than 115% of collected non-tax revenues in comparison to the Split-Dalmatia County during 2018, and even more than 3,823.40% of non-tax revenues of the Požega-Slavonia County.

**Table 3:** Analysis of total revenues from administrative and administrative fees, fees according to special regulations and fees at the level of individual counties, cities and municipalities for 2018

Name of the county	Total budget of LRGUs based on non-tax revenues	Total revenues of LRGUs	Share of non-tax revenues in total revenues of LRGUs %
City of Zagreb	1.086.099.887	7.280.213.936	14,92
Split-Dalmatia	505.068.473	2.664.529.401	18,96
Primorje-Gorski Kotar	447.705.270	2.204.414.336	20,31
Istria	416.418.414	1.795.015.966	23,20
Zagreb	236.259.757	1.560.759.048	15,14
Zadar	227.622.911	1.101.869.762	20,66
Dubrovnik-Neretva	163.214.260	1.046.946.432	15,59
Sisak-Moslavina	147.279.852	823.988.506	17,87
Osijek-Baranja	126.947.385	1.439.095.323	8,82
Šibenik-Knin	118.430.051	669.018.921	17,70
Varaždin	75.915.384	797.529.482	9,51
Karlovac	75.640.650	597.958.065	12,65
Koprivnica-Križevci	66.801.611	567.767.465	11,77
Vukovar-Srijem	66.528.497	916.576.042	7,26
Lika-Senj	61.599.734	419.418.880	14,69
Brod-Posavina	53.306.585	626.991.168	8,50
Krapina-Zagorje	48.985.900	532.174.131	9,20
Bjelovar-Bilogora	48.169.675	538.819.191	8,94
Međimurje	44.036.357	522.397.198	8,43
Virovitica-Podravina	40.457.877	490.227.860	8,25
Požega-Slavonia	27.682.556	370.430.227	7,47
<b>Total</b>	<b>4.084.171.086</b>	<b>26.966.141.340</b>	<b>15,15</b>

Source: Authors

The results of an empirical survey conducted in 2020 (Bedeković, 2021, 216) have shown that most respondents who participated in the survey believe that statistical monitoring of non-tax levies at the level of individual regions is not up to date ( $\bar{x} = 3.91$ ,  $Sd = 0,72$ ) and that at the level of local and regional government units the purpose of collecting non-tax levies is not sufficiently transparent ( $\bar{x} = 3.88$ ,  $Sd = 0.78$ ), i.e. 74.1% of respondents in the aforementioned

survey believe that the purpose of collecting non-tax levies is not sufficiently transparent at the level of local and regional government units. The paper uses a regression analysis to quantify the dependence (correlation) of one variable (the amount of revenues collected from non-tax benefits in each region positively contributes to the development of regions in the Republic of Croatia) on several independent variables, and the relationships between them are shown in Table 4.

**Table 4:** Multiple regression results

Assertion	$\beta$	$t$	$p$	Model summary
If the units of local and regional government collect more non-tax revenues, then the GDP per capita is higher.	.854	23.185	.000	corrected $R^2 = 0.758$
At the level of local and regional government units, the purpose of collecting non-tax levies is not sufficiently transparent.	-.033	-.808	.420	F (5.191) = 123.555
The obligation to pay non-tax levies cannot be linked to the service received based on paid non-tax levies.	-.042	-1.077	.283	p = 0.000
Statistical monitoring of non-tax levies at the level of individual regions is out of date.	-.009	-.198	.843	
Non-tax revenues are an important instrument for financing public needs.	-.012	-.327	.744	
Key: $\beta$ = value of standardized regression coefficient; $t$ = t-test value; $p$ = significance level; corrected $R^2$ = corrected total contribution to explained variance; F = value of the total F-ratio;				

Source: Bedeković (2021, 216)

As shown in Table 4, the assertion *If the units of local and regional government collect more non-tax revenues, then the GDP per capita is higher* is a significant predictor in the model for the dependent variable *The amount of revenues collected from non-tax levies in each region positively contributes to the development of regions in the Republic of Croatia* ( $\beta = 0.854$ ,  $p < 0.01$ ), which means that a strong positive relationship was noticed between these variables. This predictor model explained 75.8% of the total variance of criteria.

For the purposes of this paper, the relationship between regional development and the amount of revenues collected from non-tax levies at the level of local and regional government units in the period between 2014 and 2018 was tested. As previously mentioned, the development of an individual region was measured by the development index, and the amount of non-tax revenues as a share of non-tax revenues in total revenues of LRGUs. The City of Zagreb has the highest development index and the highest non-tax revenues, which in the period from 2014 to 2018 show a growth trend of 15.27%. Virovitica-Podravina County has the lowest development index, and Požega-Slavonia County has the lowest non-tax revenues.

The average indicators for the observed non-tax revenues and the development index of the counties are shown in Table 5, including the arithmetic mean, standard deviation and the minimum and maximum value for each observed indicator.

**Table 5:** The average indicators for the observed non-tax revenues and the development index of the counties

		County development index according to the existing model at the county level	Non-tax revenues of LRGUs in 2014	Non-tax revenues of LRGUs in 2015	Non-tax revenues of LRGUs in 2016	Non-tax revenues of LRGUs in 2017	Non-tax revenues of LRGUs in 2018
N	Valid	21	21	21	21	21	21
	Missing	0	0	0	0	0	0
$\bar{x}$		99.50	177,061,033.61	185,571,463.52	188,280,452.80	191,247,166.33	194,484,337.42
Sd		7.18	216,643,221.50	221,593,705.28	229,216,727.29	233,950,364.72	248,638,102.50
Min		90.66	29,552,077.00	27,897,368.00	27,105,108.00	27,684,979.00	27,682,556.00
Max		117.75	942,157,457.00	970,816,678.00	995,429,073.00	995,422,535.00	1,086,099,887.00

Source: Bedeković (2021, 224)

According to the data from Table 5, the average development index of counties and the City of Zagreb for the period from 2014 to 2018 is 99.50. Non-tax revenues of LRGUs in the observed period show a growth trend, and the highest arithmetic mean of non-tax revenues of LRGUs is in 2018. In order to determine the correlation between the amount of revenues collected from non-tax levies and the development of each region, the Pearson correlation coefficient was calculated for the observed variables. Table 6 shows the test results. A high positive relationship was noticed between all observed variables.

**Table 6:** The Pearson correlation coefficient for the observed variables of development index of counties and non-tax revenues of LRGUs

		County development index according to the existing model at the county level	Non-tax revenues of LRGUs in 2014	Non-tax revenues of LRGUs in 2015	Non-tax revenues of LRGUs in 2016	Non-tax revenues of LRGUs in 2017	Non-tax revenues of LRGUs in 2018
County development index according to the existing model at the county level	r	1	.794**	.808**	.801**	.805**	.799**
	p		.000	.000	.000	.000	.000
	N		21	21	21	21	21
Non-tax revenues of LRGUs in 2014	r		1	.998**	.998**	.994**	.998**
	p			.000	.000	.000	.000
	N			21	21	21	21
Non-tax revenues of LRGUs in 2015	r			1	.998**	.994**	.997**
	p				.000	.000	.000

		County development index according to the existing model at the county level	Non-tax revenues of LRGUs in 2014	Non-tax revenues of LRGUs in 2015	Non-tax revenues of LRGUs in 2016	Non-tax revenues of LRGUs in 2017	Non-tax revenues of LRGUs in 2018
	N				21	21	21
Non-tax revenues of LRGUs in 2016	r				1	.997**	.999**
	p					.000	.000
	N					21	21
Non-tax revenues of LRGUs in 2017	r					1	.997**
	p						.000
	N						21
Non-tax revenues of LRGUs in 2018	r						1
	p						
	N						
**. Correlation is significant at the 0.01 level (2-tailed).							

Source: Bedeković (2021, 225)

The highest level of correlation (Table 6) was recorded between the County development index according to the existing model at the county level and Non-tax revenues of LRGUs in 2015 ( $r = 0.808$ ;  $p < 0.01$ ). Also, a positive correlation was recorded between the County development index according to the existing model at the county level and Non-tax revenues of LRGUs in 2017 ( $r = 0.805$ ;  $p < 0.01$ ) and between the County development index according to the existing model at the county level and Non-tax revenues of LRGUs in 2016 ( $r = 0.801$ ;  $p < 0.01$ ).

## 5. Conclusion

Based on the comparative analysis of non-tax revenues at the level of LRGUs, it was noticed that the value of non-tax revenues in the period from 2014 to 2018 shows a growing trend, and empirical research shows that the amount of revenues collected from non-tax levies is positively related to the development of a particular region in the Republic of Croatia, given that a strong positive relationship between the observed variables was noticed. Although the results of budget transparency of counties, cities and municipalities show increased transparency in the publication of key budget documents, the survey results have shown that the purpose of collecting non-tax levies is not sufficiently transparent, and LRGUs should work further on the transparency of the collection of non-tax revenues, especially those units with a higher development index.

The role and efficiency of non-tax levies in the Republic of Croatia is in a transitional phase in terms of further clarification of the number of non-tax levies, which means that there is still a large number of them. The link between the payment of non-tax levies and benefits for the local population is not clear and recognizable, and in the future further work should be done in the segment of improving the budget process and transparency of reporting to the local population. The conducted research points to the fact that clear benefits can be expected from non-tax levies in the form of improving local public services, which implicitly has a positive impact on reducing regional inequalities.

## REFERENCES

- Bajo, A. (2006): *Deset preporuka za život u raju skrivenih nameta*. <http://lider.media/arhiva/2448/>, (accessed on 14 October 2021).
- Bajo, A., Blažić, H., Burnać, P., Dodig, D., Drezgić, S., Galinec, D., Ignjatović, M., Juričić, D., Jurlina Alibegović, D., Karačić, D., Krtalić, S., Nikolić, N., Primorac, M., Puljiz, J., Šuman Tolić, M. (2020): *Financije županija, gradova i općina*, Sveučilište u Zagrebu, Ekonomski fakultet, Zagreb
- Bajo, A., Bronić, M. (2004): *Fiskalna decentralizacija u Hrvatskoj: problemi fiskalnog izravnjanja*, Financijska teorija i praksa, Vol. 28, No. 4, pp. 445-467, [http://www.ijf.hr/FTP/2004/4/bajo\\_bronic.pdf](http://www.ijf.hr/FTP/2004/4/bajo_bronic.pdf) (accessed on 3 November 2016).
- Bajo, A., Jurlina Alibegović, D. (2008): *Javne financije lokalnih jedinica vlasti*, Školska knjiga, Zagreb
- Bedeković, M. (2021): *Neporezna davanja i njihov utjecaj na konkurentnost hrvatske poljoprivrede*, doktorska disertacija, Sveučilište Josipa Jurja Strossmayera u Osijeku, Ekonomski fakultet u Osijeku, Osijek
- Bratić, V., Bejaković, P., Devčić, A. (2012): *Porezni sustav kao odrednica konkurentnosti turizma: slučaj Hrvatske*, Računovodstvo i financije, Vol. 58, No. 9, pp. 89-93
- Bronić, M., Opačak, M., Ott, K., Petrušić, M., Stanić, B. (2021): *Proračunska transparentnost županija, gradova i općina: studeni 2020. – travanj 2021.*, Osvrti Instituta za javne financije, Vol. 14, No. 119, pp. 1-11. doi: 10.3326/ao.2021.119
- Ebel, R., D., Yilmaz, S. (2002): *Fiskalna decentralizacija u Hrvatskoj, II dio- Financiranje lokalne uprave i samouprave, Način mjerenja fiskalne decentralizacije i njezin utjecaj na makroekonomske pokazatelje*, Institut za javne financije, Zagreb, pp. 27-41.
- Institut za javne financije (2015): *Fiskalni položaj županija*, Bajo. Okrugli stol. Zagreb, <http://www.ijf.hr/upload/files/zupanije.pdf>, (accessed on 12 October 2019)
- Jurlina Alibegović, D. (2002): *Fiskalna decentralizacija u Hrvatskoj, II dio- Financiranje lokalne uprave i samouprave, Financiranje lokalne samouprave*, Institut za javne financije, Zagreb, pp. 93-106.
- Jurlina Alibegović, D. (2012): *Fiskalna decentralizacija u Hrvatskoj: između želja i mogućnosti*, Forum o javnoj upravi. Friedrich Ebert Stiftung, Institut za javnu upravu, [https://iju.hr/Dokumenti/fju\\_1.pdf](https://iju.hr/Dokumenti/fju_1.pdf), (accessed on 12 October 2019)
- Kesner-Škreb, M. (2009). *Fiskalni federalizam. Pojmovnik*, Financijska teorija i praksa, Vol. 33, No. 2, pp. 237-239.
- Ministarstvo financija (2019): *Strateški plan Ministarstva financija 2020.-2022.* <http://www.mfin.hr/adminmax/docs/Strate%C5%A1ki%20plan%20Ministarstva%20financija%202020.%20-%202022.pdf>, (accessed on 12 November 2020).

Ministarstvo financija (2019a): *Upute za izradu proračuna jedinica lokalne i područne (regionalne) samouprave*, <http://www.mfin.hr/hr/upute-za-izradu-proracuna-jlprs-arhiva> (accessed on 12 November 2020).

Ministarstvo financija (2019b): *Financijski izvještaji JLP(R)S*, <https://mfin.gov.hr/istaknute teme/lokalna-samouprava/financijski-izvjestaji-jlp-r-s/pr-ras-i-ras-func-za-razdoblje-2010-2014/211> (accessed on 12 November 2020)

Ministarstvo regionalnog razvoja, šumarstva i vodnoga gospodarstva (2010): *Pravilnik o obveznom sadržaju, metodologiji izrade i načinu vrednovanja županijskih razvojnih strategija*, Narodne novine. No. 53, Zagreb

Ministarstvo regionalnog razvoja, šumarstva i vodnoga gospodarstva (2010a): *Strategija regionalnog razvoja Republike Hrvatske, 2011. – 2013.* <https://vlada.gov.hr/UserDocsImages//2016/Sjednice/Arhiva//1.2.%20-%2059.pdf> (accessed on 28 October 2021)

Ministarstvo regionalnog razvoja i fondova Europske unije (2020): *Vrijednosti indeksa razvijenosti i pokazatelja za izračun indeksa razvijenosti 2018*: <https://razvoj.gov.hr/o-ministarstvu/djelokrug-1939/regionalni-razvoj/indeks-razvijenosti/vrijednosti-indeksa-razvijenosti-i-pokazatelja-za-izracun-indeksa-razvijenosti-2018/3740> (accessed on 28 October 2021)

Ministarstvo regionalnog razvoja i fondova Europske unije (2020a): *Indeks razvijenosti*, <https://razvoj.gov.hr/o-ministarstvu/regionalni-razvoj/indeks-razvijenosti/112> (accessed on 28 October 2021)

Ott, K., Bajo, A. (2001): *Lokalne financije i lokalni proračuni u Republici Hrvatskoj*, Financijska teorija i praksa, Vol. 25, No. 3, pp. 311-449.

Ott, K., Bronić, M., Petrušić, M., Stanić, B. (2016): *Proračunska transparentnost županija, gradova i općina: studeni 2015. – ožujak 2016*, Newsletter. Zagreb: Institut za javne financije, No. 107, pp.1-13.

Ott, K., Bronić, M., Petrušić, M., Stanić, B. (2017): *Proračunska transparentnost županija, gradova i općina: studeni 2016. – ožujak 2017*, Newsletter, Institut za javne financije. Zagreb: No. 112, pp. 1-13.

Ott, K., Bronić, M., Petrušić, M., Stanić, B., Prijaković, S. (2019): *Proračunska transparentnost županija, gradova i općina: studeni 2018.- ožujak 2019*, Newsletter (117). Zagreb: Institut za javne financije. <https://www.ijf.hr/upload/files/file/newsletter/117.pdf> (accessed on 15 January 2022)

Ott, K., Kesner-Škreb, M., Bratić, V., Kuliš, D., Bajo, A., Švaljek, S., Bejaković, P., Fabris, M. (2007): *Javne financije u Hrvatskoj*, Ott. treće, promijenjeno izdanje, Institut za javne financije. Zagreb

*Pravilnik o proračunskim klasifikacijama* 26(10), 120(13), Narodne novine. Zagreb

**Pravilnik o proračunskom računovodstvu i Računskom planu** 124(14), 115(15), 87(16) i 3(18) Narodne novine. Zagreb

Rogić Lugarić, T., Maksimovska Veljanovski, A. (2011): **Samooporezivanje kao izvor financiranja lokalnih jedinica – hrvatska i makedonska iskustva**, Zbornik Pravnog fakulteta Sveučilišta u Zagrebu, Vol. 61, No. 2, pp. 391-416.

Šimović, H. (2012): **Utjecaj fiskalnog sustava i fiskalne politike na konkurentnost gospodarstva**. Zbornik radova tradicionalnog savjetovanja Hrvatskog društva ekonomista Ekonomska politika Hrvatske u 2007., Ekonomski fakultet u Zagrebu, Zagreb, pp. 1-16.

Šimović, J. (1999): **Neka obilježja sustava financiranja javnih potreba u Republici Hrvatskoj**. Hrvatska javna uprava, Vol. 1, No. 3, pp. 415-446.

Šimović, J. (2000): **Jačanje financijskog kapaciteta i povećanje financijske autonomije lokalnih jedinica**. Hrvatska javna uprava, Vol. 2, No. 2, pp. 259-282.

Šimović, J., Rogić Lugarić, T. (2006): **Financiranje javnih potreba u velikim gradovima: iskustva Grada Zagreba**, Zbornik Pravnog fakulteta u Zagrebu, Vol. 56, No. 6, pp. 1847-1912.

Tijanić, L. (2010): **Regionalna (ne)konkurentnost u Republici Hrvatskoj**, Ekonomski pregled. Vol. 61, No.7-8, pp. 419-454.

Vlada Republike Hrvatske (2017): **Uredba o indeksu razvijenost**, No. 131, Narodne novine, Zagreb

Vlada Republike Hrvatske (2017a): **Strategija regionalnog razvoja Republike Hrvatske za razdoblje do kraja 2020. godine**, No. 75, Narodne novine. Zagreb

Vujeva, M. (2016): **Utjecaj fiskalne decentralizacije na zadovoljavanje javnih potreba lokalne zajednice**, Doktorski rad, Sveučilišta u Mostaru, Mostar; Ekonomski fakultet, Sveučilište u Splitu, Ekonomski fakultet. <https://repositorij.efst.unist.hr/islandora/object/efst%3A1809/datastream/PDF/view> (accessed on 22 November 2019).

**Zakon o financiranju jedinica lokalne i područne (regionalne) samouprave**, 127(17), Narodne novine, Zagreb

**Zakon o proračunu**. 87(08), 136(12), 15(15), Narodne novine, Zagreb

**Zakon o regionalnom razvoju Republike Hrvatske**, 153(09), 147(14), 123(17), 118(18), Narodne novine, Zagreb

**Zakonom o pravu na pristup informacijama**, 25(13), 85(15), Narodne novine, Zagreb

*A scientific paper*

**Andreja Katolik Kovačević, Ph. D.**

Department of Social Sciences and Humanities/University of Slavonski Brod

E-mail address: akkovacevic@unisb.hr

**Željko Požega, Ph. D., Full Professor**

Faculty of Economics in Osijek/Josip Juraj Strossmayer University in Osijek

E-mail address: zeljko.pozega@efos.hr

**Boris Crnković, Ph. D., Full Professor**

Faculty of Economics in Osijek/Josip Juraj Strossmayer University in Osijek

E-mail address: boris.crnkovic@efos.hr

## **SUSTAINABLE DEVELOPMENT THROUGH BETTER FOOD WASTE MANAGEMENT FROM STUDENT PERSPECTIVE**

### **ABSTRACT**

*According to current findings, globally about a third of food produced for human consumption is lost or wasted, which is approximately 1.3 billion tons, and the financial loss is about US \$ 680 billion in developed countries and 310 billion in developing countries. (EU FUZIONI, 2016) In addition to representing an economic cost, food waste is also an environmental cost. The aim of the study is to assess the applicability of previous findings regarding drivers of food waste production in consumers households and solutions aimed to reduce such food waste production. Participants were conveniently sampled (N = 256), and the demographic variables were as follows: most participants were university students between 18 and 30 years of age (f = 184, 71.9%), female (f = 173, 67.6%) with the undergraduate level degree (f = 134, 52%) live in a house (f = 200, 78.1%), with the average monthly salary less than 5000 HRK and roughly half of them using biowaste-bins (f = 134, 52.3%). The instrument was constructed for this study purposes. The questionnaire was administered through Google Forms™, data collection lasted between February 15th and March 7th 2022. The data was analyzed using SPSS 23 (IBM, 2015). How often participants think about the food waste generated by their household has been connected with older age, being female, and living in a condo while at the same time how often participants think about the food waste generation was found to be significant but still weak predictor of the attitude that food waste has a negative impact on the environment, with participants, in general, not having a really strong belief that food waste has a negative impact on the environment. This might indicate that their food waste concerns are mainly focused on equating food waste with money being wasted and not so much with the care of the environment per se.*

**Key words:** *sustainable development, food waste, environment, consumption, household.*

### **1. Introduction**

In the period from 2019 to 2024, the European Union wants to turn its economy into a modern, resource-efficient and competitive economy through the Green Plan. One third of the € 1.8 trillion investment from the EU Next Generation Recovery Plan and the EU seven-year budget



will be the source of funding for the European Green Plan. (European Commission, 2019) The Green Plan aims to achieve a circular economy, ie a model of production and consumption that includes sharing, lending, reusing, repairing, restoring and recycling existing products and materials for as long as possible to create additional, longer product value. In this way, the life of the product is produced and at the same time the amount of waste is reduced. (European Commission, 2020)

One of the main issues of the European Union (EU) is the amount of food waste and its reduction. The United Nations (UN) has stated in its Sustainable Development Plan that by 2030 it trends to halve global food waste per capita at retail and consumer levels, and reduce food losses during production and supply chains. (European Court of Auditors, 2016) However there is no review that has considered the effectiveness of interventions aimed at preventing food waste in the consumption stages of the food system. This significant gap, if filled, could help support food waste in the developed world, providing knowledge of what interventions are specifically effective at preventing food waste (Reynolds et al., 2019).

According to current findings, globally about a third of food produced for human consumption is lost or wasted, which is approximately 1.3 billion tons, and the financial loss is about US \$ 680 billion in developed countries and 310 billion in developing countries. (EU FUZIONI, 2016) In addition to representing an economic cost, food waste is also an environmental cost. Economic cost includes not only the cost of the product value itself, but also the cost of producing, transporting and storing unnecessarily discarded products and the cost of processing them. When it comes to the environment, unnecessary food waste consumes resources invested during the life cycle of products such as land, water, energy and consequently increases greenhouse gas emissions (European Court of Auditors, 2016). In EU countries, around 88 million tonnes of food are thrown away every year in various sectors, and at the same time a quarter of citizens are at risk of poverty (European Court of Auditors, 2016). In the Republic of Croatia (RH), approximately 400 thousand tons of healthy food are thrown away annually (Croatian Institute of Public Health, 2018).

The European Commission cites donating food as one of the main ways to reduce food waste, and in 2017 it adopted guidelines on food donation. Food donation guidelines should encourage donation and reduce enormous amounts of food wasted. The guidelines include instructions and advice on how to organize food donation systems without complying with all European regulations and without endangering food safety or the health of donations recipients. They aim at Member States, intermediaries, humanitarian organizations and other actors in the donation process (EU Food Donation Guidelines, 2017).

Guidelines for food donation in relation to expiration dates adopted in the Croatian Agency for Agriculture and Food in 2019, when the Ordinance on food and animal donation (OG 91/2019) entered into force. The guidelines are not legally binding, but based on them the Republic of Croatia should achieve the goal of the EU Council and contribute to achieving the goal of sustainable development 12.3, which aims to halve global food waste per capita at retail and consumer levels and reduce food losses in the production and supply chain, including post-harvest losses, by 2030 (European Court of Auditors, 2016). A study conducted in 2017 shows that all parties involved need to take responsibility, raise awareness and conduct educational campaigns among all participants. (Vaqué, 2017).

The way in which food business operators and regulators use date marking in supply chain management can also affect food waste. For example, the approaches followed by food business operators in defining date labeling (eg. whether to use a "use by" or "best before" date), market practices such as the amount of shelf life that retailers require when delivering a product) and national rules on the further distribution and use of food after the "best of" date may affect the generation of food waste in the supply chain. It estimates that up to 10% of the 88 million tonnes

of food waste generated annually in the EU relates to date marking (European Commission, 2018). Recent consumer market surveys in the EU show that only a third of consumers are able to correctly interpret the meaning of the 'best before' date. While knowledge of labelling seems to be better in some countries, consumers throughout the EU have difficulties in understanding the labelling scheme (Valant, 2015).

Therefore, through the EU Platform on Food Losses and Food Waste, the EU assists food business operators in deciding on the choice between "use by" or "best by" and setting the appropriate shelf life, storage conditions and instructions on open shelf life. All these measures will improve the understanding and use of the date stamp and contribute to better food management by all actors, which will reduce food waste. In October 2020, the European food safety authority issued a guide to date and related food information. The guide, structured as a decision tree, consists with a series of questions that manufacturers need to answer to help them make a decision about using "use by" or "best use by" labels. The guide covers, inter alia: whether the labeling requirements for this food group are already regulated by law, whether the food undergoes any treatment to eliminate the hazard, whether the food is safely handled before packaging, what are the characteristics of the food and storage conditions (EFSA, 2020). The European food safety authority plans to develop another opinion that will relate to consumer information, and relates to food storage conditions, the time limit for consumption after opening, and ways to defrost food.

As a result of the 2019 platform, Directive 2008/98/EZ which adopted obligations of Member States to include food waste prevention in their programs and to monitor and evaluate the implementation of their food waste prevention measures by measuring food waste levels based on common methodologies (EU Commission Delegated Decision 2019/1597). Reducing food loss and waste is also part of the Farm to Fork strategy, which proposes a series of activities to enable the transition to a sustainable EU food system that protects food security and ensures access to healthy food from a healthy planet.

According to FUSIONS EU (2016), the sector that contributes most to food waste is households (47 million tonnes  $\pm$  4 million tonnes) (FUSIONS EU, 2016). That is, according to existing data, estimated that at EU level households generate more than half of total food waste (53%) (Ministry of Economy and Sustainable Development, 2021).

**Table 1:** Estimates of food waste in EU-28

Sector	Food waste (million tonnes) with 95% CI*	Food waste (kg per person) with 95% CI*
Primary production	9.1 $\pm$ 1.5	18 $\pm$ 3
Processing	16.9 $\pm$ 12.7	33 $\pm$ 25
Wholesale and retail	4.6 $\pm$ 1.2	9 $\pm$ 2
Food services	10.5 $\pm$ 1.5	21 $\pm$ 3
Households	46.5 $\pm$ 4.4	92 $\pm$ 9

Source: FUSION EU (2016)

Back in 2018, the European Commission published guidelines on how to limit food waste in everyday life: plan purchases, check dates, take care of the budget, properly maintain the refrigerator, store food properly, rotate, serve smaller amounts of food, use leftovers, freeze and compost (European Commission, 2018).

**Figure 1:** Practical application of the waste hierarchy for food

Source: *Brief on food waste in the European Union, European Commission Joint Research Centre (2020)*

The Republic of Croatia applied the decision of the EU Commission 2019/1597 and measured food waste in households, thus concluding that 76% of total food waste generates from households. On average, a household throws away 2,866 grams of food per week, or 1,031 grams per household member. At the annual level, households in Croatia throw away 216,345 tons of food (the product of thrown away food per person with the number of citizens living in the Republic of Croatia). (Ministry of Economy and Sustainable Development, 2021.) Half of the households cited too much food/prepared food as a reason for throwing away food (52%). In second place is the expiration date (37%), and in third place in terms of the frequency of throwing food that is somehow destroyed/inedible (30%). In households that cited multiple reasons for throwing away food, the most common reason is also the excessive amount of food purchased or prepared. About 15% of households never use leftover meals to prepare a new meal, and 24% of them rarely do so. The relative majority of households do this at least sometimes. 19% of households do the following sometimes, and 8% usually or always. The amount of food wasted by households that often or always use leftovers is lower (Ministry of Economy and Sustainable Development, 2021).

## 2. Literature review

Significant reduction of household food waste considers to be a key step towards achieving global sustainable development. Waste of household food is a complex phenomenon determined by consumer behavior that goes from purchase to final disposal. Although avoiding food waste is socially desirable and provokes positive attitudes, consumers are not often involved in avoiding such behavior (Ferroa et al., 2022). In 20 in-depth interviews, participants tried to recall and describe when they last threw food, as well as to describe the most common food waste situations in their household, the most commonly used strategies to avoid food waste and how to reduce it. The analysis found that most participants perceive food waste in their homes as insignificant or low, while food waste in the country is considered high. Participants perceived food waste as inevitable, suggesting that they tended to find a rational explanation beyond their will to justify their behavior. Ferroa et al. (2022) emphasize that programs to reduce food waste in households should focus on providing knowledge and skills on food storage and handling and preparation.

Aschemann Witzel et al. (2015) emphasize that motivating consumers to avoid food waste, their food supply management and handling skills have a major impact on their behavior and food waste (Aschemann-Witzel et al., 2015).

One can conclude that it is difficult to motivate consumers actively reducing the level of food waste, despite their strong negative perception of this issue (Geffe et al., 2019). This is primarily due to the nature of food waste prevention because it is difficult to act on this normative goal when activating both hedonistic goals and profit goals. Therefore, in order for consumers to successfully focus on reducing food waste, interventions should not (exclusively) provide information campaigns to raise awareness because people are already concerned about this problem. Instead, it is best to serve consumers with interventions that focus on making food waste prevention more prominent (relative to their other goals), for example, by providing incentives (Geffe et al., 2019). Geffe et al. (2019) also conclude that interventions should focus on improving consumers ability and capacity to handle food efficiently. Therefore, interventions should enable consumer to handle food in such a way that they can prevent food wastage, while acting towards their other valuable goals, without the need to spend more resources. This confirms that the problem of food waste practices among consumers is a complex issue that includes socio-cultural and material factors (Hebrok & Boks, 2017).

A survey conducted in 2018 showed that consumers over the age of 65 waste less food, and that households with children usually waste more food. Per capita households account for less waste, while single households account for the most food waste. Excessive availability, unsystematic storage, misinformation about food shelf life and date declarations as well as aversion to eating leftovers are, among other things, prominent reasons for throwing away food (Schanes et al., 2018). Research shows that there is a lack of knowledge about the social and environmental impacts of food waste and what active work should do to improve consumers awareness of the wider impacts about wasteful behavior. Active work needs to raise awareness of the daily routines and practices importance on the amount of food wasted in households.

Waste prevention has become an issue of international importance. Sustainable Development 12.3 aims to halve global food waste per capita at retail and consumer levels by 2030. Reynolds et al. (2019) in their review identify interventions to prevent food waste in consumers. A review of the global academic literature from 2006 to 2017 identified 17 applied interventions according to how to achieve a reduction in food waste. Informative marketing campaigns have proven effective and have led to a reduction in food waste of up to 28% (Reynolds et al., 2019). The review also showed that a change in dietary guidelines in schools leads to a reduction in vegetable waste of up to 28%, which indicates that a healthy diet can be part of prevention, or lead to a reduction in food waste.

When it comes to reducing food waste in households schools can play a big role. A study conducted in five Australian schools in 2022 found that education, skills, school events and interventions to reduce food waste by encouraging students to be more involved at home in choosing and/or preparing food to take to school leads to greater involvement in targeted behaviors and there was a reduction in food waste. This research shows how food-related practices and behaviors result from the interaction of various factors and emphasizes the value of this perspective in designing interventions to reduce food waste (Boulet et al., 2022).

Furthermore, research conducted at the University of Roma-Tre in Italy back in 2015 showed that the more young consumers are aware that food is thrown away, the more likely they are to reduce food leftovers. In contrast, caring for the freshness of food increases waste. Greater awareness of the consequences of throwing away food increases the likelihood that young consumers will make a shopping list. Principato et al. (2015) showed that educational campaigns against food waste should be conducted in a way that gives them a realistic perception of food waste, as well as teaching young consumers how to recognize the level of freshness of food. (Principato et al., 2015) The education of young consumers will lead to a

reduction in the amount of food wasted in households in the future, because they will be the ones who will potentially generate the largest amount of food wasted.

Research conducted in Malaysia has shown that government policy variables such as: household food waste management policies, environmental knowledge and household environmental awareness have a significant impact on reducing food waste generation and achieving sustainable food waste management at the household level. The implication of the findings leads to the conclusion that sustainable food waste management does not only address behavioral issues, but also policy and regulatory issues. One suggested that the government should play a strong and important role in formulating food waste policy and providing infrastructure that could reduce food waste in households while raising awareness of the negative impacts of food waste on the environment and the economy. All of this would ultimately lead to a change in household behavior toward reducing food waste issues (Jereme et al., 2018).

Of all the waste foods, those generated in the household are the most harmful in terms of environmental and economic impact. In other works, many efforts have made to quantify and analyse the causes and problems associated with generating household food waste, which has led to the development of technical solutions and behavioural interventions (including education and awareness) to try to reduce its occurrence. The mode selection tool described in the study by Woolley et al. (2022) shows it would be feasible in combination with modern e-commerce systems and would support the establishment of a relationship between consumers and suppliers. A tool that connects the producer, the customer and his need, the preferred foods, the recipe for preparation and the proper way of storing food would ultimately lead to a reduction for food thrown away and a reduction in costs. Better supply and demand management in the food sector could improve the resilience of the supply chain, thus reducing food loss and waste of all actors in the supply chain. In addition, reducing household food waste through better engagement with consumers, as envisaged by this tool, could support corporate social responsibility efforts and lead to improved corporate sustainability (Woolley et al., 2022).

### **3. Methodology**

#### **3.1. Aims**

The aim of the study is to assess the applicability of previous findings regarding drivers of food waste production in consumers households and solutions aimed to reduce such food waste production. Therefore, the main aims of the study were to:

1. Explore what are the perceived drivers of food waste production in participants households.
2. Explore what solutions would participants be willing to implement in order to reduce the amount of the food waste being generated in their household.
3. Explore the relationship of participants demographic characteristic (gender, age, socioeconomic status, education level, etc.) with their attitudes regarding food waste production and its impact on the environment.

#### **3.2. Participants**

Participants were conveniently sampled (N = 256), and the demographic variables were as follows: most participants were university students between 18 and 30 years of age (f = 184, 71.9%), female (f = 173, 67.6%) with the undergraduate level degree (f = 134, 52%) live in a

house ( $f = 200$ , 78.1%), with the average monthly salary less than 5000 HRK and roughly half of them using biowaste-bins ( $f = 134$ , 52.3%).

### 3.3. Instruments and procedures

The instrument was constructed for this study purposes. It consisted of 12 questions, 6 of which were demographic characteristics (e.g., participants gender, age, level of achieved education, average monthly income, housing type and the number of people living in one household), attitude towards the effect of effect food waste has on the environment (“Do you think that food waste has a negative impact on environment”, with 1 – completely disagree, 5 – completely agree), indication of the level of understanding of the difference between the expiration date and the “best used before” label (“Do you understand the difference between the “use before” and “best use before” labels?, with 1 – do not understand at all, 5 – completely understand), the usage of biowaste-bins (No, Yes), active consideration of the food waste generated in the household (“How often do you think about the food waste generated by your household?”, with 1 – never, 5 – very often), indication of the reason behind the generation of food waste in their household (“What are the reasons for food waste being generated in your household?”: “too large quantities bought (food)”, “more food is prepared (per meal) than what is consumed”, “other members of the household eat less than what is prepared”, “food (item) expiration dates has passed”, “other”, with 0 – No, 1 – Yes), indication of the possible solutions they might implement in order to reduce the amount of the food waste being generated in their household (“What might you do in order to decrease the amount of food wate being generated by your household?”: “Use if for next meal preparation”, “Eat it for the next meal”, “Store it in refrigerator”, “Feed it to a pet”, “Feed it to farm animals”, “Compost”, with 0 – No, 1 – Yes). There were no open-ended questions in this questionnaire. The questionnaire was administered though Google Forms<sup>TM</sup>, data collection lasted between February 15<sup>th</sup> and March 7<sup>th</sup> 2022. The data was analyzed using SPSS 23 (IBM, 2015).

## 4. Results

**Table 2:** Distribution of the participants regarding their demographic characteristics

<b>Gender</b>		
Values	F	%
Female	173	67.6
Male	83	32.4
<b>Age</b>		
Values	F	%
18-30	184	71.9
31-55	70	27.3
> 55	2	0.8
<b>Highest achieved education level</b>		
Values	F	%
highschool	67	26.2
undergraduate	134	52.3
graduate	53	20.7
postgraduate	2	0.8

<b>Average monthly salary (HRK)</b>		
Values	F	%
< 5000	138	53.9
5000-7000	63	24.6
7000-9000	30	11.7
> 9000	25	9.8

<b>Housing</b>		
Values	F	%
House	200	78.1
Condo	56	21.9

<b>Do you use biowaste-bin?</b>		
Values	F	%
No	122	47.7
Yes	134	52.3

*Source: made by authors*

**Table 3:** Distribution of the participants regarding the reasons behind the generation of food waste in their household

<b>Too large quantities bought (food)</b>		
Values	F	%
No	169	66
Yes	87	34

<b>More food is prepared (per meal) than what is consumed</b>		
Values	F	%
No	98	38.3
Yes	158	61.7

<b>Other members of the household eat less than what is prepared</b>		
Values	F	%
No	111	43.4
Yes	145	56.6

<b>Food (item) expiration dates has passed</b>		
Values	F	%
No	168	65.6
Yes	88	34.4

<b>Other</b>		
Values	F	%
No	235	91.8
Yes	21	8.2

*Source: made by authors*

**Table 4:** Correlation between the indicated reasons behind the generation of food waste in participants household

	Variable	2	3	4	5
1	Too large quantities bought (food)	0.039	-.171**	0.106	-0.004
2	More food is prepared (per meal) than what is consumed		0.008	-0.073	-.175**
3	Other members of the household eat less than what is prepared			0.003	-.169**
4	Food (item) expiration dates has passed				-0.007
5	Other				

\*\*  $p < 0.01$ *Source: made by authors*

When it comes to possible solutions participants might implement in order to reduce food waste being generated in their household most

**Table 5:** Distribution of the participants regarding the solutions participants might implement in order to reduce the amount of the food waste being generated in their household

<b>Use if for next meal preparation</b>		
Values	F	%
No	109	42.6
Yes	147	57.4
<b>Eat it for the next meal</b>		
Values	F	%
No	86	33.6
Yes	170	66.4
<b>Store it in refrigerator</b>		
Values	F	%
No	98	38.3
Yes	158	61.7
<b>Feed it to a pet</b>		
Values	F	%
No	104	40.6
Yes	152	59.4
<b>Feed it to farm animals</b>		
Values	F	%
No	156	60.9
Yes	100	39.1
<b>Compost</b>		
Values	F	%
No	165	64.5
Yes	91	35.5

*Source: made by authors*



Participants who indicate that one of the reasons of why food waste is being generated in their household is that too large quantities are bought (food) are also more keen to the idea of using the excess food in the next meal preparation ( $r_s = 0.301$ ,  $p < 0.01$ ) while those who blame it to the other members of the household for eating less than what is prepared are inclined to thinking the excess food should be eaten for the next meal ( $r_s = 0.162$ ,  $p < 0.01$ ) or fed to farm animals ( $r_s = 0.135$ ,  $p < 0.01$ ). Participants with more household members are less keen as seeing the reason behind food waste generation buying too large quantities ( $r = -0.154$ ,  $p < 0.05$ ) and more keen to attribute it to the other members of the household for eating less than what is prepared ( $r_s = 0.203$ ,  $p < 0.01$ ) with more of them also living in houses ( $r = -0.423$ ,  $p < 0.01$ ) having achieved lower level of education ( $r = -0.156$ ,  $p < 0.05$ ) and having lower average monthly salary ( $r = -0.123$ ,  $p < 0.05$ ).

**Table 6:** Intercorrelations between the indicated reasons behind the generation of food waste in participants household and the solutions participants might implement in order to reduce the amount of the food waste being generated in their household

Variable	2	3	4	5	6	7	8	9	10	11
1 Too large quantities bought (food)	0.039	-0.171**	0.106	-0.004	0.301**	0.126*	.124*	0.056	0.085	0.053
2 More food is prepared (per meal) than what is consumed		0.008	-0.073	-0.175**	0.102	0.171**	.157*	0.118	0.169**	0.081
3 Other members of the household eat less than what is prepared			0.003	-0.169**	0.044	0.162**	0.106	0.111	0.135*	0.057
4 Food (item) expiration dates has passed				-0.007	0.074	0.045	0.045	0.080	-0.040	0.03
5 Other					0.056	-0.028	-0.028	-0.014	0.082	0.105
6 Use if for next meal preparation						0.274**	0.248**	0.108	0.074	0.144*
7 Eat it for the next meal							0.342**	0.085	0.146*	0.062
8 Store it in refrigerator								0.167**	0.202**	0.182**
9 Feed it to a pet									0.450**	0.215**
10 Feed it to farm animals										0.242**
11 Compost										

\*\*  $p < 0.01$

\*  $p < 0.05$

Source: made by authors

Participants who believe that excess food should be fed to a pet, are also likely to believe that excess food should be fed to the animals ( $r_s = 0.450$ ,  $p < 0.01$ ), both of which show a low correlation with the idea of composting ( $r_s \in [0.215, 0.242]$ ,  $p < 0.01$ ). Composting also shows low correlation with storing excess food in the refrigerator ( $r_s = 0.182$ ,  $p < 0.01$ ) and using it for the preparation of the next meal ( $r_s = 0.144$ ,  $p < 0.01$ ) which show low positive correlation ( $r_s = 0.248$ ,  $p < 0.01$ )

**Table 7:** Distribution of the participants according to understanding of food waste

Variable	M	SD	Min	Max	N
How often do you think about the food waste generated by your household?	3.884	1.078	1	5	224
Do you think that food waste has a negative impact on environment?	3.549	1.293	1	5	226
Do you understand the difference between the “use before” and “best use before” labels?	3.982	1.166	1	5	226

*Source: made by authors*

Participants report that they often think about the food waste generated by their household ( $M = 3.884$ ,  $SD = 1.078$ ) and that the food waste might have a moderate impact on the environment ( $M = 3.549$ ,  $SD = 1.293$ ). They also report understanding the difference between the “use before” and “best use before” labels ( $M = 3.982$ ,  $SD = 1.166$ ) with those with a clearer understanding also being more inclined to think about the food waste generated by their household ( $r = 0.200$ ,  $p < 0.01$ ) less willing to feed excess food to a pet ( $r = -0.162$ ,  $p < 0.01$ ) or to prepare more food than what is consumed for a meal ( $r = -0.177$ ,  $p < 0.01$ ).

Linear stepwise regression showed that there are three statistically significant predictors of the attitude that the food waste has the negative impact on environment, namely whether participants think about the amount of the food waste generated in their household, the attitude that the food waste can be used for preparing a new meal and that they buy more groceries than necessary (Table 6). Although significant overall variance explained by this model is very small ( $R^2 = 0.057$ ).

**Table 8:** Linear stepwise regression on the belief that the attitude that the food waste has the negative impact on environment

Model	Variables	R	R <sup>2</sup>	F	p	Beta	p
1	How often do you think about the food waste generated by your household?	.142	0.02	4.567	0.034	0.146	0.028
2	Use if for next meal preparation	.193	0.037	4.295	0.015	-0.175	0.012
3	Too large quantities bought (food)	.238	0.057	4.393	0.000	0.145	0.036

*Source: made by authors*

Linear stepwise regression showed that there are three statistically significant predictors of how often participants think about the food waste generated by their household reaching up to 10.5% variance explained, namely the age of the participant, their gender (female) and type of housing (living in condos) (Table 7). Although significant overall variance explained by this model is very small ( $R^2 = 0.057$ ).

**Table 9:** Linear stepwise regression on how often participants think about the food waste generated by their household

Model	Variables	R	R <sup>2</sup>	F	p	Beta	p
1	Age	.197	0.039	8.962	0.003	0.180	0.005
2	Gender	.272	0.074	8.863	0.000	-0.199	0.002
3	Housing	0.324	0.105	8.623	0.000	0.177	0.006

*Source: made by authors*

## 5. Discussion

With overall rise in concern over environmental protection one of the prominent ventures of global actions is the impact of the individuals. Public concern over the environmental crisis has begun to stimulate not only action on the local and national level but also proposals for new international effort (Contini & Sand, 2017). In this regard food waste reduction represents what might be a fruitful area of improvement. In line with some of the previous research (e.g. Geffe et al., 2019) participants report thinking that, on average, food waste has more negative than positive impact on the environment.

One of the areas of improvement is how food leftovers and items whose expiry dates have been reached are used. While our participants mostly live in houses (78.1%) and believe that they understand the difference between the “use before” and “best use before” labels which implies that they understand the meaning of the expiry date, those whose food waste generation is driven by the items reaching expiry dates are not reporting being keen on implementing any of the offered solutions. On the other hand, those who are keen to implementing solutions to the food waste generations can roughly be divided into two clusters, those who reuse the food leftovers for preparing the next meal and those who would feed the food to the animals or compost it.

When it comes to the reasons that underly the food waste generation participants reports are in line with the previous research (e.g. Ministry of Economy and Sustainable Development, 2021.) with more food being prepared (per meal) than what is consumed or other members of the household eat less than what is prepared. Both of which might be seen as opposing orientations on the same issue, with those citing the first reason admitting that they prepare too much food while the others stating more or less the same but just in terms of putting the blame to the others of not eating the excess of the food they prepare (in some instances higher number of households with more family members, lower monthly income and lower highest achieved level of education) with both groups agreeing that the leftovers might be put to later use, be it in next meal preparation or for the next meal as is. While the participants were asked what are the reasons why their household is generating food waste, they were not asked how often they implement some of the strategies for food waste generation reduction but only what strategies they might implement. This gives us no straightforward indication of which strategies are already being implemented and what is their effectiveness.

When it comes to composting, only a bit more than a third participants see it as a viable solution. This might indicate that Geffe et al. (2019) were right to conclude that interventions should focus on improving consumers ability and capacity to handle food efficiently for consumers seem to be more inclined to this kind of solution. Composting biodegradable material is an effective means of improving the state of the environment. A survey conducted in 2011 showed that proenvironmental actions can influence similar behavior in others and may be more effective than signage in doing so (Sussman & Gifford, 2011).

When it comes to the correlation between age and generating food waste, Schanes et al. (2018) showed that consumers over 65 waste less food. Although the participants in this study were mostly young people, between 18 and 30 years of age, age did turn out to be the best predictor of how often participants think about the food waste generated by their household with older participant thinking about it more often. Consumer guilt, regret and remorse for food waste, as well as the self-confidence, pride and satisfaction they derive from reducing household food waste are key noncognitive factors that increase intentions to avoid food waste (Talwar et al., 2022).

## 6. Conclusion and recommendations for further research

Most of the participants believe that the reasons behind the generation of food waste in their household is either that the “More food is prepared (per meal) than what is consumed” (61.7%) or that “Other members of the household eat less than what is prepared” (56.5%) which also exhibit small negative correlation  $r = -0.171$  ( $p < 0.01$ ) indicating that these reasons might represent different orientations towards food waste generation.

Participants indicate that what might later become food waste if not used might be eaten for the next meal (66.7%), stored in the refrigerator (61.7%) or used in the next meal preparation (57.4). These answers are exhibit low to moderate positive correlation ( $r_S \in [0.248, 0.342]$ ,  $p < 0.01$ ).

If taken on face value participants might be most inclined to the idea using the excess food for the next meal, be it as is or as the ingredients in the next meal preparation. There is an interesting low positive correlation between those who blame it to the other members of the household for eating less than what is prepared and the tendency to agree with the statement that the excess food should be eaten for the next meal. It would be interesting to see if they believe that the excess food should be eaten by those family members who didn't eat what they have been given/prepared in the first place.

Inquiry of what participants are actually doing in their everyday lives, i.e. going from attitudes to behaviour analysis (e.g. Ferroa et al., 2022) might be useful in considering the promotion of the idea of food waste reduction and implementing different policies and action plans in this regard.

How often participants think about the food waste generated by their household has been connected with older age, being female, and living in a condo while at the same time how often participants think about the food waste generation was found to be significant but still weak predictor of the attitude that food waste has a negative impact on the environment, with participants, in general, not having a really strong belief that food waste has a negative impact on the environment. This might indicate that their food waste concerns are mainly focused on equating food waste with money being wasted and not so much with the care of the environment per se.

## REFERENCES

- Allende, A., Alvarez-Ordóñez, A., Bolton D., Bover-Cid, S., Chemaly M., Davies, R., De Cesare, A., Herman, L., Hilbert, F., Koutsoumanis, K., Lindqvist, R., Nauta, M., Peixe, L., Ru, G., Simmons, M., Skandamis, P., Suffredini, E. (2020): ***Guidance on date marking and related food information: part 1 (date marking)***, EFSA journal, Vol. 18, No. 12
- Aschemann-Witzel, J., De Hooge, I., Amani, P., Bech-Larsen, T., Oostindjer, M (2015): ***Consumer-related food waste: causes and potential for action***, Sustainability, Vol. 7, No. 6, pp.6457-6477.
- Boulet, M., Grant, W., Hoek, A., Raven, R. (2022): ***Influencing across multiple levels: The positive effect of a school-based intervention on food waste and household behaviours***, Journal of environmental management, Vol. 308
- Contini, P., Sand, P. H. (2017): ***Methods to Expedite Environment Protection: International Ecostandards***, American Journal of international law, Vol. 66, No. 1

Croatian agency for agriculture and food (2019) **Guidelines for food donation in relation to expiration dates**, <https://www.hapih.hr/wp-content/uploads/2019/09/Smjernice-za-doniranje-hrane-u-odnosu-na-rokove-trajanja.pdf> (accessed 10 January 2022)

Croatian institute of public health (2018): **What can I do in my daily life to limit food waste**, [https://www.hzjz.hr/wp-content/uploads/2018/10/tips\\_stop\\_food\\_waste\\_hr.pdf](https://www.hzjz.hr/wp-content/uploads/2018/10/tips_stop_food_waste_hr.pdf) (accessed 10 January 2022)

Dyen, M., Sirieix, L. (2016): **How does a local initiative contribute to social inclusion and promote sustainable food practices? Focus on the example of social cooking workshops**, International journal of consumer studies, Vol. 40, No. 6, pp. 685-694.

European Commission (2017): **Smjernice EU-a o doniranju hrane, in Službeni list Europske unije 361/1**, [https://eur-lex.europa.eu/legal-content/HR/TXT/PDF/?uri=CELEX:52017XC1025\(01\)&from=SK](https://eur-lex.europa.eu/legal-content/HR/TXT/PDF/?uri=CELEX:52017XC1025(01)&from=SK) (accessed 18 December 2021)

European Commission (2018): **Market study on date marking and other information provided on food labels and food waste prevention (2018)** <https://op.europa.eu/en/publication-detail/-/publication/e7be006f-0d55-11e8-966a-01aa75ed71a1/language-en> (accessed 18 December 2021)

European Commission (2019): **Delegirana odluka komisije (EU) 2019/1597 od 3. svibnja 2019. o dopuni Direktive 2008/98/EZ Europskog parlamenta i Vijeća u odnosu na zajedničku metodologiju i minimalne zahtjeve u pogledu kvalitete za ujednačeno mjerenje razine otpada od hrane**, in Službeni list Europske unije 248/77, <https://eur-lex.europa.eu/legal-content/HR/TXT/PDF/?uri=CELEX:32019D1597&from=EN> (accessed 10 January 2022)

European Commission (2020): **Farm to fork strategy**, [https://ec.europa.eu/food/system/files/2020-05/f2f\\_action-plan\\_2020\\_strategy-info\\_en.pdf](https://ec.europa.eu/food/system/files/2020-05/f2f_action-plan_2020_strategy-info_en.pdf) (accessed 10 January 2022)

European Commission (2020): **Food waste measurement**, in Eu actions against food waste [https://ec.europa.eu/food/safety/food-waste/eu-actions-against-food-waste/food-waste-measurement\\_en](https://ec.europa.eu/food/safety/food-waste/eu-actions-against-food-waste/food-waste-measurement_en) (accessed 10 January 2022)

European Commission (2020): **New action plan for the circular economy** <https://eur-lex.europa.eu/legal-content/HR/TXT/HTML/?uri=CELEX:52020DC0098&from=DA> (accessed 19 December 2021)

European Commission (2021): **EU Platform on food losses and food waste, Activity report - first mandate (2016-2021)** [https://ec.europa.eu/food/system/files/2022-02/fw\\_lib\\_stud-rep-pol\\_flw\\_act-report\\_2021.pdf](https://ec.europa.eu/food/system/files/2022-02/fw_lib_stud-rep-pol_flw_act-report_2021.pdf) (accessed 18 December 2021)

European Commission (2021): **EU Platform on Food Losses and Food Waste**, in Eu actions against food waste, [https://ec.europa.eu/food/safety/food-waste/eu-actions-against-food-waste/eu-platform-food-losses-and-food-waste\\_en](https://ec.europa.eu/food/safety/food-waste/eu-actions-against-food-waste/eu-platform-food-losses-and-food-waste_en) (accessed 12 January 2022)

Europatat (2021): *International Day of Awareness of Food Loss and Waste*, <https://europatat.eu/29-september-international-day-of-awareness-of-food-loss-and-waste/> (accessed 8 February 2022)

European Court of Auditors (2016): *Combating Food Waste: an opportunity for the EU to improve the resource-efficiency of the food supply chain* [https://www.eca.europa.eu/Lists/ECADocuments/SR16\\_34/SR\\_FOOD\\_WASTE\\_HR.pdf](https://www.eca.europa.eu/Lists/ECADocuments/SR16_34/SR_FOOD_WASTE_HR.pdf) (accessed 16 December 2021)

Ferro, C., Ares, G., Aschemann-Witzel, J., Curutchet, and M. R., Giménez A. (2022): *“I don't throw away food, unless I see that it's not fit for consumption”: an in-depth exploration of household food waste in Uruguay*, *Food research international*, Vol. 151

Geffen, L., Herpen, E., and Trijp, H. (2019): *Household food waste—how to avoid it? An integrative review*, *Food waste management*, pp. 27-55

Graham-Rowe, E., Jessop D. C., Sparks, P. (2015): *Predicting household food waste reduction using an extended theory of planned behaviour*, *Resources, conservation and recycling*, Vol. 101, pp. 194-202.

Hebrok, M., Boks, C. (2017): *Household food waste: drivers and potential intervention points for design – an extensive review*, *Journal of cleaner production*, Vol. 151, pp. 380-392.

Hoogeveen, Y. et al. (2013): *Environmental indicator report 2013: Natural resources and human well-being in a green economy* <https://www.eea.europa.eu/publications/environmental-indicator-report-2013> (accessed 18 December 2021)

IBM (2015). IBM SPSS Statistics for Windows, verzija 23.0. Armonk, NY: IBM Corp.  
Innocent, J. A., Chamhuri S., Rawshan Ara B., Basri Abdul, T., Er Ah, C. (2018): *Analysis of household food waste reduction towards sustainable food waste management in Malaysia*, *The journal of solid waste technology and management*, Vol. 44, No. 1, pp. 86-96.

Ministry of agriculture of the Republic of Croatia (2019): *Ordinance on the donation of food and feed*, in Narodne novine NN 91/2019, [https://narodne-novine.nn.hr/clanci/sluzbeni/2019\\_09\\_91\\_1811.html](https://narodne-novine.nn.hr/clanci/sluzbeni/2019_09_91_1811.html) (accessed 18 December 2021)

Ministry of economy and sustainable development, (2021): *Statistical survey on food waste in the Republic of Croatia* [http://www.haop.hr/sites/default/files/uploads/dokumenti/021\\_otpad/Statistike/Mjerenje%20otpada%20od%20hrane%20u%20ku%C4%87anstvima.pdf](http://www.haop.hr/sites/default/files/uploads/dokumenti/021_otpad/Statistike/Mjerenje%20otpada%20od%20hrane%20u%20ku%C4%87anstvima.pdf) (accessed 8 February 2022)

Principato, L., Secondi, L., and Pratesi, C. A. (2015): *Reducing food waste: an investigation on the behaviour of Italian youths*, *British food journal*, Vol. 117, No. 2, pp. 731-748.

Reynolds, C., Goucher, L., Quested, T., Bromley S., Gillick S., Wells, V. K., Evans, D., Koh, L., Carlsson Kanyama A., Katzeff, C., Svenfelt, A., Jackson, P. (2019): *Review: Consumption-stage food waste reduction interventions – What works and how to design better interventions*, *Food policy* Vol. 83, pp. 7-27

Schanes, K., Dobernig, K., Gözet, B. (2018): *Food waste matters - a systematic review of household food waste practices and their policy implications*, *Journal of cleaner production*, Vol. 182, pp. 978-991.

Stenmarck, A. et al. (2016): *Estimates of European food waste levels*, <https://www.eufusions.org/phocadownload/Publications/Estimates%20of%20European%20food%20waste%20levels.pdf> (accessed 18 December 2021)

Sussman, R., Gifford, R. (2011): *Be the change you want to see: modeling food composting in public places*, Environment and behavior, Vol. 45, No. 13, pp. 323-343.

Talwar, S., Kaur, P., Kumar, S., Salo, J., Dhir, A. (2022): *The balancing act: How do moral norms and anticipated pride drive food waste/reduction behaviour?*, Journal of retailing and consumer services, Vol. 66

Terpstra, M. J., Steenbekkers, L. P. A., Maertelaere, N. C. M., Nijhuis S. (2005): *Food storage and disposal: consumer practices and knowledge*, British food journal, Vol. 107, No. 7, pp. 526-533.

Tostivint, C. (2016): *Food waste quantification manual to monitor food waste amounts and progression*, in Food Waste Quantification Manual 2016, <http://www.eufusions.org/phocadownload/Publications/FUSIONS%20Food%20Waste%20Quantification%20Manual.pdf> (accessed 15 December 2021)

Valant, J. (2015): *Best before' date labels: Protecting consumers and limiting food waste*, European parliamentary research service, <https://policycommons.net/artifacts/1336615/best-before-date-labels/1943941/> (accessed 6 April 2022)

Vaqué, L. G. (2017): *French and Italian food waste legislation: an example for other EU member states to follow*, European food and feed law review, Vol. 12, No. 3, pp. 224-233.

Woolley, E., Luo Z., Jellil, A., and Simeone, A. (2022): *A data driven approach to reducing household food waste*, Sustainable production and consumption, Vol. 29, pp. 600-613.

*A scientific paper*

**Anita Kulaš Mirosavljević, Ph. D.**  
University of Slavonski Brod  
E-mail address: akmirosavljevic@unisb.hr

## **THE IMPACT OF EMOTIONAL INTELLIGENCE ON THE SUCCESS OF COMMUNICATION**

### **ABSTRACT**

*Emotional intelligence is the ability to understand and use emotions, both one's own and someone else's to achieve different goals. It also affects the process of logical thinking and therefore communication. In business communication, the influence of emotional intelligence is visible in the way of expressing feelings and emotions at a given moment. The way of using emotions that does not interfere with communication process is called self-control. One might use feelings in a way to encourage and/or motivate people, and feelings could be used through empathy, to better understand other people's point of view. By identifying the social situation, we encourage communication. All of these abilities can be learned and honed from personal experiences or from other people's experiences. Nowadays, when most investments are made in the automation and digitalization of business processes, one might forget the fact that no robot or software algorithm can replace human feelings. Aim of the paper is to explore the impact of emotional intelligence in business communication and its development with years of work experience. The hypothesis set in this study is: Emotional intelligence influences successful business communication and develops with years of work experience. Methodology in this paper uses descriptive statistics that will provide information about variables in given dataset and highlight relationships between variables in a sample. Also, it uses Anova to show is there statistically significant difference between the groups. Survey results will show that emotional intelligence affects successful communication and that it develops and improves with years of work experience. Analysis showed that there is no statistically significant difference between the groups.*

**Key words:** *Emotions, Emotional intelligence, Business communication.*

### **1. Introduction**

Man is a social being who uses his emotional ability in everyday tasks, and when he consciously includes it in communication, it has a positive impact on achieving long-term goals. Why do we speak differently to different types of people? The answer lies precisely in the ability to recognize, understand and use one's own and others' emotions in that communication. This ability is called emotional intelligence. The concept of emotional intelligence is relatively new, but there is growing interest in its study and research, because all the data published so far are interesting in all areas of life, since the perception, expression, regulation and understanding of emotions significantly affects opinion and behavior.

To understand what emotional intelligence (EI) is, one needs to understand the concept of emotion and intelligence. Emotions can be defined as drivers that help reach solutions in all areas of human life, they give a picture of how one thinks. "Emotions are caused by the



conscious or unconscious evaluation of an event important for an important goal, and are considered positive when the goal is achieved, or negative when it is not successfully achieved” (Oatley, Jenkins, 2003, 93). „Emotions typically arise in response to an event, either internal or external, that has a positively or negatively valenced meaning for the individual. Emotions can be distinguished from the closely related concept of mood in that emotions are shorter and generally more intense“ (Salovey, Mayer, 1990, 186). Intelligence is the basis for acquiring knowledge and performing all human tasks. Intelligence is most often defined as the ability to cope with new situations without the use of instinctive behavior, learned skills, knowledge and habits. By studying so far, it realizes that emotional intelligence is an important factor in our success in all areas of life that can BE developed throughout life. „Emotional Intelligence (EI) is characterized as the ability which enables people to differentiate types of feelings, both their own and those of others, to use strategy mechanisms to decipher them in order to control and form their mindset“ (Galanakis, et al., 2021).

Although there is a lot of research related to emotional intelligence, we have not found research that studies the connection between emotional intelligence and its impact on communication success. In addition, it is necessary to explore the extent to which work experience is related to the level of development of emotional intelligence and communication.

The aim of this paper is to explore the impact of emotional intelligence on the success of communication and its development with years of work experience.

## 2. Literature review

Emotions take place and are expressed in the physical body. They depend on the mind, consciousness and psychological state. The most common are basic or primary emotions such as joy, love, amazement, shame, fear, sadness, anger, disgust, within which there are a few more feelings. For example, joy contains a feeling of pleasure, satisfaction, pride, delight, while sadness contains feelings of depression, despair, pain, loneliness. “The argument in favor of the existence of several central emotions relies in part on the discovery made by Paul Ekman, from the University of California, San Francisco, who argued that specific facial expressions for four such emotions (fear, anger, sadness, and pleasure) are recognized by people from different cultures around the world, and among them are peoples who do not know the alphabet, so they are probably not influenced by film or television - which speaks of their universality” (Goleman, 1997, 300). Emotions also occupy a significant place in the business world and provide a basis for studying more complex concepts such as emotional intelligence.

American psychologist Howard Gardner published the book *Frames of Mind* in 1983 in which he claims that every man is intelligent in his own way, and singled out nine areas of intelligence, namely: linguistic, musical, logical-mathematical, spatial, body-kinesthetic, interpersonal, intrapersonal, naturalistic and spiritual intelligence. In addition to the term intelligence, it is common to mention IQ, or IQ number for which there are many tests, but Gardner argues that these tests cover only two types of intelligence: linguistic and logical-mathematical (<https://atma.hr/devet-vrsta-inteligencije/>).

### 2.1. Conceptual definition of emotional intelligence and models of emotional intelligence

The notion of emotional intelligence in the 1990s provoked much debate among scientists, because until then, emotions were thought to make rational thinking difficult. Howard Gardner, an American psychologist in 1983, pointed out the differences between intellectual and

emotional abilities, which was the basis for the emergence of the concept of emotional intelligence. Following the idea of Edward Thorndike, an influential American psychologist who in 1920 divided intelligence into abstract, mechanical and social, Gardner divided social intelligence into interpersonal and intrapersonal intelligence. He defined interpersonal intelligence as the ability to perceive the mood, desires, temperament, motivation of other people, and he defined intrapersonal intelligence as the ability to understand one's own moods, desires, temperament, and motivation (Hercigonja, 2018). Defining intrapersonal intelligence shows a close connection with the notion of emotional intelligence. Sternberg's triarchic theory of intelligence from 1985 has a great similarity with the definition of Gardner's intrapersonal intelligence: analytical, creative and practical, where it states how practical intelligence manifests itself in recognizing one's own strengths and weaknesses.

Psychologists Peter Salovey and John Mayer began to study this topic. They were the first theorists to present the formal theory of emotional intelligence in 1990 „as the subset of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions “ (Salovey, Mayer, 1990, 189). Their theory has aroused great interest in the general public, taking into account the speed of dissemination of articles and research questions related to this topic, but it was difficult to get the attention of recognized magazines because the objection was that the ability of emotional intelligence can only be tested by self-assessment scales. This was understood by the authors and they expanded the definition, which reads "emotional intelligence includes the ability to quickly observe the assessment and expression of emotions; the ability to recognize and generate feelings that facilitate thinking, the ability to understand emotions and knowledge about emotions; and the ability to regulate emotions for the purpose of promoting emotional and intellectual development” (Takšić, et al., 2006, 731).

After the publication of articles by Salovey and Mayer, other psychologists and researchers began to deal with this topic, and among them stood out journalist and psychologist Daniel Goleman. In 1995, he published a book entitled "Emotional Intelligence". In it, he explored why emotional intelligence is more important than IQ with a multitude of real-life examples with which he wanted to prove that EI is an important success factor in life. The first comprehensive book on emotional intelligence was published in 2000 by Rueven Bar-On and James D. A. Parker. It contained twenty-two contributions on theory, development, measurement, and application in life. In 2012, another book on emotional intelligence was published by Travis Bradberry and Jean Greaves which proposing sixty-six strategies for advancing EI.

The most famous models of emotional intelligence are:

1. Mayer and Salovey model - it consists of four branches of emotional intelligence that make up the order of emotional skills and abilities, these are: perceiving emotions, using emotions to facilitate thoughts, understanding emotions, and managing emotions. According to this model, people with high emotional intelligence are expected to master and progress faster through the mentioned abilities.
2. Goleman model - emphasizes that emotional intelligence is a platform for the development of emotional competencies such as initiative, desire to achieve, optimism that enable the achievement of extraordinary results. He divides emotional intelligence into five elements: self-awareness, self-control, motivation, empathy, and social skills. In scientific circles, Goleman's model is often criticized because scientists believe that it is scientifically unfounded, based on conjecture, or that it has been studied before.
3. Bar-On model - it consists of five groups, each containing up to five narrower elements. The basic groups are: intrapersonal capacity, interpersonal skills, adaptability, stress

management, general mood and motivation. Criticism of this model refers to the great similarity with the model of personality traits.

## 2.2. Measuring emotional intelligence

Emotional intelligence consists of several elements and that is why it is a problem to make a test that would successfully measure and cover all the elements. Mayer and Salovey set out three criteria for how emotional intelligence can be measured and assessed, and these are: respondents' self-assessment, assessment of other people and direct assessment of abilities. Measurement by the self-assessment of the respondents may be inaccurate, because it depends on self-understanding and if the person is not aware of their characteristics, the measurement is not successful. On the other hand, if rounding testing is done, the answers are often insincere because what is thought to be more acceptable in society is rounded up. Measurement by assessment of other people is the least used due to the large number of shortcomings. One of the main shortcomings is the perception of the examiner, and his bias and subjectivity. Measurement by direct ability assessment is the most commonly used method of measuring emotional intelligence that includes psychological instruments, but the tests are not sufficiently verified, because the respondent's answer is evaluated according to a certain criterion. Furthermore, the answers are evaluated according to the social environments of an area so that the answers received in a certain time and place will not be evaluated in another place.

"Another criterion that must be met in order for EI to be considered intelligence is the development criterion, which implies that EI develops over age and with experience" (Takšić, et al., 2006, 732). Goleman (1997) believes that high emotional intelligence is not a confirmation that someone has mastered emotional abilities, but it means that he has a high ability to learn them. However, no test today can give an accurate emotional intelligence quotient. Emotional intelligence is a set of abilities that is very difficult to determine and therefore there is criticism from scientists that emotional intelligence is a special branch of intelligence.

Croatian researcher in the field of emotional intelligence is professor emeritus Vladimir Takšić, who achieved international recognition and received several awards and recognitions. He designed a test and help questionnaires that provide information on the emotional ability of children and adults and have been translated into some thirty languages around the world. "Emphasizing the importance of emotional intelligence for the adapted functioning of the individual certainly belongs to the search for the positive in human functioning. In the future, even better theoretical regulation of the area is expected, as well as the development of new objective tests of emotional intelligence, but also the evaluation of existing ones" (Takšić, et al., 2006, 745). Takšić believes that every person, regardless of age, should improve their emotional intelligence, which is not an easy process because it is very complex, and should learn to show feelings in any communication that will lead to success and solve problems.

„Emotional intelligence plays a very important role in raising environmental awareness among all individuals in the society. In fact, emotional intelligence is defined as emotional awareness and emotional management skill which provide the ability to balance emotion and reason so as to maximize productivity and happiness“ (Galanakis, et al., 2021).

### 3. The importance of emotional intelligence in communication

#### 3.1. Communication in the business environment

Communication is the exchange of information and emotions, the transfer of ideas and attitudes from one person to others by verbal and nonverbal cues with the aim of understanding. Knowledge of language and culture, and interaction skills are an integral part of the basic elements of communication. It begins as soon as two or more people meet, before they speak, and takes place on two levels: the content or verbal level, what we say and the emotional or nonverbal level, what we show with body language (movement, gaze, voice, clothing, silence...). It is evident from this that communication needs to be adapted to a specific situation, place, interlocutors, goals in order to successfully convey observations. For communication we can say that it is successful when the recipient of the message interpreted it the way the sender wanted.

In all areas of personal and business life, communication is crucial, because success, relationship building and achieving goals depend on it, so it is necessary to constantly develop and improve communication skills so as to remove obstacles in the communication process.

Communication in the business environment is extremely important because without it the organization would not be able to survive. It contributes to the better functioning of the organization and achieving success in business, includes speech and writing, or verbal communication, but of equal importance is non-verbal communication that significantly affects decision-making. "For years, business advisors have been talking about the importance of non-verbal communication and emphasizing the percentages that say that 93% of the impression we get about people is of a non-verbal nature" (Petar, Španjol Marković, 2013, 54). Business communication permeates all branches of the organization and includes the transmission of messages, exchange and processing of information, contact with business partners and the public. Business communication is a very complex and dynamic process that requires time and knowledge, as well as an individual approach, so it is necessary to invest effort and commitment to achieve successful communication. In simpler organizational structures, communication is more successful, because there is no chain in the transmission of messages, while in more complex organizational structures, precisely because of a series of transmitted messages, messages are often misinterpreted, that is, there are barriers to communication that can range from a poorly structured message, poor listening skills to language differences and emotions.

Successful business communication nowadays represents a great challenge that can be realized through the application of learned knowledge and skills. It is a two-way complex process by which a message can be interpreted differently, and nonverbal communication plays a major role in interpreting a message because it is difficult to control. Non-verbal actions often reveal the truth, so for example physical appearance significantly affects the interlocutors, facial expressions, gestures and posture reveals the speaker's feelings, so the message can be conveyed without verbal communication. "Knowing that each word of the same language can evoke different connotations in other people, knowing that it can evoke a different association and a different effect in each recipient (even though we speak the same language), we recognize the existence of perceptual filters" (Petar, Španjol Marković, 2013, 24).

Successful communication means conveying the message from sender to recipient in a way that is understandable and close to them, so in an organization for successful communication it is necessary to invest time, effort and financial resources to positively affect the overall success

of the business. Communication is more successful if it seems like a spontaneous process, so it takes a lot of effort and practice to apply these principles spontaneously, although it is not a condition for interlocutors to be equally trained, it is enough that one interlocutor has the knowledge and perseverance to follow others.

### **3.2. The impact of emotional intelligence on communication**

In the time we live in, the quality of business relationships is measured not only by financial gain, but also by the quality of interpersonal relationships, which is manifested in motivation, self-confidence, adaptability, personal control, desire for development, teamwork, listening and oral communication. We find all these abilities in the concept of emotional intelligence, and in business communication, combining all these abilities, we achieve extraordinary success. People with high communication skills include their emotions in communication in order to understand the message exactly the way the sender wanted it to be understood. They are highly motivated and their stronghold is in emotional intelligence.

Emotional intelligence is a partially inherited trait related to primary human needs that is upgraded throughout life by learning from experience or real events, so a person who is longer in the organizational environment has a greater opportunity to develop and learn business skills, as well as interpersonal and intrapersonal skills. "Deficiencies in emotional skills can be remedied: to a large extent, each of these areas is actually a set of habits and reactions that, with the right focus, can be improved" (Goleman, 1997, 45). Many studies have shown that emotional intelligence is very important in interacting with other people not only in private life, but also in the business environment and that effective training achieves a significant increase in EI, because expressing, understanding and controlling emotions one does not remain indifferent and contribute to successful communication (Takšić, et al., 2006, 84-85). The art of influence leads to cooperation, because the emotions of the other party are recognized, and communication, in addition to transmitting the message, creates the desired reactions of other people. "Emotional relationship management skills enable managers to quickly build respect, but also trust among co-workers, who are influenced by good communication skills, the ability to listen and persuade" (Ilić, 2008).

## **4. Methodology**

The research included 83 respondents (71.08% of women and 28.92% of men). Observing the structure of the respondents, all respondents are employed. The structure of education is such that 62.65% have a secondary school education and 37.35% have a high school education. The structure of respondents with regard to age is such that 38.55% have less than 30 years old; 45.79% are between 30 and 50 years old; 15.66% are over 50 years old.

The structure of respondents with regard to years of service is such that 56.63% have up to 15 years of service and 43.37% have 15 or more years of service.

In order to identify the impact of emotional intelligence on the success of communication and its development with years of work service depending on the level of education and professional experience, an anonymous questionnaire was conducted. The questionnaire was sent by e-mail via the Google Forms form or by sending the form directly, and the completed forms were collected in the same way as they were submitted. A questionnaire contained 8 questions. In the part of the questionnaire, the respondents expressed their degree of agreement with each

statement on the Likert scale with 5 levels of assessment (1 = unimportant, 5 = very important). Data were submitted and collected in the period from March 9, 2020 to March 23, 2020.

Education level and years of service were used as criterion variables. The entire sample of respondents depending on the level of education is divided into 2 groups: SS1 - secondary education and SS2 - university degree. Depending on the years of service, the sample of respondents was also divided into 2 groups: GS1 - years of service from 0 to 15 years; GS2 - years of service of 15 years or more.

Dependent variables used to assess the importance of the impact of emotional intelligence on communication performance consisted of a set of 8 variables.

Data processing methods included calculating descriptive statistics parameters. The data were processed by the computer program Statistics ver.13.0.

## 5. Research results

Tables 1, 2, 4 and 5 show the results of descriptive statistics for 8 dependent variables used to assess the importance of the impact of emotional intelligence on communication performance: arithmetic means, standard deviations, minimum and maximum values, and asymmetry and roundness of the distribution of results. Tables 3 and 6 show analysis of assessment variance according to education and to years of service of respondents.

Distributions of results do not exceed the maxD value limit, so we can speak of a normal distribution of data. From the presented measures it is justified to conclude that the variables have satisfactory metric characteristics, therefore parametric statistical procedures were applied in the processing of their results.

**Table 1:** Descriptive indicators for assessing the importance of the impact of emotional intelligence on the success of communication depending on the education of the respondents

Variable	SS1 (N=52)				SS2 (N=31)			
	M±	SD	Min	Max	M±	SD	Min	Max
Q1	3,88	1,17	1,00	5,00	4,00	1,15	1,00	5,00
Q2	4,54	0,94	1,00	5,00	4,52	0,85	1,00	5,00
Q3	3,40	1,18	1,00	5,00	3,87	0,96	1,00	5,00
Q4	3,98	0,96	1,00	5,00	4,03	0,98	1,00	5,00
Q5	4,48	0,83	1,00	5,00	4,55	0,62	3,00	5,00
Q6	4,81	0,69	1,00	5,00	4,81	0,54	3,00	5,00
Q7	4,25	1,01	1,00	5,00	4,39	0,99	1,00	5,00
Q8	4,42	0,82	2,00	5,00	4,55	0,62	3,00	5,00

Legend: SS1 – secondary education; SS2 – higher education; M - mean; SD - standard deviation; Min – minimum value; Max – maximum value

Source: Author

It can be seen (Table 1) that the average values of the results increase with the increase of education, except for the variable Q2, which assessed the importance of dealing with one's own emotions so that they would not interfere with work. The group of respondents with a university degree (SS2) achieved the highest average values in 7 of the 8 observed variables, while the group of respondents with a secondary education (SS1) achieved the lowest average values in almost all observed variables (except in variable Q2).

Arithmetic mean of arithmetic means of all observed variables increases with the increase of education (SS1 = 4.22; SS2 = 4.34).

The mean value of the standard deviations is relatively uniform. However, it is noticeable that the group of respondents with secondary education (SS1) is on average the most heterogeneous in their answers when assessing the importance of how we feel at a given moment and accordingly manage our decisions (SD = 1.17) and assess the importance of serving our deepest feelings, to be encouraged and persistent (SD = 1.18). The group of respondents with a university degree (SS2) is the most homogeneous in their answers when assessing the importance of business communication for business success (SD = 0.54). It is also evident that groups of respondents with a university degree (SS2) in 3 of the 8 observed variables have minimal results according to the Likert scale = 3. These are the variables used to assess the importance of dealing well with emotions in relationships and recognizing social situations, assess the importance of communication for successful business and assess the importance of recognizing emotions in employees / clients.

**Table 2:** Descriptive indicators for assessing the importance of the impact of emotional intelligence on the success of communication depending on the education of the respondents

Variable	SS1 (N=52)				SS2 (N=31)			
	SKEW	KURT	Med	Mod	SKEW	KURT	Med	Mod
Q1	-0,77	-0,31	4,00	5,00	-0,97	0,07	4,00	5,00
Q2	-2,48	6,43	5,00	5,00	-2,65	9,07	5,00	5,00
Q3	-0,25	-0,50	3,00	3,00	-0,95	1,39	4,00	4,00
Q4	-0,79	0,46	4,00	4,00	-1,19	1,78	4,00	4,00
Q5	-1,98	4,97	5,00	5,00	-1,07	0,22	5,00	5,00
Q6	-4,26	19,82	5,00	5,00	-2,82	7,08	5,00	5,00
Q7	-1,61	2,64	5,00	5,00	-1,76	3,18	5,00	5,00
Q8	-1,16	0,21	5,00	5,00	-1,07	0,22	5,00	5,00

Legend: SS1 - secondary education; SS2 - higher education; SKEW - a measure of distribution symmetry; KURT - measure of distribution form; Med - median; Mod – mod

Source: Author

It is evident (Table 2) that the distribution of results is negatively asymmetric because the arithmetic mean, median and mod are in the zone of higher results.

**Table 3:** Anova - Analysis of assessment variance according to education (2 groups)

Variable	F	p
Q1	0,192	0,66
Q2	0,012	0,91
Q3	3,503	0,06
Q4	0,055	0,82
Q5	0,154	0,70
Q6	0,000	0,99
Q7	0,365	0,55
Q8	0,533	0,47

Source: Author

Analysis showed that there is no statistically significant difference between the groups.

**Table 4:** Descriptive indicators for assessing the importance of the impact of emotional intelligence on the success of communication depending on the years of service of respondents

Variable	GS1 (N=47)				GS2 (N=36)			
	AS±	SD	Min	Max	AS±	SD	Min	Max
Q1	3,87	1,12	1,00	5,00	4,00	1,22	1,00	5,00
Q2	4,60	0,77	1,00	5,00	4,44	1,05	1,00	5,00
Q3	3,53	1,06	1,00	5,00	3,64	1,20	1,00	5,00
Q4	4,00	0,93	1,00	5,00	4,00	1,01	1,00	5,00
Q5	4,49	0,69	3,00	5,00	4,53	0,84	1,00	5,00
Q6	4,87	0,61	1,00	5,00	4,72	0,66	3,00	5,00
Q7	4,26	0,85	2,00	5,00	4,36	1,17	1,00	5,00
Q8	4,34	0,73	3,00	5,00	4,64	0,76	2,00	5,00

Legend: GS1 - years of service 0 to 15; GS2 - years of service of 15 and more; AS - arithmetic mean; SD - standard deviation; Min - minimum result; Max - maximum result.

Source: Author

It can be seen (Table 4) that average scores do not increase with increasing years of service. Arithmetic mean of arithmetic means of all observed variables increases with increasing years of service (GS1 = 4.21; GS2 = 4.31).

The average value of standard deviations is relatively uniform except in assessing the importance of dealing with one's own emotions so as not to interfere with work (Q2) and assessing the importance of emotional intelligence in the business environment (Q7). However, it is noticeable that the group of respondents with 15 and over years of service (GS2) is on average the most heterogeneous in their answers in assessing the importance of how we feel at a given moment and manage our decisions accordingly (SD = 1.22) while the most homogeneous group of respondents is in group of 0 to 15 years of service (GS1) in their responses in assessing the importance of communication for business performance (SD = 0.61). It is also evident that groups of respondents with years of experience from 0 to 15 (GS1) in 2 of the 8 observed variables (which assessed the importance of good coping with emotions in relationships and recognizing social situations, and encouraged cooperation and assessed the importance of recognizing emotions in employees / client) have minimal achieved results according to the Likert scale = 3. The group of respondents with 15 and more years of service in 1 of the 8 observed variables (which assessed the importance of communication for business success) has minimal results according to the Likert scale = 3.

**Table 5:** Descriptive indicators for assessing the importance of the impact of emotional intelligence on the success of communication depending on the years of service of respondents

Variable	GS1 (N=47)				GS2 (N=36)			
	SKEW	KURT	Med	Mod	SKEW	KURT	Med	Mod
Q1	-0,62	-0,57	4,00	5,00	-1,10	0,29	4,00	5,00
Q2	-2,72	9,60	5,00	5,00	-2,25	4,89	5,00	5,00
Q3	-0,43	-0,20	4,00	4,00	-0,61	-0,11	4,00	3,00
Q4	-1,01	1,25	4,00	4,00	-0,87	0,57	4,00	5,00
Q5	-1,01	-0,18	5,00	5,00	-2,50	7,90	5,00	5,00
Q6	-5,87	36,68	5,00	5,00	-2,17	3,16	5,00	5,00



Variable	GS1 (N=47)				GS2 (N=36)			
	SKEW	KURT	Med	Mod	SKEW	KURT	Med	Mod
Q7	-0,75	-0,53	4,00	5,00	-2,11	3,74	5,00	5,00
Q8	-0,64	-0,84	4,00	5,00	-2,14	3,91	5,00	5,00

Legend: GS1 - years of service 0 to 15; GS2 - years of service of 15 and more; SKEW - a measure of distribution symmetry; KURT - measure of distribution form; Med - median; Mod - mod.

Source: Author

It can be seen (Table 5) that the distribution of results is negatively asymmetric because the arithmetic mean, median and mod are in the zone of higher results.

**Table 6:** Anova - Analysis of assessment variance according to years of service (2 groups)

Variable	F	p
Q1	0,382	0,54
Q2	0,204	0,65
Q3	0,612	0,44
Q4	0,207	0,65
Q5	0,127	0,72
Q6	0,651	0,42
Q7	0,965	0,33
Q8	0,965	0,33

Source: Author

Analysis showed that there is no statistically significant difference between the groups.

## 6. Discussion

Statistical analysis was conducted based on two criterion variables, education level and years of service. Each criterion variable divided the sample into two groups. The variable level of education has a group of respondents with secondary education (SS1) and a group with higher education (SS2). While the variable years of service has a group of respondents with fewer years of service (<15) (GS1) and respondents with more years of service (> 15) (GS2). The responses from respondents in the survey only show the respondents perception of the importance of the variables.

Respondents, regardless of education, consider that communication is the most important for business success. After that respondents consider that dealing with one's own emotions, dealing with emotions in relationships, recognizing social situation and encouraging cooperation are also important for business success. Respondents consider that less important are how we feel at a given moment and how to manage our own decisions, using the deepest feelings to be encouraged and persistent, people's feelings and aspirations to align with the different characters of the people.

Feelings at a particular moment during business communication are more important for respondents with a university degree than respondents with a high school diploma. Dealing with one's own emotions during business communication are important for all respondents regardless of education. Using feelings that encourage us to be persistent are more important for

respondents with a university degree than with a high school diploma. Feelings and aspirations to align with different human characters are important for all respondents. Coping well with emotions in relationships and recognizing social situations are important for all respondents but the deviation from the average values of the results is significantly higher in respondents with secondary education. Regulation of emotions is more important for respondents with higher education than respondents with secondary education. The importance of communication for business success and the importance of emotional intelligence in the business environment are very important for all respondents. Recognizing emotions in other people are important for all respondents. Wolff et al. “proposed that the input necessary for processing information that leads to socially and emotionally competent behavior must come from emotional intelligence, specifically empathy “ (Wolff et al., 2002).

Dealing with our own emotions and the importance of communication for business success are the most important for respondents with less years of service (<15 years). For respondents with more years of service (> 15 years), in addition to the previous two variables, recognizing emotions in employees / clients is also important. Using the deepest feelings in order to be encouraged and persistent are important for both groups of respondents.

## 7. Conclusion

In the time we live in, the quality of business relationships is not only measured by financial gain, but also by the quality of interpersonal relationships which is manifested in motivation, self-confidence, adaptability, personal control, desire for development, teamwork, listening and verbal communication. All these skills are found in the concept of emotional intelligence, and in business communication, combining all these skills, extraordinary success is achieved.

In order to prove everything that is theoretically stated in this paper, the research of employed persons was approached through a survey. The impact of emotional intelligence on successful communication and the development of emotional intelligence with years of work experience was investigated. The obtained research results moderately confirm the theoretical statements. Therefore, the hypothesis set at the beginning of this research, which is that emotional intelligence affects successful business communication and develops with years of work experience, is accepted because the respondents mostly gave answers in the upper measurement scale. It is important to emphasize that the responses from respondents in the survey only show the respondents perception of the importance of the variables.

It is concluded that respondents know that emotional intelligence in communication is recognized in the expression, recognition, understanding and control of their own and others' emotions. They also believe that the abilities of emotional intelligence are extremely important and useful in successful communication and that more attention needs to be paid to its development. It has been proven that emotional intelligence is related to the quality of interpersonal relationships, and it has also been proven that people with high emotional intelligence communicate well with different types of people.

Finally, it is important to conclude that there is no statistically significant difference between the groups.

The limitation of the present study was the available time for the completion of the questionnaire. As it was an online questionnaire, access to it was restricted by time. The result was that some of the participants were unable to complete it within the specified time. Finally, sample size and representativeness are an issue to be addressed.

Along with the limitations of the study, we need to highlight the importance of conducting further research in order to obtain more valid results such as a larger sample should be used.

Also, it would be interesting to study the extent to which organizational culture and working conditions affect the relationship of gender and age to emotional intelligence.

## REFERENCES

BarOn, R.; Parker, J. D. A. (2000): *The Handbook of Emotional Intelligence: Theory, Development, Assessment, and Application At Home, School, and in the Workplace*, CA: Jossey-Bass, A Wiley Company, San Francisco

Bradberry, T.; Greaves, J. (2009): *Emotional Intelligence 2.0*, TalentSmart, San Diego, USA

Galanakis, M.; Krana, L.; Nikola, M. (2021): *Emotional Intelligence in Primary School Teachers: The Effect of Gender, Age and Tenure*, Psychology, 12, 1781-1789.

Gardner, H. E. (2011): *Frames of Mind: The Theory of Multiple Intelligences*, 3rd Edition, Basic Books, A Member of the Perseus Books Group, New York, US

Goleman, D. (1997): *Emocionalna inteligencija zašto može biti važnija od kvocijenta inteligencije*, Mozaik knjiga, Zagreb

Hercigonja, Z. (2018): *Emocionalna inteligencija u odgoju i obrazovanju*, Fronta Impress, Varaždin, [https://issuu.com/zoranhercigonja/docs/emocionalna\\_-\\_arci](https://issuu.com/zoranhercigonja/docs/emocionalna_-_arci) (accessed 26 March 2020)

<https://atma.hr/devet-vrsta-inteligencije/> (accessed 24 March 2020)

Ilić, E. (2008): *Emocionalna inteligencija i uspješno vođenje*, Ekonomski pregled, Vol. 59 No. 9-10, pp. 576-592, <https://hrcak.srce.hr/28692> (accessed 12 April 2020)

Oatley, K.; Jenkins, J.M. (2003): *Razumijevanje emocija*, Naklada Slap, Jastrebarsko

Petar, S.; Španjol Marković, M. (2013): *Emocionalno poslovanje, Dobrom komunikacijom do poslovnog uspjeha*, Školska knjiga, Zagreb

Salovey, P.; Mayer, J. D. (1990): *Emotional intelligence*, Imagination, cognition and personality, Vol. 9 (3), pp. 185-211.

Sternberg, R.J. (1985): *Beyond IQ: A triarchic theory of human intelligence*, Cambridge University Press, Cambridge, UK

Takšić, V.; Mohorić, T.; Munjas, R. (2006) *Emocionalna inteligencija: Teorija, operacionalizacija, primjena i povezanost s pozitivnom psihologijom*, Društvena istraživanja: časopis za opća društvena pitanja, Vol. 15, No. 4-5, pp. 84-85, <https://hrcak.srce.hr/10875> (accessed 26 March 2020)

Wolff, S. B., Pescosolido, A. T., Druskat, V. U. (2002): *Emotional intelligence as the basis of leadership emergence in self-managing teams*, The Leadership Quarterly 13, pp. 505-522

*A scientific paper*

**Ana Kutnjak**

Faculty of Organization and Informatics, University of Zagreb

E-mail address: ana.kutnjak@foi.hr

**Iva Gregurec, Ph. D., Assistant Professor**

Faculty of Organization and Informatics, University of Zagreb

E-mail address: igregure@foi.unizg.hr

**Lucija Tomašek**

Faculty of Organization and Informatics, University of Zagreb

E-mail address: luctomase@foi.unizg.hr

## **HOW DIGITAL TECHNOLOGIES INFLUENCES CONSUMER DECISION MAKING PROCESS – LITERATURE REVIEW**

### ***ABSTRACT***

*Wide technological representation is visible in various industries, especially through the improvement of business processes. Since it shapes development and behaviour, technology influence is increasingly pronounced in sales, in the field of consumer-seller related processes. On the one hand, sellers are trying to use technologies to improve and sustain their business with the purpose of achieving competitive advantage, but also to increase their final output. On the other hand, technologies have made it easier for consumers to make their purchasing decision, from the need recognition phase to the postpurchase behaviour phase. The importance of technology development increases on daily basis and influences consumer decision making process, so the aim of this paper is to reveal the impact of different technologies on each phase of that process. For the purpose of writing this paper, secondary data research was conducted, by analysing papers in relevant databases. According to obtained results, research framework for qualitative analysis was constructed with the focus on each decision making process phase and recognized technologies. Mentioned framework encompasses following technologies: artificial intelligence; internet of things; big data and data analytics; cloud computing; virtual reality; augmented reality; autonomous systems/robotics; blockchain technology; mobile technology; social media and platforms; innovative technology in general. As a result of this paper, authors identified the most useful technologies by phases of consumer decision making process. Furthermore, obtained results gave authors possibility to share their recommendations for improving each phase through specific technology solutions with the focus on sustainable and competitive business.*

**Key words:** *digital technologies, consumer decision making process, literature review, business process improvement.*

### **1. Introduction**

Market disruptions caused by the digital transformation and increasing consumer demands have led to an increase in the need to apply digital technologies in business. Technologies are no longer a matter of choice, and their importance in volatile market conditions is undeniable.

Various market disruptions violate the stability of business models of organizations (Kutnjak, 2021), and lead to the mass application of technologies in the business and private spheres (Manalu et al., 2020; Yoo et al., 2022) emphasizing the need for change in the mode of operation in many industrial areas (Gorokhova et al., 2021; Jain et al., 2021). Given the incorporation of technology into various business processes, there is a need to modify current business models if organizations want to achieve or sustain a competitive advantage. A strong focus on consumers has been recognized as a key business component for several years (Osakwe, 2020) and market disruptions further emphasize the value of collaboration and joint value creation with consumers. Given the above, it is important to look at how different technologies affect the consumer decision making process, and this is precisely the focus of this paper.

The consumer-focused business provides strategic benefits to organizations (Pihir et al., 2018; Habel et al., 2020; Colleoni et al., 2021), and market competition and other external pressures are considered to be the main drivers of consumer-focused strategy. As consumer needs have become a priority for many organizations (Osakwe, 2020), they strive to implement new innovative solutions in products and services as quickly as possible. This leads to an increase in their creativity (Jain et al., 2021), and consequently to an understanding and satisfaction of individual consumers needs (Osakwe, 2020). In order to put the interest of consumers at the center of organizations activities, it is necessary to reorganize marketing strategies and implement information technology in business processes that will support activities to identify consumer needs.

Various information and communication technologies (ICT) have contributed to improved care and a strict focus on consumers. They recognize the way consumers behave and thus influence more efficient decision making regarding the creation of appropriate patterns of performance towards consumers (Habel et al., 2020). Monitoring user experience with technological tools facilitates future predictions (Riedmann-Streitz, 2018), which makes technology the perfect tool that helps to direct, but also to keep the focus on individual consumers. Technologies enable the collection of consumer data (Riedmann-Streitz, 2018) at all stages of making a purchase decision, which allows organizations to create a strategy of individual performance towards users of products or services at each stage.

Consumer behaviour can be viewed through five stages represented in the purchasing decision making process (Kotler & Keller, 2012): need recognition, information search, evaluation of alternatives, purchase decision and postpurchase behaviour (Adhikary, 2014; Shin et al., 2020). Technological solutions can be implemented in each of the mentioned phases, and the aim of this paper is to identify how and which technology affects each phase of the consumer decision making process. According to the defined research goal of this paper, the following research questions (RQ) were appointed (RQ1): What technologies are represented in each of the stages of the consumer decision making process, aimed at effective monitoring of consumer behaviour by organizations? (RQ2) How do selected technological solutions within organizations affect consumer behaviour at each stage of the consumer decision making process?

The paper is structured as follows. After the introductory part and the explanation of the research goal and questions, the behaviour of consumers and changes due to technological progress was considered. The following is a description of the methodological framework as a basis for conducting research. After the methodology section, the authors present research results - identified technology at each stage of the consumer decision making process. Based

on the research results, the authors state the research implications and define their own recommendations for improving each phase of the consumer decision making process, considering the adequacy of technological solutions. These recommendations can be used within organizations in order to influence the sustainability and competitiveness of business. Following, the authors state research conclusions. At the very end, the limitations of the conducted research are clearly outlined, as well as plans for future research with the aim of removing those limitations.

## **2. Theoretical background of consumer behaviour**

Monitoring consumer behaviour in a rapidly changing environment is a key activity of successful organizations. Organizations that understand the way consumers behave are more prosperous in creating marketing and development activities focused on products and/or services (Pirc Barcic et al., 2021). Through their conscientious or unscrupulous behaviour and interaction with the organization, consumers give feedback regarding the quality of the products and services (Son et al., 2020) they have consumed or used. Given the growing demands of consumers, organizations are forced to monitor their behaviour (Boustani, 2021) through all stages of the consumer decision making process (Hussain et al., 2020). Creating value that will drive interest in a product or service is a major challenge for organizations, and technology has a big impact. In the consumer decision making process, consumers learn about the need for a product or service in different ways and using different technologies, they seek information about it, evaluate available alternatives, decide to buy and evaluate used product or service.

Ease or complexity of use, compatibility, the ability to test the product, are some of the characteristics that affect the purchase. By adopting new technology, in the form of products or services, the consumer can improve their own performance in certain activities (Hasan & Stannard, 2022) and thus meet their consumer expectations. Artificial intelligence (AI) contributes to greater consumer satisfaction and consequently fewer complaints in the banking sector (Boustani, 2021). The mentioned technology enables individual focus on each client, contributes to the innovative consumer experience (Yoo et al., 2022) and in this way, consumers are supplied with the best products and services created especially for them. Internet of things (IoT) technology in the domain of monitoring consumer behaviour helps in collecting relevant data, their analysis (Rogojanu et al., 2018) and creating personalized offers for an individual consumer. Data on consumer behaviour on social networks, or any other internet service, can be analysed using big data (BD) and text mining (Singh & Glinska-Newes, 2022) to influence the satisfaction of complex user requirements (Venkatraman, 2017). Mobile devices and applications improve interactivity and provide consumers with constant information access (Son et al., 2020). Feedback in the form of reviews of products or services is one of the most common and convincing information sources on consumer satisfaction after using products or services (Hasan & Stannard, 2022; Hussain et al., 2020). By sharing product information after purchase, consumers influence possible product improvements. Such information is considered to be very influential in new consumer decisions (Hasan & Stannard, 2022; Lee & Hong, 2021), which in turn can lead to the improved business performance of organizations (Hussain et al., 2020).

Organizations must be ready to recognize consumers wishes, but also to analyse their attitudes related to products and services in order to more effectively identify how to meet their needs. Rapid advances in technology are changing consumer habits and opinions, leading to increasing demands on products and services, and consumers sometimes tend to make

reckless purchasing decisions (Pirc Barcic et al., 2021). Technological solutions built into products and services lead to high quality products and enable efficient monitoring and prediction of consumer preferences (Boustani, 2021; Son et al., 2020) and more successful understanding of their needs (Rogojanu et al., 2018). Based on tracking preferences, organizations can create their own performance policies towards consumers. With regard to monitoring consumer behaviour using different technologies, consumers are often faced with fears of misuse of their personal data (Hasan & Stannard, 2022; Hussain et al., 2020), security risks (Khurana & Jain, 2019) and privacy in general (Chopdar et al., 2018). Therefore, there is an aversion to sharing data with different organizations, while a change of such a perception is only “on the back” of organizations who must provide consumers with secure interaction (Rogojanu et al., 2018), but also secure opportunities to create shared value for both parties.

### 3. Methodology and data collection

The set of research goal and research questions represent the basic settings of this research. In the previous chapter, the authors presented a brief overview of the situation in the field of consumer behaviour to show how consumers act in the current market conditions, but also how their behaviour affects the way organizations do their job. Since it is evident that technology today has a great influence on consumer behaviour at all stages of their decision making process, this was the guiding thread of this research and the starting point for creating a research framework. In order for the authors to get answers to the research questions (RQ1 and RQ2), it was necessary to conduct desk research, in a way of searching relevant databases to collect secondary data, as a first step before processing the results. The search was guided by the stages of the consumer decision making process (abbreviated CDMP) according to (Kotler & Keller, 2012): need recognition, information search, evaluation of alternatives, purchase decision and postpurchase behaviour. For each of the five phases, a separate research query was made in the Scopus and Web of Science (WoS) databases, as shown in Table 1. Given the number of papers obtained in the search, each research query was adjusted in terms of adding or omitting the extension “or technology” in the query, while additional limitations in the research were not set by the authors. The CDMP phases represent the first setting variable in the research framework.

**Table 1:** Research queries in databases

Database	<i>Consumer Decision Making Process</i>				
	<i>Need recognition</i>	<i>Information search</i>	<i>Evaluation of alternatives</i>	<i>Purchase decision</i>	<i>Postpurchase behaviour</i>
Scopus / WoS	"need recognition" and "consumer decision making process" or "technology"	"information search" and "consumer decision making process"	"evaluation of alternatives" and "consumer decision making process" or "technology"	"purchase decision" and "consumer decision making process"	"postpurchase behaviour" and "consumer decision making process" or "technology"
No.	7	4	4	16	9

*Source: Authors*

In addition to defining CDMP as the first research variable, the authors defined a second variable that focuses on technological concepts: artificial intelligence; internet of things; big data and data analytics; cloud computing; virtual reality; augmented reality; autonomous systems/robotics; blockchain technology; mobile technology; social media and platforms; innovative technology in general. The list of technologies is based on the results of previous research conducted by the authors of this paper and is therefore recognized as relevant to this

research (Gregurec et al., 2021a; Gregurec et al., 2021b). For ease of understanding the meaning, each technology will be shortly explained below.

Artificial intelligence represents the ability of a device to mimic human activities such as learning, planning, etc. It allows computers and machines to develop human-like intelligence (Boustani, 2021), perceiving the environment in which they find themselves to solve a given problem and achieve a certain goal. Internet of things is a system of connected smart devices, equipped with sensors and intelligent computer logic (Bayer et al., 2021) that has the ability to transfer data over a network without the need for human-human or human-computer interaction. Big data and data analytics are set of advanced analytical techniques focused on large, diverse datasets that include structured, semi-structured, and unstructured data from different sources and different sizes (Singh & Glinska-Newes, 2022). Cloud computing refers to the delivery of hosted services over the internet (Rogojanu et al., 2018). The use of computer modelling and simulations that enable a person to interact with an artificial three-dimensional (3-D) visual or other sensory environment is called virtual reality (Mukherjee & Chatterjee, 2021), while augmented reality denotes an interactive experience of a real-world environment where the real world objects are enhanced by computer-generated perceptual information. Autonomous systems/robotics signify complex systems with cognitive capabilities (Boustani, 2021). Blockchain technology allows recording information in a way that makes it difficult or impossible to change or hack the system, while mobile technology is portable technology (Chopdar et al., 2018) that has the characteristics of two-way communications enabled through devices like smartphones, tablets and watches. Social media and platforms are used for social interaction between its users and access to news or information (Oumayma, 2019).

Based on the mentioned two variables, CDMP and technology, technologies were mapped for each phase of the consumer decision making process, while recognizing the improvements of business processes that a particular technological solution provides for organizations. In addition, the authors identify the impact of technology in making a purchase decision, from the need recognition phase to the postpurchase behaviour phase. All the aforementioned activities allow the authors to systematize the results based on the set research framework and ultimately define their own recommendations aimed at sustainable and competitive business, adequate to current market conditions influenced by technology and digital transformation.

#### **4. Research results**

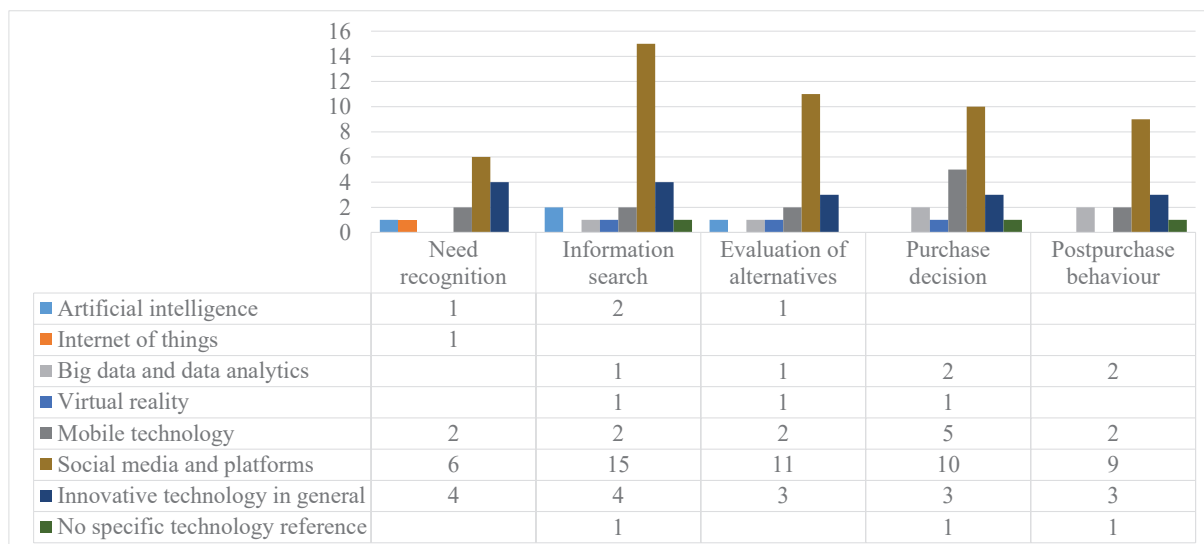
Since the impact of technology on the consumer decision making process is the main subject of the paper, an analysis of secondary data, which was identified as relevant for the contribution to this research, was performed. The results are divided into subchapters as follows. In the beginning, the authors provide an answer to the first research question (RQ1), and show the frequency of technologies at each phase of the consumer decision making process. An overview of the consumer decision making process under the influence of digital technology is given in the following subchapter, by which the authors answer the second research question (RQ2). Based on the results, the authors in the next chapter can define their recommendations aimed at improving the CDMP phases through specific technological solutions.



#### 4.1. Frequency of occurrence of specific technologies per each phase of CDMP

At the beginning of the research, the authors set up a research framework consisting of two variables. The first variable represents CDMP phases, while the second variable focuses on technological concepts: artificial intelligence; internet of things; big data and data analytics; cloud computing; virtual reality; augmented reality; autonomous systems/robotics; blockchain technology; mobile technology; social media and platforms; innovative technology in general. The analysis of the results established the absence of all identified technologies, so they are excluded from the research framework. Technologies that are not recognized as represented in the CDMP are: cloud computing; augmented reality; autonomous systems/robotics; and blockchain technology. The variable “no specific technology reference” was added to the research framework, since in some papers, the authors did not clearly indicate the technology used in certain phases of CDMP, and their content contributes to this research.

**Figure 1:** Specific technology identification per each phase of CDMP



Source: Authors

After conducting an analysis of all papers, the authors identified the most useful technologies by phases of the consumer decision making process, shown in Figure 1. From the Figure 1, it is evident that in the phase *need recognition*, in addition to social media and platforms, innovative technology in general, mobile technology, artificial intelligence and IoT are represented. *Information search* is the phase in which the greatest technological diversity occurs. Thus, in the mentioned phase, the application of social media and platforms, innovative technology in general, artificial intelligence, mobile technology, big data and data analytics, virtual reality, was identified. Furthermore, in some papers none of specific technology was identified. In the third phase, *evaluation of alternatives*, the authors identified the presence of social media and platforms, innovative technology in general and mobile technology. In addition to the above, artificial intelligence, big data and data analytics and virtual reality are present in the phase. For the *purchase decision* phase, in addition to social media and platforms, there are relevant mobile technology, innovative technology in general, big data and data analytics, virtual reality, and vaguely specified technology by some authors. The last phase of CDMP, *postpurchase behaviour*, has been upgraded with technological solutions such as social media and platforms, innovative technology in general, big data and data analytics and mobile technology. The phase is also mentioned through the variable no

specific technology reference. It should be mentioned that several technologies appear through multiple analysed papers, but also through several phases of CDMP.

In addition, from Figure 1 it can be seen that the most prevalent technology in all phases are social media and platforms (mentioned 51 times in the literature), which is not surprising, given its wide application in the private and business spheres. Such prevalence leads to the possibility of truly innovative and individual performances towards end consumers. After the mentioned technology, the next in the series according to the number of occurrences (mentioned 17 times) is innovative technology in general, followed by mobile technology (mentioned 13 times). It is important to emphasize that the presence of the mentioned three most common technologies is visible through all five phases of CDMP. Big data and data analytics are mentioned 6 times, artificial intelligence 4 times, virtual reality and no specific technology reference 3 times, while IoT is mentioned once in the analysed papers. In the continuation of the paper, the role of technologies covered by this research and its influence on each phase of CDMP will be presented.

#### **4.2. Consumer decision making process under influence of digital technologies**

As it is well known, every CDMP begins with *need recognition* phase. In the initial phase, consumers recognize the need for a product or service. Nowadays, digital technologies have a great influence on recognizing the need and their influence is prominent in all phases of the CDMP (Chatthipmongkol & Jangphanish, 2016; Dahiya & Gayatri, 2018; Hsu et al., 2013; Mohammed & Uren, 2019; Oumayma, 2019; Rosenbaum et al., 2017). Consumers can identify needs through social media in many situations. They can recognize the need when looking at photos of products that their friends have bought and published on some social media account. In addition, social media users can react to these photos and thus support a brand of product or service (Barišić et al., 2019), which can affect the need recognition by new consumers. It is well known that consumers have embraced mobile technology and this has resulted in increased marketing promotions and activities through the same (Meydanoğlu et al., 2015). Saturation with marketing promotions through social media that are used daily through mobile technology, results in recognizing the need where the need may not exist. Digital technology seeks to create value for consumers by improving the experience through a personalized offering of products and services, and this is achieved by collecting recommendations from consumers (Rosenbaum et al., 2017). Social media offers an overview of reviews and recommendations from experienced consumers while providing product recommendations can increase sales diversity by helping consumers discover a previously unknown product (Köcher et al., 2019). Also, in the literature, the use of IoT as a smart technology that can recognize consumers need even before perhaps he/she himself recognizes the need is mentioned (for example a smart thermostat could detect the need for space heating and affect the amount of purchased energy before the consumer recognized that need) (Bayer et al., 2021). In recent years, thanks to rapid technological innovations, numerous ICT products have been placed on the market (such as smartphones, tablets, etc.), and it is concluded that the more motivated individuals are to use an innovative ICT product, the more likely they will identify the need for it (Amlani, 2020; Teng & Cheng, 2016).

Consumers use different channels to gather information about products and services in the phase *information search* in order to meet the needs arising from the previous CDMP phase. Consumers seek information before buying any product or service. Artificial intelligence uses recommender systems on retailer websites to help consumers to find certain information (Bayer et al., 2021; Köcher et al., 2019). Advertising plays an important role in the

information search phase and organizations in the market are always looking for a potential consumer to sell their products or services they offer in the market (Adhikary, 2014). With the development of technology and the availability of the internet environment, consumers are provided with various tools to search for information about products or services for which they have identified a need. Digital technologies provide digital channels of communication that serve as a source of information through which consumers can evaluate different brands, pay attention to reviews, opinions and comments, join online communities, discussion forums, subscribe to promotional emails and express their own experience and thinking on digital platforms (Amlani, 2020). Mobile technology allows consumers to quickly and easily search for the required information, but also arouse curiosity in them. Increasingly, QR codes is appearing, which, by scanning the QR code via smart devices, allows consumers to recognize an opportunity, for example, a discount coupon or a classic search for menu information in a restaurant, etc. (Meydanoğlu et al., 2015). Social media is most represented among consumers in the phase of seeking information about products and services due to the simple and fast use of search (Akalamkam & Mitra, 2018; Chen et al., 2015; Kotni, 2017; Lăzăroiu et al., 2020; Li et al., 2019; Mohammed & Uren, 2019; Moreno & Tejada, 2019; Oumayma, 2019; Radziszewska, 2019; Voramontri & Klieb, 2019; Wang & Yu, 2017). According to (Butkouskaya et al., 2021; Gupta, 2019; Hsu et al., 2013), social media also has a progressively significant role in the source of information, including a wide range of information seeking activities before and after (reviewing) the use of a product or service, for example in meeting tourist needs. Also, consumers today use multiple channels in order to make a purchase decision (Mukherjee & Chatterjee, 2021; Shen et al., 2018). Two terms are mentioned in the literature to denote the information search phase, namely webrooming and showrooming. Webrooming is more focused on searching for information about products and roles via the web, but results in consumers going to the store to make a purchase decision, while showrooming is the reverse situation where the consumers first search for information offline but decides to buy online (Mukherjee & Chatterjee, 2021). The adoption of ICT has changed consumer behaviour (Chatthipmongkol & Jangphanish, 2016) in at least four phases, namely information search, evaluation of alternatives, purchase decision and postpurchase behaviour (Moreno & Tejada, 2019). Recently, due to the coronavirus pandemic and the introduction of measures of social distancing, consumers are increasingly turning to the internet environment. For this reason, the entire consumer decision making process can be viewed in an online environment (Tajdini et al., 2022), and by using virtual reality technologies CDMP can be simulated based on consumer behaviour data (Mukherjee & Chatterjee, 2021).

In the phase *evaluation of alternatives*, the presence of several relevant technologies was identified. For example, AI and automated referral systems recommend products on shopping sites or movies on movie platforms, thus simplifying the evaluation of available alternatives. Such systems track previous consumer behaviour and generate personalized predictions about alternatives that consumers will probably like (Köcher et al., 2019), and can be simulated with virtual reality technology (Mukherjee & Chatterjee, 2021). In this way, from a large set of products, they create a narrowly specified set, tailored to the individual user. Organizations can use big data to obtain specific data on consumer behaviour when shopping online (Li et al., 2019). The data collected in this way create personalized marketing strategies with the aim of offering specific purchasing alternatives. Mobile applications facilitate electronic word-of-mouth which inevitably affects consumer perception and easy assessment of alternatives (Chen et al., 2015; Meydanoğlu et al., 2015). The authors state that in the phase evaluation of alternatives the influence of social networks is more pronounced than in other phases of CDMP (Oumayma, 2019). They allow consumers to evaluate products and services offered

by different organizations (Oumayma, 2019; Moreno & Tejada, 2019; Gupta, 2019; Radziszewska, 2019) based on confidential reviews (Mohammed & Uren, 2019; Chen et al., 2015; Moreno & Tejada, 2019) through various platforms such as Facebook, Instagram, YouTube, blogs (Voramontri & Klieb, 2019; Hsu et al., 2013). Extensive research, as well as positive or negative reviews (Shen et al., 2018; Wang & Yu, 2017), have a large impact on consumer attitudes and opinions, and consumers reading them reduce the risk of unwanted purchases (Mukherjee & Chatterjee, 2021). Influencers, as a voice of trust for recommending products or services, are an increasingly pronounced trend to share experiences with potential consumers (Oumayma, 2019). By listening to the advice of influencers on various social networks, consumers get information about the tested products or services and their different characteristics or values. Advertising products using various innovative technologies makes it easier to assess product properties and compare different alternatives (Adhikary, 2014; Moreno & Tejada, 2019; Chatthipmongkol & Jangphanish, 2016).

The authors (Shin et al., 2020) found that in the *purchase decision* phase, when buying online, the credibility of the site is related to the future intention for purchasing the product. The mentioned statement was confirmed by data analysis, where the consumer behaviour during the purchase was monitored in a simulated environment for online shopping (Mukherjee & Chatterjee, 2021). Monitoring consumer behaviour when making a purchase decision and analysing data that consumers create on online platforms are the basis of personalized marketing strategies (Li et al., 2019). The widespread use of mobile technology improves the experience of using services, for example in hospitality and tourism (Moreno & Tejada, 2019), where technology allows instant purchase and cooperation of various stakeholders of the ecosystem, such as suppliers, payment systems, etc. (Lăzăroiu et al., 2020). Furthermore, the authors (Chen et al., 2015) emphasize the importance of picturesque representation of products and services that affect their authenticity and trust (Lăzăroiu et al., 2020). Impulsive shopping, which takes place anywhere and at any time, is increasingly present in today's fast-paced lifestyle (Choi & Bum, 2021), and is made possible by mobile technologies (Meydanoğlu et al., 2015). E-retailers can use social networks such as Facebook, Instagram or YouTube to help potential buyers to make the final purchase decision (Oumayma, 2019; Mohammed & Uren, 2019; Chen et al., 2015; Radziszewska, 2019; Gupta, 2019; Voramontri & Klieb, 2019) or to increase the level of motivation to take a buying action. On social networks, it is necessary to provide an optimal and relevant set of information that will have a direct impact on purchases (Mukherjee & Chatterjee, 2021; Hsu et al., 2013), and retailers can strengthen consumer practices based on interactive technology support (Lăzăroiu et al., 2020; Wang & Yu, 2017). The wide impact of innovative technology in general enables direct marketing toward consumers, based on which they facilitate purchasing decisions (Moreno & Tejada, 2019; Chatthipmongkol & Jangphanish, 2016) and create highly connected and confidential relationships with retailers (Lăzăroiu et al., 2020). The importance of the relationship is also mentioned by the authors (Haziri et al., 2018), without identifying a specific technology that contributes to its development.

*Postpurchase behaviour* of consumers is most often seen in the form of sharing feedback on satisfaction or dissatisfaction with purchased products or services used. Online reviews are an inevitable part of CDMP, and organizations encourage consumers to make them public. In order to be able to essentially view large amounts of published reviews, it is necessary to summarize specific aspects of user online reviews using big data algorithms (Rakesh et al., 2018). Data mining technology reveals knowledge of consumer behaviour after using the product (Chhabra & Suri, 2019), and thus allows the assessment of the situation at the time of purchase and the level of consumer needs meeting. Mobile applications use algorithms to track consumer behaviour after purchase in order to find out the actual consumer experience

in using and adopting new products or services (Khurana & Jain, 2019; Meydanoğlu et al., 2015). Social media and platforms facilitate consumer interaction after using products or services (Mohammed & Uren, 2019; Paley et al., 2019; Jacobsen, 2018; Gupta, 2019; Nagamalar & Ravindran, 2019), and are considered reliable sources of information (Wang & Yu, 2017). These technologies are recognized in the postpurchase behaviour phase, as they allow the sharing of both positive and negative consumer reviews based on their own shopping experiences (Shen et al., 2018). In addition to consumers, feedback on products or services shared on social media is also used by organizations (retailers) to analyse consumer satisfaction or dissatisfaction and modify products or services in the segment where it is needed (Shen et al., 2018; Sanni et al., 2018; Jacobsen, 2018). Although the mentioned technology is significantly widespread and enables the easier exchange of feedback on attitudes when using products or services, it is considered that there is an aversion of individual consumers when giving feedback (Oumayma, 2019). It can be concluded that postpurchase behaviour, is a phase in which various innovative technologies are used (Moreno & Tejada, 2019) with the purpose of (i) monitoring consumer behaviour in different industrial segments (Shahril et al., 2013; Sun, 2014), (ii) building long-term relationships and (iii) retaining consumers (Butkouskaya et al., 2021).

#### 4.2.1. Why a particular technology is represented in a certain CDMP phase?

According to the authors opinion, the possible reasons for the presence of technologies by CDMP phases will be identified (three most important per phase). A literature review, which was conducted for the purpose of writing this paper, showed that social media and platforms are the most influential technology in the entire CDMP, from *need recognition* phase to *postpurchase behaviour*. Mentioned is not surprising given the wide distribution of social media and platforms in the private and business spheres with the aim of sharing content and information with interested stakeholders. Mobile technology, due to its easy portability and personalized marketing activities that are placed through it, facilitates *information search* and *evaluation of alternatives* (products and services) phases, while increasingly precise AI algorithmic systems provide potential consumers with information about various products or services, in which a need could be identified based on previous information searches or purchases made. In *purchase decision* phase, through this research, the importance of mobile technology is recognized. Such technology is established as a tool that consumers are increasingly using in order to purchase products or contract some kind of service. Innovative technology in general is present in the purchase decision phase as much of the business has moved to the online environment, and purchases are increasingly made using web stores and various applications. Reviews related to used products or consumed services are placed by consumers using various innovative technologies, most often in the online environment, which results in its representation in the *postpurchase behaviour* phase. In order to substantially analyse such consumer feedback, big data and data analytics are used to improve products or services.

## 5. Research implications and conclusions

Based on everything mentioned in this paper, considering the main aim that is set at the beginning of writing this paper and given results, it is obvious that paper provides identification of how different digital technology affects each phase of the consumer decision making process, and also which digital technology is used more in each one of the phases of that same process. Likewise, based on a research framework that was constructed for qualitative analysis of this paper and given results, observed technologies, in order: artificial

intelligence, internet of things, big data and data analytics, virtual reality, mobile technology, social media and platforms and innovative technology in general, were used in almost all phases of consumer decision making process. Authors opinion is that through those technologies organizations nowadays can create visibility and long term relationships with their consumers and also sustain in this very competitive world, but they cannot gain competitive advantage because every organization now uses those technologies in some way and for some phase of decision making process. Therefore, if organization want to be more competitive, the authors see an opportunity for them to use technologies that are not recognized directly based on secondary data research, but which were a part of research framework. Those technologies are: cloud computing, augmented reality, autonomous systems/robotics and blockchain technology. Although the mentioned technologies have not been identified in the papers covered by this research, it cannot be said with certainty that organizations do not actually use them in any of the CDMP phases. But according to conducted research, authors think that by implementing and using specific technological characteristics and solutions of those technologies in consumer decision making process phases, organizations will not only focus on their sustainability but also on competitiveness. Therefore, this paper can be useful both for organizations and for the scientific community.

## 6. Research limitations and future work

This paper suffers from the following few limitations that need to be addressed by future research. First, since the research is based on the results of two scientific platforms and databases, Scopus and Web of Science, it may be expanded to more platforms or databases (such as IEEE Explore, EBSCO, DOAJ, Emerald, ScienceDirect, etc.) in order to obtain a larger scope for specific technology identification per each CDMP phases. Given the scope of the search, the authors probably limited some set of papers that could contribute to the research topic and to the results. Secondly, the research queries can be modified and expanded with terms that refer to specific technologies (such as “artificial intelligence”, “big data”, etc.). Third, obtained results of the literature review are not subject to filters such as the number of citations in databases, document types, or the number of references in the selected paper, so the same can be considered a weakness of the research. Furthermore, in future work, an analysis by industries can be performed to determine which technologies are represented in the CDMP phases, and how it affects the improved performance of individual consumer policy making in broader industrial areas.

## REFERENCES

- Adhikary, A. (2014): *Advertising: A Fusion Process between Consumer and Product*, Procedia Economics and Finance, Vol. 11, pp. 230–238.
- Akalamkam, K., & Mitra, J. K. (2018): *Consumer Pre-purchase Search in Online Shopping: Role of Offline and Online Information Sources*, Business Perspectives and Research, Vol. 6, No. 1, pp. 42–60.
- Amlani, A. M. (2020): *Influence of Provider Interaction on Patient’s Readiness Toward Audiological Services and Technology*, Journal of the American Academy of Audiology, Vol. 31, No. 5, pp. 342–353.

- Barišić, P., Strmota, M., & Ivanda, K. (2019): *Sociodemographic characteristics of modern tourists as a determining factor in the need recognition for travel*, in: Proceedings of FEB Zagreb 10th International Odyssey Conference on Economics and Business, Vol. 1, pp. 754–769.
- Bayer, S., Gimpel, H., & Rau, D. (2021): *IoT-commerce—Opportunities for customers through an affordance lens*, Electronic Markets, Vol. 31, No. 1, pp. 27–50.
- Boustani, N. M. (2021): *Artificial intelligence impact on banks clients and employees in an Asian developing country*, Journal of Asia Business Studies, *ahead-of-print* (ahead-of-print).
- Butkouskaya, V., Llonch-Andreu, J., & Alarcón-del-Amo, M.-C. (2021): *Inter-Country Customer-Perspective Analysis of Strategic Antecedents and Consequences for Post-Purchase Behaviour in Integrated Marketing Communications (IMC)*, Journal of International Consumer Marketing, Vol. 33, No. 1, pp. 68–83.
- Chatthipmongkol, M., & Jangphanish, K. (2016): *Factors influencing consumer decision-making process of thai frozen food products*, International Business Management, Vol. 10, No. 2, pp. 166–175.
- Chen, C.-H., Nguyen, B., Klaus, P. P., & Wu, M.-S. (2015): *Exploring Electronic Word-Of-Mouth (Ewom) in the Consumer Purchase Decision-Making Process: The Case of Online Holidays - Evidence From United Kingdom (UK) Consumers*, Journal of Travel & Tourism Marketing, Vol. 32, No. 8, pp. 953–970.
- Chhabra, I., & Suri, G. (2019): *Knowledge Discovery for Scalable Data Mining*, EAI Endorsed Transactions on Scalable Information Systems, 6(21). <https://eudl.eu/doi/10.4108/eai.19-3-2019.158527>
- Choi, C., & Bum, C.-H. (2021): *A comparative study of differences in consumers' impulse buying behaviour, purchase satisfaction, and complaint behaviour based on types of product purchased*, Sport Mont, Vol. 18, No. 1, pp. 51–56.
- Chopdar, P. K., Korfiatis, N., Sivakumar, V. J., & Lytras, M. D. (2018): *Mobile shopping apps adoption and perceived risks: A cross-country perspective utilizing the Unified Theory of Acceptance and Use of Technology*, Computers in Human Behaviour, Vol. 86, pp. 109–128.
- Colleoni, E., Bonaiuto, F., Illia, L., & Bonaiuto, M. (2021): *Computer-Assisted Concept Analysis of Customer Centricity: A Review of the Literature on Employee Engagement, Culture, Leadership, and Identity Co-Creation*, Sustainability, Vol. 13, No. 9, 5157.
- Dahiya, R. & Gayatri. (2018): *A Research Paper on Digital Marketing Communication and Consumer Buying Decision Process: An Empirical Study in the Indian Passenger Car Market*, Journal of Global Marketing, Vol. 31, No. 2, pp. 73–95.
- Gorokhova, A. E., Eskerkhanova, L. T., & Shishkin, A. N. (2021): *The effect of remote work on the successful development of engineering company*, Nexo Revista Científica, Vol. 34, No. 06, pp. 1720–1729.

- Gregurec, I., Tomičić Furjan, M., & Tomičić-Pupek, K. (2021a). *The Impact of COVID-19 on Sustainable Business Models in SMEs*, Sustainability; Vol. 13, No. 3, pp. 1-24.
- Gregurec, I.; Tomičić-Pupek, K.; & Kutnjak, A. (2021b). *Disruption caused business transformations in tourism-related industries*, in. Proceedings of IEEE Technology & Engineering Management Conference - Europe (TEMSCON-EUR), pp. 163-168.
- Gupta, V. (2019): *The influencing role of social media in the consumer's hotel decision-making process*, Worldwide Hospitality and Tourism Themes, Vol. 11, No. 4, pp. 378–391.
- Habel, J., Kassemeyer, R., Alavi, S., Haaf, P., Schmitz, C., & Wieseke, J. (2020): *When do customers perceive customer centricity? The role of a firm's and salespeople's customer orientation*, Journal of Personal Selling & Sales Management, Vol. 40, No. 1, pp. 25–42.
- Hasan, M. N.-U., & Stannard, C. R. (2022): *Exploring online consumer reviews of wearable technology: The Owlet Smart Sock*, Research Journal of Textile and Apparel, ahead-of-print (ahead-of-print).
- Haziri, F., Chovancova, M., & Aliu, F. (2018): *The consumer decision-making process which form domestic brand loyalty: A literature review*, in: 14th Annual International Bata Conference, pp. 95–102.
- Hsu, C., Chuan-Chuan Lin, J., & Chiang, H. (2013): *The effects of blogger recommendations on customers' online shopping intentions*, Internet Research, Vol. 23, No. 1, pp. 69–88.
- Hussain, S., Song, X., & Niu, B. (2020): *Consumers' Motivational Involvement in eWOM for Information Adoption: The Mediating Role of Organizational Motives*, Frontiers in Psychology, Vol. 10, 3055.
- Jacobsen, S. (2018): *Why did I buy this? The effect of WOM and online reviews on post purchase attribution for product outcomes*, Journal of Research in Interactive Marketing, Vol. 12, No. 3, pp. 370–395.
- Jain, B., Khan, A., Verma, N., Bahurupi, Y., Singh, M., & Aggarwal, P. (2021): *Hacking Covid-19 with Technology*, International Journal of Preventive Medicine, Vol. 12, 73.
- Khurana, S., & Jain, D. (2019): *Applying and Extending UTAUT2 Model of Adoption of New Technology in the Context of M-Shopping Fashion Apps*, International Journal of Innovative Technology and Exploring Engineering, Vol. 8, No. 9S, pp. 752–759.
- Köcher, S., Jugovac, M., Jannach, D., & Holzmüller, H. H. (2019): *New Hidden Persuaders: An Investigation of Attribute-Level Anchoring Effects of Product Recommendations*. Journal of Retailing, Vol. 95, No. 1, pp. 24–41.
- Kotler, P., & Keller, K. L. (2012): *Marketing management* (14th [ed.]), Prentice Hall.
- Kotni, V. V. D. P. (2017): *Paradigm Shift from Attracting Footfalls for Retail Store to Getting Hits for E-stores: An Evaluation of Decision-making Attributes in E-tailing*, Global Business Review, Vol. 18, No. 5, pp. 1215–1237.



- Kutnjak, A. (2021): *Covid-19 Accelerates Digital Transformation in Industries: Challenges, Issues, Barriers and Problems in Transformation*, IEEE Access, Vol. 9, pp. 79373–79388.
- Lăzăroiu, G., Neguriță, O., Grecu, I., Grecu, G., & Mitran, P. C. (2020): *Consumers' Decision-Making Process on Social Commerce Platforms: Online Trust, Perceived Risk, and Purchase Intentions*, Frontiers in Psychology, Vol. 11.
- Lee, J., & Hong, I. (2021): *The Influence of Situational Constraints on Consumers' Evaluation and Use of Online Reviews: A Heuristic-Systematic Model Perspective*, Journal of Theoretical and Applied Electronic Commerce Research, Vol. 16, pp. 1517–1536.
- Li, T., Li, W., Zhao, Y., & Chen, H. (2019): *The Impact of Online Shopping Carnival on Consumer Decision-Making: The Moderating Role of Gender*, PACIS.
- Manalu, E. P. S., Muditomo, A., Adriana, D., Trisnowati, Y., Kesuma P., Z., & Dwiyani H., R. (2020): *Role Of Information Technology for Successful Responses to Covid-19 Pandemic*, in: 2020 International Conference on Information Management and Technology (ICIMTech), pp. 415–420.
- Meydanoğlu, E. S. B., Klein, M., & Çilingirtürk, A. M. (2015): *Impacts of QR codes on buying decision process of Turkish consumers*, International Journal of Technology Marketing, Vol. 10, No. 3, 287.
- M.Nagamalar, & Ravindran, D. (2019): *Impact of Social Media Sites (SMS) on Post Purchase Behaviour of Tourism Customers*, International Journal of Recent Technology and Engineering, Vol. 8, pp. 1514–1516.
- Mohammed, K., & Uren, V. (2019): *The influence of social media on purchase decision-making by young Nigerians*, in: 5th European Conference on Social Media, ECSM 2018, Proceedings of the 5th European Conference on Social Media, ECSM 2018, pp. 471–475.
- Moreno, P., & Tejada, P. (2019): *Reviewing the progress of information and communication technology in the restaurant industry*, Journal of Hospitality and Tourism Technology, Vol. 10, No. 4, pp. 673–688.
- Mukherjee, S., & Chatterjee, S. (2021): *Webrooming and showrooming: A multi-stage consumer decision process*, Marketing Intelligence & Planning, Vol. 39, No. 5, pp. 649–669.
- Osakwe, C. N. (2020): *Customer centricity: An empirical analysis in the micro-sized firm*, Journal of Strategic Marketing, Vol. 28, No. 5, pp. 455–468.
- Oumayma, B. (2019): *Social media made me buy it: The impact of social media on consumer purchase behaviour*, in: 4th International Conference on Smart City Applications (Sca' 19).
- Paley, A., Tully, S. M., & Sharma, E. (2019): *Too Constrained to Converse: The Effect of Financial Constraints on Word of Mouth*, Journal of Consumer Research, Vol. 45, No. 5, pp. 889–905.

- Pihir, I., Tomičić-Pupek, K., & Tomičić Furjan, M. (2018): *Digital Transformation Insights and Trends*, in: Proceedings of the 29th Central European Conference on Information and Intelligent Systems, 9, pp. 141-149.
- Pirc Barcic, A., Kitek Kuzman, M., Vergot, T., & Groselj, P. (2021): *Monitoring Consumer Purchasing Behaviour for Wood Furniture before and during the COVID-19 Pandemic*, Forests, Vol. 12, No. 7, 873.
- Radziszewska, A. (2019): *The Role of Social Media in Promotion of Sustainable Consumption Behaviour*, in: K. S. Soliman (Ed.), Vision 2025: Education Excellence and Management of Innovations Through Sustainable Economic Competitive Advantage, pp. 11812–11820.
- Rakesh, V., Ding, W., Ahuja, A., Rao, N., Sun, Y., & Reddy, C. K. (2018): *A Sparse Topic Model for Extracting Aspect-Specific Summaries from Online Reviews*, in: Proceedings of the 2018 World Wide Web Conference, pp. 1573–1582.
- Riedmann-Streitz, C. (2018): *Redefining the Customer Centricity Approach in the Digital Age*, in: A. Marcus & W. Wang (Eds.), Design, User Experience, and Usability: Theory and Practice, Duxu 2018, Pt I, Vol. 10918, pp. 203–222. Springer International Publishing Ag.
- Rogojanu, I., Suciu, G., Ditu, M.-C., & Pasat, A. (2018): *Smart Shopping Technologies for Indoor Markets*, in: F. Pop, C. Negru, H. GonzalezVelez, & J. Rak (Eds.), 2018 21st Ieee International Conference on Computational Science and Engineering (cse 2018), pp. 99–103.
- Rosenbaum, M. S., Ramírez, G. C., Edwards, K., Kim, J., Campbell, J. M., & Bickle, M. C. (2017): *The digitization of health care retailing*, Journal of Research in Interactive Marketing, Vol. 11, No. 4, pp. 432–446.
- Sanni, S., Leemoon, B., Arora, A., & Edmonds, J. (2018): *Social Commerce Optimization: An Integrated Framework for Consumer Behaviour in Social Media*, pp. 17–33.
- Shahril, Z.R., Zahari, M. S. M., & Othman, I. R. (2013): *Responsiveness of Smart Card in Restaurants: Factor Analysis Approach*, Procedia - Social and Behavioural Sciences, Vol. 105, pp. 745–754.
- Shen, Y., Shan, W., & Luan, J. (2018): *Influence of aggregated ratings on purchase decisions: An event-related potential study*, European Journal of Marketing, Vol. 52, No. 1/2, pp. 147–158.
- Shin, E., Chung, T.-L., & Damhorst, M. (2020): *Are negative and positive reviews regarding apparel fit influential?*, Journal of Fashion Marketing and Management: An International Journal, ahead-of-print.
- Singh, A., & Glinska-Newes, A. (2022): *Modeling the public attitude towards organic foods: A big data and text mining approach*, Journal of Big Data, Vol. 9, No. 1, 2.
- Son, Y., Oh, W., Han, S. P., & Park, S. (2020): *When Loyalty Goes Mobile: Effects of Mobile Loyalty Apps on Purchase, Redemption, and Competition*, Information Systems Research, Vol. 31, No. 3, pp. 835–847.

Sun, Q. (2014): *Discussion and analysis for the price sensitivity and post-purchase behaviour of travelers on tourism food-taking “agritainment” as an example*, Carpathian Journal of Food Science and Technology, Vol. 6, pp. 36–46.

Tajdini, S., Ramirez, E., & Frankwick, G. L. (2022): *Developing a multi-dimensional product evaluation scale*, Psychology & Marketing, Vol. 39, No. 2, pp. 271–293.

Teng, W., & Cheng, Y.-H. (2016): *Towards an understanding of low consumer acceptance of an e-Book reader in Taiwan*, International Journal of Mobile Communications, Vol. 14, No. 2, pp. 149–169.

Venkatraman, S. (2017): *A Proposed Business Intelligent Framework for Recommender Systems*, Informatics-Basel, Vol. 4, No. 4, 40.

Voramontri, D., & Klieb, L. (2019): *Impact of social media on consumer behaviour*, International Journal of Information and Decision Sciences, Vol. 11, No. 3, pp. 209–233.

Wang, Y., & Yu, C. (2017): *Social interaction-based consumer decision-making model in social commerce: The role of word of mouth and observational learning*, International Journal of Information Management, Vol. 37, pp. 179–189.

Yoo, S.-R., Kim, S.-H., & Jeon, H.-M. (2022): *How Does Experiential Value toward Robot Barista Service Affect Emotions, Storytelling, and Behavioural Intention in the Context of COVID-19?*, Sustainability, Vol. 14, No. 1, 450.

*A scientific paper*

**Višnja Lachner, Ph. D., Associate Professor**  
Faculty of Law Osijek, Republic of Croatia  
E-mail address: vlachner@pravos.hr

**Jelena Kasap, Ph. D., Assistant Professor**  
Faculty of Law Osijek, Republic of Croatia  
E-mail address: kasap@pravos.hr

## **LEGAL AND SOCIAL POSITION OF CITY OF OSIJEK AT THE TIME OF 6TH JANUARY DICTATORSHIP**

### ***ABSTRACT***

*The aim of the paper is to present the legal and political framework and socio-political circumstances in the city of Osijek during the 6th January Dictatorship (1929-1931). Also, the purpose of this paper is to present the functioning of the administration of the City of Osijek and to identify the problems, and to point out the state of the administration at the local level where it is of importance and a detailed account of developments in local politics as well as an overview of the economic and cultural situation in the city.*

*For a system of local self-government in which city autonomies also played a significant role, with the entry of the Croatian territories in 1918 into the new state of the Kingdom of SHS / Yugoslavia, the situation changed dramatically. At that moment, there were good preconditions for the development of modern self-government and democratic society in the Croatian territories, because there was a legacy of decentralized administration. However, the state leadership chose the French centralist model as a model for building a future state, instead of one of the existing federation models, which was more appropriate to a complex country in every respect.*

*With the introduction of the 6th January Dictatorship in 1929, „the holders of state power“ became appointed and loyal civil servants in city government. Although a special status was granted to cities during the king's dictatorship, in reality it was not respected. Such a policy was especially evident at the level of Osijek city government, since the „ban“ played the main role in the election of city officials, which was often used, especially when appointing city representatives. Consequently, it can be stated that the central government dealt a real blow to the local autonomy of Osijek.*

*Before the new state polity, Osijek enjoyed the status of the economic center of the Slavonian economic area. However, the introduction of the 6th January Dictatorship had a particularly negative impact on the Osijek economy, and the industry represented only dead capital and a utilized minimum of its capacity. The collapse of the Osijek economy was also affected by the Great Depression. In these circumstances, when the assistance of the state government was expected, the opposite happened and, contrary to the policy of the state government, the city government became the instigator and organizer of all sections of the population of Osijek.*

**Key words:** *Osijek, the 6th January Dictatorship, local administration, economy, city government.*

## 1. Demographic characteristics of Osijek from 1929-1931

At that time, Osijek was still, after Zagreb, the largest city, educational, cultural, social, economic and health center of the Sava Banovina. This is supported by the fact that Osijek itself had as many houses, residents, educational institutions, societies and cooperatives, economic, financial and industrial plants and health institutions as all four Slavonian self-governing cities (Brod, N. Gradiška, Požega and Virovitica) together, which illustratively speaks for itself. As far as schools are concerned, Osijek had a men's and women's real grammar school, a teacher's school, civic school, women's vocational and vocational craft school, a trade academy, a two-grade trade school, an art school, six state and one Jewish primary school, four kindergartens and a city conservatory. Concerning cultural institutions, it had the National Theater, the city museum and three libraries, 33 educational societies and clubs (out of which 12 were singing and music societies). It had more than 30 humanitarian societies and institutions, the most important of which was the Public Health Center and hospital, and seven class unions (with a total of 25 associations, most of which are workers, employees, craftsmen and teachers) and twelve associations (out of which 4 business, and of the others there are associations of Chetniks, volunteers and reserve officers. It had twenty-seven sports clubs and societies (13 of which were sports clubs), of the Franciscan Monastery and Capuchin Monastery, three Roman Catholic parish offices, a Serbian Orthodox parish, a Jewish superintendent, an evangelical parish office, and a Muslim imam; concerning the economy it had 13 banks and money bureaus, 15 insurance companies, 24 factories: matches, linen goods, bricks, coffee, soap, pasta, iron goods, tanneries, two breweries, four mills, five wood companies, eleven printing bureaus, Osijek fair and sugar factory etc.; then six larger hotels and cafes ("Central", "Grand", "Schneller", "Tomislav", "Royal", "Hrvatski dom" ...) and three cinemas ("Urania", "Royal" and "Slavia").<sup>1</sup>

According to the 1931 census, the city of Osijek had an area of 56.62 km<sup>2</sup>, 3612 houses, more than 8000 households and 40,337 inhabitants, and it was the seat of the Osijek district and one of the three district inspectorates of the Sava Banovina.<sup>2</sup> According to religion in the city of Osijek, there were 30,330 or 75.19% Roman Catholics (mostly Croats), 5,884 Orthodox (mostly Serbs) or 14.58%, 2,445 or 6.06% Jews, 1,049 or 2.60% Evangelicals, and 437 Muslims. 1.08% of other and unknown religions.<sup>3</sup> Data on the mother tongue in the Osijek area (inhabitants of Osijek and Osijek district) show that Croatian and Serbian were the mother tongues of 45,023

<sup>1</sup> Almanah Kraljevine Jugoslavije, IV. jubilarni svezak 1929.-1931 [*Almanac of the Kingdom of Yugoslavia, IV. jubilee volume 1929-1931*], Zagreb, 1932 p. 363-364 and 384-385. (City and district / county / Osijek). General statistics for self-governing cities for 1930 on p. 337. differ slightly from the data given for the city of Osijek. According to them, Osijek had nine churches, five Orthodox and three evangelical parishes, 2 secondary schools (gymnasium and teacher's school), 9 vocational, one civic and 18 primary schools and 9 public libraries and reading rooms (out of which four important libraries), it had 153 different societies and cooperatives (16), 28 money and other institutes, 35 industrial plants (out of which 9 mills, 6 hemp factories, 4 distilleries, 3 soda-water factories, 1 flax, 1 cured meat goods, three fattened pig industries, two fattening cattle and two brickyards) and two health facilities.

<sup>2</sup> Godišnjak banske vlasti Banovine Hrvatske [*Yearbook of the Ban's Government of the Banovina of Croatia*], p. 314 and 315 and the Almanah Kraljevine Jugoslavije [*the Almanac of the Kingdom of Yugoslavia*], IV. jubilee volume 1929-1931], Zagreb, 1932, p. 338 and 345, 363-364 and 384-385. (City and district / county / Osijek).

<sup>3</sup> Godišnjak banske vlasti Banovine Hrvatske 1939 – 26. kolovoza – 1940 [*Yearbook of the Ban's Government of the Banovina of Croatia 1939 - 26 August – 1940*], I., Zagreb, 1940, Present population according to the census of 31 March 1931, p. 314-315. These data differ slightly from those published by Konjević, M., O djelatnosti građanskih političkih stranaka u Slavoniji 1929.-1941 [*On the activities of civic political parties in Slavonia in 1929-1941*], Sl. Brod, 1976, p. 168, Table no. 1. The population of Slavonia by confessional affiliation according to the census of 31 March 1931, which does not specifically show Jews, and among other Christians there are 15 fewer.

or 60.96% of the population, German 16.521 or 22.37%, Hungarian 9161 or 12.40%, Czech and Slovak 953 or 1.29%, Slovenian 932 or 1.26% of the population and 1261 or 1.70% of the population of other and unknown mother tongues (Konjević, 1976, 169).<sup>4</sup> These two statistical indicators, the population of Osijek by religion and mother tongue, speak of Osijek as a multinational, multicultural and civilizational center of eastern Croatia. This points to a very complex national and religious structure that the ruling structures sought to change by emigrating some Roman Catholics and Evangelicals, Germans, Hungarians and Croats, and by systematically settling Orthodox Serbs.

Apart from the national and religious structure, the economic and social structure of the inhabitants of Osijek is also interesting. Out of 40,337 inhabitants of Osijek in 1931, 17,212 or 42.7% lived from industry and crafts, 2507 from agriculture, forestry and fishing, 6302 from public services, free professions and the army, 3897 from trade, 3274 from transport, 706 from loans and 6439 from others occupation or no occupation. However, the picture changes if we look at the active persons who were 21,709, of whom 11,616 or 53% worked in tertiary, 9,027 or 41.6% in secondary (industry and crafts) and 1,067 or 4.9% in primary (agriculture), forestry, fisheries) to the economic sector. With the expansion of the factory economy, the share of workers grew, so that the total number of workers was 7564, wage earners and servants 2616, apprentices 879, domestic servants 879 and auxiliary family members 215 or a total of 16,889 inhabitants, which represents 41.8% of Osijek's total population. Also, a large group consisted of clerks and employees, and there were 3787 active clerks and employees. 2577 illiterate, out of which 858 men aged 20 to 39 and 324 men aged 40 to 59 or a total of illiterate men 1182 and women 1395 (Verl, 1996, 302-304). Osijek was one of the middle developed regions of Slavonia in terms of the percentage of illiterate inhabitants.

## 2. Legal - political framework at the time of 6th January Dictatorship

The political situation in the Kingdom of Serbs, Croats and Slovenes during 1928 was quite complex and aggravated, as the sharp attacks of the opposition led by the Peasant-Democratic Coalition (SDK) on the policy of the radical-democratic government due to corruption and other illegal actions did not stop. A similar political situation was in Osijek. Namely, with the creation of the Peasant-Democratic Coalition (hereinafter SDK) in October 1927, a sharper opposition struggle was waged in the Osijek district and the city of Osijek itself, as well as the response of the regime's (Dizdar, 2005, 221). Thus, on June 10, 1928, a large SDK assembly was held in Osijek, at which Stjepan Radić spoke sharply against violence and corruption in Belgrade, while Svetozar Pribičević emphasized the need to change the Constitution "to ensure equality of Serbs, Croats and Slovenes in the country." Two days later, in the National Assembly, Puniša Račić stated on behalf of the Radical Party "that the state should be called Greater Serbia, because as such it will be invincible." At the same time, in Osijek, government supporters demanded that the government apply "the Announcement" and the Law on State Protection to the SDK, but the government did not decide to do so. However, the radical press openly threatened to kill S. Radić and S. Pribičević (Horvat, 1992, 385-386). Indeed, the assassination of Croatian deputies took place in the National Assembly in Belgrade on June 20, 1928, as well as the murder of two and the wounding of three Croatian pioneers, including Stjepan Radić.

To this great crisis in the country on January 6, 1929, King Alexander responded with a coup d'etat, guided by the slogan "one king, one people and one state". He also repealed the 1921 Constitution, dissolved the National Assembly, banned the display of national, religious, and regional characteristics, and introduced a personal dictatorship. He thus secured unlimited

---

<sup>4</sup> Table no. II. Population of Slavonia by mother tongues according to the census of 31 March 1931. Jews are not particularly pronounced.

executive, legislative, and military power, for which he was not accountable to anyone, nor could he be tried. During its duration, the dictatorial regime led by the king emphasizes that the state should be the supreme ideology (Grgić, 2013, 92). In the same year, the state was renamed the Kingdom of Yugoslavia, and the king sought to achieve the policy of creating a single Yugoslav nation through the most brutal repression. Also on the same day, by the king's signature and order, the Law on Amendments to the Law on Municipalities and District Self-Governments was published, which abolished self-governments at all levels where they existed before 1929, i.e. in urban and rural municipalities and areas. (Službene novine, Beograd, 1929., br. 9., Official Gazette, No. 9, 1929). Then, on January 14, the Law on Repeal of the Law on Election of District, District and Municipal Self-Government Bodies was passed, which repealed all regulations of previous laws, decrees and regulations on the election of assemblies, committees, representatives of regional, district and municipal self-government (Službene novine, Beograd, 1929., br. 11., Official Gazette, No. 11, 1929).

Most of the laws mentioned were valid for at least the next few years, and they all meant circumventing the basic intentions of self-government. Under these laws persons appointed by the state to head the self-government, such as various commissioners, as well as the officials legally elected or employed by the municipal or city administration became strictly controlled in the new state regime. Therefore, it can be said that during this period, the appointed municipal or city administrations primarily enjoyed the support of the regime, and it was also important for them to secure the support of local regime party powerful people.

### 3. Socio-political conditions in the area of Osijek from 1929-1931

The state authorities actively monitored the developments at the local levels of government, which was also the case in the area of the city of Osijek. Most of the data on the political situation in the period of the dictatorship can be found in the civil journalism, which was loyal to the regime, and from which it follows that the proclamation of the dictatorship was accompanied by a ban on the work of political party organizations. The king's proclamation on the establishment of a dictatorship, i.e. the proclamation of January 6, was welcomed by the civil press at first, expecting that a period of more favorable political and economic opportunities would come in their favor (Hrvatski list, 7. siječnja 1929., *Hrvatski list*, 7th January 1929 and Hrvatski list, 7. siječnja 1929., *Hrvatski list*, 7th January 1929).

Apart from the citizens, the Osijek city council also expressed satisfaction with the "proclamation" of the dictatorship. Namely, at the session of the city council, held on February 4, 1929, chaired by the envoy of the great prefect of Osijek region, county secretary Dragutin Kovačić, the city representative Dr. Alfons Muža proposed that His Majesty King Alexander I be sent a telegram expressing loyalty to the city council (HR-DAOS-6, GPO, Zapisnici gradskog zastupstva, *Minutes of the city council*, Vol. No. 1080).

The Osijek authorities closely monitored the development of political circumstances and the possible actions of opposition politicians and "suspicious" persons. Thus, by the decision of the city police, due to the application of measures under the Law on the Protection of Public Security and Order in the State, the organizations of the Croatian Party of Rights, the Croatian Right Republican Youth and the Croatian Youth were first dissolved. Furthermore, the dissolution of the Croatian Scout Flag was announced, but then it was announced that its operation was allowed. This was followed by the dissolution of the Croatian People's Party, the Croatian Federalist Peasant Party and the Croatian Peasant's Party, and then the Radical, Democratic, Independent Democratic and Socialist Parties followed as well. Finally, the organizations of the Independent Radicals, the Radical Youth, German and the Agrarian Party were banned. By the end of January 1929, all organizations of civic political parties had been

dissolved.

During the regime, supporters of Croatian national parties were most often referred to as "tribal" and "separatist" movements that broke and destroyed the foundations of the Kingdom of Yugoslavia, but also supporters of the illegal KPJ (The Communist Party of Yugoslavia), who were the fiercest political opponents of Greater Serbian hegemony and the king's dictatorship (Dizdar, 2006, 345)

The dictatorship regime, in addition to relying on the army and police, also relied on numerous nationalist and Greater Serbian societies and organizations, among which the Chetnik groups stood out in particular for their terror and cruelty. That is when their establishment and operation in Osijek and in the Osijek district began again.<sup>5</sup> The basic program principle of the Chetnik organization was to advocate the idea of "Yugoslav nationalism", i.e. "uncompromising integral Yugoslavism and unitarism". This is also a feature of the official policy of the regime after the introduction of the dictatorship of King Aleksandar Karađorđević on January 6, 1929.

In accordance with the official policy of banning the display of national (tribal) symbols, the work of some organizations was banned in Osijek, and at the same time some new ones were established. Thus, in 1929, the Rotary Club was founded in Osijek, following the example of the world's Rotary clubs. Until 1929, Croatian civic associations and clubs reflected the national spirit, fighting for Croatian culture and interest, and among them was the Croatian Women's Society, which emerged as a reaction to Greater Serbian ideas and the threat to Croatian identity.<sup>6</sup> Likewise, after 1929, most of the former Croatian cultural and educational associations ceased to exist or gets disintegrated or came under strong "Yugoslav" (Serbian) influence, which also applies to the Croatian civic reading rooms in Osijek in Gornji and Donji grad, which became a service for book lending and some minor activities in line with Yugoslav policy. Although associations and clubs had to take on a Yugoslav character, a number of Croatian-oriented associations and clubs preferred to cease their activities rather than accept the Yugoslav orientation. Others acted formally as state clubs, but really as Croatian ones, and the third were established under various general humanitarian or similar characters so that they could really continue to act as Croatian ones. Therefore, the state policy also affected the cultural and sports societies in Osijek.

Apart from the difficult position of political opponents and organizations in Osijek, the position of civic media is also becoming increasingly difficult. Thus, on January 26, 1929, Hrvatski list, the largest Osijek paper, which represented Croatian politics among Osijek Croats, was seized. In those days, Sportski list was also confiscated for criticizing the district mayor in Valpovo,

---

<sup>5</sup> Of the political parties, the main promoters and founders of Chetnik organizations were the Radical and Democratic Parties, and initially each of these parties had its own Chetnik association, but from 1929 onwards a single " *Udruženje četnika za slobodu i čast otadžbine* " continued to operate. The Radical Party, as the main ruling party and the most influential of the regime parties in the Osijek area, was the initiator and founder of Chetnik associations, and its " *Udruženje srpskih četnika Petar Mrkonjić za Kralja i Otadžbinu* " was founded in 1924 and was the first to appear in Osijek and in the area of Osijek district. In 1924, the Local Boards of the " *Srpsko četničko Udruženje Petar Mrkonjić za Kralja i Otadžbinu* " were established in Osijek, Čepin and Tenje. Even after the proclamation of the dictatorship in 1929, the local Chetnik committee in Osijek continued to work, supporting the dictatorship. However, as early as December 1929, the authorities, in order to emphasize only "Serbness", quarrels in the leadership and other reasons, dissolved and banned the work of the " *Udruženje srpskih četnika Petar Mrkonjić za Kralja i Otadžbinu* ". Thus, his local committees in Osijek, Tenje and Čepin ceased to function, while their property was confiscated. Most of the members of this association in Osijek and its surroundings, joined the original Chetnik organization - " *Udruženje četnika za slobodu i čast otadžbine* ", which fully supported the dictatorship of King Alexander. See in: Dizdar, Z. (2005): Osnivanje i djelatnost četničkih udruženja na području grada i kotara Osijek u monarhističkoj Jugoslaviji (1918.-1941), Scrinia Slavonica, Vol. 6, No. 1, pp.342-401

<sup>6</sup> HR-DAOS, Društvene organizacije-1; Jeka od Osijeka 1922., p. 160.



who banned the holding of the annual assembly of the Jovalija football club. Then in Osijek, in addition to the mentioned Hrvatski list, Hrvatska obrana and Sportski list, Straža, Reporter, and the German newspapers Die Drau, Abend and Slavonische Presse, the Hungarian Szlavoniai Ujsag were also published (Vinaj, 1996, 374). Although most civic newspapers were mostly oriented towards local problems, they still found themselves in a difficult position if they did not accept the orientation towards promoting the idea of Yugoslav state and national unitarism. Therefore, the position of civic journalism largely reflects the dilemmas and aspirations of civic circles, which initially supported certain illusions of the January 6 regime, and soon the differentiation is established between them, in terms of strengthening opposition commitments or supporting the regime. Therefore, the latter launched in Osijek the newspaper *Narod i država*, which in the introductory part "Why are we being published?" points out that the Manifesto of January 6 greeted "all the people cordially and sincerely" and in the article "Democracy and the King" it points out that Alexander is distinguished by „his royal democratism, which amazed the whole world".<sup>7</sup>

It can be said that the regime of the January 6 dictatorship in the Osijek area was accepted without much resistance, and until then the politically dominant opponents were placed under constant surveillance. Soon the "new government" in Osijek forcibly "dealt" with the Communists and other political opponents, so that their influence on the political situation was negligible.

#### 4. Administrative situation in Osijek

After the proclamation of the dictatorship on January 6, 1929, all organizations of political parties in the Osijek area were dissolved and any political activity that, in the opinion of the regime, was directed against the state order was banned. The proclamation of the dictatorship was accompanied by the dismissal of responsible officials, if they were not pro-regime oriented, and by the appointment of persons committed to the regime in the city, municipal and district institutions. Thus, the introduction of the January 6 dictatorship in 1929 also meant a direct blow to the self-governing status of the city municipalities. Namely, the Law on Amendments to the Law on Municipalities and District Self-Governments of January 6, 1929<sup>8</sup> dissolved all municipal authorities in the country, and large prefects were given the authority to appoint new administrations, at the will of the government, without any possibility of election by citizens. The regime tried to present the removal of old and the establishment of new municipal administrations in towns and villages as an attempt to completely depoliticize self-governments, and on the other hand as an opportunity for better and more valuable people to come to the helm of municipalities (Grgić, 2013, 97). The regime placed itself in the position of an exclusive factor in deciding what kind of person a certain environment needs and wants at its head. To a large extent, everything depended on the personal assessment of the individual great prefect, and later the ban. According to this law, the appointment of municipal administrations, as well as the entire municipal bureaucracy, was decided by the competent regional high prefect, who was the highest-ranking civil servant in a particular area as the highest state regional unit. The Grand Prefect was appointed by the ruler at the suggestion of the Minister of the Interior. The composition and competencies of administrations remain the same according to applicable laws and statutes. The new administrations were given commissioner powers, so the heads of city administrations were designated as commissioners, and later the city chief-commissioner.

<sup>7</sup> *Narod i država*, siječanj, 1929. [*Narod i država*, January 1929]

<sup>8</sup> Zbornik zakona, uredbi i naredbi, svezak 1/2, 1-3 (siječanj-veljača 1929), Zagreb, 1929., str. 300. [*Collection of laws, decrees and orders*, vol. 1/2, 1-3 (January – February 1929)]

Since the Osijek city council headed by the Mayor Vjekoslav Hengl was not credited with a more pronounced political orientation, Hengl was re-appointed mayor. Also, the election of the former deputy mayor as well as members of individual committees of the city council is confirmed.<sup>9</sup> At the same time, there was a change in the position of the great prefect of the Osijek region, where Marijan Hanžeković was replaced by Juraj Kučić, the former great prefect of the Primorje-Krajina region. The Osijek city council, headed by the city mayor-commissioner Dr. Hengl, was satisfied with this choice. In his opinion, he showed a special interest in the city's communal affairs in a very short time.<sup>10</sup>

Eight days after the adoption of the Law on Amendments to the Law on Municipalities and Regional Self-Governments, on January 14, the Law on Repeal of the Law on Election of Regional, District and Municipal Self-Government Bodies was passed, which determined the repeal of all regulations and statutes, "relating to the election of the bodies (assembly, board, representation) of the district, county and municipal self-government." This means that during the dictatorship of January 6, the regulations on the election of local representative bodies were no longer applied, i.e. the possibility of electing citizens' representatives in all previously existing self-governing bodies in the country was finally abolished.<sup>11</sup> The electoral principle was abolished, and new administrations, appointed by the state bodies, were set up in municipalities and cities instead of elected representative offices. Therefore, the local government was thus really suspended. Consequently, no elections for city government were held in Osijek either.

In addition to the abolition of the right to elect municipal administrations, a different mandatory text of the oath of allegiance to the king is prescribed, mandatory for all members of municipal committees, mayors and municipal officials. Taking the obligatory oath to the king was important because through it, any work that was not to the liking of the rulers could be declared a violation of the oath and thus considered high treason.<sup>12</sup> In this text of the oath, the emphasis is placed on fidelity to the ruler, conscientious performance of service, and observance of land laws in work. Since this text of the oath was prescribed in 1929, at the time when the ruler suspended the Vidovdan Constitution, it does not mention the basic state law and the principle of loyalty to state interests is much more emphasized.<sup>13</sup>

In this regard, it should be noted that with the adoption of these laws, local self-government lost

---

<sup>9</sup> HR-DAOS-6, GPO, Zapisnici gradskog zastupstva, knj. br. 1080., red. br. 6. [*Minutes of the city council*, Vol. No. 1080, ed. No. 6]

<sup>10</sup> HR-DAOS-6, GPO, Zapisnici gradskog zastupstva, knj. br. 1080., red. br. 12. [*Minutes of the city council*, Vo., No. 1080, ed. No. 12]

<sup>11</sup> Zakon o ukidanju zakon o izboru organa oblasne, sreske i opštinske samouprave, u: Zbirka zakona protumačenih i objašnjenih sudskom i administrativnom praksom, Sv. 125., Beograd, 1929., str. 7. [*Law on Repeal of the Law on Election of Regional, District and Municipal Self-Government Bodies*, in: Zbirka zakona protumačenih i objašnjenih sudskom i administrativnom praksom, Vol. 125., Beograd, 1929, p. 7]

<sup>12</sup> „Uredba o polaganju zakletvi i zavera opštinskih uprava, opštinskih službenika i služitelja, kao i komesara oblasnih samouprava i oblasnih činovnika“, Zbirka zakona protumačenih i objašnjenih sudskom i administrativnom praksom, Sv. 125., Beograd, 1929., str. 15.-16. [*Decree on taking oaths and conspiracies of municipal administrations, municipal officials and employees, as well as commissioners of regional self-governments and regional officials*, in: Zbirka zakona protumačenih i objašnjenih sudskom i administrativnom praksom, Vol. 125., Beograd, 1929., pp. 15.-16]

<sup>13</sup> For example, the text of the oath during swearing for city representative: “Ja..., gradski zastupnik, zaklinjem se, da ću vladajućem Kralju i Otadžbini biti vjeran, da ću se u radu zakona pridržavati, da ću dužnosti svoga zvanja tačno izvršivati i da ću općinske interese savjesno braniti i zastupati.” [“I ..., city representative, swear that I will be faithful to the ruling King and the Fatherland, that I will abide by the law in my work, that I will perform the duties of my profession accurately and that I will conscientiously defend and represent municipal interests”], HR-DAOS-6, GPO, Zapisnici gradskog zastupstva, knj. br. 1080., red. br. 149. [*Minutes of the city council*, vol. no. 1080, ed. no. 149.]

its importance and that the administration was strictly centralized, which left the local authorities, i.e. commissioners, with no other choice but to carry out orders of state bodies, grand prefects.

### 5. The position of the city of Osijek in the Sava Banovina

One of the consequences of the dictatorship of King Alexander, introduced on January 6, 1929, was the administrative reorganization of the state. The previous division of the state into 33 districts as territorial self-governing units was abolished in early October 1929. King Alexander signed a new law which divided the state into nine banovinas and determined their seats: Drava (Ljubljana), Sava (Zagreb), Vrbas (Banja Luka), coastal (Split), Drina (Sarajevo), Zeta (Cetinje), Danube (Novi Sad), Moravia (Nis) and Vardar (Skopje), while Belgrade with Zemun and Pancevo was singled out as the capital (Čulinović, 1961, 13). The new organization of the state was based on the idea of unitarism, so a new name was assigned to the state - the Kingdom of Yugoslavia. The new administrative division sought to concentrate all power in the royal court and to abolish self-government, which, however, was also the focus of local and regional development.

With the division of the Kingdom of Yugoslavia into nine banovinas in October 1929 and the abolition of the area, Osijek became only the seat of the district (county) in the Sava banovina. As according to Article 6 of the new law, the ban exercised supreme administrative power in the territory of the banovina, supervised self-governing bodies and resolved second-instance administrative cases, so accordingly, all powers of the Grand Prefect under the 1895 Act were transferred to the ban. Based on this, the ban had the main say in the election of city officials, allowing the central government to de facto strike at local autonomy.<sup>14</sup> Thus, the new administrative division allowed state leaders even greater control over local affairs.

The loss of important administrative functions in Osijek has not been replaced by some new ones. However, in Osijek at that time, in addition to the city and county administration, there was also the seat of the district court, tax administration, customs, city police headquarters, gendarmerie company command, Osijek divisional district command and about twenty different offices.

On the occasion of the decision of His Majesty the King of October 3, 1929 on the name and division of the Kingdom of Yugoslavia into administrative areas, the mayor Dr. Vjekoslav Hengl convened an extraordinary solemn session of the city council on October 8. It was attended by many citizens of all classes, including representatives of trade, craft and industrial societies, religious municipalities and clergy, educational, cultural and humanitarian societies, and government offices, the presidency of the Chamber of Commerce with councilors and teachers of secondary schools and city council officials. In his speech, the Mayor Dr. Vjekoslav Hengl gave his support to King Alexander and the laws he passed, emphasizing the following: "Such a state is being built by His Majesty King Alexander I, faithful to the promise he made in his manifesto to his dear people, all Serbs, Croats and Slovenes," emphasizing that the highest goal of his rule is to preserve national unity and statehood for himself as well as for everyone else. Faithful to this promise, he passed laws, the essential features of which were the absolute justice and equality for all in all rights and duties."<sup>15</sup> He believed that with the new name of The Kingdom of Yugoslavia, the state aligned the name of the state with the aforementioned goals

---

<sup>14</sup> HR-DAOS-6, GPO, Zapisnici grad. zastupstva, knj. br. 1080., red. br. 594. [*Minutes of the city council*, vol. no. 1080, ed. no. 594.]

<sup>15</sup> HR-DAOS-6, GPO, Zapisnici grad. zastupstva, knj. Br. 1080., red. br. 464. [*Minutes of the city council*, vol. no. 1080, ed. no. 464.]

which were to be achieved by the King Alexander I. By convening this session, the Mayor Dr. Hengl wanted to express gratitude to the King for his "great deeds" which ensure secure development and strengthen the state and the state as a whole. He also suggested that the city deputies send a telegram to the King Alexander, stating, among other things: "... Just as the King Tomislav united all Croatian parishes and banovinas into the Kingdom of Croatia a thousand years ago, so a thousand years later Alexander I Karagjorgjevic united all countries of Serbs, Croats and Slovenes into the Kingdom of Yugoslavia and divided them into banovinas."<sup>16</sup> This report and the proposal to send telegrams were unanimously accepted by the city council, which shows that the top of the city administration of the city of Osijek was consisted of people loyal to the regime, state and the national unity.

The way in which the Osijek city administration treated the visits of members of the royal family and high political dignitaries and representatives, as well as the celebrations of birthdays and public holidays, can be considered a certain indicator of its mood towards the central authorities. On the other hand, it was certainly important for the central authorities to expand their support for the implementation of the new (dictatorial) government by coming to a certain local environment. In such a political context, General Petar Živković, the Prime Minister, visited Osijek in July 1929. After that, the City Mayor-Commissioner Dr. Hengl pointed out at a session of the City Council in early July that General Živković visited and inspected the state offices and humanitarian institutions as well as the town hall, during which he showed interest in the work of the city council and success achieved.<sup>17</sup> In relation to this there is the celebration of the king's birthday on December 17, 1929, which is why an extraordinary session of the city council was held on December 1. Namely, the Mayor Dr. Hengl convened the same so that the city council of Osijek would choose a delegation that will go to Belgrade on the eve of King Alexander's birthday to "... solemnly declare his loyalty and allegiance to the Exalted Symbol and guardian of Yugoslav votive idea ...". The invitation to send a city delegation to Belgrade on the occasion of his Majesty's birthday The Osijek City Representation received from the City Representation in Zagreb. The invitation of the city council in Zagreb states the following: "... that on the occasion of His Majesty's, King Alexander I birthday Croatian cities are to send delegations to Belgrade, to express in a solemn and unambiguous manner the loyalty and fidelity of the entire nation to His Majesty and Yugoslav State". The Council of the City of Osijek unanimously accepted this proposal.<sup>18</sup> The city of Osijek showed a similar attitude by giving a donation of 100,000 Din. for the purpose of erecting a monument to King Peter I, the Great Liberator, in Zagreb. This was initiated by the city of Zagreb, which established an "executive committee for the erection of a monument to King Peter I, the Liberator" in Zagreb. This committee issued a proclamation to "all patriots in Zagreb and outside Zagreb" whose basic idea was that the city of Zagreb, as a "hotbed of national and libertarian idea", must erect a permanent monument to "the people's great man who brought these thoughts to life". It is also stated that apart from Zagreb, all others "who have always gathered around it and fed off by the thoughts served by the Great King the Liberator" should also contribute to the erection of the monument. Accordingly, The Mayor of Osijek, Dr. Hengl, believed that Osijek should not lag behind any city, so the city council unanimously accepted this proposal of the mayor.<sup>19</sup>

---

<sup>16</sup> HR-DAOS-6, GPO, Zapisnici grad. zastupstva, knj. Br. 1080., red. br. 464. [*Minutes of the city council*, vol. no. 1080, ed. no. 464.]

<sup>17</sup> HR-DAOS-6, GPO, Zapisnici grad. zastupstva, knj. br. 1080., red. br. 281. [*Minutes of the city council*, vol. no. 1080, ed. no. 281]

<sup>18</sup> HR-DAOS-6, GPO, Zapisnici grad. zastupstva, knj. br. 1080., red. br. 589. [*Minutes of the city council*, vol. no. 1080, ed. no. 589]

<sup>19</sup> HR-DAOS-6, GPO, Zapisnici grad. zastupstva, knj. br. 1080., red. br. 3. [*Minutes of the city council*, vol. no. 1080, ed. no. 3]

The visit of General Živković was not the only visit of a prominent representative of the central state and royal government, bearing in mind that at the end of March 1930 the Ban of the Sava Banovina, Dr. Josip Šilović, visited Osijek and its surroundings. Therefore, the Mayor, Dr. Hengl, convened an extraordinary session of the city council on March 23, 1930 in the presence of the Ban, Dr. Josip Šilović. The session was opened on behalf of the City Council and the City of Osijek by Deputy Mayor Jovan Vuković, who said in his speech that Osijek was "accidentally affected" by the arrangement of October 3, 1929. Namely, after the adoption of this law, Osijek ceased to be one of the administrative districts, which had 800,000 inhabitants, and before that it was also the seat of the Greater County area. Apart from losing the area, Osijek no longer had the financial authority as well as many other institutions, which caused great difficulties. Without these institutional features, Osijek could not develop further in economic, cultural and social terms, so the city deputy asked for the help of the Ban, Dr. Šilović. The ban of the Sava Banovina, Dr. Šilović, said that he was aware that the city of Osijek was at loss after the new administrative division of the Kingdom of Yugoslavia into banovinas, with the concentration of self-governments in large self-governing units. He also pointed out that what Osijek, as the center of Slavonia and Baranja and one part of Srijem, lost, should gain on the "other side" thus he considered it his "sacred duty" to help its further development. In his opinion, Osijek has made good progress in economic, cultural and social terms and he is impressed by the many institutions that serve this purpose. However, he also saw many shortcomings, such as overcrowding in schools, hospitals, etc. At the end of his speech, he said that he would work "with all his might" with "relevant authorities" to meet the justified needs of Osijek. After that, Mayor Hengl suggested sending a telegram to King Alexander and Prime Minister Zivkovic expressing their gratitude for the "beneficial fruits" of their "fatherly love and care for the people", which the city council unanimously accepted.<sup>20</sup> At the next session of the city council on May 11, the deputy mayor Jovan Vuković was relieved of his duties on the basis of the decision of the Royal's Ban administration of the Sava Banovina, administrative department in Zagreb, which appoints Milutin Dimitrijević, a merchant from Osijek, as deputy head.<sup>21</sup>

A few months after the visit, the Ban of the Sava Banovina Dr. Šilović visited Osijek again to deliver a decree on appointing the banovina councilors for Osijek, Našice, Donji Miholjac, Đakovo, Valpovo, Virovitica, Brod, Slatina and the cities of Osijek, Brod and Virovitica.<sup>22</sup> For this reason, an extraordinary solemn session of the city council was convened on August 14, 1930, under the chairmanship of the Ban of the Sava Banovina, Dr. Šilović. In addition to the appointed banovina councilors, city representatives and members of the city administration, this session was attended by many prominent citizens of Osijek from political, economic and cultural life. The assembly was opened by the city senator Jovan Belajčić, who was also appointed deputy mayor on July 15 during his absence.<sup>23</sup> After reading the letter, Ban Dr. Šilović gave the floor to the City Representative Dr. Julije Kaiser, who in his speech, in a similar way as Deputy Mayor Jovan Vuković, warned of the consequences of the latest state order, which made Osijek lose not only a significant number of state authorities and offices, but also a large number of officials and other staff who worked there. Thus, the "relevant authorities" should have taken measures to make Osijek "flourish" again in both cultural and economic

---

<sup>20</sup> HR-DAOS-6, Zapisnici grad. zastupstva, knj. br. 1080., red. br. 124. [*Minutes of the city council*, vol. no. 1080, ed. no. 124]

<sup>21</sup> Otpis od 8. svibnja br. 13.971 / Pov., Prezidijalni – načelnikovi spisi [*Write-off of 8 May* no. 13.971 / II. Pov., Presidium - Chief's writings.]

<sup>22</sup> Otpis Kr. banske uprave Savske banovine u Zagrebu od 30. srpnja 1930., br.: 20.282 – II- Pov. [*Write-off of the Royal Ban's Administration of the Sava Banovina in Zagreb of 30 July 1930*, No. : 20.282 - II - Pov.]

<sup>23</sup> Otpis Kr. banske uprave Savske banovine u Zagrebu od 15. srpnja, br.: 70.935 – II- 1- Pov [*Write-off of the Royal Ban's Administration of the Sava Banovina in Zagreb dated 15 July*, No. : 70.935 - II - 1 - Pov.]

terms.

Prior to the new state system, Osijek enjoyed the status of the economic center of a large Slavonian economic area. On the Drava River there was a highly developed trade in goods, especially flour, grain and wood as well as the mill industry, roads, etc. After the Law of 3 October, the industry represented only dead capital and the used minimum part of its capacity.

After that, Ban Dr. Šilović gave a speech in which he initially emphasized the historical importance of the Manifesto of January 6, 1929 and the Law of October 3, 1929. In addition to these two laws, he also referred to the declaration of the Council of Ministers of 4th July 1930, which "perfectly" interprets the content and meaning of these two "great acts", and also contains the program of the Government of the Kingdom of Yugoslavia. In the first place, the declaration of the Council of Ministers states the following: "The old cannot be returned, new ways and methods are being sought". From this it can be read that the "revival" that took place on January 6, 1929, had to last and that on this basis the "regeneration" of economic, social and cultural life was supposed to begin. The declaration further states that "Yugoslavs are the children of one father and one mother" and one nation, "one nation by blood, one nation by language", so that the name Yugoslavia is nothing but the family name of a family with three sons: a Serb, a Croat and a Slovene ". Accordingly, if Serbs, Croats and Slovenes are to love Yugoslavia in the way King Alexander and Queen Maria „are loved“ by their children, then Yugoslavia will "flourish with unprecedented progress". Thus, according to the declaration, the absolute principle of the Law of October 3, 1929, is "one people, one national feeling".<sup>24</sup>

The Ban of the Sava Banovina, Dr. Šilović, pointed out in his speech, and adhering to the stated principles of the declaration, that one should primarily think about the progress and interests of the whole of Yugoslavia, because if "the whole does not progress, then not a single part of it can progress." Therefore, he believed that for the development of the whole country, one should know the general opportunities and interests in each of its parts. He further states that he, as the Ban, could not know all the needs and opportunities of the entire banovina, so banovina councils and banovina councilors were established to present the state of affairs in their counties and cities to the ban administration. He believed that only joint cooperation between the Banovina administration and the people could achieve success, which should be followed by "easy steps". He also states that the precondition was either cultural or social progress, the improvement of the economy and that Yugoslavia is primarily an agrarian country, so that agriculture should be improved.<sup>25</sup>

It can be said that the celebration of public holidays, the visits of prominent persons from the state government and the "special deputation" should have been an external expression of Osijek's support for the central state policy. At the same time, the Osijek city council underwent numerous changes in the form of appointing and removing elected deputies, including the constant removal of deputy mayors, which completely changed the will of the Osijek population in the 1927 elections. Holders of state power became appointed and loyal civil servants who had the task of implementing the imposed repressive policy of the central government.

## 6. Conclusion

The Osijek city government tried to implement the central state policy and "establish" it in that area, and in that context, celebrations of state holidays and visits of high political dignitaries

---

<sup>24</sup> HR-DAOS-6, GPO, Zapisnici grad. zastupstva, knj. br. 1081., red. br. 324. [*Minutes of the city council*, vol. no. 1081, ed. no. 324]

<sup>25</sup> HR-DAOS-6, GPO, Zapisnici grad. zastupstva, knj. br. 1081., red. br. 324. [*Minutes of the city council*, vol. no. 1081, ed. no. 324]

and representatives were used. In a way, it was as if the mayor and some members of the city council "competed" in their speeches to show loyalty to the "new government" and pursue a strict state policy, and those city deputies who only incidentally criticized state policy were soon removed. Therefore, we can say that during the period of the January 6 dictatorship (1929-1935)<sup>26</sup>, the appointed mayors, deputy mayors and city deputies primarily enjoyed the support of the regime

In expressing dissatisfaction with the somewhat diminished role of Osijek, which found itself in a peripheral position in the Yugoslav state and lost some professional and administrative functions, there were close civic circles. This resonated especially during the global economic crisis, when efforts were supported in terms of reaffirming its social and economic functions, and the need for industrial development and construction of roads in all directions to accelerate the rise of other sectors of the economy was emphasized. All these incentives were used to make Osijek the administrative, cultural, political and economic center of Slavonia.

Many families of officials emigrated as significant organizations such as the finance directorate, labor inspection and others were removed from the city, affecting the general economic life of Osijek in the form of reduced consumption. Despite the fact that the state government was well aware of the city of Osijek's difficulties, it was not prepared to prevent its collapse, and the state government continued to abolish important economic and cultural Osijek institutions under the guise of austerity, exacerbating the city's current situation and future development prospects.

With the introduction of the January 6 dictatorship in 1929, holders of state power became appointed and loyal civil servants in the city government. Although the special status of cities was confirmed during the dictatorship, in reality it was not respected. Such a policy was especially visible to various Osijek city authorities, because the ban had the main say in the election of city officials, which he often used, especially when appointing city representatives. Consequently, we can conclude that the central government has *de facto* struck a blow at local autonomy and that in the time of the January 6 dictatorship there was actually no self-government.

## REFERENCES

Almanah Kraljevine Jugoslavije, IV. jubilarni svezak 1929.-1931 [*Almanac of the Kingdom of Yugoslavia, IV. jubilee volume 1929-1931*], Zagreb. 1932.

Čulinović, F. (1961): *Jugoslavija između dva rata* (II Vol.), JAZU, Zagreb

Dizdar, Z. (2005): *Osnivanje i djelatnost četničkih udruženja na području grada i kotara Osijek u monarhističkoj Jugoslaviji (1918.-1941)*, Scrinia Slavonica, Vol. 5, No. 1, pp. 199-228

Dizdar, Z. (2006): *Osnivanje i djelatnost četničkih udruženja na području grada i kotara Osijek u monarhističkoj Jugoslaviji (1918.-1941)*, Scrinia Slavonica, Vol. 6, No. 1, pp. 342-401

---

<sup>26</sup> Although there are differing interpretations of the end of the dictatorship, the key events in ending the government include: the assassination of King Alexander in October 1934, the holding of parliamentary elections in May 1935, or the resumption of political and party life after those elections. *See:* (Hasanbegović, 2012, 54-55).

Fond Gradsko poglavarstvo Osijek (HR-DAOS-6, GPO, Zapisnici gradskog zastupstva [Minutes of the city council])

Fond Gradsko poglavarstvo Osijek (HR-DAOS-6, GPO) Prezidijalni – načelnikovi spisi

Godišnjak banske vlasti Banovine Hrvatske 1939 – 26. kolovoza – 1940 [Yearbook of the Ban's Government of the Banovina of Croatia 1939 - 26 August – 1940], I., Zagreb, 1940

Grgić, S. (2013): *Općinske uprave u vrijeme šestosiječanjske diktature*, Časopis za suvremenu povijest, Vol. 45, No. 1., pp. 89-117

Hasanbegović, Z. (2012): *Jugoslavenska muslimanska organizacija 1929.-1941. (U ratu i revoluciji 1941.-1945.)*, Bošnjačka nacionalna zajednica-Institut društvenih znanosti Ivo Pilar-Medžlis Islamske zajednice, Zagreb

Horvat, R. (1992): *Hrvatska na mučilištu*, Školska knjiga, Zagreb

Hrvatski list, 7. siječnja 1929. (*Hrvatski list*, 7th January 1929)

Hrvatska obrana, 11. siječnja 1929. (*Hrvatska obrana*, 11th January 1929)

HR-DAOS, Društvene organizacije-1

Konjević, M. (1976): *O djelatnosti građanskih političkih stranaka u Slavoniji 1929.-1941.*, Zbornik Historijskog Instituta Slavonije i Baranje, No. 13, pp. 167-208

Narod i država, siječanj, 1929. (*Narod i država*, January 1929)

Službene novine, Beograd, 1929., br. 11. [*Official Gazette*, No. 11, 1929]

Službene novine, Beograd, 1929., br. 9. [*Official Gazette*, No. 9, 1929]

Verl, E. (1996): *Socijalna i ekonomska struktura stanovništva*, in Martinčić, J., ed.: *Od turskog do suvremenog Osijeka*, Osijek, pp. 302-304

Vinaj, M. (1996): *Pregled osječkih novina 1918.-1945.*, in Martinčić, J., ed.: *Od turskog do suvremenog Osijeka*, Osijek, pp. 374-375

Zakon o ukidanju zakon o izboru organa oblasne, sreske i opštinske samouprave, u: Zbirka zakona protumačenih i objašnjenih sudskom i administrativnom praksom, Sv. 125., Beograd, 1929. [*Law on Repeal of the Law on Election of Regional, District and Municipal Self-Government Bodies*, in:

Zbirka zakona protumačenih i objašnjenih sudskom i administrativnom praksom, Vol. 125., Beograd, 1929]

Zbornik zakona, uredbi i naredbi, svezak 1/2, 1-3 (siječanj-veljača 1929), Zagreb, 1929., [*Collection of laws, decrees and orders, vol. 1/2, 1-3 (January – February 1929)*]



*A professional paper*

**Biljana Lončarić, Ph. D.**

Tourist Board Slavonski Brod

E-mail address: info@tzgsb.hr

## **FAMILY ACCOMMODATION AS A SOURCE OF TOURIST DEVELOPMENT OF THE CITY OF SLAVONSKI BROD**

### ***ABSTRACT***

*The city of Slavonski Brod has been intensively developing as a tourist destination for the last twenty years. The trend of increasing tourist traffic, taking into account a longer period of time, is also reflected in the increase in accommodation capacities. According to the E-visitor system, there are 874 beds currently available, of which 35.58% in family accommodation. The statistical data show that in the period from 1 January to 31 December 2021, 8.702 overnight stays were realized in family accommodation, what is 11,28% more than in the same period of 2020, ie 15,24% lower compared to the same period of 2019. At the same time, 23.241 overnight stays were realized in hotels and similar accommodation facilities, what is 48,64% more than in the period January – December 2020, or 29,90% lower compared to for the same period in 2019. The aim of this paper is to show the role and importance of the family accommodation as a source of tourist development of the city of Slavonski Brod. For the purposes of this paper, a detailed analysis of the basic indicators of tourism development in the city of Slavonski Brod was conducted, the results of the analysis were synthesized and conclusions were drawn. The results of the work should motivate the domicile population that has excess living space to provide accommodation services as additional activity and assist local government units in adopting measures to encourage private entrepreneurship in tourism.*

**Key words:** *Slavonski Brod; family accommodation; tourist traffic.*

### **1. Introduction**

Most empirical research is not burdened at all with the questions of the definition of a tourist destination, but simply deals with localities where visitor traffic takes place or where it could take place (Hitrec, T., 1995, 43-51), all in the function of meeting the needs of tourists (Lončarić, B., 2012, 140). A prerequisite for this is, among other things, the appropriate equipment for the arrival and stay of tourists, whereby the legalities of tourist markets give primacy to tourist demand (market oriented concept) which has the most intense effect on the destination, i.e. its offer (Magaš, D., Vodeb, K., Zadel, Z., 2018, 48).

According to Buhalis (Buhalis, D., 2000, 101), when analyzing a tourist destination, in addition to attractions, available packages and activities, accessibility (the entire infrastructure system), facilities (accommodation and catering facilities, retail, other tourist services) and ancillary services (bank services, post offices, hospitals and more) should be taken into account, as well, so the destination must have an offer that will meet the requirements of visitors (Travis, A.S., 1989).

The tourist destination can be smaller, but also a larger space as a whole, all depending on how the specified area is perceived by tourist demand (Lončarić, B., 2012, 139), with different tourist destinations being in different stages of development, depending on the connection between their overall development and tourism and their impact on tourism (Đurašević, S., 2015, 79).

The Law on Tourist Boards and Promotion of Croatian Tourism (N.N. 52/19; 42/20) also defines the concept of a tourist destination. According to the provisions of the Article 2 item 1 of this Act, a tourist destination is defined as a market-based and tourist-valorized spatial entity that represents the goal of tourist trips and covers the territory of one or more units of local or regional self-government.

The aim of this paper is to show the role and importance of the family accommodation as a source of tourist development of the city of Slavonski Brod. The purpose of the paper is to give guidelines for those who decide to provide accommodation services as additional activity and to point out that the measures undertaken by local government units could encourage private entrepreneurship in tourism industry.

## 2. The main reasons for travel and consumption of tourists in the region of Slavonia as a tourist destination

According to the results of the research "Tomas Croatia 2019", conducted by the Zagreb Institute for Tourism, the reasons for the travel of tourists to coastal and continental Croatia vary significantly. While tourists traveling to the Adriatic in more than 90.00% of cases cite "holidays" as the main reason for the trip, tourists coming to the regions of continental Croatia, in addition to traveling for the reason of holidays in 62.70% of cases, also travel for business reasons, in 21.70% of cases.

**Table 1:** The main reasons for the travel of tourists to the regions of continental Croatia, in %

Reasons	continental Croatia, total	Zagreb	Slavonia	northern Croatia	central Croatia
Work	21,70	28,10	29,70	21,40	9,80
Holidays	62,70	57,30	37,80	60,50	79,10
Visiting relatives and friends	6,20	5,00	19,30	8,10	3,50
Health reasons	3,40	3,10	2,00	4,90	3,40
Religious reasons	0,40	0,00	0,20	0,80	0,60
Education	1,60	2,00	2,40	1,00	1,20
Something else	4,00	4,40	8,50	3,30	2,40

Source: Tomas – attitudes and consumption of tourists in Croatia 2019, Institute for Tourism, Zagreb, 2020, pp. 103

Concerning the reasons for the traveling to Slavonia, the data in Table 1 show that, unlike other regions of continental Croatia where tourists mostly come for vacation, the tourists visiting Slavonia travel for the reason of spending holidays (in 37.80% of cases); for the reason of work

(in 29.70% of cases), but also to visit relatives and friends (in 19.30 % of cases, what is 13.10% higher than the average at the level of continental Croatia). Also interesting is the fact that as many as 8.50% of tourists traveling to Slavonia do not cite “work”, “rest”, “education”, “health” or “religious reasons” as the reason for traveling, but "something else".

The results of the research "Tomas Croatia 2019" also showed that the structure of average expenditures of tourists staying on the coast and in the continental part of Croatia does not differ significantly, with tourists spending an average of 128.49 euros per day on the coast, and 12.65% less in continental Croatia. In both cases, the largest share of expenditure (an average of 64.69%) relates to accommodation and to food in restaurants (an average of 21.19 %).

**Table 2:** The structure of average daily expenditures of tourists in regions of continental Croatia, in %

<b>Average daily expenditures</b>	<b>continental Croatia, total</b>	<b>Zagreb</b>	<b>Slavonia</b>	<b>northern Croatia</b>	<b>central Croatia</b>
Accommodation	55,15	58,99	36,26	54,01	56,87
Food in restaurants and bars	17,61	16,80	24,81	16,03	16,40
Trade services	12,95	11,20	26,06	9,41	12,33
Culture and entertainment	1,77	1,56	2,17	0,99	2,90
Sports and recreation	0,79	0,56	0,99	0,21	1,956
Tours	1,09	1,51	0,39	0,46	0,67
Local transport	7,86	6,89	7,06	12,97	7,41
Something else	2,79	2,49	2,26	5,92	1,46

Source: *Tomas – attitudes and consumption of tourists in Croatia 2019*, Institute for Tourism, Zagreb, 2020 pp. 180

As regards the region of Slavonia, the data in Table 2 are very indicative. From them it is evident that tourists in Slavonia spend less money on accommodation (36.26% of total expenditures) compared to tourists staying in other regions of continental Croatia, and significantly more than in other regions - on food in catering establishments (24.81%, meaning 40.89% more than is the average at the level of continental Croatia) and trade (26.06%, meaning twice the average at the level of continental Croatia).

The conclusion that can be drawn from this data is that tourists in Slavonia use cheaper types of accommodation during their stay in the region, but at the same time allocate significant amounts for out-of-board consumption in the part related to the consumption of catering services and shopping.

### 3. Tourist movements in the region of Slavonia

According to the e-Visitor system data, shown in Table 3, in 2021 there were 406.240 overnight stays in the region of Slavonia, what is 56.17% more than the tourist traffic in 2020 (when coronavirus pandemic started) and 22.38% less than the number of overnight stays achieved in the record 2019.

**Table 3:** Arrivals and overnight stays of tourists in the five Slavonian counties, 2019-2021

County	Overnight stays 2019	Overnight stays 2020	Overnight stays 2021	Arrivals 2019	Arrivals 2020	Arrivals 2021
Osijek-Baranja	234.018	119.244	180.734	111.134	47.813	79.970
Vukovar-Srijem	140.483	57.291	92.522	82.136	32.360	41.132
Brod-Posavina	64.399	37.900	51.571	37.810	17.678	27.662
Virovitica-Podravina	38.194	17.398	37.350	15.341	7.703	13.692
Požega-Slavonia	46.245	28.288	44.063	20.718	10.875	16.331
SLAVONIA	523.339	260.121	406.240	267.139	116.429	178.787
CROATIA	108.672.888	54.394.810	84.614.450	20.703.683	7.761.717	13.784.884

Source: Information on statistical indicators of tourist traffic - January-December 2019, Croatian Tourist Board, Zagreb, 2020, pp. 19; Information on statistical indicators of tourist traffic - January-December 2020, Croatian Tourist Board, Zagreb, 2021, pp. 12; e-Vistor system data from January to December 2021, February 2022

It is also apparent from the data in the same Table that the entire region of Slavonia, whose share in the total tourist traffic of Croatia is less than 0.50%, is tourist insignificant, if only statistical indicators achieved in the accommodation services sector are considered. Analyzing the results by individual counties, it can be found out that almost half of tourist overnight stays are realized in the Osijek-Baranja county, while the Brod-Posavina county is in third place in the region of Slavonia in terms of tourist traffic and arrivals, and with tourists staying in the county for an average of almost 2 days.

Regarding the tourist offer in the area of the region of Slavonia, in the part related to accommodation by species, Table 4 shows that the share of the number of beds available to tourists in the region, is only 0.67% of the total number of beds in Croatia.

**Table 4:** Number of beds in accommodation facilities by species in the five Slavonian counties

County	Hotels and similar establishments	Family accommodation <sup>1</sup>
Osijek-Baranja	1.400	3.746
Vukovar-Srijem	622	2.046
Brod-Posavina	517	1.149
Virovitica-Podravina	178	878
Požega-Slavonia	110	1.208
SLAVONIA	2.827	9.027
CROATIA	177.667	1.581.698

Source: e-Vistor system, February 2022

From the data in the same Table it is also clear that in Slavonia the complementary accommodation facilities in which 9.027 beds are available to tourists, have a significantly

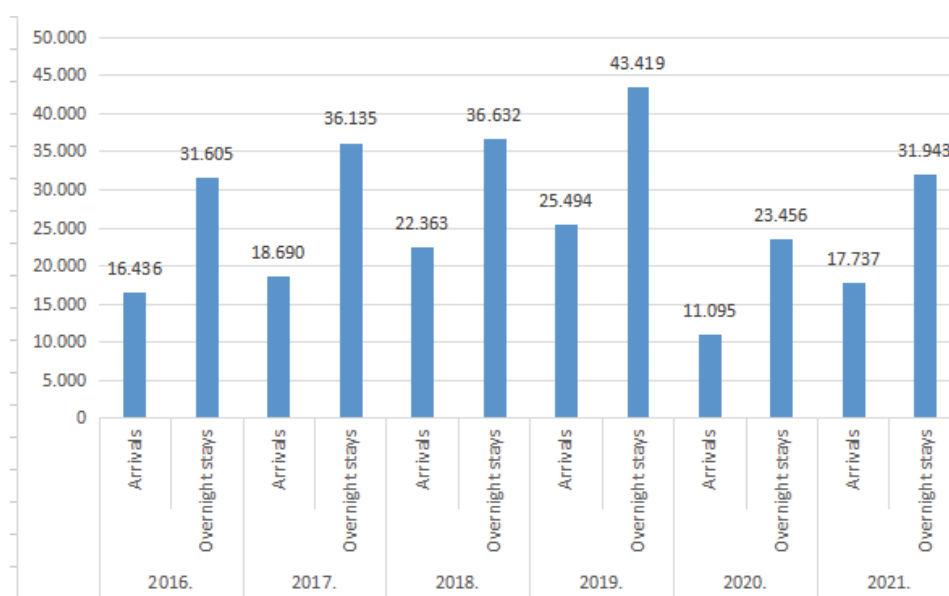
<sup>1</sup> Family accommodation facilities include rooms, apartments and houses for rest.

higher share (76.15%) in the whole receiving capacity at the region level. Almost two thirds of them are in the Osijek-Baranja and Vukovar-Srijem counties.

#### 4. Tourist movements in the area of the city of Slavonski Brod

During the period 2016-2019, the city of Slavonski Brod recorded a continuous increase in tourist traffic, with the fact that in 2020, as well as at the level of Croatia and the region of Slavonia, there was a drastic drop in the number of overnight stays, of 45.98 %, compared to the previous year (Figure 1). It was due to the coronavirus pandemic. In 2021, a positive trend is coming to the fore again. That year, a tourist traffic of 31.943 overnight stays was realized in the city, what is 36.18% more than in 2020, but still (by 26.43%) less than the number of overnight stays achieved in a record 2019.

**Figure 1:** Movement of tourist demand in the area of the city of Slavonski Brod in the period 2016-2021



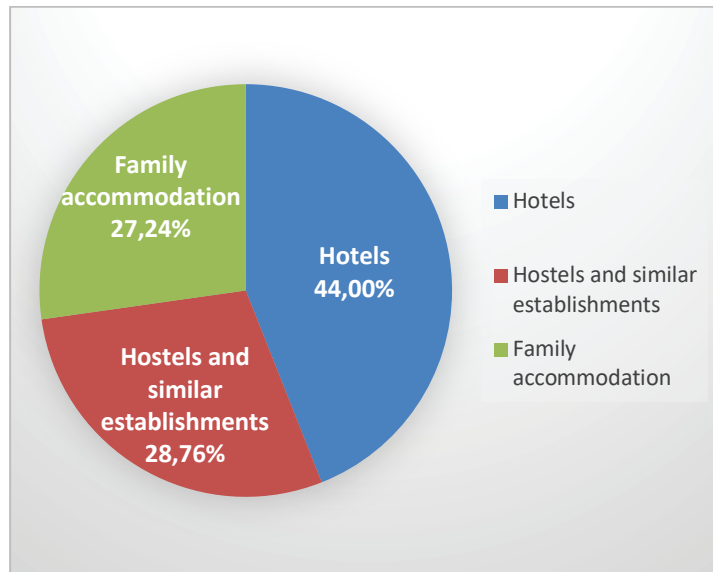
Source: *e-Visitor system, February 2022*

The same Figure shows that in Slavonski Brod in 2021 there were 17.737 tourists, or 59.86% more than in 2020.

According to the e-Visitor system, in 2021 23.241 overnight stays were realized in hotels and similar accommodation facilities, what is 48,64% more than in 2020, or 29,90% lower than in 2019.

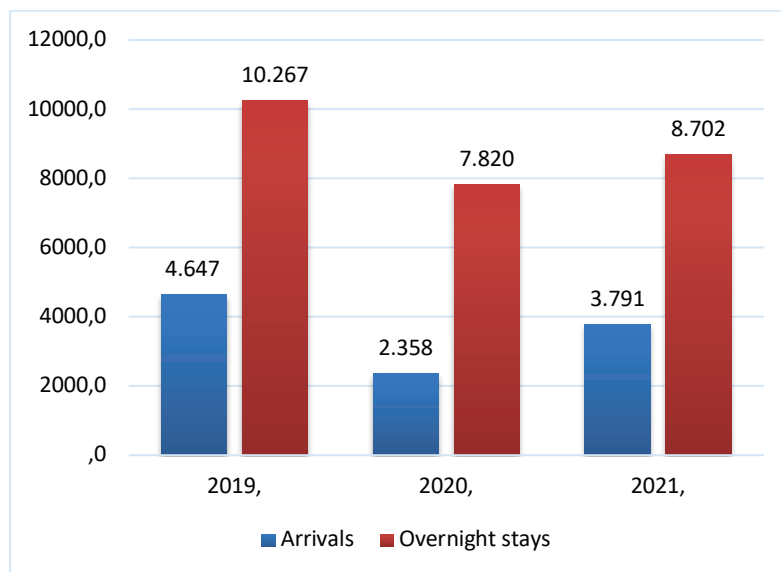
Family accommodation accounted in 2021 for just over one quarter of the total number of overnight stays (Figure 2), what is 11.28% more than in 2020, or 15.24% less than in 2019. (Figure 3).

**Figure 2:** Tourist traffic in the city of Slavonski Brod by types of accommodation facilities in 2021



Source: e-Vistor system, February 2022.

**Figure 3:** Tourist traffic in the city of Slavonski Brod in family accommodation in the period 2019-2021



Source: e-Vistor system, February 2022

The growth of tourist traffic in the previous period was accompanied by the growth of accommodation facilities operating in the city. According to data from the eVisitor system from February 2022, there are currently 80 accommodation establishments in the city, and 60 of them have the status of family accommodation.

**Table 5:** Number of beds in accommodation facilities in the area of the city of Slavonski Brod in the period 2016-2021

Year	Hotels and similar accommodation	Family accommodation
2016.	447	165
2017.	498	205
2018.	576	226
2019.	551	273
2020.	551	267
2021.	563	311

*Source: eVisitor system and own data processing, February 2022*

Although family accommodation, as measured by the number of beds, accounts for only one third of the city's reception capacity, from the data in Table 5 it follows that the number of beds in family accommodation increased almost twice in the period 2016-2021, while in hotels and similar accommodation facilities the percentage increase in the number of beds in the same period is significantly lower (25.95%).

Also interesting are the data from Table 6 showing the current structure of family accommodation in Slavonski Brod. These data show that the share of rooms and tourist apartments to which three or more stars were allocated in the categorization is 90.00%, and it also shows that the private renters, in accordance with the requirements of tourist demand, took care of quality, when arranging and equipping the accommodation units.

**Table 6:** Family accommodation in Slavonski Brod by individual categories

Name of the group of facilities categorized by stars	Number of objects in the group
Family accommodation with one star	2
Family accommodation with two stars	4
Family accommodation with three stars	33
Family accommodation with four stars	20
Family accommodation with five stars	1

*Source: eVisitor system and own data processing, February, 2022*

## 5. Geotrafic position and other characteristics of Slavonski Brod

The city of Slavonski Brod is the seat of the Brod-posavina county, which has the best traffic position of all five Slavonian counties because on its territory there is the intersection of the two main European transport corridors X and Vc, and it is also of all Slavonian counties closest to Zagreb and to the rest of Croatia (Institute for Tourism, 2019, 9).

Through the city of Slavonski Brod passes the highway A3 Bregana - Zagreb - Slavonski Brod - Bajakovo (the so-called Posavina Highway), as part of the Pan-European transport corridor X Salzburg - Ljubljana - Zagreb - Zagreb - Niš - Skopje - Thessaloniki and the international European road communication E-70 connecting La Coruna in Spain via France, Italy, Slovenia, Croatia, Serbia, Romania, Bulgaria and Turkey, with the city of Poti in Georgia (Institute for Tourism, 2020, 8).

Through Slavonski Brod also passes a railway line that connects the city to the west with Zagreb and further with Western Europe, and to the east through Vinkovci with Belgrade in Serbia and on to southeastern Europe. It is also significant that the distance of the city from Zagreb Airport is only 180 km, and from Osijek Airport it is 100 km.

Of great importance for the entire Brod-Posavina county is the Sava River because it represents an international waterway, with Slavonski Brod being one of the four internal ports of the Republic of Croatia along the state border with Bosnia and Herzegovina, with most cargoes transported in transit (Brodsko-Posavina County, 2020, 54).

When it comes to the economy, it should be noted that the driving force of the economy of the Brod-Posavina county, and within it the city of Slavonski Brod, is the processing industry that is also the most represented activity and in which almost half of the total revenues of the county are generated (City of Slavonski Brod, 2014, 16). This activity is accompanied by trade with the share of total revenues of 17.54% and construction industry, with the share of 10.99%. (Croatian Chamber of Commerce County Chamber of Slavonski Brod, 2021, 2).

The tourist development of a destination is measured by the index of tourist development, which for the needs of the Ministry of Tourism and Sports and the Croatian Tourist Board is determined annually by the Institute for Tourism based on statistics of the Croatian Bureau of Statistics. The index is based on the following quantitative indicators: the total number of beds, the number of beds in hotels and similar accommodation facilities, the number of arrivals (tourists), the number of overnight stays and the number of employees in the activities of providing accommodation and food services. These indicators are observed in the total value and in proportion to the number of inhabitants of local and regional self-government units. According to the latest available data for 2020, the tourist development index for the city of Slavonski Brod is 19.07 and, accordingly, Slavonski Brod belongs to the third category in which are the destinations with the index from 10.00 to 20.00 (Institute of Tourism, 2022, 14).

According to the World Tourism Organization, one of the most important trends in the global tourism market is the increasing segmentation and the fact that in the future the importance and market share of the so-called special forms of tourism (Institute for Tourism, 2010, 77) will grow. The coronavirus pandemic in 2020 almost stopped tourist movements and led to changes in consumers' claims, so development of tourism products in some destinations had to adapt to new circumstances.

When it comes to the profile of tourists who come to Slavonski Brod and make the consumption in the city, before the pandemic, the city accommodation facilities were mostly occupied by business tourists who usually stay overnight in hotels and in similar facilities. This was shown in the previous research. In the area of the city of Slavonski Brod, in 2020, the structure of guests changed, as interest in consuming tourist products that imply a larger number of people in a relatively small areas decreased, what is the case with business tourism as a selective form of tourism.



## 6. Results of the research conducted in January 2022

As shown in Figure 3, there was no drastic drop in tourist traffic in 2020, due to the profile of guests staying in city apartments and rooms. Conversations conducted in the form of in-depth structured interviews, in the first half of 2021, with two owners of three-star apartments, three owners of four-star apartments, one owner of five-star apartment, two owners of three-star rooms and two owners of four-stars rooms, has emerged knowledge that family accommodation is occupied mainly by guests in transit who are on the way to their destinations; furthermore, participants in private gatherings, sports preparations and competitions and other social events, and at times of the year with more favorable weather conditions, construction and seasonal workers.

On the last three questions from the interview ("Do you believe in a speedy recovery after the end of the epidemic?"; "Do you intend to continue to engage in providing of services in family accommodation?"; Do you intend to expand or modernize existing accommodation units?"), concerning the running of family accommodation facilities in the upcoming period, all the interviewees responded positively.

As the attitudes of the local population can determine the success or failure of tourism, before implementing any development plan in a tourist destination, it is crucial to explore how local residents perceive tourism (Nejati, M., Mohamed, B., Omar, S.I., 2014, 144). Namely, in order to develop the tourism industry in an area, it is necessary to have developed infrastructure, which implies public sector investments financed by tax and other levies by citizens. Therefore, negative reactions of the locals are also possible.

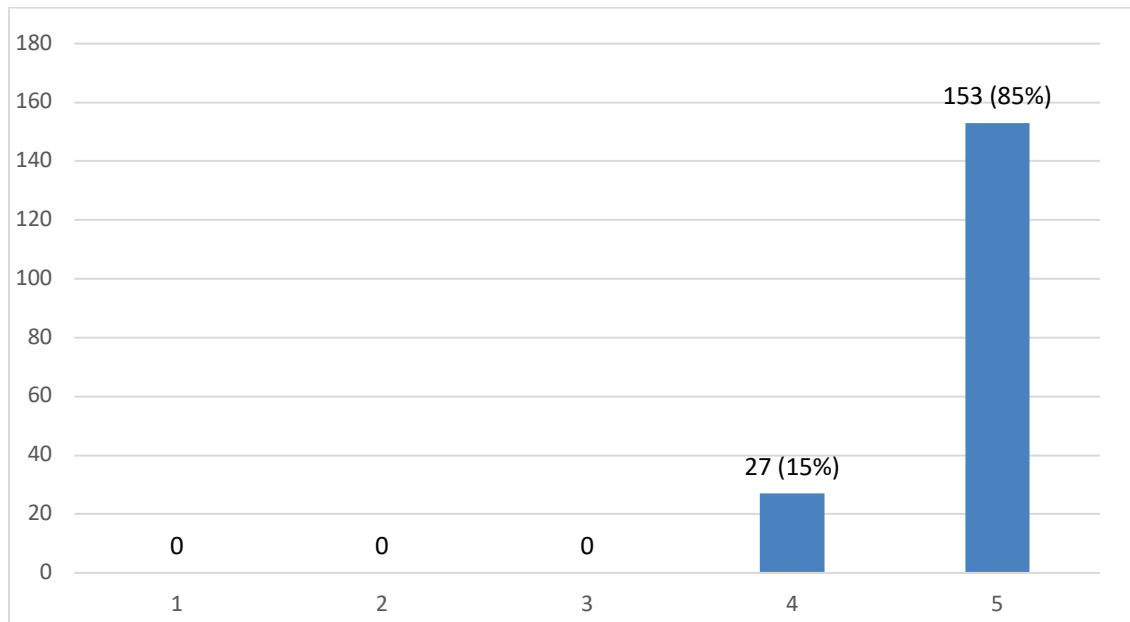
In 2019, the Institute for Tourism conducted the primary research of the attitudes of the citizens of Croatia towards the development of tourism in 2018, and the results of the research concerning the territory of the region of Slavonia showed that 52.00% of the inhabitants of this region agree that tourism benefits the places in which they live, and 82.00% of them believe that tourism helps maintain and/or improve the quality of life in these places (Institute for Tourism, 2019, 52).

Since the including the citizens of Croatia in decision making is mainly recognized as a key component of effective tourist planning at all levels, the primary research was carried out at the level of the city of Slavonski Brod, for the purposes of this work. The mentioned purpose was to find out the attitude of the local population regarding the apartmentization. This research was conducted using the method of surveying visitors of the City Colosseum shopping center in Slavonski Brod, using questionnaires, on the third Saturday in January 2022, during the afternoon hours. Only visitors who have the place of residence in Slavonski Brod, 180 of them, were surveyed by random selection method.

The results of this research are shown in Figure 4. According to them, almost 80.00% of respondents expressed the opinion that the main comparative advantage of Slavonski Brod, when it comes to tourism development, is its geo-traffic position. More than 70.00 % of respondents declared that, in the case of a visit to Slavonski Brod, as a tourist, they would choose family rather than hotel accommodation for the overnight stay, and this due to a lower price (which was answered by 94, 44 % of respondents), i.e. for the sake of hospitality by the host, which answer was choosed 61.11% of respondents.

**Figure 4:** Quality of family accommodation in the function of tourist development of the city of Slavonski Brod, question and answers

*Do you agree with the statement that the tourist development of the city of Slavonski Brod depends on both the increase and the quality of family accommodation? (Possible answers ranging from 1 - I don't agree at all, to 5 - I completely agree).*



*Source: Self-conducted research, January 2022*

## 7. Discussion

The development of tourism generates various economic, socio-cultural and environmental effects for the community (Lee, T.H., 2013, 37) and can also affect the standard of living of residents (Anderek., K.L., Nyaupane, G.P., 2011, 248). Assessing these effects, local residents build their attitudes towards tourism and its future development (Soldić Frleta, D., Smolčić Jurdana, D., 2020, 170). This was shown on the example of the city of Slavonski Brod and supported by the results of the conducted primary research. According to these results, the inhabitants of Slavonski Brod support the future development of tourism, both in connection with the increase in the number and in the quality of family accommodation.

The demand for family accommodation is increasing throughout Europe, and the growth rate of this sector, which is undergoing numerous innovations, is faster than the growth rate of hotel accommodation (Hulten, S., Perret, S., 2019). Authenticity, human touch, personality, warmth and host atmosphere (Ministry of Tourism, 2013, 14) are cited as key attractive attributes in family accommodation. The National Programme for the Improvement of Family Accommodation of the Republic of Croatia from 2013, developed by the Institute for Tourism for the purposes of the Ministry of Tourism, states as one of the development principles that "in addition to improving the quality of family offer in the coastal area, significant attention should be paid to the development of family accommodation in the Adriatic hinterland, but also in the continental area, with priorities to be given to the areas that, due to the features of the resource-attraction basis and/or tradition in the tourism industry, have a chance of success already in the short term."

The need for above mentioned activities is particularly imposed in the conditions of the coronavirus pandemic, which has led to numerous structural disproportions and changes around the world, major dissatisfactions and stressed challenges in most global, regional and national processes, and has resulted in the creation of operational problems in a large number of small and large institutions in national and international frameworks (Mikac, R., Kravaršćan, K., 2021, 611). Croatia also faced these problems, especially because, according to the Ministry of Tourism and Sports, the share of international tourist receipts in the social gross product of Croatia is extremely high and amounts more than 15.00% (Ministry of Tourism, 2018).

The demand for a product or service will be less elastic if there is a small or no substitute at all; buyers do not immediately notice the price; buyers are slow to change their purchasing habits and are looking for lower prices or feel that higher prices are justified by improved quality, average inflation and more (Kotler, P., 1988, 525). In tourist destinations located on significant international travel routes, among the most important demand generators are the so-called transit sources. These are individuals and groups who have no other reason to spend in a particular place than that it is on the way to the goal of their trip and that they need a break of traveling. Thus, it is a source of demand closely related to means of transport (Medlik, S., Ingram, H., 2002, 34)

Considering, the before mentioned favorable geo-traffic position, the city of Slavonski Brod has also established itself as a tourist destination, meaning a city through which tourists "are passing" on the way to the goal of their travel, but also stop for a short time, mainly for overnight stays, shorter break ups and dining. It leads to the tourist consumption and positive economic effects. Tourists on the "journey" through Slavonski Brod mostly use services in family accommodation, with their demand being less sensitive, i.e. elastic in relation to objective demand factors, including the different social and economic conditions under which modern man lives and works (Marković, S., Marković, Z., 1972, 51). The same has been proven in this paper through the analysis of physical indicators of the development of tourism in the area of Slavonski Brod over the period of the last three years.

The relatively small sensitivity of the tourist demand for family accommodation in relation to external factors has also been recognized by the local population, which has "excess living space", and who, in increasing numbers, decides to deal with providing accommodation services, especially of high quality, in supplementary activities. Namely, the needs of today's tourists and even those in the "passing" are increasingly complex, even when it comes to those "existential" (for sleep, food and drink) that in practice, when being met in the hospitality sector, take on the the secondary character (Ružić, D., 2007, 86).

## **8. Conclusion**

The conclusion that can be drawn from the analysis of statistical indicators, conducted in-depth interviews and the questionnaire research is that both the increase and quality of family accommodation are in the function of tourist development of the city of Slavonski Brod. It is also expected that the results of this work help the competent departments in the City of Slavonski Brod and Brod-Posavina County to propose to the representative bodies to adopt measures that will be in function of improving the business conditions for owners of family accommodation, but also in the function of improving hospitality and tourism activities at the local or regional level, at all.

In addition, it is important to note that the Ministry of Tourism and Sports, within the framework of the Methodology and mandatory instructions for drafting annual work programmes and reports on the implementation of annual work programmes of tourist boards, within the policy area "tourist products developing", anticipates the realization of the project "systems of tourist product quality labeling", and as a possible project task within this project - "labeling of family accommodation" (Ministry of Tourism and Sports, 2020, 12). Therefore, the Tourist Board of the city of Slavonski Brod, in accordance with the planned activities of its Work Program for 2022, started the realization of this project in cooperation with the Faculty of Economics & Business of the University of Zagreb.

Regarding examples of good practice at the Croatian level concerning labeling, it should be mentioned the project of quality labeling in family accommodation, which, in cooperation with the local tourist boards, was initiated by the Tourist Board of the Zadar county (Tourist Board of the Zadar county, 2015, 3). This is the project whose implementation has resulted in the establishment of a group of standards and benchmarks that the owners of family accommodation facilities from the Zadar county need to meet in order to be assigned a quality label, all with the aim of better positioning in tourist markets. According to the program whose component is the above project, the quality label, which has been ultimately awarded to those private renters in the Zadar county who have met the conditions, represents in fact an upgrade of the visual identity (kind of sub-brand) of the Tourist Board of the Zadar county.

Regarding the city of Slavonski Brod, the application of the tourist visual identity started back in 2011. The project was implemented in cooperation with the Faculty of Graphic Arts of the University of Zagreb (Lončarić, B., 2014, 230), and it was based on the branding strategy as a component of the Action Plan for the Tourist Development of the city of Slavonski Brod (Institute for Tourism, 2011, 57). The realization of the labeling project for family accommodation in Slavonski Brod is a continuation of the branding project then started and resulted in creating the tourist logo and slogan for the city of Slavonski Brod as a tourist destination.

The project "labeling of family accommodation in Slavonski Brod" itself will be realized over a two-year period and will cover five basic sections. Within the framework of the first section, a basic analysis will be carried out and the state of family accommodation in the city will be assessed. Within the second section, the scope for managing the quality of family accommodation will be defined in such a way as to determine the objectives, processes, standards and criteria, and within the third section, the criteria, protocols and procedures for creating the label will be established. Defining the name of the quality label and designing the appropriate visual identity and creating an accompanying verbal identity are activities of the fourth section, while within the fifth section, promotional campaigns for the adopted quality labels will be prepared and then the labels implemented.

## REFERENCES

- Anderek, K.L., Nyaupane, G.P. (2011): *Exploring the nature of tourism and quality of life perceptions among residents*, Journal of Travel Research, Vol.50, No.3, pp. 248-260
- Brodsko-posavska županija (2020): *Analiza razvoja Brodsko-posavske županije*, Slavonski Brod
- Buhalis, D. (2000): *Marketing the competitive destination of the future*, Tourism management, Vol. 21, Issue 1, pp. 101
- Đurašević, S. (2015): *Perspektiva destinacijskog menadžmenta, Crna Gora*, Turizam, Zagreb, Vol. 63, No. 1, pp. 79-93
- Grad Slavonski Brod (2014): *Strategija razvoja urbanog područja Slavanskog Broda do 2020.*, Slavonski Brod
- Hitrec, T. (1995): *Turistička destinacija: pojam, razvitak, koncept*, Turizam, Zagreb, Vol. 43, No. 3, 4, pp.43-51
- Hrvatska gospodarska komora Županijska komora Slavonski Brod (2021): *Gospodarski profil Brodsko-posavske županije*, [www.hgk.hr/zupanijska-komora-slavonski-brod/gospodarski-profil-brodsko-posavske-zupanije](http://www.hgk.hr/zupanijska-komora-slavonski-brod/gospodarski-profil-brodsko-posavske-zupanije), Slavonski Brod (accessed 25 February 2022)
- Hrvatska turistička zajednica (2021): *eVisitor sustav*, [www.evisitor.hr](http://www.evisitor.hr), Zagreb (accessed 1 March 2022)
- Hrvatska turistička zajednica (2019): *Informacija o statističkim pokazateljima turističkog prometa – siječanj-prosinac 2018.*, Zagreb
- Hrvatska turistička zajednica (2020): *Informacija o statističkim pokazateljima turističkog prometa – siječanj-prosinac 2019.*, Zagreb
- Hrvatska turistička zajednica (2021): *Informacija o statističkim pokazateljima turističkog prometa – siječanj-prosinac 2020.*, Zagreb
- Hrvatska turistička zajednica (2020): *Smještajni kapaciteti hrvatskog turizma s analizom popunjenosti po vrstama smještajnih kapaciteta*, Zagreb
- Hulten, S., Perret, S.(2019): *The Serviced Apartment Sector in Europe: Poised to Outperform*, [www.hvs.com/article/8548-The-Serviced-Apartment-Sector-in-Europe-Poised-to-Outperform](http://www.hvs.com/article/8548-The-Serviced-Apartment-Sector-in-Europe-Poised-to-Outperform) (accessed 25 February 2022)
- Institut za turizam (2020): *Akcijski plan prilagodbe turističkog upravljanja u kriznoj situaciji izazvanoj pandemijom C-19*, Zagreb
- Institut za turizam (2011): *Akcijski plan turističkog razvoja grada Slavanskog Broda*, Zagreb
- Institut za turizam (2022): *Analiza stanja i mogućnosti udruživanja Turističke zajednice*

**grada Slavonskog Broda s turističkim zajednicama i jedinicama lokalne samopurave u okruženju, Zagreb**

Institut za turizam (2019): *Marketinški plan turizma Brodsko-posavske županije*, Zagreb

Institut za turizam (2019): *Stavovi lokalnog stanovništva prema razvoju turizma u Hrvatskoj u 2018.*

Institut za turizam (2019): *Strateški marketinški plan turizma Slavonije s planom brendiranja za razdoblje 2019.-2025.*, Zagreb

Institut za turizam (2020): *Tomas – stavovi i potrošnja turista u Hrvatskoj 2019.*, Zagreb

Institut za turizam (2010): *Turistički master plan za grad Slavonski Brod*, Zagreb

Kotler, P. (1988): *Upravljanje marketingom I*, Informator, Zagreb

Lee, T.H. (2013): *Influence analysis of community resident support for sustainable tourism development*, Tourism Management, Vol. 34, pp. 37-46

Lončarić, B. (2014): *Branding cities as tourist destinations; the case of Slavonski Brod*, in: International Congress: Tourism and Hospitality Industry 2014, Proceedings, Fakultet za menadžment u turizmu i ugostiteljstvu Opatija Sveučilište u Rijeci, Opatija, pp. 229-244

Lončarić, B. (2012): *Marketing u turizmu Slavonije i Baranje, doktorska disertacija*, Ekonomski fakultet Osijek Sveučilište J. J. Strossmayera u Osijeku, Osijek

Magaš, D., Vodeb, K., Zadel, Z. (2018): *Menadžment turističke organizacije i destinacije*, Fakultet za menadžment u turizmu i ugostiteljstvu Opatija Sveučilište u Rijeci, Opatija

Marković, S., Marković, Z. (1972): *Ekonomika turizma*, Školska knjiga, Zagreb

Medlik, S., Ingram, H.(2002): *Hotelsko poslovanje*, Golden marketing, Zagreb

Mikac, R., Kravaršćan, K. (2021): *Croatian Tourism Sector and Crisis Management – A Case Study Related to the COVID-19 Pandemic*, Turizam, Zagreb, Vol. 69, No. 4, pp. 611-629

Ministarstvo turizma (2013): *Nacionalni program unapređenja obiteljskog smještaja*, Zagreb

Ministarstvo turizma (2018): *Turizam u brojkama 2017.*, Zagreb

Ministarstvo turizma i sporta (2020): *Metodologija i obvezatne upute za izradu godišnjih programa rada i izvješće o izvršenju godišnjih programa rada*, Zagreb

Nejati, M., Mohamed, B., Omar, S.I., (2014): *Stavovi lokalnog stanovništva o utjecajima turizma i važnosti njihova angažmana: komparativna studija dvaju otoka u Maleziji*, Turizam, Zagreb, Vol. 62, No. 2, pp. 143-154

Ružić, D. (2007): *Marketing u turističkom ugostiteljstvu*, Ekonomski fakultet Osijek Sveučilište J. J. Strossmayera u Osijeku, Osijek

Soldić Frleta, D., Smolčić Jurdana, D. (2020): *Uvid u razlike u stavovima stanovnika: učinci turizma i podrška budućem razvoju*, Turizam, Zagreb, Vol. 68, No. 2, pp. 170-179

Travis, A.S. (1989): *Tourism destination area development: from theory to practice*, Tourism Market Handbook, ed., by S.F. Witt, L. Moutinho, Prentice Hall, New York

Turistička zajednica Zadarske županije (2015): *Projekt označavanja (labelinga) u obiteljskom smještaju*, Zadar, <https://www.zadar.hr/datastore/filestore/10/projekt-oznacavanja-kvalitete-u-obicajskom-smjestaju.pdf> (accessed 4 February 2022)

*Zakon o turističkim zajednicama i promicanju hrvatskog turizma, N.N. 52/19; 42/20.*

*A scientific paper*

**Suzana Marković, Ph. D., Full Professor with tenure**

University of Rijeka, Faculty of Tourism and Hospitality Management

E-mail: suzanam@fthm.hr

**Matina Gjurašić, Ph. D.**

Institute for Tourism

E-mail: matina.gjurasic@iztztg.hr

**Vedran Zubović, M. Sc.**

University of Rijeka, Faculty of Tourism and Hospitality Management

E-mail: vedranz@fthm.hr

## **FROM REALITY TO VIRTUALITY EXPERIENCE: CONCEPT AND APPLICATION IN HOTEL INDUSTRY**

### **ABSTRACT**

*Virtual Reality (VR) is an emerging technology in the hotel industry and there is limited research on what factors lead guests to choose a hotel presented by VR. This conceptual paper takes an in-depth look at the principles of using Virtuality Experience in the hotel industry, highlighting virtual experiences from past implementations as well as various cases being implemented in hotels today. The goal is to examine the impact of VR on the overall visitor experience in the hotel industry. This paper provides a systematic review of the VR literature in the hotel industry to identify the theoretical foundations and key themes by combining complementary approaches of bibliometric analysis and content analysis. Related publications through Scopus and WoS database are selected to provide a comprehensive overview of VR and guest experience. Findings of the paper include recognizing opportunities for experience design in hotel industry. By better understanding these concepts and integrating technological (embodiment), psychological (presence), and behavioural (interactivity) perspectives the application of virtuality experiences in the hotel industry can be classified. On a conceptual level, this requires a complete rethink of the way the hotel industry uses technology, engages, and revises its services to remain competitive through the implementation of VR.*

**Key words:** *Virtual Reality, Virtual Experience, Hotel Industry, Bibliometric Analysis.*

### **1. Introduction**

Technological development is changing the way guests experience the hotel service. New technologies like VR are changing the hotelier's approach to creating an experience before, during and after the stay (Loureiro et al. 2020, 1). The term VR refers to the use of a computer-generated 3D environment that allows the user to interact by simulating physical presence through the combination of 5 senses (Guttentag, 2010, 638). The concept of VR is described as a sense of physical presence in an imaginary space with visual and audio effects (Diemer et al., 2015, 2; Sheridan, 1992, 1).



Recent reports show that in 2020, consumer and enterprise VR revenue amounted to 3.89 billion U.S. dollars and in 2021, VR revenues reached more than 4.84 billion U.S. dollars (Statista, 2022). VR applications are not extensively used in hotel industry today. Hotel guests benefit from technology by receiving more detailed information about possible activities at their destination, and by using virtual travel guides (Özkul, E., & Kumlu, S. T. 2019, 108). The use of VR in hotel industry can be observed separately during travel experience and after travel experience. In hotel industry VR is mostly used as an innovative way to provide information and deliver authentic experiences (Beck, Rainoldi & Egger, 2019, 587), to exam the effectiveness of advertising (Leung et al. 2019, 1), and improve the hotel management information systems, platforms and databases (Xueyan, 2021, 113).

There is still a lack of previous research examining guest experiences in the hotel industry during and after the application of virtual technologies in the use of the hotel service. The aim of this research is to identify and better understand how the VR experience can influence a better hotel experience by identifying: (1) hospitality industry and contexts which VR is emerged in creating guest experience; (2) the forms of VR which influence the creation of guest experience.

## **2. Virtual reality**

Recent research defines VR as the technology that uses a computer-generated 3D environment, often referred to as a virtual environment (Pestek & Sarvan, 2020, 246). The history of the development of VR dates back to 1965, when Ivan Sutherland introduced the "ultimate display," a head-worn device that would serve as a "window into a virtual world" proposing a concept of an artificial world that include interactive graphics, taste, smell and sound. According to the Franklin Institute (2022), the term "virtual reality" was first used in the mid-1980s when VPL Research founder Jaron Lanier began developing VR equipment such as goggles and gloves. Lourero et al. (2020) noted that the development of VR occurred in 1994, when interactive three-dimensional (3D) graphics appeared on the Internet using the VRLM - Virtual Reality Modeling Language (p.2). In the scientific literature, VR has been studied for more then 20 years, and one of the first studies by Hobson and Williams (1995) described VR as a technological achievement with the greatest potential at the end of the twentieth century (p. 425).

In the hospitality industry, VR is becoming increasingly popular as the primary promotional material and the incorporation of 3 D virtual components into the promotional mix. A prime example of this is Marriott Hotels. In collaboration with Oscar-winning creative studio Framestore, they developed "The Teleporter" system, which allow to see 360-degree images of London and Hawaii and feel the wind, heat, and fog of the destinations (Hospitalitytech.com, 2020). Marriott was also the first hotel company to offer guests a VR room experience. Slevitch et al. (2020) stated that following the development of VR in the hotel industry, it was also applied to planning, management, entertainment, education, accessibility and historic preservation (p. 2).

Most concepts of virtual experience relate to emotion, service satisfaction, and willingness to pay (Lee et al., 2020, 1). There are three levels that need to be covered: VR experience satisfaction, VR experience loyalty, and VR experience advocacy (Wu et al., 2020, 481). VR experience satisfaction, loyalty and advocacy are described as dimensions that allow visitors to experience basic VR (Tussyadiah et.al., 2018, 146). De Gauquier et al. (2018) determine

cognitive, affective, sensory, attitudinal, and behavioural dimensions in describing the VR experience (p.241).

VR offers innovative ways to engage more travellers and improve the service experience. Customer experience is an integral part of overall satisfaction, not divided by the desire to experience the same service again or make a good recommendation (Nobar & Rostamzadeh, 2018, 423). In essence, VR allows consumers to learn about and experience products and places in novel ways, while hoteliers remain competitive by offering enriched and unique experiences (Neuhofer et al. 2014, 341; Tussyadiah 2014, 143). Hospitality and technology research defines enhanced guest experience as one of the key benefits of hotel technology applications. Customer experience management has been developed with a focus on operations and processes that address the needs of individual customers. Travelers mostly make purchase decisions based on reviews and presentations of the hotel product on the website. Therefore, room ads and other services are one of the most important tools to attract guests and make hotel selection decisions.

### **3. Virtual reality experience in hotel industry**

The guest experience in the hotel industry is the overall impression of the sum of interactions with a brand's products and services. Virtual experience in hospitality refers to the simulation of activities through specialized digital technologies that provides a positive experience in a searchable and changeable form of hotel services. The significant role of VR in tourism is related to meeting consumer expectations by providing an authentic pre-trip experience (McLean & Barhorst, 2021, 1). The application of VR in the hospitality industry provides the opportunity to visualize the environment where products are not tangible, which guests cannot test in advance. For hotel service consumer VR can cater specifically by allowing the user to experience visual, audio, and most importantly, spatial aspects of the product (Law et al. 2014, 5). The challenge of VR is to make the world look, act, sound and feel real with the help of the user's five senses interacting with an input device (Ristova et al. 2019, 79; Yung & Khoo-Lattimore, 2019, 2). VR technology can create an intense, immersive user experience where hotel providers should use this technological advantage for attractive presentation of their offers (Israel, 2019, 17). One of the biggest advantages that VR provides to hoteliers are the opportunity to see the hotel product from a guest's perspective. VR is being adopted and implemented in diverse areas such as marketing and branding (Shin, 2018, 65, Bogicevic et al., 2021, 5), entertainment, accessibility (Merckx & Nawijn, 2021, 1) destination attractiveness and attitude toward a destination (Gibson & O'Rawe, 2017, 97), consumer perception and behaviour (Surovaya, 2020, 5). The potential of VR technologies in meeting the tourists' needs is large, starting with booking process and after with experiencing a virtual recreation or experiencing nearby attractions. To understand better the hospitality innovations in creating the VR experience there are trends to be taken in consideration like using robots with artificially intelligent chatbots, virtual booking process, voice control systems, smart hotel systems called Internet of Things (IoT) or virtual travel experiences.

Lyu et al. (2021) point out that VR ads generate a better position in visibility and interactivity among customers, which has a positive impact on the perception of the product, attitude towards advertising, attitude towards the brand and purchase intention (p.421). In addition, they stated that women are more influenced by VR compared to men in the virtual environment. Hotel companies' efforts are more focused on the way they offer their services. Modern tourists gravitate toward offerings where they are confident that the experiences are unique, high quality, and worth the price. VR based offerings can provide a hedonic (e.g.,

fun), functional (e.g., learning), or social (e.g., community) visitor experience (Itani & Hollebeek, 2021, 3). VR is considered as valuable in creating better services experiences for customers. To better understand the visitor experience of VR, immersion, interaction, usability, and illusion should be used as definitional features to measure the VR experience (Perez-Marcos, 2018, 2). Immersion as the consumer's involvement during consumption, interaction as the visual exploration of the space, usability as the effectiveness, and illusion as perceptions. Chandra (2014) identifies sensory experience, emotional experience and social experience as categories simultaneously related to experience satisfaction (p.10). Wu et al. (2019) identifies interaction as a driver of user VR satisfaction and that illusion is a predictor of visitor satisfaction in a VR context (p. 494). In general, the importance of using VR in the hospitality industry is very high, as it allows users to experience hotel services in a different environment through VR stimulations (Han, et. al., 2014, 478).

#### 4. Methodology

The systematic literature review (SLR) and bibliometric analysis have been applied for analysing research work related to VR in hospitality industry. SLR is a structured methodology for scanning knowledge resources and building the bibliography (Snyder, 2019, 334; Xiao & Watson, 2017, 94; Sahebalzamani & Bertella, 2018, 3). Bibliometrics is a set of methods for investigating the role of the researcher and to explore the role and impact of the researcher and publication (Andersen, 2018, 148).

SLR was conducted with the aim of analysing the distribution according to the year of publication, the purpose of the research, the type of research, the sample, the cultural context, and the key outcomes. The SLR was conducted between December 2021 and March 2022 from Scopus and WoS databases. Relevant keywords were used in the search for titles, abstracts, and text content (e.g., virtual reality / VR, virtual reality / VR experience), and each of the terms related to the hospitality industry. Articles from 2010 to March 2022 were retrieved. Conference papers, books, book reviews, editor prefaces and research notes were excluded. The identification process resulted with 89 journal papers (on March 1, 2022). To identify VR in the hospitality industry during article identification, a summary of each article was read. Articles identified as relevant were read in full and the final decision was made to include the article in the analysis based on whether it was relevant to the topic adopted. A total of 28 articles published in journals constituted the sample which in the next step are grouped into categories of empirical papers by type of research (quantitative research, qualitative research or mixed method research) and non-empirical papers (review and conceptual papers).

The literature selection for bibliometric analysis included scanning, curating, and reporting the sample. The bibliographic coupling, a citation and co-word analysis, and a co-authorship analysis was used by the Bibliometrix software package. The database was downloaded in Bibtext format, and for eliminating duplicates and creating a unified file the R Studio software version 3,0 was used. A total of six journals in hospitality and tourism are rated and these journals are: *Annals of Tourism Research*, *Tourism Review*, *Journal of Hospitality Management*, *Journal of Travel Research*, *Tourism Management*, and *International Journal of Contemporary Hospitality Management*.

## 5. Findings

The final database consists of 28 articles from 2010 to 2022 (March 1, 2022) published by 81 authors in 6 different journals. Most of the articles are multi authored, only 2% are single authored papers, resulting in a collaboration index of 3.04 authors per document. The total number of keywords (author's keywords: 133) is higher than the total number of phrases that frequently appear in the title of the article reference (keyword plus - 30). Average years from publication is 2,18. According to statement of Aksnes et al. (2019, 2) in many humanities disciplines it takes approximately 10 years to achieve one citation of an average paper, while papers in the biomedical sciences achieve 40 citations in the same period, so it can be concluded that the selected articles are relevant for the field with 40.86 - Average citations for documents.

From the literature review, it can be concluded that VR in the hotel industry emerged from the general trend of technological improvement from 1995. Over the past decade, VR in the hospitality industry has helped to reduce costs, change the way businesses interact with their guests, improve operational performance, and enhance services and customer experience (Guttentag, 2010, 644). Both guests and hotel operators can benefit from improved guest communication, bookings, and service orders.

A virtual tourist experience is a complex phenomenon that requires an in-depth understanding of its multiple relationships. From the literature review, it can be concluded that VR is present in the hospitality industry in the last 10 years in terms of customer experience. VR represents an alternative type of tourism experience. One of the key elements of the virtual experience in the hospitality industry is mental imagery as the first way for travellers to become an active member of the VR world. Immersion, interaction, and illusion are positively related to satisfaction with VR experiences. Authentic experiences with hotel-related VR activities were found to have a significant impact on potential tourists' cognitive and affective responses. Full VR stimulation of the five senses is still limited in the hotel industry, but in the near future, experts agree, tourists may eventually be able to experience the destination without physically being there. VR and AR are used to remember the last visit and to interact with other members. Companies and researchers are working on using VR and AR as wearable devices and developing technology that would one day allow VR and AR devices to be reduced to small contact lenses. Hospitality 5.0 will enable customization and personalization of services through VR and the development of smart hotels could drive the use of VR in the hospitality industry through features such as usefulness and ease of use. All researchers stated that VR applications in hospitality industry generate richer guest experience.

Most of analysed research on virtual experience in the hospitality industry has been conducted with university students. Studies do not address details about virtual students' experiences in hotels when describing the sample. Of the 28 articles, only 5 (1 of which is a mix) were conducted with travellers and none on hotel guests. Most of the articles focus on marketing and branding, and almost all the articles are concerned with researching the overall customer experience in the hotel industry without addressing the different types of services offered in the hotel. The major findings on research development of VR concept are summarized in below Table 1.

Table 1: Research development of VR concept

Source	Purpose	Research/ Sample/Profile/ Cultural context	Key outcome
El-Said, O. Aziz, H. (2022)	To identify factors for user acceptance of VR in times of crisis	<ul style="list-style-type: none"> <li>Quantitative</li> <li>N= 401</li> <li>Students and university staff</li> <li>Sultanate of Oman and Germany</li> </ul>	Perceived ease of use (PEOU) factors have a significant impact on the acceptance of VR in times of crisis
Kim, H., So, K. K. F. (2022)	A systematic review of the evolution of customer experience in hotels and/or tourism industry in general	<ul style="list-style-type: none"> <li>Qualitative</li> <li>N= 1.248</li> <li>Articles 1998 -2021</li> <li>13 top journals of hospitality and tourism</li> </ul>	Researches of customer experience has developed from behavioural intentions, perceived value, and loyalty
Alyahya, M. McLean, G. (2021)	The functions of VR in relation to tourism customers' attitudes towards the destination and their intention to visit it	<ul style="list-style-type: none"> <li>Quantitative</li> <li>N= 204</li> <li>Lab-based participants/travellers</li> <li>UK</li> </ul>	VR experience contribute to positive consumer attitude when comparing to a website experience
Bogicevic, V., Liu, S.Q., Seo, S., Kandampully, J., Rudd, N.A. (2021)	How VR can be applied to generate integrated guest experiences before to arrival	<ul style="list-style-type: none"> <li>Quantitative</li> <li>N= 279</li> <li>Students</li> <li>USA</li> </ul>	VR can be applied to create better service images then the imagery resulting from 360° web-based tours and pictures
Bonfanti, A., Vigolo, V., Yfantidou, G. (2021)	To identify factors managers are using for designing safe customer experiences	<ul style="list-style-type: none"> <li>Qualitative</li> <li>N= 14</li> <li>Hotel managers</li> </ul>	Fast and efficient service delivery by digital innovations improve the overall hotel experience
Eletxigerra, A., Barrutia, J.M. Echebarria, C. (2021)	To propose an essential model of contribution processes affecting customer value	<ul style="list-style-type: none"> <li>Quantitative</li> <li>N= 98</li> <li>Residents</li> <li>Spain and France</li> </ul>	VR can influence tourist co-creation to intensify thoughts and memories of past and future travel experiences

Source	Purpose	Research/ Sample/Profile/ Cultural context	Key outcome
Itani, O. S., Hollebeek, L. D. (2021)	To determine intention factors of VR attraction site tours during and after Covid-19 pandemic	<ul style="list-style-type: none"> <li>Quantitative</li> <li>N= 174</li> <li>Travelers</li> <li>USA</li> </ul>	Social distancing has no effect on potential visitors' intent to use VR vs. in-person tours post-the pandemic
Li, M., Yin, D., Qiu, H., Bai, B. (2021)	To identify factors that effects high technology (artificial intelligence) infused service and the belonging customer service outcomes	<ul style="list-style-type: none"> <li>Qualitative</li> <li>N= 107</li> <li>Articles 2017 -2019</li> <li>Web of Science, Taylor &amp; Francis, ScienceDirect, and Emerald</li> </ul>	Intelligent recommendations or VR strengthens customers to choose member hotels
McLean, G., Barhorst, J. B. (2021)	To determine consumers' attitudes toward VR in tourism	<ul style="list-style-type: none"> <li>Quantitative</li> <li>N= 204</li> <li>Travelers</li> <li>UK</li> </ul>	VR enable consumers to develop clearer and more involved mental imagery experiencing the hotel
Merkx, C., Nawijn, J. (2021)	To explore the sense of isolation by implementing VR in tourism	<ul style="list-style-type: none"> <li>Qualitative</li> <li>N= 32; 39</li> <li>32 blogs and 39 reviews of VR experiences</li> </ul>	VR experience in tourism reflects a sense of isolation
Orús, C., Ibáñez-Sánchez, S., Flavián, C. (2021)	To identify factors influencing previous experiences of users in the hotel industry based on physical or digital content	<ul style="list-style-type: none"> <li>Quantitative</li> <li>N= 206</li> <li>Students</li> <li>Spain</li> </ul>	VR presents a more effective experience than the other contents
Pillai, S. G., Haldorai, K., Seo, W. S., Kim, W. G. (2021)	To understand how Hospitality 5.0 mediate the synergy between humans and machines	<ul style="list-style-type: none"> <li>Qualitative</li> <li>N= 14</li> <li>Articles 2010 -2021</li> </ul>	Hospitality 5.0 will allow for customization and personalization of services

Source	Purpose	Research/ Sample/Profile/ Cultural context	Key outcome
Yang, H., Song, H., Cheung, C., Guan, J. (2021)	To determine visiting intentions through Technology readiness (TR) and technology amenities (TA)	<ul style="list-style-type: none"> <li>• Mix</li> <li>• N= 8; 648</li> <li>• 8 interviewees with smart hotel experience and</li> <li>• 648 travellers</li> <li>• China</li> </ul>	Characteristics of TR and TA directs the development of smart hotels
Ying, T., Tang, J., Ye, S., Tan, X., Wei, W. (2021)	To determine the effects of VR commercials and telepresence for tourists' (re)visit intentions	<ul style="list-style-type: none"> <li>• Quantitative</li> <li>• N= 254</li> <li>• Students</li> <li>• China</li> </ul>	VR commercials displaying of telepresence perform a stronger (re)visit intention
El-Manstrly, D., Ali, F., Steedman, C. (2020)	To identify the influence of relational and personal factors on virtual travel community (VTC) members' stickiness behaviour	<ul style="list-style-type: none"> <li>• Quantitative</li> <li>• N= 431</li> <li>• VTC members</li> <li>• UK</li> </ul>	Behavioural intentions such as purchase, participation, promotion, participation are distinct from site stickiness
Jeong, M., Shin, H. H. (2020)	To measure the effects of STT (smart tourism technologies) utilized on travel experience and future revisit intention	<ul style="list-style-type: none"> <li>• Quantitative</li> <li>• N= 155</li> <li>• Students</li> <li>• USA</li> </ul>	Using STT secure memorable tourism travel experience
Kim, M. J., Lee, C. K., Jung, T. (2020)	To identify what makes consumers visit a tourist VR destination	<ul style="list-style-type: none"> <li>• Quantitative</li> <li>• N= 1.756</li> <li>• VR tourist consumers</li> <li>• Korea</li> </ul>	VR significantly impact to cognitive and affective responses of potential tourists enabling authentic experience
Lee, M., Lee, S. A., Jeong, M., Oh, H. (2020)	To identify customers' psychological acceptance and impact of VR	<ul style="list-style-type: none"> <li>• Quantitative</li> <li>• N= 247</li> <li>• VR users' browsers</li> <li>• USA</li> </ul>	VR enable enriched and immersed tourist experience

Source	Purpose	Research/ Sample/Profile/ Cultural context	Key outcome
Loureiro, S. M. C., Guerreiro, J., Ali, F. (2020)	To generate a review of the VR and AR-related tourism studies network	<ul style="list-style-type: none"> <li>• Qualitative</li> <li>• N= 56; 325</li> <li>• 56 journal papers and 325 conference proceedings related to VR</li> <li>• WoS &amp; Scopus</li> </ul>	In the near future, tourists could have the option to experience the destination not being physically there. At the end of the visit, VR and AR can also be used to remember the last visit and to interact with other members
Zeng, G., Cao, X., Lin, Z., Xiao, S. H. (2020)	To identify the role and effects of VR on booking process	<ul style="list-style-type: none"> <li>• Quantitative</li> <li>• N= 244</li> <li>• Students</li> <li>• China</li> </ul>	Design of VR content generate richer experience
Beck, J., Rainoldi, M., Egger, R. (2019)	To illustrate a comprehensive review of VR in tourism industry	<ul style="list-style-type: none"> <li>• Qualitative</li> <li>• N= 27</li> <li>• Articles 1994 -2018</li> <li>• Science Direct &amp; Google Scholar</li> </ul>	VR in tourism is limited to vision and hearing when using the five senses
Wu, H.C., Ai, C.H., Cheng, C.C. (2019)	To identify relationships between immersion, interaction, usability and illusion to VR experience	<ul style="list-style-type: none"> <li>• Quantitative</li> <li>• N= 490</li> <li>• visitors who tried 360 VR travel video game</li> <li>• Taiwan</li> </ul>	Immersion, interaction, illusion, VR identity, VR affect and VR familiarity generate positive experience
Tussyadiah, I.P., Wang, D., Jung, T.H. Tom Dieck, M.C. (2018)	To identify the effects of VR experience on attitudes and behavioural intentions	<ul style="list-style-type: none"> <li>• Quantitative</li> <li>• N= 202; 724</li> <li>• 202 students, 724 festival goers</li> <li>• UK</li> </ul>	Increasing effects of VR performances leads to better visit intention
Tavakoli R. Mura, P. (2015)	To identify tourists' patterns of behaviour travelling in Second Life - virtual internet-based environment	<ul style="list-style-type: none"> <li>• Qualitative</li> <li>• N= 10</li> <li>• Students</li> <li>• Malaysia</li> </ul>	VR enables the possibility to experience moments of perceived freedom



Source	Purpose	Research/ Sample/Profile/ Cultural context	Key outcome
Lee, S. A., Jeong, M. (2014)	How online-offline brand image affects to online customer experience and builds brand trust	<ul style="list-style-type: none"> <li>• Quantitative</li> <li>• N= 322</li> <li>• Hotel website browsers</li> <li>• USA</li> </ul>	VR contents of self-concept, image congruity, and value congruity leads to better visit intention
Huang, Y.-C., Backman, S.J., Backman, K.F., Moore, D. (2013)	To identify a review by examining the VR and behavioural intentions of virtual tourists	<ul style="list-style-type: none"> <li>• Quantitative</li> <li>• N= 198</li> <li>• Students</li> <li>• USA and Canada</li> </ul>	Using 3D virtual worlds generate of an increasing interest in intention visit
Guttentag, D. A. (2010)	To examine how VR can substitute the physical tourism experiences	<ul style="list-style-type: none"> <li>• Qualitative</li> <li>• Conceptual framework</li> </ul>	VR can be considered as substitute to physical experience on heritage preservation

Source: Authors

As stated in Table 1., VR generate richer experience and enable consumers to develop clearer and more involved mental imagery. Research development of VR concept in hotel industry rely on identification of factors for user acceptance of VR, examination how VR can substitute the physical tourism experiences and on identifying what makes consumers visit a tourist VR destination. The journal’s productivity analysis was based on the ranking of the 6 best journals. One journal stands out in terms of number of articles: *International Journal of Hospitality Management* with 12 articles, while others have less than 10 articles each. *Journal of Travel Research* counts 7 articles, *Tourism Management* 4 articles, *Annals of Tourism Research* 2 articles, *International Journal of Contemporary Hospitality Management* 2 articles, and *Tourism Review* 1 article.

Analysis of the literature has shown that the USA and China are the countries with the largest contribution of VR in the hotel industry. An intercountry collaboration cooperation also exists between China and the UK. The most prominently cited publication is the article authored by Flavián, C., Ibáñez-Sánchez, S., Orús, C. entitled “The impact of virtual, augmented and mixed reality technologies on the customer experience” published in *International Journal of Hospitality Management*, 2019., Vol. 40. It has received a total of 218 citations. There are currently 7 articles with more than 150 citations, 6 articles from 100-150 citations, 19 of them have 50-100 citation and others are with less than 50 citations. Jeong M. and Ali F are most local cited authors when comparing individual authors contribution to a published set of paper.

The result of world cloud analysis reveals that tourist behaviour is most frequently used terms by the researchers following VR and Virtual experience keywords. A visual presentation of word data where the size of a particular word can visualize the importance and frequency assigned by research are presented in in Figure 1. The size of a word in the word cloud, presents the number of times that word is used in articles. Based on their frequency of occurrence in the literature, related keywords can be arranged as follow: tourist behaviour, VR, tourist destination, tourism management, tourist market, tourism development, consumption behaviour, travel behaviour.

Figure 1: World-cloud analysis of Virtual experience

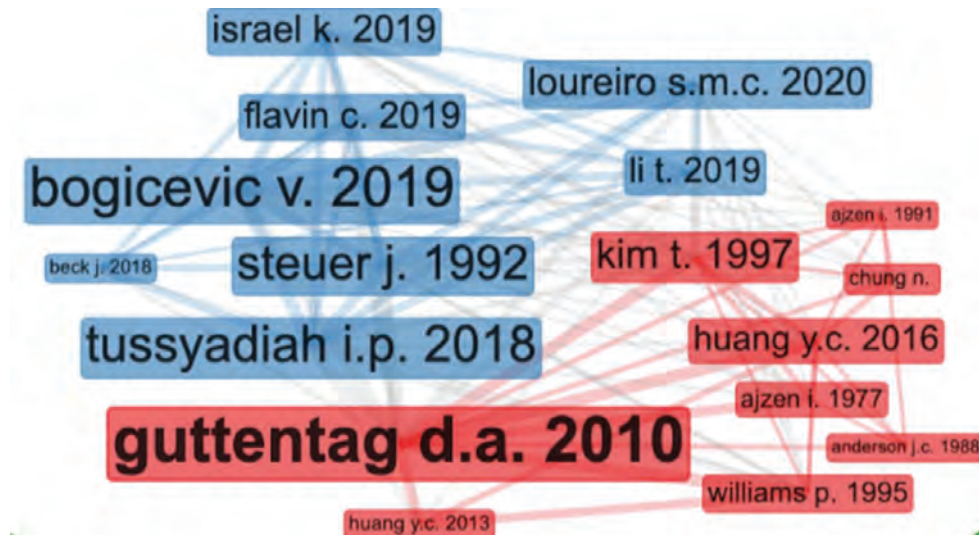


Source: Authors

The co-citation network analysis was used to examine the effects of co-citation proximity on the quality of co-citation analysis. Also compared was the frequency of citations by two or more authors in the third paper published in a similar period. The most cited authors in this

field of research have the biggest size of the frame. Moreover, the relative distance in the map indicates the frequency that the third common paper has cited other two authors. In addition, two different colours in the map (red and blue), present two clusters.

**Figure 2:** Co-citation Network



Source: Authors

For this research topic, Guttentag (2010) and Bogicevic, Liu, Seo, Kandampully & Rudd, are cited more frequently together, while Kim and So, Huang, Backman and Moore are co-cited together as presented in Figure 2. Regarding the VR in the hotel industry, the present study found that authors generally more frequently co-cite articles that include a wide variety of social interactions and mental processes that occur in VR travel environments.

## 6. Conclusion

VR techniques in hospitality industry are creating valuable opportunities for creating guest experience. Such tool is mostly used in planning, marketing and managing tourist experiences. VR is becoming a popular subject of interest with technology evolution allowing the process automation and promotion in service providing.

This paper examines a conceptual framework of determinants and dimensions of VR related user behaviour and experience in hospitality industry. The paper acknowledges that VR is focused on the challenges of technological characteristics, customers' readiness, and practical effectiveness of the business (Marković, Raspor Janković, Zubović, 2020, 163). Despite substantial literature on VR in the field of tourism, a systematic literature review concluded that researchers in the field of guest experience in hotel industry rely on limited concepts and indicators. The main contribution of this paper is to present research trend on VR experience in hotel industry and to identify the most cited journals.

Previous research in the hotel industry has shown that VR is related to guest experience in the context of marketing tools that allow hotels to reach new guests and keep up with new technologies. As an extension of marketing, the conceptualization of VR in the hotel industry has also been presented through the booking management and development system process. Elements of entertainment, accessibility and attractiveness of a destination or a particular product where VR helps to create a new perception and a new way of consumer behaviour are

indispensable. The forms of VR, which have an impact on the guest experience, are mainly described by the virtual booking process, the virtual hotel tour and the interactive hotel facility.

The literature review justifies the growing trend of adopting quantitative methods when designing research. Most of the reviewed articles (17) adopted quantitative research designs, 10 studies attempted to use qualitative and 1 article mixed research designs. The reason for this can be largely attributed to the popularity of advanced software tools for statistical data analysis. The findings identify Guttentag as most cited author since he is the one of the first who conceptualized the topic. Regarding the virtual experience International Journal of Hospitality Management stands out with most published papers about virtual experience in hotel industry. Most of the research work in VR and virtual experience is originating from the China and USA. Both analyses, SLR and bibliometric of the full text of the papers agreed on the topics that VR in hospitality industry presents a new way of designing a hotel product. Also, the results show that virtual experience is described as a new way in which guests look, act, feel and taste their travel and creates stronger memories of the journey.

This research has several limitations. This study attempted to review articles from English-language journals in the Scopus and WoS databases. The inclusion of articles from Web of Science, Emerald, ScienceDirect, EBSCOhost, and ProQuest, as well as publications from major conferences, books, book chapters, and dissertations could enrich future research. There are limitations on additional keywords that could lead to a larger pool of articles. Therefore, due to the purpose of this review, only articles that explore the link between virtual experiences and the hotel industry were considered. Future literature work could aim to find a correlation between VR experience concepts in different hotel businesses and their application in a systematic way.

### Acknowledgements

This paper is the result of the scientific project “*Tourism experience measurement in physical and virtual space*” which is supported by the University of Rijeka (Project No. ZIP-UNIRI-116-1-21).

### REFERENCES

- Aksnes, D., Langfeldt, L., & Wouters, P. (2019): *Citations, Citation Indicators, and Research Quality: An Overview of Basic Concepts and Theories*, Sage Open, pp. 1-17 <https://doi.org/10.1177/2158244019829575>
- Alyahya, M., & McLean, G. (2021): *Examining tourism consumers' attitudes and the role of sensory information in virtual reality experiences of a tourist destination*, Journal of Travel Research, pp. 1-16, <https://doi.org/10.1177/00472875211037745>
- Andersen, J. (2018): *Preaward - Project Preparation. In Research Management: Europe and Beyond*, Elsevier, ISBN: 978-0-12-805059-0, pp. 147-171.
- Beck, J., Rainoldi, M., & Egger, R. (2019): *Virtual reality in tourism: a state-of-the-art review*, Tourism Review, Vol 74, No. 3, pp. 586-612, <https://doi.org/10.1108/TR-03-2017-0049>

- Bogicevic, V., Liu, S. Q., Seo, S., Kandampully, J., & Rudd, N. A. (2021): *Virtual reality is so cool! How technology innovativeness shapes consumer responses to service preview modes*, International Journal of Hospitality Management, Vol. 93, pp. 1-10, <https://doi.org/10.1016/j.ijhm.2020.102806>
- Bonfanti, A., Vigolo, V., & Yfantidou, G. (2021): *The impact of the Covid-19 pandemic on customer experience design: The hotel managers' perspective*, International Journal of Hospitality Management, Vol. 94, pp. 1-11, <https://doi.org/10.1016/j.ijhm.2021.102871>
- Chandra, S. (2014): *The impact of customer experience toward customer satisfaction and loyalty of ciputra world Surabaya*, iBuss Management, Vol. 2 No. 2, pp. 1-11.
- Christodoulidou, N. (2020): *Virtual Reality and Its Possibilities for Hospitality*, <https://hospitalitytech.com/virtual-reality-and-its-possibilities-hospitality>, Accessed 12.3.2022)
- De Gauquier, L., Brengman, M., Willems, K., Van Kerrebroeck, H. (2018): *Leveraging advertising to a higher dimension: Experimental research on the impact of virtual reality on brand personality impressions*, Virtual Reality, Vol. 23, pp. 235-253. <https://doi.org/10.1007/s10055-018-0344-5>
- Diemer, J., Alpers, G.W., Peperkorn, H.M., Shiban, Y. and Mühlberger, A. (2015): *The impact of perception and presence on emotional reactions: a review of research in virtual reality*, Frontiers in Psychology, Vol. 6, pp. 1-9, <https://doi.org/10.3389/fpsyg.2015.00026>
- Eletxigerra, A., Barrutia, J. M., & Echebarria, C. (2021): *Expanding the task-dominant value cocreation narrative: the role of consumer expertise and social and mental processes*, Journal of Travel Research, pp. 1-27, <https://doi.org/10.1177/00472875211017234>
- El-Manstrly, D., Ali, F., & Steedman, C. (2020): *Virtual travel community members' stickiness behaviour: How and when it develops*, International Journal of Hospitality Management, Vol. 88, pp. 1-11, <https://doi.org/10.1016/j.ijhm.2020.102535>
- El-Said, O., & Aziz, H. (2022): *Virtual tours a means to an end: An analysis of virtual tours' role in tourism recovery post COVID-19*, Journal of Travel Research, Vol. 61, No.3, pp. 528-548., <https://doi.org/10.1177/0047287521997567>
- Gibson, A. & O'Rawe, M. (2017): *Virtual Reality as a promotional tool: insights from a consumer travel fair'*, in Jung T. and tom Dieck, M.C. (eds.) Augmented Reality and Virtual Reality - Empowering Human, Place and Business, London: Springer, pp. 93-107.
- Guttentag, D. A. (2010): *Virtual reality: Applications and implications for tourism*, Tourism management, Vol. 31, No. 5, pp. 637-651., <https://doi.org/10.1016/j.tourman.2009.07.003>
- Han, H., Baek, H., Lee, K., & Huh, B. (2014): *Perceived benefits, attitude, image, desire, and intention in virtual golf leisure*, Journal of Hospitality Marketing & Management, Vol 23, No. 5, pp. 465-486., <https://doi.org/10.1080/19368623.2013.813888>
- Hobson, J. S. & Williams, P. (1995): *Virtual reality and tourism: fact or fantasy?* Tourism Management Journal, Vol. 16, No 6, pp. 423-427., [https://doi.org/10.1016/0261-5177\(95\)00050-X](https://doi.org/10.1016/0261-5177(95)00050-X)
- Huang, Y. C., Backman, S. J., Backman, K. F., & Moore, D. (2013): *Exploring user acceptance of 3D virtual worlds in travel and tourism marketing*, Tourism Management, Vol. 36, pp. 490-501., <https://doi.org/10.1016/j.tourman.2012.09.009>

- Israel, K., Tscheulin, D., & Zerres, C. (2019): *Virtual reality in the hotel industry: assessing the acceptance of immersive hotel presentation*, European Journal of Tourism Research, Vol. 21, pp. 5-22.
- Itani, O. S., & Hollebeek, L. D. (2021): *Light at the end of the tunnel: Visitors' virtual reality (versus in-person) attraction site tour-related behavioral intentions during and post-COVID-19*, Tourism Management, Vol. 84, pp. 1-12., <https://doi.org/10.1016/j.tourman.2021.104290>
- Jeong, M., & Shin, H. H. (2020): *Tourists' experiences with smart tourism technology at smart destinations and their behavior intentions*, Journal of Travel Research, Vol. 59, No. 8, pp. 1-14, <https://doi.org/10.1177/0047287519883034>
- Kim, H., & So, K. K. F. (2022): *Two decades of customer experience research in hospitality and tourism: A bibliometric analysis and thematic content analysis*, International Journal of Hospitality Management, Vol. 100, pp. 1-54, <https://doi.org/10.1016/j.ijhm.2021.103082>
- Kim, M. J., Lee, C. K., & Jung, T. (2020): *Exploring consumer behavior in virtual reality tourism using an extended stimulus-organism-response model*, Journal of travel research, Vol. 59, No. 1, pp. 69-89., <https://doi.org/10.1177/0047287518818915>
- Law, R., Buhalis, D., & Cobanoglu, C. (2014): *Progress on information and communication technologies in hospitality and tourism*, International Journal of Contemporary Hospitality Management, Vol. 26, No. 5, pp. 727 – 750., <https://doi.org/10.1108/IJCHM-08-2013-0367>
- Lee, J., Lee, H., & Chung, N. (2020): *The impact of customers' prior online experience on future hotel usage behaviour*, International Journal of Hospitality Management, Vol. 91, pp.1 – 9., <https://doi.org/10.1016/j.ijhm.2020.102669>
- Lee, S. A., & Jeong, M. (2014): *Enhancing online brand experiences: An application of congruity theory*, International Journal of Hospitality Management, Vol. 40, pp. 49-58. <https://doi.org/10.1016/j.ijhm.2014.03.008>
- Leung, X. Y., Lyu, J., & Bai, B. (2019): *A fad or the future? Examining the effectiveness of virtual reality advertising in the hotel industry*, International Journal of Hospitality Management, Vol 88, pp. 1-10., <https://doi.org/10.1016/j.ijhm.2019.102391>
- Li, M., Yin, D., Qiu, H., & Bai, B. (2021): *A systematic review of AI technology-based service encounters: Implications for hospitality and tourism operations*, International Journal of Hospitality Management, Vol. 95, pp. 1-10., <https://doi.org/10.1016/j.ijhm.2021.102930>
- Loureiro, S. M. C., Guerreiro, J., & Ali, F. (2020): *20 years of research on virtual reality and augmented reality in tourism context: A text-mining approach*, Tourism management, Vol 77, pp. 1-21., <https://doi.org/10.1016/j.tourman.2019.104028>
- Lyu, J., Leung, X., Bai, B. & Stafford, M. (2021): *Hotel virtual reality advertising: a presence-mediated model and gender effects*, Journal of Hospitality and Tourism Technology, Vol. 12 No. 3, pp. 409-422., <https://doi.org/10.1108/JHTT-04-2020-0080>
- Marković, S., Raspor Janković, S., & Zubović, V. (2020): *The Impacts of Robots and Artificial Intelligence on Service Quality in the Hotel Industry*, Balkans JETSS, Vol 3, No. 2, pp. 163-170., <https://doi.org/10.31410/Balkans.JETSS.2020.3.2.163-170>
- McLean, G., & Barhorst, J. B. (2021): *Living the Experience Before You Go... but Did It Meet Expectations? The Role of Virtual Reality during Hotel Bookings*, Journal of Travel Research, pp.1-19., <https://doi.org/10.1177/00472875211028313>

- Merkx, C., & Nawijn, J. (2021): *Virtual reality tourism experiences: Addiction and isolation*, Tourism Management, Vol 87, p. 1-4., <https://doi.org/10.1016/j.tourman.2021.104394>
- Neuhofer, B., Buhalis, D., and Ladkin, A. (2014): *A typology of technology-enhanced tourism experiences*, International Journal of Tourism Research, Vol. 16, No. 4, pp. 340-350., <https://doi.org/10.1002/jtr.1958>
- Nobar, H. B. K., & Rostamzadeh, R. (2018): *The impact of customer satisfaction, customer experience and customer loyalty on brand power: empirical evidence from hotel industry*, Journal of Business Economics and Management, Vol 19, No. 2, pp. 417-430.
- Orús, C., Ibáñez-Sánchez, S., & Flavián, C. (2021): *Enhancing the customer experience with virtual and augmented reality: The impact of content and device type*, International Journal of Hospitality Management, Vol. 98, pp. 1-13., <https://doi.org/10.1016/j.ijhm.2021.103019>
- Özkul, E., & Kumlu, S. T. (2019): *Augmented reality applications in tourism*, International Journal of Contemporary Tourism Research, Vol 3, No. 2, pp. 107-122., <https://doi.org/10.30625/ijctr.625192>
- Perez-Marcos, D. (2018): *Virtual reality experiences, embodiment, videogames and their dimensions in neurorehabilitation*, Journal of Neuroengineering and Rehabilitation, Vol. 15, No.1., pp. 1-8, <https://doi.org/10.1186/s12984-018-0461-0>
- Pestek, A., & Sarvan, M. (2020): *Virtual reality and modern tourism*, Journal of Tourism Futures, Vol. 7, No. 2, pp. 245-250., <http://dx.doi.org/10.1108/JTF-01-2020-0004>
- Pillai, S. G., Haldorai, K., Seo, W. S., & Kim, W. G. (2021): *COVID-19 and hospitality 5.0: Redefining hospitality operations*, International Journal of Hospitality Management, Vol. 94, pp. 1-11., <https://doi.org/10.1016/j.ijhm.2021.102869>
- Ristova, C., Angelkova, T., & Micevski, M. (2019): *Virtual tourism: New frontier for the hotel industry*, Second International Scientific Conference Challenges of Tourism and Business Logistics in the 21st Century »ISCTBL 2019«, Faculty of Tourism and Business logistics, Goce Delcev University of Stip, North Macedonia, pp. 79-86.
- Sahebalzamani, S. & Bertella, G. (2018): *Business Models and Sustainability in Nature Tourism: A Systematic Review of the Literature, Sustainability*, Vol 10, No. 9. pp. 1-15 <https://doi.org/10.3390/su10093226>
- Sheridan, T. B. (1992): *Musings on telepresence and virtual presence*, Presence: Teleoperators and Virtual Environments, Vol 1, No. 1, pp. 120–126.
- Shin, D. (2018): *Empathy and embodied experience in virtual environment: To what extent can virtual reality stimulate empathy and embodied experience?* Computers in human behavior, Vol. 78, pp. 64-73., <https://doi.org/10.1016/j.chb.2017.09.012>
- Slevitch, L., Chandrasekera, T., & Sealy, M. D. (2020): *Comparison of Virtual Reality Visualizations With Traditional Visualizations in Hotel Settings*, Journal of Hospitality & Tourism Research, pp. 1-26, <https://doi.org/10.1177/1096348020957067>
- Snyder, H. (2019): *Literature review as a research methodology: An overview and guidelines*, Journal of business research, Vol 104, pp. 333-339., <https://doi.org/10.1016/j.jbusres.2019.07.039>
- Statista (2022): *Virtual Reality Market Size Worldwide*, <https://www.statista.com/statistics/1221522/virtual-reality-market-size-worldwide/> (Accessed 28.2.2022)

- Surovaya, E., Prayag, G., Yung, R., & Khoo-Lattimore, C. (2020): *Telepresent or not? Virtual reality, service perceptions, emotions and post-consumption behaviors*, Anatolia, pp. 1–16., <https://doi.org/10.1080/13032917.2020.1808431>
- Tavakoli, R., & Mura, P. (2015): *Journeys in Second Life’–Iranian Muslim women's behaviour in virtual tourist destinations*, Tourism Management, Vol. 46, pp. 398-407., <https://doi.org/10.1016/j.tourman.2014.07.015>
- The Franklin Institute (2022): *History of Virtual Reality*, <https://www.fi.edu/virtual-reality/history-of-virtual-reality>, (accessed 26 February 2022)
- Tussyadiah, I.P., Wang, D., Jung, T.H. & Tom Dieck, M.C. (2018): *Virtual reality, presence, and attitude change: empirical evidence from tourism*, Tourism Management, Vol. 66, pp. 140-154. <https://doi.org/10.1016/j.tourman.2017.12.003>
- Wu, H.-C., Ai, C.-H. & Cheng, C.-C. (2020): *Virtual reality experiences, attachment and experiential outcomes in tourism*, Tourism Review, Vol. 75 No. 3, pp. 481-495. <https://doi.org/10.1108/TR-06-2019-0205>
- Wu, H.C., Ai, C.H., & Cheng, C.C. (2019): *Virtual reality experiences, attachment and experiential outcomes in tourism*, Tourism Review, Vol. 75 No. 3, pp. 481–495. <https://doi.org/10.1108/TR-06-2019-0205>
- Xiao, Y., & Watson, M. (2017): *Guidance on Conducting a Systematic Literature Review*, Journal of Planning Education and Research, Vol. 39, No. 1, pp. 93-112., <https://doi.org/10.1177/0739456X17723971>
- Xueyan, D. (2021): *Hotel Management Platform Design Based on Virtual Reality*, In 2021 International Conference on Intelligent Transportation, Big Data & Smart City (ICITBS), pp. 113-116. IEEE.
- Yang, H., Song, H., Cheung, C., & Guan, J. (2021): *How to enhance hotel guests' acceptance and experience of smart hotel technology: An examination of visiting intentions*, International Journal of Hospitality Management, Vol. 97, pp. 1-12., <https://doi.org/10.1016/j.ijhm.2021.103000>
- Ying, T., Tang, J., Ye, S., Tan, X., & Wei, W. (2021): *Virtual Reality in Destination Marketing: Telepresence, Social Presence, and Tourists' Visit Intentions*, Journal of Travel Research, pp.1-19., <https://doi.org/10.1177/00472875211047273>
- Yung, R., & Khoo-Lattimore, C. (2019): *New realities: a systematic literature review on virtual reality and augmented reality in tourism research*, Current issues in tourism, Vol 22, No. 17, pp. 1-27, doi: <https://doi.org/10.1080/13683500.2017.1417359>
- Zeng, G., Cao, X., Lin, Z., & Xiao, S. H. (2020): *When online reviews meet virtual reality: Effects on consumer hotel booking*, Annals of Tourism Research, Vol. 81, pp. 1-12, <https://doi.org/10.1016/j.annals.2020.102860>



**Biljana Marković, Ph. D.**

University North

E-mail address: bemarkovic@unin.hr

## **THE ROLE OF COMPUTER AND INFORMATION LITERACY IN THE NURSING PROFESSION IN INCREASING THE EFFICIENCY AND EFFECTIVENESS OF THEIR WORK IN GENERAL HOSPITALS IN THE REPUBLIC OF CROATIA**

### **ABSTRACT**

*The efficiency and effectiveness of work in the field of nursing depends largely on the correct use of information and communication technology in identifying, finding, processing, storing and communicating essential information. The subject of this paper is computer and information literacy in the field of nursing, since the issue being studied is to what extent are nurses computer-literate as well as information-literate. The purpose of the paper is to provide an overview of the state of play in relation to the computer and information literacy of nurses working in the Republic of Croatia. The hypotheses being researched are the following: i) computer and information literacy helps nurses in improving the quality of healthcare by shortening the time spent doing administrative work; and the second hypothesis: ii) in order to increase the level of computer and information literacy of nurses, it is necessary to introduce new content into the existing nursing curriculum and to ensure lifelong learning. The confirmation of the hypotheses has been achieved by: a study of available literature, curriculum analysis, observation and measurement, analysis of surveys related to standards of computer and information literacy in nursing and analysis of surveys related to self-assessment of computer and information literacy of nurses.*

*The paper itself consists of an introduction, with a short overview of the field as well as the explanation of the basic terms, followed by a presentation of the survey results. The final conclusions relating to computer and information literacy are drawn at the end of paper.*

**Key words:** *computer literacy, curriculum lifelong learning, information literacy, nursing.*

### **1. Introduction**

Information literacy (Marković, 2021), (Eisenberg, 2008), (Hoffman, 2020), (Špiranec, Banek Zorica, 2018) of healthcare professionals involves the use of knowledge and skills gained throughout one's education as well as their application in practice. Computer literacy is the basis of efficient communication with patients and the basis of successful provision of information between stakeholders in the health system. If the level of communication is satisfactory, owing to the knowledge and skills of healthcare professionals, professional standards in the field of healthcare can be achieved.

Patients availing themselves of healthcare services should be acquainted with the diagnostic procedures as well as the aims and plans of possible treatments in a manner that is understandable to them. If the medical staffs have to spend their time on administrative work without having mastered the technology, they waste time necessary for the basic things and that primary relationship with the patient.

On the one hand, medical staff should have the knowledge and skills for communicating with patients. On the other hand, they need to be able to exchange opinions on professional matters with their colleagues. It is doubtful to what extent those professional competencies are connected with the knowledge and skills of the new literacies and the use of information and communication technology (ICT) in general as well as how much that knowledge and skills optimize the distribution of the working time spent on administrative work instead on healthcare.

Before the questions posed could be answered, basic terms used in the research should be defined, as well as a list of procedures related to the documentation in the profession should be created, and research the models of formal education in Croatia researched and studied whether there are any forms of lifelong education, and if yes, what are they.

Nowadays, information literacy and communication skills of nurses as healthcare professionals in their communication with patients can be considered fundamental, together with the basic knowledge of the profession. The use of ICT has become an important skill for medical staff.

## 2. Overview of the field

The subject matter of this paper is information literacy of nurses in general hospitals. Information literacy as a concept appeared at the end of the 20<sup>th</sup> century when it garnered interest among researchers. What is common to all authors is that they defined information literacy as the ability to identify key information, find that information, analyse the information and efficiently use the information in order to make quality decisions, which is the essence of the need for information literacy.

Numerous sources (Eisenberg, 2008), (Božiković, 2017), (Horton, 2013), (Lasić-Lazić, Špiranec et al., 2012), (McBride, Tietze, 2018), (McDougall, 2018), (McGowan, 2019), (Meuleenmester, 2015), (Shaw, Hines, et al., 2018), (Špiranec, 2016), (Špiranec, 2019) deal with the issue of information literacy. In this paper, those bibliographic units whose concepts lit our way into this area and served as the basic starting points have been highlighted.

A synthesis of all the texts in the sources listed demonstrates that their authors deal with:

- information literacy in general,
- information literacy in library science,
- the relationship between information literacy and computer sciences,
- the need to study information literacy in higher education.

Numerous sources state facts on information literacy from various aspects (i.e. the attitudes toward information literacy of students, professors, librarians, nurses and physicians as well as how ICT development boosts information literacy). Some aspects are explained in more detail, while others are merely touched upon.

By studying the available sources, it was established that examining information literacy in the field of nursing has not yet been sufficiently studied when it comes to the transfer of information between nurses. Do nurses know what the sources of relevant information are and how to reach them, do they use them in an appropriate manner, and do they present them to others? Is the level of literacy of nurses satisfactory? What are the criteria for the determination of the sufficient level of information and information literacy? Do nurses gain information literacy skills throughout their education or through their work or through lifelong learning? Based on these questions the research was carried out, which will be elaborated upon further in this paper. The results of the research answered the questions about the level of information literacy in nursing, what can be done to increase the level of information literacy as well as what can be

done for information literacy to reduce administrative work and increase time spent with patients by healthcare professionals.

On the other hand, the research identified the subject matter for the study in higher education institutions or in lifelong learning courses, i.e. courses related to information literacy (what should be paid special attention to when creating curriculum for university-level institutions, i.e. how to design lifelong learning courses related to boosting information literacy).

A preliminary research of the sources indicated that information literacy has been insufficiently researched, i.e. its level is not sufficient in certain professions, particularly in the profession which is the subject matter of this paper.

### 3. Research

The research had three aims:

First aim: To establish the existing level of information literacy of nurses in general hospitals in Croatia (using the survey method; horizontally and vertically) and, with a special emphasis, to analyse the distribution of the working hours spent on administrative work in relation to time spent on healthcare.

Second aim: To carry out a parallel analysis of the course curricula at all levels of formal education in the nursing profession in the field of information literacy in Croatia and EU Member States as well as to provide an overview of the guidelines set out in EU Directive 2005/36/EC relating to nursing as a regulated profession (Directive 2005/36/EZ, Directive 2013/55/EU).

Third aim: To identify the necessary skills, knowledge and competencies of nurses in relation to information literacy using questionnaires for the self-assessment of information literacy knowledge and skills necessary for the performance of their tasks, as well as to provide recommendations based on the results.

By working toward, the research aims, the endeavour was to confirm two hypotheses:

1. Information literacy aids nurses in improving the quality of healthcare by shortening the time spent on administrative work.
2. In order to increase the level of information literacy, it is necessary to introduce new content into the existing nursing curriculum and to ensure lifelong learning.

The methods used in the research were studying the available sources; analyzing the sources, international and national standards and curriculum; survey carried out by means of a questionnaire; monitoring and measurement.

The aforementioned methods focused the research itself on the following:

1. A detailed analysis of the most influential authors and topics related to information literacy was carried out. The analysis provided us with key terms and basic forms of phenomena and correlations. Terms as the basis of further research as well as the design of the questionnaires and questions for the self-assessment of knowledge and skills related to information literacy were defined (Abunadi, 2018), (Association of College and Research Libraries, 2013), (Adelaide Australian and New Zealand Institute for Information Literacy, 2004).
2. A detailed analysis of curriculum was carried out, along with a substantive and formal overview of the courses taught in schools and universities in order to obtain a picture of the knowledge and skills that can be gained in the programmes. The purpose of the analysis was to establish to what extent the courses involve content related to information literacy with which former students come into the working process (Directive 2005/36/EZ, Directive 2013/55/EU) (Association of College and Research Libraries, 2013), (Croatian Chamber of Nurses, 2017), (Domitrović, 2016).

3. A detail research of the models and standards of information literacy was carried out. With the development of the information literacy process, numerous models and standards which aimed to explain or interpret information literacy were set (Association of College and Research Libraries, 2013), (Adelaide Australian and New Zealand Institute for Information Literacy, 2004), (Croatian Chamber of Nurses, 2017), (Domitrović, 2016), (Bolek, Kokles et al., 2016), (SCONUL Working Group on Information Literacy, 2018).

4. Survey questionnaires were designed on the self-assessment of knowledge and skills related to information literacy as well as a survey questionnaire was used to evaluate the knowledge and skills on the basis of questions and answers, comparing them with the questionnaire and self-assessment results. This was necessary in order to apply the findings on the context of terms pertaining to nursing as a regulated profession and research domain to the creation of proposals of obligatory content of curriculum and programmes for professional training in the domain of information literacy. It is the central issue, which is also a starting point for the foundation of information literacy. Simultaneously, it refers to a certain context of application, such as a specific degree of education. Information literacy models represent the theoretical framework based on the scientific work in the first three parts of the research (Špiranec, Banek Zorica, 2018), (Meuleenmester, 2015), (Abunadi, 2018), (Association of College and Research Libraries, 2013), (*Nursing in Croatia Toward the Accession into the EU*, 2011), (Lloyd, 2010), (Project “The New Literacy Set” 2015.-2017. Project EU „Erasmus+”, 2016).

#### 4. Results and discussion

The research yielded the following findings (Marković, 2021).

a) Analysis of the survey related to the standards of computer and information literacy in nursing

Since the Republic of Croatia has no established standards, for the survey questionnaire the Computer and Information Literacy Competency Standards created by the Association of College and Research Libraries (ACRL) were used– “Working group for Information Literacy Standards for Nursing”, 2013 (ACRL, 2013). It is an American standard which is very detailed, and which can be applied in Croatia as well. The standard consists of five groups of indicators connected with the outcome on the basis of which the level of information literacy can be measured through five tasks. The survey questions aimed to examine the following:

- (S1) ability to define the need for information (31 questions),
- (S2) ability to efficiently gather the necessary information, select research methods and apply search strategies (29 questions),
- (S3) ability to critically evaluate information and sources of information (39 questions),
- (S4) efficiency of information use to achieve goals (20 questions),
- (S5) how much an information-literature nurse understands the ethical, legal and socio-economic issues connected with information and information technology (15 questions).

The survey questionnaire was distributed among ward nurses and their substitutes (69 respondents). These respondents were chosen because they are departmental nurses (and their substitutes) and do administrative work. It is assumed that due to the nature of the work, they have a certain level of computer and information literacy. The survey was conducted during the spring of 2020. At the beginning of the questionnaire, the respondents had to enter their qualifications, age, and complexity of their work. At the end, they had to self-assess their information knowledge.

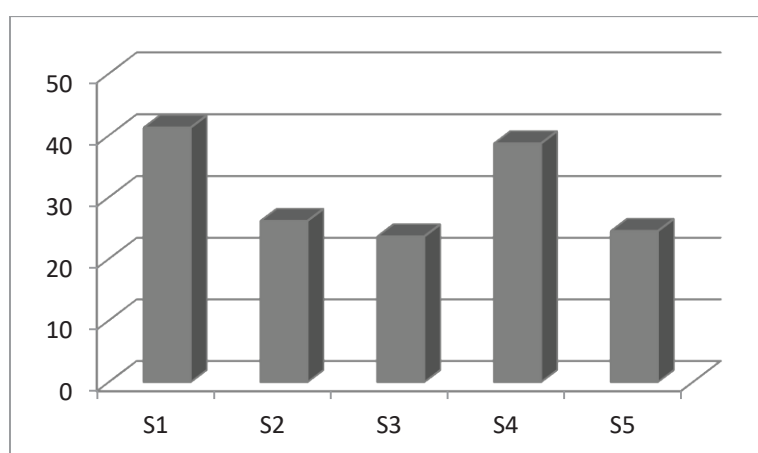
Respondent structure by their qualifications: 31 respondents with secondary-level education, 25 with college education and 13 with higher education.

**Table 1:** Recapitulation by standards

Standard	Percentage of completion (%)	Sample	Literacy
S1	41.27	69	Partial
S2	26.16	69	Insufficient
S3	23.64	69	Insufficient
S4	38.71	69	Partial
S5	24.53	69	Insufficient

*Source: Author*

**Figure 1:** Recapitulation by standards



*Source: Author*

#### b) Analysis of the survey on information literacy

The results of the research on information literacy by literacy standards in nursing justifies the intention to define in more detail the level of information literacy of nurses through a survey on information literacy with regard to age, level of education, complexity of work and self-assessment of knowledge of information and communication technology. In that manner, problem areas with regard to literacy would be identified (need for better curriculum, lifelong learning, need for the application of information and communication technology in order to reduce administrative work), with activities proposed in order to improve the literacy.

The aims are the following:

- to establish how information literacy affects the balance between administrative work and healthcare,
- to establish whether new curriculum is needed or whether the existing ones should be improved in relation to computer and information literacy,
- to establish whether the respondents see the impact of information and communication technology as positive, with regard to their age, level of education, complexity of their work and self-assessment of their own computer knowledge.

The survey is divided into the following groups of questions:

- general questions related to age, sex, qualifications and work experience,
- questions related to the application of information and communication technology and administration in the work of nurses,

- questions related to computer literacy as a specific competency,
- questions related to information literacy as a specific competency,
- questions related to the contents of curriculum that would enable computer and information literacy.

The survey was carried out by means of a questionnaire in four general hospitals in the Republic of Croatia using a Google Form. Nurses with secondary-level, college and higher education participated in the survey, 602 completed surveys were gathered.

Sample size n=602. Secondary-level education 254; college education 194; higher education 114.

The survey answers confirm the initial hypotheses as seen from the following data:

**Table 2:** Results pertaining to balance between administrative work and healthcare

		N	%	$\bar{x}$	Sd
If you use a computer, do you spend too much time doing administrative work compared to healthcare?	I completely disagree	74	12.3%		
	I partially disagree	131	21.8%		
	I neither agree nor disagree	98	16.3%		
	I partially agree	149	24.8%		
	I completely agree	150	24.9%		
	Total	602	100.0%	<b>3.28</b>	1.37
Does being adept at working with the hospital information system leave you more time to work with patients?	I completely disagree	88	14.6%		
	I partially disagree	74	12.3%		
	I neither agree nor disagree	113	18.8%		
	I partially agree	271	45.1%		
	I completely agree	55	9.2%		
	Total	601	100.0%	<b>3.22</b>	1.22

Source: Author

**Table 3:** Do you need continuous education in the field of computer literacy?

Do you need continuous education in the field of computer literacy?	Secondary		College		University	
	Yes	37	86.0%	377	78.9%	54
No	6	14.0%	101	21.1%	27	33.3%
$\Sigma$	43	100.0%	478	100.0%	81	100.0%

Source: Author

**Table 4:** Results pertaining to satisfaction with information literacy gained throughout education according to age

Do you believe that the information literacy knowledge that you gained throughout your formal secondary level or college education is sufficient for the performance of your work?	AGE: 20-29		30-39		40-49		50 and above		0.341	
	Yes	86	45.5%	80	44.9%	51	44.3%	43		35.8%
No	103	54.5%	98	55.1%	64	55.7%	77	64.2%		
Total	189	100.0%	178	100.0%	115	100.0%	120	100.0%		
Do you believe that it is necessary to improve the curriculum in the area of information literacy in secondary level and college education so that they would be sufficient for the performance of your work?	Yes	136	72.0%	140	78.7%	88	76.5%	88	73.3%	0.471
	No	53	28.0%	38	21.3%	27	23.5%	32	26.7%	
	Total	189	100.0%	178	100.0%	115	100.0%	120	100.0%	

Source: Author

### c) Observation and measurement

In a concrete example, the work of nurses/technicians in the process of entering administrative data with and without smart cards (at a surgical polyclinic and internal medicine polyclinic) was observed and measured. The duration of the whole study was three weeks in order to prove the principle of repeatability and to annul the element of chance.

The aim of the observation and measurement was to prove exactly that the application of information and communication technology helps nurses/technicians to work faster and reduce administration. Observation and measurement were carried out on three occasions (three months in a row – in each month one week without the use of readers and cards, one week with the use of readers and cards). Observation and measurement were designed in such a way that all variables were the same (employee, same computer, number of patients, patient diagnosis, and type of referral). The only thing that was changed was working with and without a reader and card.

Large clinics (surgery and internal) carried out tasks for a week without the use of a smart card, the second week the same clinic worked with a smart card. Variables measured:

- number of patients,

- patient enrolment time,
- patient processing time (for the same incoming diagnosis),
- number of patients seen per unit of time.

The smart card and the smart card reader enable a connection to CEZIH (Central Health Information System of the Republic of Croatia). As a result, the status of the insured is automatically checked, their general data and data from the referral are entered automatically (administration is automated). Also, physicians automatically send findings to CEZIH from where they are picked up by the general practitioner's office.

**Table 5:** 1<sup>st</sup> iteration (first week without, second week with a smart card)

Smart card reader application	Number of patients / hour	Average patient enrolment time (min)	Number of patients who came to pick up the findings / hour	Patient treatment time (for the same incoming diagnosis) / minute (from enrolment to departure)
No	10	6	3	20
Yes	15	4	0	15

*Source: Author*

**Table 6:** 2<sup>nd</sup> iteration (first week without, second week with smart card)

Smart card reader application	Number of patients / hour	Average patient enrolment time (min)	Number of patients who came to pick up the findings / hour	Patient treatment time (for the same incoming diagnosis) / minute (from enrolment to departure)
No	12	5	2	21
Yes	18	3.33	0	14

*Source: Author*

**Table 7:** 3<sup>rd</sup> iteration (first week without, second week with smart card)

Smart card reader application	Number of patients / hour	Average patient enrolment time (min)	Number of patients who came to pick up the findings / hour	Patient treatment time (for the same incoming diagnosis) / minute (from enrolment to departure)
No	14	6	3	20
Yes	18	3	0	16

*Source: Author*

Measurement results show:

- that by using a smart card, the total time of the patient's stay in the outpatient clinic is shorter
- that the use of a smart card has increased the number of patients treated per unit of time
- a larger number of treated patients results in the following:
  - A larger number of applied procedures paid for by the Croatian Health Insurance Institute (HZZO) - positive financial effect of the general hospital's operations;



- Patient satisfaction is higher because they are processed faster (they spend less time on admission and more time with the physician);
- With the application of information and communication technology, results are sent automatically to general practitioners (thanks to the use of smart cards) and patients do not have come to the hospital just to pick up the test results.

d) Analysis of the curriculum

The analysis of international and national frameworks which are the prerequisites for the definition of curriculum confirmed the second hypothesis and yielded a recommendation of a concrete curriculum to improve the level of information literacy.

The criteria for the evaluation of the quality of curriculum in secondary, college and university-level nursing schools are the following:

- European Computer Driving Licence (ECDL), i.e. skills in Office tools, e-mail and Internet for computer literacy,
- fulfilment of information literacy standards (analysis of curriculum based by standards),
- harmonization of the curriculum with the national guidelines,
- student workload: hours in subjects related to computer and information literacy in relation to the total number of hours (in all subjects).

An analysis of four secondary-level, college and university-level schools established the following:

- in secondary and college schools, there are subjects dealing with computers which are in accordance with the national guidelines,
- college nursing schools, there are no guidelines, therefore the concrete curriculum are not uniform,
- at all three levels of education there is a complete lack of elements of computer literacy or there are only elements thereof,
- in comparison with United Kingdom, Germany, Slovenia and Hungary, student workload is the highest in the Republic of Croatia by the number of hours; the structure is also different – there is more theory and less practice.

**Table 8:** Overview of the state of play in the education of nurses in Croatia in the area of computer literacy

Education level	Document for comparison	State of play	Proportion of subjects dealing with computer and information literacy in relation to all subjects (%)	Is it in line with the national strategy?	Should the curriculum be improved?
Secondary-level	<ul style="list-style-type: none"> <li>• National Framework for Secondary Schools</li> <li>• ECDL</li> <li>• information literacy standards</li> </ul>	<ul style="list-style-type: none"> <li>• there is computer literacy content</li> <li>• there is no information literacy content even</li> </ul>	1.56%	Yes	Yes

Education level	Document for comparison	State of play	Proportion of subjects dealing with computer and information literacy in relation to all subjects (%)	Is it in line with the national strategy?	Should the curriculum be improved?
		though the National Framework contains competencies related to information literacy			
College	<ul style="list-style-type: none"> <li>• Core Curriculum for College Schools</li> <li>• ECDL</li> <li>• information literacy standards</li> </ul>	<ul style="list-style-type: none"> <li>• there is computer literacy content</li> <li>• there are elements of information literacy content</li> </ul>	1.21 %	Yes	Yes
University	<ul style="list-style-type: none"> <li>• no framework</li> <li>• ECDL</li> <li>• information literacy standards</li> </ul>	<ul style="list-style-type: none"> <li>• there is computer literacy content</li> <li>• there are elements of information literacy content</li> </ul>	1.23%-1.59%, depending on the undergraduate study programme	-	Yes

Source: Author

Due to the lack of subjects related to information literacy, what follows is a recommendation for an introduction of information literacy content into the education system based on the so called ACRL standard.

Since there are no frameworks (guidelines) for the creation of curriculum with regard to computer and information literacy for higher education in nursing, this part aims to define such guidelines for information literacy since the national guidelines for the undergraduate study programme in nursing can be “used” for computer literacy.

Subject name: Information Literacy in Healthcare (Rašidović, 2019).

Subject aim and purpose: Equipping students for independent learning and knowledge building with the aid of distributed sources of information; ethical participation in learning and education communities as well as in the civil society.

Learning outcomes: At the end of the programme, students are expected to gain competences of an independent approach to and browsing of sources of information of analogue, digital and virtual origin in any form and format. Students should be able to find, process, evaluate study and manage relevant information. They should analyse information, critically, synthesise, organize, interpret and present them with the aim to responsibly create new knowledge through

studying for tests, writing essays, giving presentations and submitting seminars and their final thesis.

The skills necessary for information literacy require understanding (general aims and purpose in the curriculum area): “need for information, knowledge of the available resources, how to find information, need for an evaluation of the results, how to work with the results, ethical and responsible use of the results, how to communicate and share the results, how to manage one’s results” (Rašidović, 2019), (“The New Literacy Set” 2015-2017, Project EU „Erasmus+“, 2016). The above can be learned by (subject/unit content):

1. Browsing information
2. Advanced search
3. Organizing information
4. Understanding a text
5. Information use
6. Analyzing and creating graphs and charts
7. Analysis and creation of maps
8. Evaluation of information
9. Creating structured information
10. Usability
11. Copyright and intellectual property
12. Data protection
13. Use of social networks.

## 5. Conclusion

Based on the research and discussion, the following can be concluded:

Studies on the concept of information literacy emphasize the importance of the inclusion of theoretical frameworks, particularly information searching models, according to the standards accepted in that part. By studying the sources, it was found that information literacy means the following knowledge: searching for information, advanced searching for information, organizing information, understanding the text, using information, analyzing and creating graphs, analyzing and creating maps, evaluation of information, creation of structural information, creation of online information, usability of information, intellectual property, data protection and the use of social networks. In the context of nursing, the aforementioned knowledge enables the improvement of healthcare results, reduction of unnecessary expenditure of medical materials and drugs, mitigation of damage arising due to improper treatment, improvement of the focus on the patient, increased monitoring possibilities and boosting the quality of healthcare.

- The discussion on curriculum provides an overview of the European guidelines connected with regulated professions, including nursing. It also describes the National Guidelines of the Republic of Croatia for Secondary Education and College Schools in the Field of Nursing. It lists the prescribed competencies of nurses for secondary, college and higher education in accordance with the Nursing Act. The aforementioned theoretical overview of the curriculum was used in the research of design curriculum. Curriculum from four secondary-level schools of medicine, four college schools of medicine and four university-level schools of medicine were analysed. The general conclusion is that none of the programmes contains subjects connected to information literacy, regardless of whether information literacy is studied as a separate subject or in a cross-subject manner. Furthermore, a comparison of the EU guidelines, National Guidelines and concrete curriculum established the following:

- the EU guidelines themselves do not provide for information literacy content, only for information literacy as such.

- The National Guidelines contain information literacy subjects, but the curriculum in general have too many hours of theory and too few hours of practice if all subjects are taken together (in relation to the prescribed number of hours in the EU guidelines).
- curriculum in secondary-level and college medical schools in the Republic of Croatia are in line with the National Guidelines.

The research on curriculum includes a comparison with EU Member States (Slovenia, Hungary and Germany). Their national curricula have been harmonized with the EU guidelines. Compared to the Croatian curriculum, they have fewer hours of theory, and more of practical classes.

- The observation, measurements and surveys carried out have established that, by increasing the level of information literacy in profession of nurses, it is possible to improve the level of healthcare in the form of a more efficient distribution of the working hours in relation to the balance between the time spent on administrative work and the time spent on the provision of healthcare (which will also lead to a rationalization of costs and positive financial effects in the running of general hospitals); in the context of nursing, this means that information literacy enables an improvement of healthcare results, reduction of unnecessary consumption of medical materials and drugs, mitigation of damage caused by improper treatment, improvement of the focus on the patient, better possibilities of monitoring and improving the quality of healthcare.

- The analysis of the available curriculum of regular education of nurses at different levels indicates a lack of certain topical knowledge, skills and competences in the area of computer literacy; the analysis of the EU guidelines and National Guidelines of the Republic of Croatia as well as the curricula in secondary-level schools, undergraduate and graduate study programmes confirms that there is a lack of certain knowledge, skills and competences, which confirms the hypothesis. Based on the conducted research, a proposal was made for the development of a curriculum that would enable the study of information literacy within the nursing profession.

- Increasing information literacy in the field of nursing could achieve a better competence of employees, faster performance of administrative tasks, more time for healthcare as well better triaging of patients because they would be able to recognize essential information, structure it and transform it into new knowledge.

- Lifelong learning programmes (particularly for nurses aged 50+) could make up for the found shortcomings in the regular education programmes as well as ensure a continuity in the changes which occur daily in the context of technology and digital competencies.

Computer and information literacy are very important in today's competitive economy. Everyone who wishes to survive on the market and be efficient and effective in their work must know how to find, analyse, present, evaluate and use the information that can help them to gain advantage over their competition. Information literacy is a tool for the advancement of the society as a whole.

## REFERENCES

- Abunadi (2018). *A Technology-Dependent Information Literacy Model within the Confines of a Limited Resources Environment*. Information Technology, December 2018
- ACRL (Association of College and Research Libraries) (2013). *Nursing Information Literacy Framework Working Group*. USA

Adelaide Australian and New Zealand Institute for Information Literacy (2004). *Australian and New Zealand Information Literacy Framework principles, standards and practice Second edition*. Adelaide Press

Bolek, Kokles et al (2016). *Information Literacy of managers: models and factors*. Journal of Business Economics and Management. Volume 19 Issue 5: 722–741

Božiković (2017). *Opinions of Nurses on Modern Documentation in the Nursing Practice*. Faculty of Medicine in Osijek – Nursing Study Programme

Croatian Chamber of Nurses. (2017) *Strategic Guidelines for the Development of Nursing in the Republic of Croatia for the 2017 – 2027 period*.

*Directive2005/36/EZ*; <https://eur-lex.europa.eu/legal-content/HR/TXT/?uri=celex%3A32005L0036>, (accessed 19 September 2020.)

*Directive2013/55/EU*; <https://eur-lex.europa.eu/legal-content/HR/TXT/PDF/?uri=CELEX:32013L0055&from=PT> (accessed 19 September 2020.)

Domitrović (2016). *Education of Nurses in the Republic of Croatia in Comparison with the EU Standards*. University of Zagreb, School of Medicine

Eisenberg. (2008) *Information Literacy: Essential Skills for the Information Age*. DESIDOC Journal of Library & Information Technology, Vol. 28, No. 2, March 2008, pp. 39-47

Hoffman (2020). *Communication Competences of Physiotherapists*. University of Zagreb, Faculty of Humanities and Social Sciences, Zagreb

Horton (2013). *Overview of Information Literacy Resources Worldwide*. Published in 2013 by United Nations Educational, Scientific and Cultural Organization (UNESCO), 7 place de Fontenoy, 75352 Paris 07 SP, Paris, France

Lasić-Lazić, Špiranec et al. (2012). *Lost in the New Educational Environments, Found in Information Literacy Programmes*. Media research (year 18, No 1) 2012 (pp. 125-142). Times New Roman

Lloyd (2010). *Information literacy landscapes: Information literacy in education, workplace and everyday contexts*. Cambridge, Chandos Publishing

Lopes, Costa et al (2018). *Measuring media and information literacy skills: Construction of a test*. Communications. AOP press

Marković (2021). *Computer and information literacy of the regulated health profession - nursing in croatian general hospitals*, University North, 2021.

McBride, PhD, RN-BC, CPHIMS, Tietze, PhD, RN-BC, FHIMSS (2018). *Nursing Informatics for the Advanced Practice Nurse, Second Edition: Patient Safety, Quality, Outcomes, and Interprofessionalism*. Springer Publishing Company

McDougall (2018). *The uses of (digital) literacy*. The uses of (digital) literacy, Learning, Media and Technology, 43:3, 263-279

McGowan (2019). *Reimagining information literacy instruction in an evidence-based practice nursing course for undergraduate students*. Journal of the Medical Library Association 107 (4)

Meuleenmester (2015). *The “Information Literacy Self-Efficacy Scale” and the Medical Curriculum at Ghent University*. ECIL 2013, CCIS 397, pp. 465–470.

*Nursing in Croatia Toward the Accession into the EU (2011)*. 11<sup>th</sup> International Conference; Opatija

*Project “The New Literacy Set” 2015.-2017. Projekt EU „Erasmus+ “(2016)*. Carles Vallbona Institute, Spain, Futura Private Grammar School and Economic & Computer Science School, Croatia Granollers

Rašidović (2019). *A Curriculum for a Subject on Information Literacy*. BOSNIACA 2019; 24: pp. 39-47

SCONUL Working Group on Information Literacy (2018). *“The SCONUL Seven Pillars of Information Literacy Core Model for Higher Education”*, London

Shaw, Hines, at al. (2018). *Impact of Digital Health on the Safety and Quality of Health Care*. Published by the Australian Commission on Safety and Quality in Health Care Level 5, 255

Špiranec, Banek Zorica (2018). *Information Literacy: Theoretical Framework and Starting Points*. Zagreb, Institute for Information Studies, Department of Information Sciences, Faculty of Philosophy, University of Zagreb

Špiranec (2016). *Information Literacy: From the Functional to the Critical*. Faculty of Philosophy, Information and Communication Sciences – teaching materials

Špiranec (2018). *Critical Information Literacy in the Academic Context*. Читалиште 32

*A scientific paper*

**Robert Martić, MA**  
BIT Centre Tuzla  
E-mail: robert@bit.ba

**Vedrana Ajanović, MA**  
BIT Centre Tuzla  
E-mail: vedrana@bit.ba

## **LEADERSHIP STYLES OF ENTREPRENEURIAL SUPPORT INSTITUTIONS**

### ***ABSTRACT***

*The paper deals with the analysis of leadership styles of entrepreneurial support institutions. The sample includes institutions from Bosnia and Herzegovina, the Republic of Croatia and the Republic of Serbia. The qualitative method is primarily used to analyze whether innovative and modern leadership styles are applied in entrepreneurial support institutions and which specific leadership styles are used in entrepreneurial support institutions. The behavior of managers, in terms of "open" or "closed" behavior, exploitation or use, flexibility and degree of innovation in running such institutions is specifically analyzed to investigate whether there are characteristics of ambidextrous leadership style. The paper also partly deals with the characteristics of managers of entrepreneurial support institutions, in terms of their behavior, in order to determine the predominant preference towards leader or manager. Starting from the very specifics of running these institutions, the results of the research confirmed that innovative leadership styles are applied and are applicable in such institutions.*

**Key words:** *Innovative leadership styles, ambidextrous leadership, opening and closing behavior.*

### **1. Introductory considerations**

Entrepreneurial support institutions are business entities aimed at creating a quality, user-oriented entrepreneurial environment that implements programs for the development of entrepreneurship, and are part of the overall entrepreneurial infrastructure. Together with business zones and free customs zones, they form the entrepreneurial infrastructure. The development of entrepreneurial support institutions has undergone significant development since the early 2000s in Bosnia and Herzegovina and in the Region, and is reflected in its transformation of initial forms of business incubators, as part of entrepreneurial support institutions, as well as increasing the number of science and technology parks, incubators for new technologies, innovation centers and HUBs. This is not only the case in Bosnia and Herzegovina and the Region, since during the last few decades there has been a significant development of entrepreneurial infrastructure and especially the development of science and technology parks (Steruska, 2019, 59). In the past few decades science and technology parks have developed significantly and become quite widespread throughout the world (Albahari, 2017, 16).

The name itself is not unified and often the same institutions within entrepreneurial support institutions are called by a similar but different name, which in a way makes it difficult to group and analyze them, which otherwise would be researched, analyzed and compared together (Henriques, 2018, 145). Defining the name as well as certain differences, in both, operations and content can often be reduced to just defining the name of the institution, which does not mean different content.

Many regions have tried to copy or develop in a similar way their regions or local communities modeled on Silicon Valley (USA) but very few have had any success. There is no universal formula for creating such institutions, nor is it possible to copy certain successful incubators to another environment. When establishing some form of entrepreneurial support institution, it is necessary to take into account many factors and work carefully on the development of all parts of the institution. Business incubators, which most often include entrepreneurial incubators, innovation centers and new technology incubators, are certainly one of the most important factors in developing a positive environment and creating new companies by commercializing research and improving the region (Aaboen, 2009, 657).

Due to the growing presence, as well as the effects, that are important, because they represent the most effective way of creating jobs (Monkman, 2010, 3) and the growth of these forms of entrepreneurial support institutions is crucial, the paper deals with the problem of adequate management of such institutions.

The primary goal of the research is to determine whether, and to what extent, managers of entrepreneurial support institutions use innovative and modern leadership styles.

## 2. Literature review

A more complete understanding of innovative leadership styles requires a contextual understanding of the concept of innovation, which includes the introduction of new systems and benchmarks, yields, changes, innovations and new ways. To date, a single definition of innovation has not been set, so there are a large number of definitions that usually differ in scope and type of innovation. Innovation (Schumpeter, 2012, 142), as introducing a new good, represents new production methods, opening a new market, conquering new sources of supply of raw materials or semi-products, and finding a new organization of a certain industry, such as, creating a monopolistic position or breaking a monopolistic position. Despite its importance, very little significance is given to managerial innovation and only 0.01% of authors deal with managerial innovation (Birkinshaw, 2006, 82). Also very important are open innovations, the use of knowledge of smart people outside the company, as well as the simultaneous use of domestic and foreign research and development (Bayat, 2022, 2).

The behavior of managers and management in companies that are drivers of local development (Correia, 2022, 2) must be innovative and as such the complexity of innovation activities should be aligned with the complex way of leading (Zacher, 2015, 65). Management as such must be characterized by temporal flexibility and adjustment according to the situation between “opening” and “closing” leader behavior (Rosing, 2011, 966). The behavior of managers that encourages innovation and the competencies they should possess have been researched by many authors. Managers' behavior as such must be "consistently inconsistent", ie, behavior that must be constantly adapted to the needs of innovative companies (Keller, 2015, 58). Managers with these characteristics can adapt to the business of innovative companies and adapt the management itself to the needs of innovative companies.



Entrepreneurial support institutions should be linked to educational institutions in some way. Since it is a matter of creating jobs that are based on new technology, it is very important that such centers have a linkage or a strong connection with educational institutions.

Managing in innovation companies or in companies that initiate or work with research or innovation companies, requires a special leadership style. Management in such companies must support the development of innovation and therefore must be innovative, which implies a different approach compared to traditional ways of management (Löfsten, 2020). Managers must take certain steps to realize creative ideas and thus help and encourage innovation (Certo, 2008, 461). It is necessary for the manager to have a sense and to distinguish between creativity and innovation in order to be able to create an environment for the creation of innovative companies in an adequate way through leadership. Mass misconceptions about the applicability of innovation and creativity hinder the development of business innovation (De Bes, 2016, 8). Innovation as a competitive advantage has the status of a central organizational force. Support staff as bearers of the innovation process have a special status as well as managers as bearers of the innovation process (Šunje, 2002, 191) and thus experts, as bearers of the innovation process, have a special status.

Leadership and management of entrepreneurial support institutions in a way equates, but should still distinguish leadership from management (Coverly, 2013, 107). Peter Drucker and Warren Bennis best define the difference between management and leadership in a way that “*management is doing things the right way, while leadership is doing the right things*”. The relationship between managers and leaders and the analysis of their characteristics were dealt with by professor Sikavica and professor Bahtijaravić – Šiber, and based on the analysis of the dominant characteristics of managers and leaders, they defined the characteristics of managers and leaders (Sikavica, 2004, 94).

Leadership style is the way in which the relationship between the leader and the followers or employees is established. *Leadership style consists of the pattern of behavior of a person trying to influence others* (Northouse, 2010, 93). Leadership should be adapted to situations (Čizmić, 2010, 210). Most organizations send their managers to certain trainings so that they can develop and improve leadership skills in order to increase efficiency (Yukl, 2013, 382).

Innovative and modern leadership styles are emerging as a result of the new way of doing business and as such are more acceptable to innovative companies. Along with the development of business in recent times, there is also an expansion of the analysis of models of successful leadership and examples of it, followed by the development of many theories and understanding of the importance of leadership from people in leadership positions and followers. Leadership as such is evolving in both leaders and followers, and is approached in completely new ways (Bass, 2006, 2). “*The environment in which the company operates today is fraught with many influential factors that make it very complex, dynamic, heterogeneous and uncertain. In such conditions, a new approach to leadership is sought, characterized by a leader who is able to build trust between himself and his followers.*” (Buble, 2011, 35)

Transactional leadership style refers to most leadership models that focus on the exchange between the leader and their followers and offers reward to employees who exceed their goals through promotion (Northouse, 2010, 176). This leadership style is built on a relationship of exchange between leader and follower based on contingent reward (punishment) determined by achieving or failing to achieve performance goals (Cho, 2019, 3).

Transformational leadership is reflected in a person's cooperation with others and creates a connection that results in increased motivation and morale, in both, the leader and the follower.

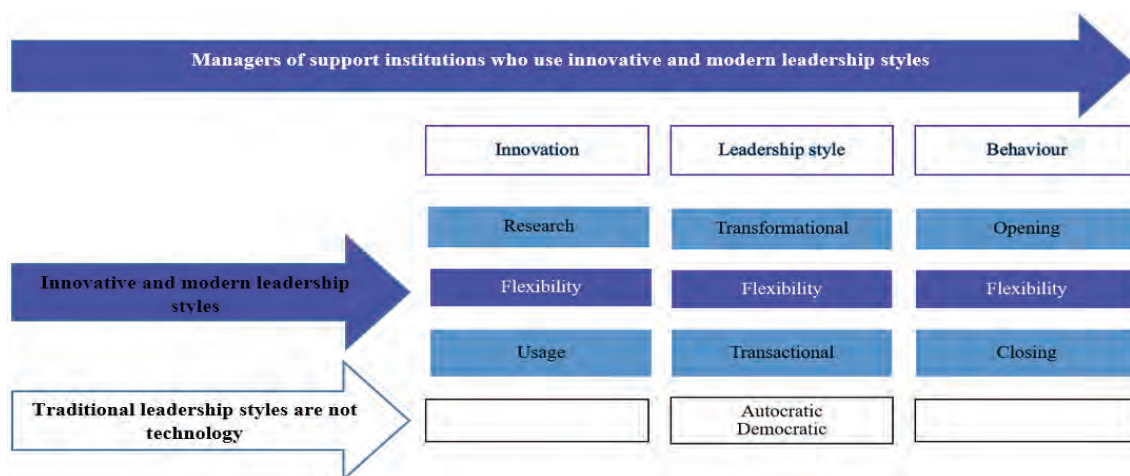
The leader takes care of the needs of the followers and tries to motivate them and help them realize their potentials (Northouse, 2010, 176). This leadership style transforms followers, encouraging them to think about the interests of the organization rather than their own interests, raising their morale, encouraging them to examine how their values align with the organization's values, invoking their ideal sense of what the organization may be, and encourage them to do their best for the common good (Cho, 2019, 4).

Recently, the link between leadership and innovation has received increasing attention in the literature as well as methods on how to measure this leadership style (Alghamdi, 2018, 7). Ambidextrous leadership style is important to improve employee-leader interaction (Tolulope, 2020, 25). Ambidextrous in leadership is associated with successful use and exploration and exploitation of resources, and equally well, not only short-term, but also long-term must be *ambidextrous* oriented (Rosing, 2011, 966). Leadership styles have a different relationship with innovation depending on third variables (Rosing, 2011, 956). Traditional leadership styles are too extensive and can hardly influence the encouragement or hindrance of innovation. As an example, he states that transformational leadership, where the leader communicates in a way that inspires, can encourage innovation if the vision involves encouraging experimentation. On the other hand, it can hinder innovation, if followers perceive the vision in a way that limits themselves to any opinion outside of it. "A key feature of this leadership style is that innovation is supported by research or use through reducing or increasing variations in follower behavior." (Rosing, 2011, 957). *Research and usage* are defined as two forms of organizational learning. The focus of research on adaptive processes is the relationship between exploring new possibilities and using existing safe ones (March, 1991, 71).

### 3. Results of empirical research and discussions

The starting point of empirical research is the premise that innovative and modern leadership styles are adequate for running entrepreneurial support institutions, as opposed to traditional leadership styles. In order to prove the set premise, we developed a conceptual research model, shown in Scheme 1.

**Scheme 1:** Presentation of the research model of leadership style of entrepreneurial support institutions



Source: Authors

We conducted the research on six entrepreneurial support institutions that met the following criteria: that they are registered and have been operating for at least 5 years; have a focus or do

business/help create ICT companies, have some collaboration with academia, have more than 10 companies within the Center and have created more than 10 companies. Entrepreneurial support institutions that have met the above criteria are: Innovation Center Banja Luka ICBL (BiH), BIT Center (BiH), Technology Park INTERA (BiH), Science and Technology Park Belgrade (SRB), Technology Park Varaždin (HR) and Podi Šibenik (HR). Although of different names: incubator, innovation center, technology park, science and technology park, they all meet the criteria to be classified as incubators of new technologies as one of the most important business support institutions.

The research aimed to determine whether and to what extent innovative and modern leadership styles are represented in entrepreneurial support institutions, more specifically in new technology incubators. Before the research, we set the following hypothesis:

*“Managers of entrepreneurial support institutions use innovative and modern leadership styles.”*

In addition to the basic one, two other accompanying hypotheses were set:

H1. *Traditional leadership styles are not adequate for running entrepreneurial support institutions.*

H2. *Innovative and modern leadership styles are adequate for running entrepreneurial support institutions.*

As this is an insufficiently researched phenomenon, in order to prove the hypothesis and achieve the research objectives, we used multiple case analysis as an appropriate qualitative research method. An additional basis for using the chosen research method is the fact, that it is a small sample based on personal choice of researchers, based on decades of experience of researchers in leading incubators of new technologies, and the assessment that the selected sample will best contribute to research.

Data collection was performed by combining questionnaires, surveys and interviews of targeted incubators. Open problem-oriented questionnaires composed of defined framework questions related to the research subject were used for data collection. The data collection process itself included interviews, surveys of managers of new technologies incubators and their followers. For the purposes of the research, two questionnaires were created.

The first questionnaire for incubator managers of new technologies consisted of 18 questions grouped into three basic groups determined by the hypothesis, namely: (1) innovation - to determine whether the management is fundamentally committed to exploiting existing resources or finding new solutions, (2) leadership style - to demonstrate whether traditional or contemporary and innovative leadership styles are used and to determine which specific leadership style prevails and (3) behavior - to determine whether overt or closed behavior prevails.

The second questionnaire consisted of 33 general questions about incubators of new technologies and their basic results and form of operation, and served to obtain a general picture of the state of such institutions. For easier data collection, a web platform was used and a questionnaire form was created using the same platform.

Data collection was followed by a phase of data processing and drawing conclusions, based on findings. The analysis is based on three types of coding procedures used in processing, namely (Halmi, 2005, 348): open or initial coding, axial coding and selective coding.

The analysis of the existing managers of entrepreneurial support institutions was aimed at reaching certain conclusions regarding the characteristics they have and to determine whether they were dominated by more qualities of managers or leaders. Some of the characteristics by importance were analyzed, as shown in Table 1. Out of the managers' characteristics by importance, the largest percentage refers to: achieving the goal, results and perseverance of managers. On the other hand, the predominate characteristics of a leader are: interaction between people, trust and directing people towards the goal.

**Table 1:** Characteristics of managers and leaders of entrepreneurial support institutions

Manager	%	Leader	%
Achieving the goal	93%	Leading others	82%
Procedure	62%	Orienting people towards a goal	87%
Results	90%	Interaction between people	88%
Doing the job	83%	Determining the direction of change	77%
Overcoming complexity	77%	Implementing change	75%
Compliance with procedures and rules	57%	Introducing changes and improving procedures	65%
Employee control	65%	Trust	88%
Importance of how and when to do it	58%	More interested in what and why to do	73%
Rational	78%	Visionary	82%
Stubborn	87%	Creative	85%
Analytical	82%	Innovative	77%

Note: Research partially done and adapted according to the model Sikavica, P., Bahtijarević-Šiber, F., *Management - management theory and large empirical research in Croatia*, Masmedia d.o.o., Zagreb, 2004, p. 94.

Taking into the consideration all the analyzed institutions in analyzing all the characteristics that are taken into account, it can be concluded that the managers who lead such institutions are dominated by the qualities of a leader with a total percentage of 53.5%.

Although there is no single formula for organizing and leading certain institutions, or traits that are ideal, and whose ratio or development can achieve certain results in each circumstance and institution, analyzing certain traits, one can draw a conclusion about a typical head of entrepreneurial support institutions (Sikavica, 2004, 94), i.e. the profile of the manager of the entrepreneurial support institution.

**Table 2:** Typical manager of the entrepreneurial support institution

<b>Sex</b>	<b>Male 80%</b>
<b>Age</b>	35-45
<b>Qualifications</b>	University degree or higher
<b>First job</b>	N0
<b>Work experience in the institution</b>	5-10 years
<b>Experience in business with entrepreneurial infrastructure</b>	(8,1) average USA
<b>Previous experience in similar jobs</b>	5-10 years
<b>Number of working hours per month</b>	160
<b>Range of people management</b>	50 -100
<b>Range of company management</b>	Over od 15

Note: Research partially done and adapted according to the model Sikavica, P., Bahtijarević-Šiber, F., *Management - management theory and large empirical research in Croatia*, Masmedia d.o.o., Zagreb, 2004, p. 94.

The second part of the research enabled conclusions to be drawn on determining the degree of innovation, the form of managerial behavior and the leadership style that is mostly used in entrepreneurial support institutions.

### ***Research and usage***

The management of entrepreneurial support institutions by their specificity requires managers to understand the concept and purpose of work and find new opportunities. When analyzing the codes of these behaviors, the results were obtained as shown in the following table.

**Table 3:** Research and usage - aggregate codes

<b>Research</b>	<b>Usage</b>
<b>Innovative projects are primarily supported (++)</b>	Use is important
<b>Investment in development</b>	Sustainability is very important (++)
<b>Research is important</b>	Use of existing resources is essential
<b>Research is very important because of the form of organization that has certain limitations for development (+)</b>	Those companies that have a chance of success are supported (+)
<b>Exploring new possibilities is more important</b>	Ideas that have no market alternative are not supported
<b>Employees are expected to be self-initiated</b>	
<b>Exploring new opportunities for specific areas</b>	

*Source: Authors*

Regarding the research of new possibilities, the most important and most repeated codes are:

- Innovative projects are primarily supported
- Research is very important because of the form of organization that has certain limitations for development

Regarding the use of new possibilities, it turned out to be the most important and most repeated are:

- Sustainability is very important
- Those companies that have a chance of success are supported

Business sustainability is very important and it is necessary to take care of it, as well as of the companies supporting. What can be a certain risk is if the business of the incubator focuses on its own sustainability, consequently supporting only secure projects that would succeed even without such institutions.

Analyzing the representation of aggregate codes related to research and use, it was concluded that most of managers' behavior of is focused on research and a smaller part on use, which is shown in the chart below.

**Table 4.** Relationship between research and usage

	Research	Useage
<b>Institution 1</b>	+/-	+/-
<b>Institution 2</b>	-	+
<b>Institution 3</b>	+	-
<b>Institution 4</b>	+	-
<b>Institution 5</b>	+	-
<b>Institution 6</b>	+/-	+/-
<b>(+) more pronounced</b>	(-) not expressed	(+/-) partially expressed

Source: Authors

**Leadership style**

The analysis in the paper determined which specific style is mostly represented in entrepreneurial support institutions, i.e. the adequate style for such institutions. In this part, it was analyzed which specific leadership style is predominantly represented in the management of such institutions. In the analysis of codes, significantly more codes corresponding to the transformational leadership style have been identified.

**Table 5:** Transactional or transformational leadership - aggregate codes

<b>Transformational</b>
<b>Direct communication is established with each employee (+++)</b>
<b>The staff identifies with the organization</b>
<b>The proactivity of each employee is required.</b>
<b>Trying to motivate employees to perform tasks (+)</b>
<b>Communication on a daily basis</b>
<b>A special approach to each person</b>
<b>Innovation of the process is more important without which there is no alternative for such centers</b>
<b>Innovation is essential to achieve exceptional results</b>
<b>Innovation and process optimization is more important (++)</b>
<b>Transactional</b>
<b>The use of the reward and punishment system (++)</b>
<b>Partly a system of rewards and punishments</b>
<b>Trying to work with the staff to improve their engagement</b>
<b>Managing existing resources</b>
<b>More concerned with management</b>
<b>Different level of qualification of employees</b>
<b>Centralization is very high (+)</b>

Source: Authors

The analysis of codes associated with transformational leadership styles most often repeats the following:

- Direct communication is established with each employee

- Innovation and optimization of the process is more important
- Employees are tried to be motivated to perform tasks

Establishing direct communication with each of the employees, as well as with companies, or company representatives, is crucial for the successful management of such institutions. Direct communication and a special approach to each employee and each organization is crucial for successful business. Innovation and optimization are also recognized as very important as well as motivating employees without whose involvement such centers have no alternative.

The most common codes associated with transactional management style are:

- A reward and punishment system is used
- Centralization is very high

Although in some institutions it has been shown that there is, to some extent, a system of rewards and penalties, for running such institutions, with extremely small management, applying a system of rewards and penalties, and have a high level of centralization cannot be fully justified, especially since the business significantly depends on the engagement of employees.

**Table 6:** Representation of leadership types in entrepreneurial support institutions

	Transformational	Transactional
<b>Institution 1</b>	+	-
<b>Institution 2</b>	+/-	+/-
<b>Institution 3</b>	+	-
<b>Institution 4</b>	-	+
<b>Institution 5</b>	+	-
<b>Institution 6</b>	+	-
<b>(+) more pronounced</b>	(-) not expressed	(+/-) partially expressed

*Source: Authors*

After an individual analysis of institutions and the determination of the predominantly represented style of behavior, as shown in the chart above, it was determined that the predominantly represented leadership style in entrepreneurial support institutions is a transformational leadership style, and to a lesser extent, transactional. The combination and adaptability of these styles is extremely pronounced and it can be concluded that the leadership style used in entrepreneurial support institutions is an ambidextrous leadership style that primarily combines transformational and transactional leadership style.

### ***"Opening" or "closing" behaviors***

The diagram above shows an analysis of "opening" or "closing" behavior in managing entrepreneurial support institutions. Whether employees are exploring new opportunities and whether they are allowed creativity in doing business or whether it is more desirable to use already existing procedures and resources characterizes and distinguishes between opening and closing behavior. When analyzing the codes of these behaviors, the obtained are shown in the following table.

**Table 7:** Opening and closing behavior - aggregate codes

<b>Opening behavior</b>
Employees are expected to be creative and research (+)
The way of behaving depends on the situation
It is desirable that they use all available resources
Employees need to be creative and explore new opportunities
Possibility of independent thinking and acting
Space for your own ideas
<b>Closing behavior</b>
Complying with procedures is essential (+)
Depending on the situation, they need to use existing resources
Controlling goal achievement

Source: Authors

The following are most common codes in the analysis associated with "opening" behavior:

- Employees are expected to be creative and research

Employees, as key to the development of such institutions, must have a high degree of creativity and a tendency to explore new development opportunities. Employees must also be given space for their own ideas and allow certain mistakes from which they can learn.

The most common codes for "closed" behavior are:

- Compliance with procedures is essential

The need to adhere to procedures and certain routines has been recognized as the most common form of "closing" behavior. Although it is important to respect the rules and procedures, they should be taken into account, but no one should allow the institution and its development to be limited by procedures.

**Table 8:** Relations between “opening” and “closing” behavior

	Opening	Closing
<b>Institution 1</b>	+	-
<b>Institution 2</b>	+/-	+/-
<b>Institution 3</b>	+	-
<b>Institution 4</b>	+/-	+/-
<b>Institution 5</b>	+	-
<b>Institution 6</b>	+	-
<b>(+) more pronounced</b>	(-) not expressed	(+/-) partially expressed

Source: Authors

**Flexibility**

Flexibility and cognitive abilities are especially pronounced and important in modern and innovative leadership styles and are strongly expressed as managerial qualities. The following table shows the codes related to flexibility.



**Table 9:** Flexibility – aggregated codes

<b>Flexibility</b>
<b>Flexible behavior</b>
<b>Changes are constant and it is important to adapt to changes (+)</b>
<b>Consistency is very important, although the basic goal and purpose need to be adjusted and taken into account</b>
<b>Flexible managerial behavior and adaptability to the situation</b>
<b>Working on many projects requires good organization and flexibility</b>

*Source: Authors*

New challenges and changes determine the flexibility of managers as key to adapting the incubator to the needs of innovative companies. The analysis of the codes shows that in all entrepreneurial support institutions, managers have a high degree of flexibility and high cognitive ability.

The most common flexibility codes are:

- Changes are constant and it is important to adapt to changes

Incubator managers show a high degree of flexibility in management and adapt their style to certain changes. Incubator managers must be extremely flexible and adaptable to certain new situations.

The analysis of the codes of these behaviors yielded the results as shown in the following table.

**Table 10:** Traditional styles - aggregated codes

<b>Autocratic</b>
<b>The director is an authority</b>
<b>The director makes the decisions</b>
<b>Low level of independent decision-making of followers</b>
<b>Democratic</b>
<b>High degree of delegation of authority and responsibility (++)</b>
<b>Two-way communication (+)</b>
<b>High engagement of followers</b>
<b>High degree of delegation</b>

*Source: Authors*

The codes related to the autocratic style of leadership are not particularly pronounced. The director as an authority and someone who makes the majority of decisions and the low level of independent decision-making did not match in several institutions, and we can conclude that such leadership is not appropriate and not predominately represented in entrepreneurial support institutions. This does not mean that the director is not an authority and does not make decisions, but uses more democratic leadership styles.

In the case of codes related to democratic leadership style, the most pronounced are:

- High degree of delegation of authority and responsibility
- Two-way communication

A high degree of delegation of authority and responsibility as a two-way communication is certainly a way of leadership style that can be applied in such institutions.

Further analysis of these codes, which can be linked to traditional styles, leads to the predominance of the majority characteristics of democratic leadership and, to a lesser extent, autocratic leadership, as shown in the following chart.

Due to the extremely small number of employees in all companies, there is good communication between employees as well as employees towards the leader. Leaders are a formal authority but there is a high degree of delegation of authority and decision-making by employees.

**Table 11:** Representations of traditional leadership styles

	Democratic	Autocratic
<b>Institution 1</b>	+	-
<b>Institution 2</b>	+/-	+/-
<b>Institution 3</b>	+	-
<b>Institution 4</b>	+	-
<b>Institution 5</b>	+/-	+/-
<b>Institution 6</b>	+	-
<b>(+) more pronounced</b>	<b>(-) not expressed</b>	<b>(+/-) partially expressed</b>

Source: Authors

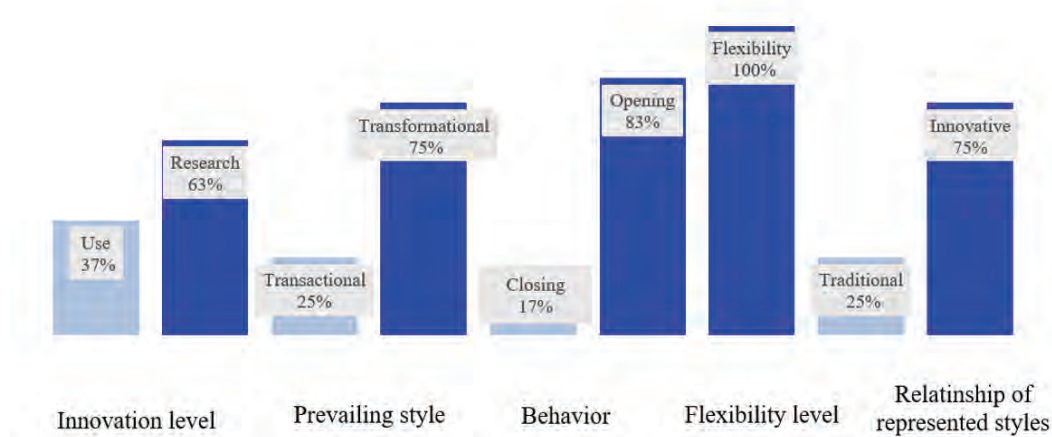
During the analysis, it was determined that there is a predominantly transformational and transactional leadership style. Their combination and a high degree of managerial flexibility depending on the situation confirms the hypothesis that modern and innovative leadership styles are used in the management of new technology incubators.

**Table 12:** Overview of leadership styles represented

	Institution 1	Institution 2	Institution 3	Institution 4	Institution 5	Institution 6
<b>Research</b>	+/-	-	+	+	+	+/-
<b>Usage</b>	+/-	+	-	-	-	+/-
<b>Transformational style</b>	+	+/-	+	-	+	+
<b>Transactional</b>	-	+/-	-	+	-	-
<b>Opening behavior</b>	+	+/-	+	+/-	+	+
<b>Closing behavior</b>	-	+/-	-	+/-	-	-
<b>Flexibility</b>	+	+	+	+	+	+
<b>Traditional styles</b>	-	+	-	+/-	-	-
<b>The presence of innovative styles</b>	+	-	+	+/-	+	+
<b>(+) more pronounced/high</b>			<b>(-) not expressed</b>		<b>(+/-) partially expressed/low</b>	

Source: Authors

The analysis of the research results, as shown in the table above, leads to the conclusion that there is a high representation of modern and innovative leadership styles in entrepreneurial support institutions. Certain models of traditional leadership style. Modern and innovative management styles of entrepreneurial support institutions change depending on the situation and the needs of the company and employees. Taking into account all the above, it can be concluded that the leadership style used in entrepreneurial support institutions is an ambidextrous leadership style which, depending on the situation, involves the application of multiple leadership styles in order to maximize the results of the incubator

**Chart 1: Presentation of research results**

Source: Authors

As a result of the analysis of entrepreneurial support institutions in relation to leadership styles, we came to the following results. Regarding “usage” or “research” that the behavior of managers in most institutions is more focused on “research” and less on use. Regarding the predominantly represented leadership style in relation to the recognized transactional or transformational leadership styles, transformational leadership styles are more represented. Behavior of managers in terms of “opening” or “closing” behavior can be concluded to be dominated by “opening” behavior, especially in terms of expectations of employees to be creative and research. The way of doing business requires high flexibility from managers as crucial in terms of running entrepreneurial support institutions and research has confirmed this through the highest degree of flexibility. In the end, the research showed that innovative leadership styles are significantly more represented in entrepreneurial support institutions, while certain forms of traditional leadership styles are insignificantly represented.

#### 4. Discussion and limitations

Research is focused on the leadership styles represented in entrepreneurial support institutions and identifies and recognizes leadership style. Primarily, the research includes institutions which have high managerial support and a high technological level and focus. Included institutions can be taken as reference for making conclusions on leadership style in entrepreneurial support institutions. In this sense, this research found that similar or the same leadership styles are mostly represented in analyzed institutions.

In addition to those analyzed institutions, in the region there is a certain number of entrepreneurial support institutions that are not covered by this research, because it is a fact that to include these institutions it is necessary to modify the research criteria.

Also, entrepreneurial support institutions do not have of the same focus for establishing businesses and supporting services for entrepreneurs, and that is why is decided to analyze only institutions which support the ICT industry and entrepreneurs in this field.

One of the reasons for this sample is that work, success and even leadership style can be analyzed only in institutions that have a sufficiently long continuity in work and there are very few institutions in the region that can meet these criteria.

This paper did not analyze results of institutions and that can be taken as a limitation and at the same time a recommendation that the future research include results of the analyzed institutions in order to draw the connection and determine the results of certain leadership styles. It would be certainly important to determine the significance, effectiveness and efficiency of certain styles, i.e. to determine whether if there is a connection and effect of leadership styles in entrepreneurial support institutions on the results of these institutions.

Certain limitations of the research are reflected in the partially different organizational structure and size of the management of analyzed entrepreneurial support institutions, but in the other hand the goal and focus of the work was on key managers - directors. In addition, as it is mentioned before the analysis of leadership styles did not include and did not deal with the results of these institutions and the correlation of leadership styles with the results of entrepreneurial support institutions.

In addition, a small sample which included only the most representative institutions in the region in this field, may be a limitation of the research. It would be good to take a larger sample into the analysis by adding more entrepreneurial support institutions which have less managerial support and lower technological innovation and focus, and then to compare it with the research results. As a certain limitation in the research, it is that it is limited to a small number of entrepreneurial support institutions and primarily to science parks, innovation centers and incubators for new technologies. It is recommended to do the research in each of these countries (Bosnia and Herzegovina, Croatia and, Serbia) to reach a comprehensive conclusion or comparative analysis of these studies. Finally, by expanding the research to other regions and countries close to this region and/or the EU to determine if leadership styles are the same or there are some deviations depending on the country, industry or entrepreneurship support institution.

This research can be a starting point for determining leadership styles in entrepreneurial support institutions and are set by the hypothesis and assumption of recognizing leadership styles. As such, it provides a starting point in next analysis and identification of styles represented in entrepreneurial support institutions.

## **5. Concluding remarks**

It is very important to take into account the managerial component in entrepreneurial support institutions because research has shown, not only that entrepreneurs care about the infrastructure offered in entrepreneurial support institutions, but also that the quality of advisory services offered by institutions has increased in recent decades. One of important qualities is the management team that leads institutions, but also provides consulting services and understands the processes taking place in the market.

Managers in entrepreneurial support institutions face limited resources and different needs of the company as well as human resources with the institution. When analyzing these forms of behavior, it was found that managers have a greater tendency to radical innovation or use new opportunities than using existing resources.

In determining the specific style represented in entrepreneurial support institutions, it was found that there is a predominantly transformational and transactional leadership style. Behavior of managers in terms of "opening" or "closing" behavior, and the degree of freedom of employees,

i.e. giving freedom to explore new opportunities and creativity in doing business, have shown that "opening" behavior of managers significantly prevails with a present high degree of flexibility and adaptability. Prior to the analysis of the specific style, the characteristics of the leaders of entrepreneurial support institutions were analyzed and it was determined that the characteristics of the leader are more prevalent. A high degree of flexibility and cognitive abilities, "opening" and "closing" behavior and adaptability, as elements of innovative - ambidextrous leadership style are crucial for the successful management of new technology incubators and incubators in general.

The analysis of the research results, as shown, leads to the conclusion that in entrepreneurial support institutions there is a high representation of modern and innovative leadership styles. Certain models of traditional leadership style are also present but they are not adequate for running such institutions. Modern and innovative management models change depending on the situation and the needs of the company and employees. Taking into account all the above, it can be concluded that the leadership style used in entrepreneurial support institutions is ambidextrous leadership style which, depending on the situation, involves the application of multiple leadership styles in order to maximize the results of entrepreneurial support institutions.

## REFERENCES

- Aaboen, L. (2009): *Explaining incubators using firm analogy*. Technovation, 29, pp. 657-670, 657.
- Albahari, A. P.-C.-G. (2017): *Technology Parks versus Science Parks: Does the university make the difference?* 13, 2. Technological Forecasting & Social Change, 13(28), 16.
- Alghamdi, F. (2018): *Ambidextrous leadership, ambidextrous employee, and the interaction between ambidextrous leadership and employee innovative performance*. Journal of Innovation and Entrepreneurship, 7:1.
- Bass, B. M. (2006): *Transformational leadership*, (2nd ed.), NY: Mahwah, Lawrence Elburm, New York, 2006., str. 1-2. Lawrence Elburm, New York, 1-2.
- Bayat, P., Daraei, M. (2022): *Designing of an open innovation model in science and technology parks*. Journal of Innovation and Entrepreneurship, 11:4, 2.
- Birkinshaw, J. M. (2006): *How Management Innovation Happens*, . MIT Sloan Management Review, Vol. 47, pp, 82.
- Buble, M. (2011): *Poslovno vođenje (Business Leadership)*. Zagreb, M.E.P., Zagreb.
- Certo, S. C. (2008): *Moderni menadžment (Modern Management)*, Zagreb: MATE.
- Cho, Y. S. (2019): *Transformational leadership, transactional leadership, and affective organizational commitment: a closer look at their relationships in two distinct national contexts*. Springer Nature Limited, 3.

- Čizmić, E. T. (2010): *Savremeni menadžerski koncepti (Contemporary Managerial Concepts)*, Sarajevo: Ekonomski fakultet, Sarajevo.
- Correia, A. M. (2022): *Management model by processes for science parks*. Econstor, 2.
- Covery, S. R. (2013): *The 7 Habits of Highly Effective People, Powerful Lessons in Personal Change*, Rosetta Books LCC, 25<sup>th</sup> Anniversary Edition, .
- De Bes, F. T. (2016): *Inovacijom do pobjede. Model od A do F (Innovation to victory. Model from A to F)*, Zagreb: Školska knjiga.
- Halmi, A. (2005): *Strategija kvalitativnih istraživanja u primijenjenim društvenim znanostima (Strategy Of Qualitative Research In Applied Social Sciences)*. Zagreb: Naklada Slap.
- Henriques, I. C. (2018): *Science and Technology Park: Future challenges*. Technology in Society, 53, 144-160.
- Keller, R. T. (2015): *Transformational leadership, initiating structure, and substitutes for leadership: a longitudinal study of research and development project team performance.*, Journal of Leadership & Organizational Studies, Vol. 22 (1), 54-71.
- Löfsten, H. K. (2020): *Science Parks and talent attraction management: university students as a strategic resource for innovation and entrepreneurship*. European Planning Studies, 28(12).
- March, J. G. (1991): *Exploration and exploitation in organizational learning*. Organization Science, Vol. 2(1), 71–87, 1991, str.71. Organization Science, Vol. 2(1), 71–87.
- Monkman, D. (2010): *Business Incubators and Their Role in Job Creation*, Washington, USA: National Business Incubation Association.
- Northouse, P. G. (2010): *Vodstvo: teorija i praksa (Leadership: Theory and Practice)*, Zagreb: Mate, 4. edition.
- Rosing, K. F. (2011): *Explaining the heterogeneity of the leadership-innovation relationship: Ambidextrous leadership*. Leadership Quarterly, 956-974, p. 966.
- Schumpeter, J. A. (2012): *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and the Business Cycle*, translated from the German by Redvers Opie., Transaction Publishers. Journal of Comparative Research in Anthropology and Sociology, 142.
- Sikavica, P. Bahtijarević-Šiber, F., (2004): *Menadžment – teorija menadžmenta i veliko empirijsko istraživanje u Hrvatskoj (Management - Management Theory and Large Empirical Research in Croatia)*, Zagreb: Masmedia d.o.o.
- Steruska, J. S. (2019): *Do science and technology parks improve technology transfer? Technology in Society*, 59 (101127), 59.

Šunje, A. (2002): *Šunje, A., Top – menadžer: vizionar i strategy (Top Manager: Visionary and Strategist)*, Sarajevo: Tirada.

Tolulope, O. S. (2020): *Leading innovation: Empirical evidence for ambidextrous leadership from UK high-tech SMEs*. Journal of Business Research.

Yukl, G. (2013): *Leadership in organizations (6th ed.)*. Pearson Prentice Hall. New York: University at Albany, State University of New York, 2013.

Zacher, H. R. (2015.): *Ambidextrous leadership and team innovation*. Leadership & Organization Development Journal, 55.

*A scientific paper*

**Bianca Matković, univ.spec.oec.**

Morium d.o.o., Maksimirska cesta 284, Zagreb,

E-mail address: bianca@morium.hr

**Marijana Cesarec, univ.spec.oec.**

Rehabilitation Centre Nada, Hrvatske bratske zajednice 26, Karlovac,

E-mail address: marijana.cesarec4@gmail.com,

**Željko Požega, Ph. D., Full Professor**

University of J.J. Strossmayer in Osijek, Faculty of Economics, Trg Ljudevita Gaja 7, Osijek,

E-mail address: zeljkopozega@gmail.com

## **RELATION BETWEEN INVESTMENTS AND THE NUMBERS OF VISITORS IN NATIONAL PARKS AND NATURE PARKS**

### ***ABSTRACT***

*The main purpose of this paper is to present the importance of continuous investments of the Government of the Republic of Croatia and European Union funds in the infrastructure and facilities of national parks and nature parks in order to increase the appeal of their locations and better tourist offer of those natural sites protected by the law. The aim of the research is to demonstrate the impact of the new tourist infrastructure and new interesting multimedia content aimed at educational projects on the maintenance or increase in the number of visitors. The paper presents data on the number of visitors in the period from 2013 to 2020 in national parks and nature parks in the Republic of Croatia and the increase in the number of visitors in accordance with the investments in the promotional projects of sustainable use of natural heritage. In addition, the paper presents an analysis of investments based on the data collected from national parks and nature parks, as well as the data on state and European Union funds investments through infrastructure enhancement projects in national parks and nature parks that affect the appeal of the locations and, consequently, the increase in the number of visitors. The aim of the paper is also to present the data on the correlation between the investments in national parks and nature parks from the state budget of the Republic of Croatia and European funds and the results of these investments visible through the increase in the number of visitors to national parks and nature parks of the Republic of Croatia. Hypothesis H1 is tested using the collected data: The level of investments in national parks and nature parks significantly affects the level of increase in the number of visitors.*

**Key words:** *investments, national parks, nature parks, visitors*

### **1. Introduction**

Nature conservation was recognised in the early stages of independence of the Republic of Croatia (RC) and incorporated as such in the Constitution where it is defined as one of the highest values. Preserved nature contributes to ensuring all the functionalities necessary for life and economic development, so, consequently, sustainable and responsible development of rural areas, as one of the challenges of tourism development in RC, has experienced growth in recent



years. The richness and diversity of natural resources are some of the most important resources of RC, hence the protection of such nature is a priority of each RC Government and the line ministry - Ministry of Economy and Sustainable Development (MESD). National parks (NatiP) and nature parks (NatuP) are all located in rural and less developed areas; hence their tourist valorisation automatically helps the development of these rural areas.

Quality management of natural resources is a political priority of any mature democracy, and the protection of the environment and nature is one of the most demanding activities penetrating all aspects of organisation of human society and quality of life. (Ministry of Economy and Sustainable Development (2020). By adopting the National Sustainable Development Strategy, MESD has become a coordination point for all topics in the sustainable development sector, as well as a place of coordination of all multilateral environmental agreements and global issues of sustainable development at the international level. The Strategy defines the subject of environment and natural resources as one of the special topics and emphasises the need to protect nature by implementing and conserving biological and landscape diversity and protecting natural values. The umbrella strategic document within the nature protection sector is the Nature Protection Strategy and Action Plan of RC for the period from 2017 to 2025 (Narodne Novine 2020), which was adopted by the Croatian Parliament upon the proposal of the Government of the Republic of Croatia. "The Strategy assumed all global nature conservation commitments defined by the Strategic Plan of the Convention on Biological Diversity adopted in Rio de Janeiro at the United Nations Conference on Environment and Development in 1992, as well as the then valid obligations of the European Union (EU) and the goals defined by the EU Biodiversity Strategy until 2020, adopted by the European Parliament as early as in 2011." (Ministry of Economy and Sustainable Development, 2020).

As everywhere else in the world, nature in RC is under the constant influence of human activities and development, and, regardless of the conservation measures that are being implemented, nature and some of its components are still endangered. Therefore, the Nature Protection Strategy and Action Plan of RC for the period from 2017 to 2025, as the fundamental nature protection document, contains five strategic goals (Narodne novine, 2017):

1. increase the effectiveness of basic nature protection mechanisms
2. reduce direct pressures on nature and encourage sustainable use of natural resources
3. enhance the capacity of nature protection systems
4. increase knowledge and availability of nature-related data
5. raise the level of knowledge, understanding and public support for nature protection.

The Strategy of the Government of the Republic of Croatia defines the goals of developing a system of interpretation and management of visitors in protected areas and individual parts of the ecological network, as well as informing and educating the public. It should be noted that informing and educating the public is a very important factor in the nature protection system.

Every single tourist destination, especially NatiPs and NatuPs, inevitably leads to the enhancement of tourist facilities outside the parks, while the increased construction of facilities and apartments challenges the environmental sustainability of these parks. Plitvice Lakes National Park is one such example where increased construction, especially in the area outside Veliki Slap, jeopardised the preservation of cleanliness of the park and all waters in the park, as there is no developed sewage network in the area, which resulted in waste waters overflowing and polluting the park. The calcareous soil and sinkholes in Plitvice Lakes are becoming permeable which, unfortunately, leads to a greater possibility of environmental pollution because waste waters penetrate the park. It is precisely because of the protection of nature and

natural heritage that RC should make additional infrastructural investments, such as the installation of agglomeration systems and the introduction and construction of a quality sewage and wastewater system. Intense efforts are made on the communal infrastructure through the programme of improving water and communal infrastructure of agglomerations of local self-government units funded from the Cohesion Fund, the Operational Programme for Environmental Protection, with the co-funding of the Ministry of Agriculture, national water management entity Hrvatske vode and local self-government units.

The main motivating factor for the arrival of domestic visitors to the NatuPs and NatiPs is the escape from everyday life, crowds and cities, and the use of weekends to spend quality time with children in nature and fresh air. An additional bonus is certainly getting acquainted with the natural resources, biodiversity of natural heritage and education about nature and its specificities. This additional information and educational content, which has been substantially enriched and upgraded with new tourist infrastructure in recent years, brings new revenues to the parks and adds to their interestingness and appeal for all target groups of visitors. It is these new trends in tourism, such as escaping from mass tourism, the possibility of contracting COVID and finding quieter places, accommodation capacities or events in the open space and fresh air, that require new perspectives in the development of the tourist offer.

## **2. Research methodology**

The main purpose of the paper is to demonstrate the importance of continuous investments of the Government of the Republic of Croatia as well as a European Union funds in infrastructure and facilities in NatiPs and NatuPs in order to contribute to increased appeal of their locations and better tourist offer of those natural sites protected by the law. The aim of the research is to demonstrate the impact of the new tourist infrastructure and new interesting multimedia content aimed at educational projects on the maintenance or increase in the number of visitors. In this paper, a considerable number of research methods has been used to an appropriate extent in order to ensure the most reliable, plausible and specific knowledge and conclusions on the analysed subject. Their use depended on the set goals, and they complemented each other. The research methods predominantly used in this paper are method of analysis and synthesis, inductive and deductive method, method of abstraction and concretisation, method of generalisation and specialisation and comparative method. Hypothesis H1 is tested using the collected data: The level of investments in national parks significantly affects the level of increase in the number of visitors. Datas were collected separately for each NatiP, from their annual financial reports (Poslovna Hrvatska, 2021) and internal datas, as well as from the reachable internal datas of the Croatian National Tourist Board regarding the number of visitors for the National Parks. The datas on investment in National Parks and were taken from the Ministry of economy and sustainable development, and they represent the investment of the Republic of Croatia and European Union Funds. This variables present the best approach to measure the correlation between the investments and the increase the visitors of every each NatiP.

## **3. Analysis of investments in national parks and nature parks**

“Tourist destination management is a complex process because all destination specificities should be taken into account when planning the development of tourism. NatiP management is an additionally demanding process because it primarily requires the conservation of biodiversity and balancing of economic, environmental and socio-cultural principles of sustainable development.” (Bučar, Hendija, Bauer, 2020.) MESD defines the strategy,

programme flows and plans for sustainable development of the society based on the principle of sustainable use of existing resources with the aim of creating development opportunities and a balanced prosperous society. The goal of such a strategy is certainly a resource-based, competitive and efficient economy and rational and sustainable management of natural resources. A sustainable tourism industry is based on a number of factors, hence the impact of tourism on the community as a whole must be particularly taken into account.

NatiPs and NatuPs, as true natural beauties and riches of RC, represent great tourist and ecological value (Narodne novine, 2014). The need and desire to visit such clean, authentic places of preserved beauty is becoming increasingly important, hence the number of visitors (domestic and foreign guests) has been rising every year. The increased number of visits creates a collision between the development of tourism and the protection of these natural resources, especially those that are denoted as UNESCO World Heritage Sites, such as Plitvice Lakes and Paklenica National Park. In fact, these places of unique natural beauty, where nature was formed so as to create unique and interesting architectural forms interwoven with the vegetation of the area, represent the desired destination of many visitors precisely because of their authenticity and natural landmarks.

In accordance with the Nature Protection Act (Narodne novine, 2020) protected areas in RC cover 9.3% of the total surface area of the country, i.e., 11.38% of its mainland, 4.76% of which are NatiPs and NatuPs. The importance of nature conservation in NatiPs and NatuPs is one of the national priorities because they are considered areas intended for the preservation of authentic natural values and have scientific, cultural, educational and recreational and tourist purposes. It is precisely this rich natural diversity and natural resources that place RC at the very top of the European protected nature, and they represent the segment of tourism which attracts visitors from all over the world. Therefore, 8 NatiPs and 12 NatuPs registered in RC can become the basis for the development of the tourist offer if the enhancement of their infrastructure is ensured.

The support and coordination of all stakeholders directly or indirectly involved in nature protection is required for the implementation of measures for the protection and preservation of natural values as efficiently as possible. Among the institutions from the nature protection sector, public institutions managing protected areas and the areas covered by the Natura 2000 ecological network have the most prominent contact with the public and the opportunity to act. Through visitor points and centres, educational trails and boards, or installations in nature, visitors get acquainted with the values of the area, while events and educational programmes that usually consist of expert guides and workshops represent a significant form of education. These requirements are included as some of the priorities of nature protection in the current multiannual financial period from 2014 to 2020 through the 2014 – 2020 Operational Programme Competitiveness and Cohesion (OPCC), especially through the Specific Objective 6c2 (SO 6c2): Increasing the appeal, educational capacity and sustainable management of natural heritage sites; which provided financial resources for NatiPs and NatuPs amounting to HRK 651,576,579.41 (approximately EUR 85 million) in grants. Investments are related to the promotion of sustainable use of natural heritage with the aim of contributing to socio-economic development in local and regional environments.

In addition to the support ensured from the EU structural and investment funds, domestic co-funding was provided not only through the NatiPs' and NatuPs' own revenues, but also through the Environmental Protection and Energy Efficiency Fund and through the state budget resources collected in accordance with the Ordinance on Criteria and Manner of Use of

Donations and Own Revenues of NatiPs and NatuPs (so-called joint funds of RC parks). The projects refer to the improvement of the visitor infrastructure and the construction and equipping of educational and information centres in NatiPs and NatuPs. Out of 17 projects, several have been successfully completed (NatuP Učka, NatiP Risnjak), and the rest are in the final phase of implementation and their completion is expected by the end of 2022.

The amount of HRK 389 million has been paid from the state budget of RC through the call for grants within the framework of SO 6c2 and through joint funds of RC parks since the beginning of project implementation. The legal basis is contained in the Nature Protection Act and by-laws arising from it, among which is the Ordinance on Criteria and Manner of Use of Donations and Own Revenues of NatiPs and NatuPs (Narodne novine, 2017) and the Ordinance on Concession Approvals in Protected Areas. A potential for continued investments of this type was recognised through the new multiannual financial period from 2021 to 2027, with the programming of new operational documents underway. The priority of infrastructure has also been recognised through the investments in the renovation of existing mountaineering and visitor infrastructure in the protected areas and ecological network areas. In order to ensure the readiness of projects for application, the call of the Environmental Protection and Energy Efficiency Fund, that provided funds for the project preparation, has recently terminated, which considerably helps project applicants because the preparation of documentation poses another financial challenge to them. Said Fund has co-funded the visitor infrastructure from 2013 until the present day. The Fund added national funds (15%) to projects for which EU funds were approved from the OPCC (co-funding of 85%) as most public institutions do not have sufficient funds to close the financial structure by themselves. The reason for the increase in the amount of funds is the exceptional interest of public institutions and mountaineering associations in the timely preparation of project documentation for the restoration of visitor and mountaineering infrastructure whose works and equipment would be funded from the National Recovery and Resilience Plan (NRRP) 2021 – 2026 – Component C1.6.

The development of sustainable and resilient tourism in RC is the responsibility of the Ministry of Tourism and Sports. Investment C1.6. R1-I1 Regional diversification and specialisation of Croatian tourism through investments in the development of high added value tourism products refers to the funding of already prepared public investment projects in tourism infrastructure and sports-recreational centres and active tourism zones. These investments contribute to the transformation of the tourism model towards sustainable tourism through the support of public investments in green and digital transition of public infrastructure. In addition to contributing to sustainable development, this investment will also contribute to the recovery and resilience of the tourism sector through the diversification of the tourist offer by increasing the appeal of destinations and, consequently, tourist demand. Timely preparation of project documentation raises the readiness of projects for the withdrawal of funds from NRRP. Through strategic documents, such as the Nature Protection Strategy and Action Plan of RC for the period 2017 – 2025 and Operational Programme Competitiveness and Cohesion 2014 – 2020, funds have been provided for the increase of appeal, educational capacity and sustainable management of natural heritage sites. Within the call S6c2 “Promotion of sustainable use of natural heritage”, 20 projects were contracted for 17 public institutions of NatiPs and NatuPs with a total value of HRK 735,488,774.53 in addition to EU funds amounting to HRK 618,032,050.15, and 34 projects for 21 public institutions of the county, municipality and the city in the total value of HRK 613,432,892.52 in addition to EU funds amounting to HRK 423,984,651.10. All projects with approved funding have an educational and interpretive function.

**Table 1:** List of NatiP and NatuP projects in RC that received grants (2013-2022)

<b>NatiP / NatuP – project title</b>	<b>PROJECT DESCRIPTION</b>	<b>AMOUNT (millions of HRK)</b>
Brijuni – Refreshed appearance of Brijuni	<ul style="list-style-type: none"> <li>• Renovation of 7 smaller buildings on the island of Mali Brijun for educational and tourist purposes</li> <li>• Development of the information centre on Veliki Brijun</li> <li>• Construction of the promenade, renovation of the summer cinema and purchase of film material</li> <li>• Procurement of tourist trains and boats</li> <li>• Development of a series of educational and interpretive contents for visitors</li> </ul>	32.1
Krka – Unknown Krka – hidden treasures of the upper and middle course of the Krka River	<ul style="list-style-type: none"> <li>• Construction and renovation of neglected facilities into visitor infrastructure: Eco Campus Krka in Puljani Nature Interpretation Centre Krka - the source of life in Kistanje Electrification of part of boat transport</li> </ul>	78.6
Mljet – Improving the system of sustainable management, tourist valorisation and interpretation of natural heritage – Mediterranean Odyssey	<ul style="list-style-type: none"> <li>• Construction of the Interpretation Centre Gustijerna</li> <li>• Parking, information centre, souvenir shop, service facilities, development of trails</li> <li>• Transport improvement (mini-bus)</li> <li>• Interpretation and education with special emphasis on local community involvement</li> </ul>	17
Paklenica – Underground city at the heart of Velebit – development of year-round sustainable and safe active tourism in the NatiP and the wider Velebit area	<ul style="list-style-type: none"> <li>• Development of a visitor centre with 2 multimedia exhibitions in the tunnels of the former Yugoslav National Army</li> <li>• Construction of a wooden bridge and an outdoor classroom</li> <li>• Procurement of an electric train</li> <li>• Specifically emphasised security aspect (Croatian Mountaineering Rescue Service HGSS)</li> </ul>	22.9
Risnjak – Volunteer centre with hostel accommodation	<ul style="list-style-type: none"> <li>• Development of a volunteer centre</li> <li>• Development of a parking lot with information reception for welcoming visitors</li> <li>• Development of a series of educational and volunteer programmes</li> </ul>	6
Velebit – Centre of Excellence of the Cerovac Cave – sustainable management of natural heritage and karst underground	<ul style="list-style-type: none"> <li>• Development of pedestrian and roadway area and trails to caves</li> <li>• Development of the visitor centre by reconstructing an abandoned building (former motel)</li> <li>• Installation of adequate lighting in caves</li> </ul>	62.6
<b>Total NatiP</b>		<b>219.2</b>
Biokovo – New Adrion – promoting sustainable use of natural heritage	<ul style="list-style-type: none"> <li>• Construction of a visitor centre in Župa, Skywalk and 7 typical facilities</li> <li>• Development of the road Rodičeva cesta (6 km)</li> <li>• Improvement of the visitor transport system (purchase of mini-buses, bicycles, etc.)</li> <li>• Preparation of a series of educational-presentational and multimedia contents</li> </ul>	32
Kopački rit – Presentational-Educational Centre Tikveš and Sakadaš tourist pier construction project	<p>Tikveš complex:</p> <ul style="list-style-type: none"> <li>• Renovation and equipping of the Tikveš castle as a presentational and educational centre</li> </ul> <p>Sakadaš Lake:</p> <ul style="list-style-type: none"> <li>• Construction of a pier with a pontoon that will adapt to the water level</li> </ul>	51.6

NatiP / NatuP – project title	PROJECT DESCRIPTION	AMOUNT (millions of HRK)
	<ul style="list-style-type: none"> <li>• Procurement of an electric boat for visitors and excursion boats</li> </ul>	
Lonja field – increasing the appeal and educational capacity by building the Visitor Centre “Crna roda” Osekovo	<ul style="list-style-type: none"> <li>• Construction and equipping of a modern Visitor Centre “Crna roda” in Osekovo and 8 vistas</li> <li>• Development of a series of presentational-interpretive contents (ethno-collection, park signalisation, etc.)</li> </ul>	15.8
Medvednica – improving visitor capacity for the purpose of sustainable management	<ul style="list-style-type: none"> <li>• Development of the Visitor Centre Medvedgrad with 3 multimedia museum exhibits</li> <li>• Development of the road and bicycle trails, children’s playground, educational trail</li> <li>• Procurement of electric bicycles</li> <li>• Development of a series of interpretive contents (signalisation, mobile app, hologram, etc.)</li> </ul>	29.7
Papuk – UNESCO Geo stories	<ul style="list-style-type: none"> <li>• Construction of the Visitor Centre (Voćin) and equipping the halls in the House of the Pannonian Sea (Velika)</li> <li>• Construction of the adrenaline park (Duboka) and 6 vistas throughout the park</li> <li>• Reconstruction of the road from Slavonski Drenovac to Jankovac (picnic area on Papuk)</li> <li>• Preparation of a series of presentation and interpretive contents for visitors (indoor and outdoor spaces)</li> </ul>	77.2
Telašćica – Interpretive-Educational Centre Grpašćak	<ul style="list-style-type: none"> <li>• Reconstruction and equipping of military facilities (fortifications) and landscaping (children’s playground)</li> <li>• Preparation and setting up of 3 multimedia exhibitions</li> <li>• Connecting the contents of Uvala Mir and the new Centre Grpašćak</li> <li>• Development of educational and interpretive content for visitors</li> </ul>	15.5
Učka – Učka 360°	<ul style="list-style-type: none"> <li>• Construction and equipping of the Visitor Centre Poklon (reconstruction of the old processing plant)</li> <li>• 4 more visitor facilities (Rovozna, Podmaj, Lovranska Draga and Šušnjeva)</li> <li>• Development of innovative tourism interpretation programmes</li> </ul>	38.5
Vrana Lake – Revitalisation and connection of sites of the Centre for Sustainable Active Tourism BioSfera Biograd	<ul style="list-style-type: none"> <li>• Development of visitor infrastructure in the park and in Biograd (information centres)</li> <li>• Procurement of an electric train and solar boat</li> <li>• Development of the port of Crkvine and two educational trails</li> <li>• Construction of an adrenaline park</li> </ul>	22.3
NatuP Žumberak – Visitor Centre Sošice, Samobor Highlands	<ul style="list-style-type: none"> <li>• Visitor centre with a multi-purpose hall, exhibition space and souvenir shop</li> <li>• Buildings with accommodation facilities, toilets, restaurant, landscaped park with educational trail</li> <li>• Amphitheatre, sports fields and children’s playground</li> <li>• HGSS point with search and rescue equipment</li> </ul>	27.4
<b>Total NatuP</b>		<b>310</b>
<b>TOTAL</b>		<b>529.2</b>

Source: Ministry of Economy and Sustainable Development, Directorate for Nature Protection, internal data (2021), interview with Assistant Minister for Nature Protection Mr. Kreitmeyer Igor (November 2021)

It derives from the above overview that the total planned investment in the improvement of the infrastructure of NatiPs and NatuPs in RC, which enhances their tourist offer and achieves

greater appeal in the tourist market, amounts to HRK 555.2 million. Competent state institutions continuously invest in the development of rural tourism in RC, tourist and rural infrastructure and development programmes, which is reflected in their results through increased number of visitors in rural areas of the Republic of Croatia. By observing the following data on the number and structure of visitors in NatiPs and NatuPs in the period from 2013 to 2020, a continuous increase in the number of visitors can be noticed (except in 2020 when the COVID-19 pandemic occurred), and this was likely due to the investments in the supporting infrastructure at the protected nature sites, where guests are offered additional amenities in addition to natural beauties. It should be noted that the COVID-19 crisis has affected the entire world and reduced or completely suspended tourist travel for a period of more than a year. This decline in the number of visitors in the period of COVID-19 and lockdown benefited the provisional recovery of nature and vegetation, and surveillance cameras in that period recorded lynx, wolves and bears in certain NatiPs.

**Table 2:** Number of visitors in NatiPs in RC (2013 – 2020)

<b>NatiP</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Brijuni	151007	153086	160010	181560	169299	171794	152522	74135
Kornati	94257	105000	157574	165200	229061	237435	242321	8521
Krka	786635	804411	951106	1071561	1284720	1354802	1364000	423010
Mljet	120464	100787	112156	126699	140329	145751	148395	37844
Northern Velebit	15777	14360	16471	16913	22919	30638	21636	19691
Paklenica	114381	122189	119686	127848	140561	144624	144681	64924
Plitvice Lakes	1188798	1184449	1357304	1429228	1720331	1796670	1771523	445841
Risnjak	13725	11338	12715	14346	16575	16816	31074	14580
<b>TOTAL</b>	<b>2485044</b>	<b>2495620</b>	<b>2887022</b>	<b>3133355</b>	<b>3723795</b>	<b>3898530</b>	<b>3876152</b>	<b>1088546</b>

*Source: Ministry of Economy and Sustainable Development of RC, Directorate for Nature Protection, internal data (2021)*

The number of visitors to NatiPs has been steadily growing since 2013 in parallel with the investments in them. Enhancement of the tourist infrastructure and investment in their modernisation and digitalisation of media content of NatiPs greatly contributes to the influx of more visitors and their increased interest in visitation. In addition to natural beauty, visitors are looking for informative multimedia content and additional services such as catering and shopping (souvenirs, postcards, etc.), hence any such content is essential. This additional content also increases the time that visitors spend in NatiPs and encourages them to spend more and thus create additional revenue. The number of visitors in 2020 was decreased due to the COVID-19 crisis and lockdown, however the statistics for 2021 showed a return and increase in visitors.

In accordance with the increase in the number of visitors to NatiPs and NatuPs of the Republic of Croatia, the data presented in Chart 1 show that the year of COVID-19 (2020) has disrupted tourism flows and travel and reduced common tourist migrations. However, in line with the trends of previous years, it can be assumed that financial figures will take the upward turn with the normalisation of the epidemiological situation and the return to the previous state of visitor migrations. Of course, with the end of the pandemic, it is necessary to continue developing offers in the continental parts of RC, to provide a certain standard at the level of the most demanding guests and be specific in setting the goals and establishing the development strategy because that is the only way to achieve the common goal - year-round tourism and sustainable development where both visitors and locals are satisfied.

Based on the collected business data for each individual NatiP and NatuP and their analysis, it is evident that the investments in infrastructure attract new visitors and encourage the old ones to return. Increased interest in visiting NatiPs and NatuPs can be observed through the investments in the above-mentioned tourist infrastructure, but also through increased interest of visitors (domestic or foreign) in visiting autochthonous, ecologically clean natural places, where nature is preserved at the highest level of authenticity. The modernisation of capacities and their presentation via digital platforms and networks today entails faster and more prominent marketing activities and brings natural resources closer to citizens in the virtual world. As every year, the Plitvice Lakes National Park breaks all attendance records, which only indicates the fact that it requires additional tourist facilities, primarily accommodation capacities.

**Table 3:** Number of visitors to NatuPs in RC (2013 – 2020)

<b>NatuP</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Biokovo	44059	46378	46982	54820	64130	64484	68000	119453
Kopački rit	26013	26764	29836	38679	37062	40135	70000	18418
Lastovo archipelago	29792	21209	-	18940	24520	29567	39338	5936
Lonja field	11850	12320	12100	10028	17000	17500	18779	4862
Medvednica	20560	26191	29873	32591	34423	20081	316373	203339
Papuk	6636	5741	4333	5685	7470	7171	52633	45048
Telašćica	121746	114413	113295	116378	123327	124841	123516	49773
Učka	2346	1687	-	2845	30000	20000	30000	30000
Velebit	35317	32030	37202	43091	49889	56319	50904	27486
Vrana Lake	10938	13449	-	24385	114598	122256	125000	34818
Žumberak (Samobor Highlands)	2800	1652	52600	3534	41674	43179	54678	51000
<b>TOTAL</b>	<b>312057</b>	<b>301834</b>	<b>326221</b>	<b>350976</b>	<b>544093</b>	<b>545533</b>	<b>949221</b>	<b>590133</b>

*Source: Ministry of Economy and Sustainable Development of RC, Directorate for Nature Protection, internal data (2021)*

Unlike NatiPs and their tendency of continuous increase in the number of visitors the situation with NatuPs and the number of their visitors is far more complex and prone to stagnation tendencies and slight increase from year to year. This is evident from the chart below.

Providing diversity of the tourist offer, the uniqueness of natural resources through the development of rural tourism and the creation of new and interesting tourist facilities are the tasks of all local self-government units as well as the competent institutions of the Republic of Croatia. Through MESD, the Environmental Protection Fund and a part of the Ministry of Culture, projects are funded to set up new tourist infrastructure and multimedia content with an emphasis on the educational component. In addition to the above institutions, the Croatian National Tourist Board also contributes to the development of rural tourism by funding new and creative tourist products with the aim of enhancing the tourist offer and professional conferences on the development of rural tourism.

Based on numerous collected data on investment amounts, revenues, number of visitors and other parameters for each individual NatiP and NatuP in RC in the period from 2013 to 2020, the hypothesis H1 was tested: The level of investments in national parks and nature parks significantly affects the level of increase in the number of visitors.

In order to test the hypothesis and assess the impact of investments in NatiPs on their visitation rate, the level of capital investments is estimated, which is related to the number of visitors. In



order to assess the level of capital investments in NatiPs in RC, the approach of accelerated depreciation rate of capital investments in the period from 2013 to 2019 (Leamer, 1984.) will be used (see: Table 4). As an approximation of investments, the sum of total revenues will be used, including revenues from ticket purchases, revenues from European funds projects and revenues representing remittances from the Croatian budget expressed in thousands of HRK. The total amount of capital will be estimated according to the following equation (1):

$$I^{\text{NatiP}} = \sum_{i=0}^n (1 - 0,1333)^n * I_t \quad (1)$$

where:

$I^{\text{NatiP}}$  – represents total investments in NatiPs

n - number of years of depreciation

$I_t$  – annual investments

It should be noted that, despite the data collected for 2020, said year was excluded from the analysis due to the pandemic that began in the same year. In fact, the COVID-19 crisis occurred in 2020, which significantly reduced the average number of visitors, hence the data up to 2019 was used for the analysis. The method of the best linear unbiased estimator was used to measure the impact of investments in NatiPs and NatuPs on their visitation rate. The method of the best linear unbiased estimator defined the regression model according to the following equation (2):

$$nv = aI_i + b + \varepsilon_i \quad (2)$$

where:

nv - represents the number of visitors in each NatiP in 2019

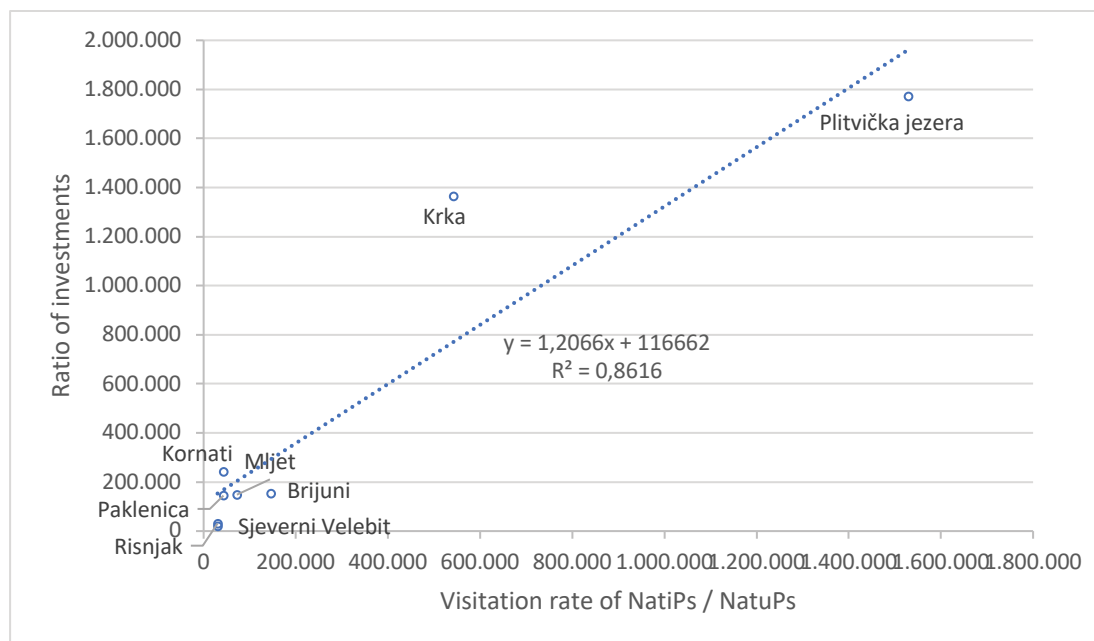
$aI_i$  – the level of total investment in each NatiP in the period from 2013 to 2019 (sum of discounted values of all investments in that period)

$\varepsilon_i$  – relation error

**Table 4:** Discounted investments in NatiPs in the period 2013 – 2019 (in thousands of HRK)

NatiP	2013	2014	2015	2016	2017	2018	2019	TOTAL
Brijuni	0	0	0	0	35,421	46,941	64,378	191,742
Kornati	3,097	3,586	4,554	4,884	7,044	9,767	10,830	51,538
Krka	25,426	32,365	44,717	64,501	91,633	118,104	165,576	603,669
Mljet	0	5,215	7,273	11,289	10,675	14,143	23,589	82,456
Northern Velebit	0	0	0	13,659	9,946	3,042	4,797	34,849
Paklenica	0	0	6,074	9,059	7,205	8,515	12,176	51,499
Plitvice Lakes	95,285	114,582	154,848	181,077	244,096	335,747	403,706	1,629,726
Risnjak	1,694	2,242	2,974	5,137	3,880	5,015	9,270	37,862

Source: prepared by the authors

**Figure 2:** Ratio of investments (in thousands of HRK) and visitation rate of NatiPs

Source: Prepared by the authors

As evident from the obtained discounted investments and through the ratio of investments and the number of visitors, the model brings into correlation the level of investments and the level of increase in visitation of NatiPs. According to the coefficient of determination of the estimated model, it can be concluded that 86.1% of variations in the number of tourist visits is a reflection of the amount or level of investments in NatiPs. According to the defined model, a significant correlation was found between the level of investments and the level of increase in visitation of NatiPs and NatuPs, which leads to the conclusion that hypothesis H1 was confirmed. In addition, the hypothesis was confirmed since the above regression equation shows that for every thousand kuna invested in NatiP / NatuP, the number of visitors will increase on average by 1.2 visitor. This results of research are also applicable for Nature Parks as well.

#### 4. Synthesis of research results

NatiP and NatuP in RC as drivers of destination development are points of great potential for tourism initiatives of local tourist boards and the creation of new and interesting content to attract domestic and foreign guests. Natural resources and their protection through nature conservation, development strategies of local self-government units and strategic documents for their development are the basis for a quality direction of development of rural tourism. Enhancing tourist capacities, supporting infrastructure, ensuring employee training and creativity of programmes contribute to the development of tourism, strengthening of the tourist offer and increase in the number of visitors, and thus better financial indicators of the tourism sector. Government investments in NatiPs and NatuPs in recent years have already yielded results, which are not only visible through an increase in the number of visitors, but also through revenues. Furthermore, the fact that the enhancement of destination tourism implies the development of other branches of economy, especially small and medium-sized enterprises, is not negligible. Previous state investments from the state budget, as well as the funding of projects from EU funds for the development of tourism and supporting infrastructure as the prerequisites for the revitalisation of existing tourist destinations related to NatiPs and NatuPs,

indicated that the local self-governments units need assistance in funding the preparations for these projects. Therefore, the latest investments of grants from the Environmental Protection and Energy Efficiency Fund represent a favourable direction towards the acceleration of the process of development of these tourist locations.

Hypotheses confirmation presented in this research showed that investment in NatiP in Croatia are in the consequential relationship with the increase of the number of visitor in the NatiPs. This trend is scientifically proven in the different world research and now thorough this research it is proven for the Republic of Croatia.

One of the directions that the local self-government units and public institutions managing NatuPs and NatiPs should follow is to enhance the multimedia dimension of these locations and create infrastructure for a greater range of on-site educational programmes. By applying modern technologies and digital platforms, destinations would be brought closer to a wider number of users by providing information on interesting tourist sites and thus working on their promotion to all target groups, from preschool children to retirees. In order to balance tourism (development of tourist programmes, infrastructure and facilities), urban development (construction of accommodation and sports facilities) and nature protection, significant coordination of all state and local government bodies is required. Through the EU Operational Programmes, it is possible to achieve a higher quality of offer in the protected areas while increasing the safety of visitors to locations in the mountain area, such as hiking trails on Plitvice Lakes, Velebit or a promenade and Skywalk on Biokovo.

The development of infrastructure is aimed at enhancing the visibility of tourist locations, but also at increasing the number of visitors and revenues from tourism in these local units, which entails the development of accommodation capacities, gastronomic offer, additional facilities, cycling and adrenaline tourism, greater application of environmental technologies for environmental protection and other forms of tourism that make a long-term comprehensive tourist offer of Croatian national beauties and resources. The synergy of state institutions, European funds and the creativity of local self-government in creating content is important for the development and sustainability of rural tourism, as it creates conditions for the local population to remain in these areas and persuades them against emigrating abroad.

## REFERENCES

Bučar, K., Hendija, Z., Bauer, Z. (2020) *The role of different sources of financing in sustainable tourism development: The case of national parks in Croatia*; Conference Proceedings of the 2nd International Conference on the Economics of Decoupling (ICED), Zagreb, 30 November – 1 December 2020, University of Zagreb, Faculty of Economics Zagreb, pp. 29

Government of the Republic of Croatia (2020), Ministry of Economy and Sustainable Development *Convention on Biological Diversity – CBD* <https://mingor.gov.hr/o-ministarstvu-1065/djelokrug-4925/medjunarodna-suradnja/multilateralni-medjunarodni-sporazumi-1138/konvencija-o-bioloskoj-raznolikosti-cbd/1144> (accessed on 30 October 2021)

Government of the Republic of Croatia, *National Recovery and Resilience Plan for 2021-2026*; <https://mingor.gov.hr/o-ministarstvu-1065/1065> (accessed on 3 November 2021)

Government of the Republic of Croatia, *National recovery and resistance plan 2021 – 2026*, <https://vlada.gov.hr/UserDocsImages/2016/Sjednice/2021/Travanj/55%20sjednica%20VRH/Dokumenti%20NOVO/55%20-%201%20NPOO.pdf> (accessed 7 December 2021)

Government of the Republic of Croatia, *Protected areas*; <https://mingor.gov.hr/o-ministarstvu-1065/djelokrug/uprava-za-zastitu-prirode-1180/zasticena-podrucja/1188> (accessed on 10 December 2021)

Hughes, M., Jones, T., Deery, M., Wood, D., Fredline, L., Whitely, Z., Lockood, M., (2009), *Estimating the Economic, Social and environmental value of tourism to Protected Areas*

Leamer, E. E. (1984) *The Leontief Paradox, Reconsidered*. Source of International Comparative Advantage: Theory and Evidence. Cambridge, Mass.: MIT Press.

Ministry of Economy and Sustainable Development (2020): *About the Ministry*: <https://mingor.gov.hr/o-ministarstvu-1065/1065> (accessed 12 December 2021)

Ministry of Economy and Sustainable Development, Directorate for Nature Protection, internal data (2021), *Interview with Assistant Minister for Nature Protection Mr. Kreitmeyer Igor* (November 2021)

Ministry of Tourism and Sport (2021); Strategy on sustainable development <http://www.odrzivi.turizam.hr/default.aspx?id=4510> (accessed on 11/11/2021)

Narodne novine (2014), *Constitution of the Republic of Croatia*, consolidated text NN 56/90, 135/97, 08/98, 113/00, 124/00, 28/01, 41/01, 55/01, 76/10, 85/10, 05/14 <https://www.zakon.hr/z/94/Ustav-Republike-Hrvatske> (accessed 01 October 2021.)

Narodne novine (2020), *Law on Nature protection*, <https://www.zakon.hr/z/403/Zakon-o-za%C5%A1titi-prirode> (accessed 10 December 2021)

Narodne novine (2017), *Strategy and action plan for nature protection of the Republic of Croatia for the period from 2017 to 2025*; [https://narodne-novine.nn.hr/clanci/sluzbeni/2017\\_07\\_72\\_1712.html](https://narodne-novine.nn.hr/clanci/sluzbeni/2017_07_72_1712.html), pp1 (accessed 12 December 2021):

Narodne novine (2019), *Nature Protection Act, consolidated text of the law* NN 80/13, 15/18, 14/19, 127/19 <https://www.zakon.hr/z/403/Zakon-o-za%C5%A1titi-prirode> (accessed on 23 October 2021)

Narodne novine (2017), *Ordinance on the criteria and manner of using donations and own revenues of national parks and nature parks*, NN 65/2017 (7.7.2017.), [https://narodne-novine.nn.hr/clanci/sluzbeni/full/2017\\_07\\_65\\_1537.html](https://narodne-novine.nn.hr/clanci/sluzbeni/full/2017_07_65_1537.html) (accessed 10 December 2021)

Pacific Asia Travel Association (PATA), *Sustainability & Social Responsibility (SSR)*; <https://sustain.pata.org/wpcontent/uploads/2014/12/80037HughesEconSocEnvEvalWEB.pdf> (accessed on 25/11/2021)

Poslovna Hrvatska, <https://www.poslovna.hr/> (accessed 21 December 2021)

*A scientific paper*

**Marija Mesić Škorić, Ph. D., prof. adviser**

Secondary school of Economics and Administration Osijek

E-mail address: marija.mesic@yahoo.com

**Ivana Franjić, mag. ing. agr.**

Ministry of Agriculture

E-mail address: ivanafranjić89@gmail.com

## **THE IMPORTANCE OF LIFELONG LEARNING FOR DEVELOPING FARMERS' ENTREPRENEURIAL WAY OF THINKING**

### **ABSTRACT**

*In the Republic of Croatia, agricultural activity has an important role in rural development. The population in rural areas is traditionally engaged in the cultivation of agricultural crops, it is necessary to acquaint the population with the possibilities of developing new products with new technologies. It's evident that the agricultural population is not sufficiently educated. Education, knowledge, expertise and entrepreneurial skills as the basis for modern agricultural business. Additional training of the agricultural population encourages entrepreneurship in agriculture, which is of particular importance because its activities drive the entire economy. Currently, it's difficult to know what is the educational structure of the population in rural areas and whether it's appropriate to the needs of the work performed by the population in the rural areas of Slavonia and Baranja. Accordingly, it will be investigated what activities the rural population in Slavonia and Baranja is engaged in, whether the educational structure of the population corresponds to the needs of the jobs that the population is engaged in and whether the higher educational structure of the agricultural population positively affects the socio-economic development of rural areas. To solve the observed problem, the research will be conducted by surveying a sample of the rural population of Slavonia and Baranja. The data will be statistically processed in order to reach relevant conclusions on the state of the educational structure of the rural population of Slavonia and Baranja and the harmonization of the educational structure of the jobs that this population is engaged in. A model will be created to provide guidelines for improving the educational structure of the population in Slavonia and Baranja, as well as a proposal of educational programs and educational institutions that should be involved in solving the problem of harmonizing the educational structure with the needs of rural population of Slavonia and Baranja.*

**Key words:** education, lifelong learning, agriculture, rural areas, development.

### **1. Introduction**

The educational structure of the population of rural areas is increasingly important, especially when it comes to active farmers, who at any time must be ready to respond to new challenges related to the socio-economic development of rural areas. Responding to new challenges means mastering more and more diverse knowledge and skills as soon as possible, so that

farmers can increase the competitiveness of their family farm, and thus the competitiveness of Croatian agriculture, especially in order to enter the demanding European market.

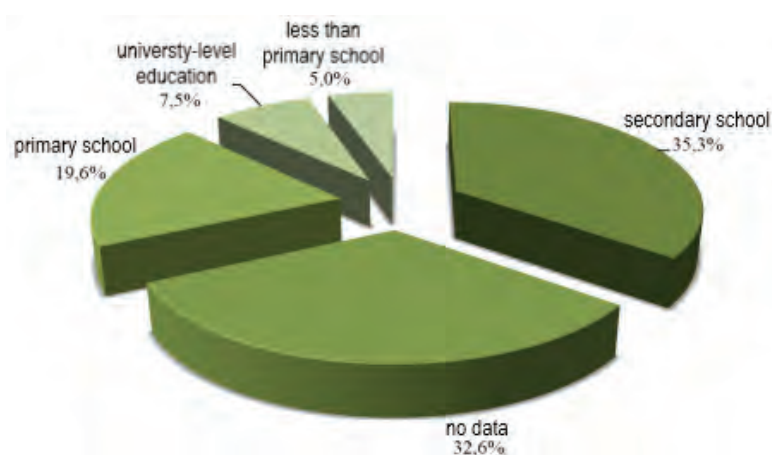
One of the goals aimed at improving the educational structure of the rural population is focused on the system of continuous professional education and training for the needs of family farming and the rural population.

Nowadays, education and lifelong learning are considered the foundation of modern agricultural production, which must follow the trends of industrial and sustainable development. To this end, it is necessary to encourage the education of farmers and staff employed in the agricultural sector. A major obstacle to the progress of agriculture is the fact that Croatia has a low level of education of the agricultural population, which also negatively affects IT literacy, the use of new technologies and the development of innovation. It is important to point out that, given the unfavorable educational structure of the rural population, there is a need to improve and intensify all forms of education (formal, non-formal and informal education).

According to the data from the Farmers Register kept by the competent Paying Agency for Agriculture, Fisheries and Rural Development, if the category "no data" is excluded, which amounts to 55,624, the largest number of holders have a secondary school diploma. As at 31 December 2020, the number of holders who graduated from secondary school was 60,295 (35.3%). The share of graduates with a university degree and a bachelor's degree in the total number of graduates is still small and amounts to 7.5%. The highest positive rate of change, which amounts to 8.2%, is recorded in the category of farmers whose holders have university-level education.

Although groups of holders who have not completed primary school, i.e. the primary level of education, show a declining trend in the number of holders, they still make up a high share of it. As at 31 December 2020, 8,540 holders with less than primary education (5%) and 33,519 holders with primary education (19.6%) were registered.

**Graph 1:** Structure of farmers by professional qualifications, 2020



*Source: Paying Agency; processing: Ministry of Agriculture*

It is widely known that in developed countries, human capital is the main development resource, the quality of which is largely determined by education. Therefore, given the unfavorable educational structure of the population in rural areas, there is a need to improve

and intensify all forms of education, which include the modern concept of education, and these are formal, non-formal and informal education.

In an extrinsic framework, education is usually considered valuable for both the individual (they will find a better job) and the society (society will consist of mature, good citizens). Nevertheless, education should also be looked at in intrinsic terms. This means that in formal education it is possible to distinguish two sides – one side, the teachers (or professors), who take responsibility for the education of the other side. In contrast, non-formal education is defined negatively, as education under which this condition does not exist, so the word "education" remains undefined. Thus, a person who lacks formal education also lacks the ability to evaluate, analyze and judge, and to communicate information in all its virtual forms and aspects. Conversely, a formally educated person is expected to recognize when a half-truth is placed instead of the whole truth (Žitinski, 2006, p. 143). Formal education is an institutionalized system that includes primary, secondary, university-level and science education, based on the authorization and verification of the competent state body.

Non-formal education is an organized and systematic learning activity that takes place outside the formal education system where it enables special types of learning for special target groups of children and adults (Žiljak, 2002, p. 116). Mijatović (2002, p. 171) points out that the fundamental meaning of education is organized and systematic development of cognitive abilities and individual learning. Education is a different process, but parallel to upbringing, where education strongly fulfills the basic prerequisites for achievements in upbringing. It is usually emphasized that there is no education without effects upon upbringing.

Lifelong learning is a pedagogical concept that is based on the realization that people learn formally and/or informally all their life, that learning is a part of people's immanent ability and an integral part of their life practice. It unites all levels of intentional and functional education, all personal and conventional experience, professional and life knowledge as well as numerous practical, situational, family and other experiences. The modern conception of lifelong learning is derived from a development strategy that is a synthesis of educational, economic and social development in which each individual participates to a greater or lesser extent and acquires new knowledge and opens new endless perspectives (Mijatović, 2002, p. 170).

The term lifelong learning, according to Žiljak (2002, p. 117), contains the principle of extending the period of organized learning from childhood and youth to whole life. Education is understood as an inseparable feature of human life from birth to death, and thus includes adult education. It is a system of related elements, and educational aims are achieved by a combination of different forms of self-education, directed self-education and learning through different forms of teaching.

Pastuović (2008, pp. 253-254) believes that the concept of lifelong education, i.e. learning, is driven by the development of the idea and practice of adult education in industrialized Western countries such as England, Germany and the Scandinavian countries. The development of the concept of adult education has significantly contributed to the formation of the concept of lifelong learning. The term lifelong learning prevailed in 1996 at a meeting of twenty-five Ministers of Education of Western and Central Europe, Australia, Canada, Japan, Mexico, New Zealand and the United States, in Paris, where it was concluded that it achieves paradigm shift "from education to learning" which is necessary as the primary goal of world educational reform. Lifelong learning requires that education is viewed in its totality. It covers formal, non-formal and informal forms of education and seeks to integrate and articulate all structures and phases of education along the vertical and horizontal dimensions.

It is also characterized by its flexibility in terms of time, space, content, learning methods and therefore requires self-directed learning by sharing one's enlightenment with others and embracing different learning styles and strategies.

Considering the state of the educational structure in the rural areas of Slavonia and Baranja and the fact that the share of highly educated is below 5%, and when it comes to the Republic of Croatia, about 7.5%, it is necessary to encourage experts from various fields in agriculture to organize professional courses essential for the further organization and design of educational programs in the field of agriculture in order to increase the number of highly educated people in rural areas. The available resources from European funds intended for this purpose certainly contribute to this. The measure of lifelong learning encourages the development of competencies in the labor market, and refers to the implementation of education of agricultural producers in order to upgrade formally acquired education, knowledge and skills.

Today's labor markets require new occupations and constantly changing profiles of skills, qualifications and experience. Lack of skills and knowledge and their inadequacy are often one of the reasons for non-competitiveness in the economy. Therefore, in order to maintain an adequate market position, it is necessary to enable the acquisition of skills and knowledge whenever business processes require it.

The data show that in the Republic of Croatia, unfortunately, the demands of today's labor markets are not being followed. Despite all organized efforts, our reality shows that a very small number of citizens are involved in lifelong learning and adult education systems, despite the large number of unemployed and educated with insufficient basic competencies to survive in the labor market or to adapt to social and economic changes and challenges. survival in a competitive environment (Perin, Terihaj, 2019).

According to Eurostat data on participation in lifelong learning processes, in 2006 3.1% of the population aged 24 to 65 were enrolled in some of the education programs in Croatia (EU 9.6%), in 2016 this number decreased to 3.0% (EU 10.8%). As the biggest obstacles to inclusion in education, respondents state that it is too expensive and that they cannot afford it (60.6%), that they do not have time (55.5) and that their education time collides with working hours (35%). Respondents in 22% of cases state that employers are the ones who provide education and training (EU 32%).

## **2. Material and methods**

A total of 140 questionnaires were processed in the conducted anonymous survey. The survey was conducted in March 2022, in cooperation with the Administrative Departments of Agriculture in the counties of Slavonia and Baranja, and an invitation to participate in an anonymous survey was submitted to all agricultural producers from five counties in Slavonia and Baranja. 140 agricultural producers responded to the survey. The survey provided data on the age, gender and educational structure of the population in rural areas of Slavonia and Baranja and on the legal status, registered activity, type of production, size of the economy and the time of engagement in agricultural production. The data are processed by standard statistical techniques and are presented collectively for all farmers from the area of Slavonia and Baranja.

With regard to the educational structure, the educational structure of the inhabitants of the rural areas of Slavonija and Baranja is analyzed and compared with the educational structure

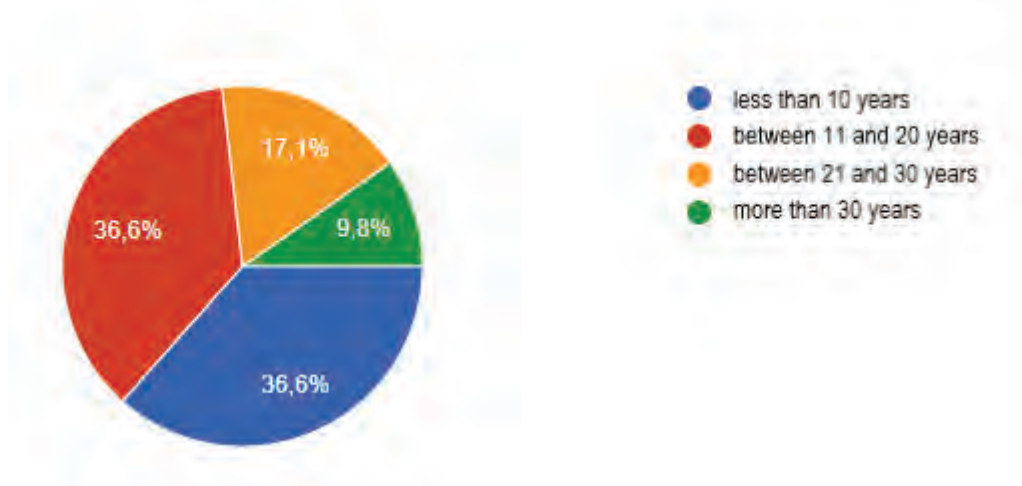


of the population of rural areas in Croatia, according to the Annual Report on Agriculture in 2020. In addition, the survey evaluated the areas of specific knowledge and skills they consider most necessary for business success and improvement, which provided data on the use of training services, education and instruction related to regular business and the need for them to improve business, along with the reasons why they are not used. The results of the evaluation were used in order to improve and adjust the organization and content of additional education according to the needs of the population of rural areas of Slavonia and Baranja.

### 3. Results and discussion

The survey included agricultural producers from five counties in Slavonia and Baranja. Regarding the gender structure, 78% of the respondents were men, while 22% were women. In terms of the area from which the respondents are, most of them are from Požega-Slavonia County, 29.3% from Virovitica-Podravina County, 19.5% from Brod-Posavina County, 14.6% from Osijek-Baranja County and only 2.4% from Vukovar-Srijem County. Considering the legal status of the holding, 78% of respondents operate as a family farm, other forms refer to trades 12.2%, 4.9% to self-supplying farms and 2.4% to companies.

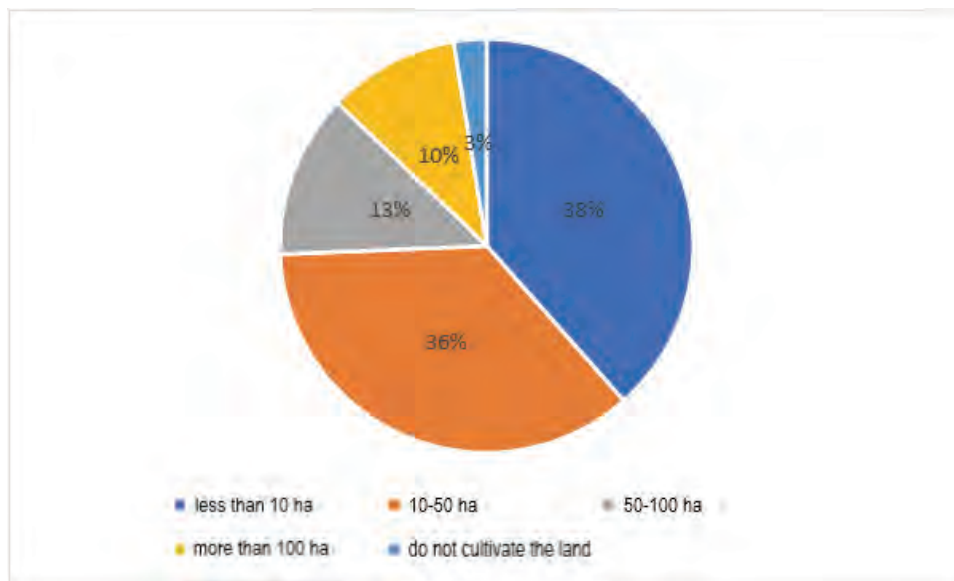
**Graph 2:** Time of engagement in agricultural production



*Source: Authors*

The size of the farm, expressed in the number of arable hectares, and the registered activity are shown in the following graphs.

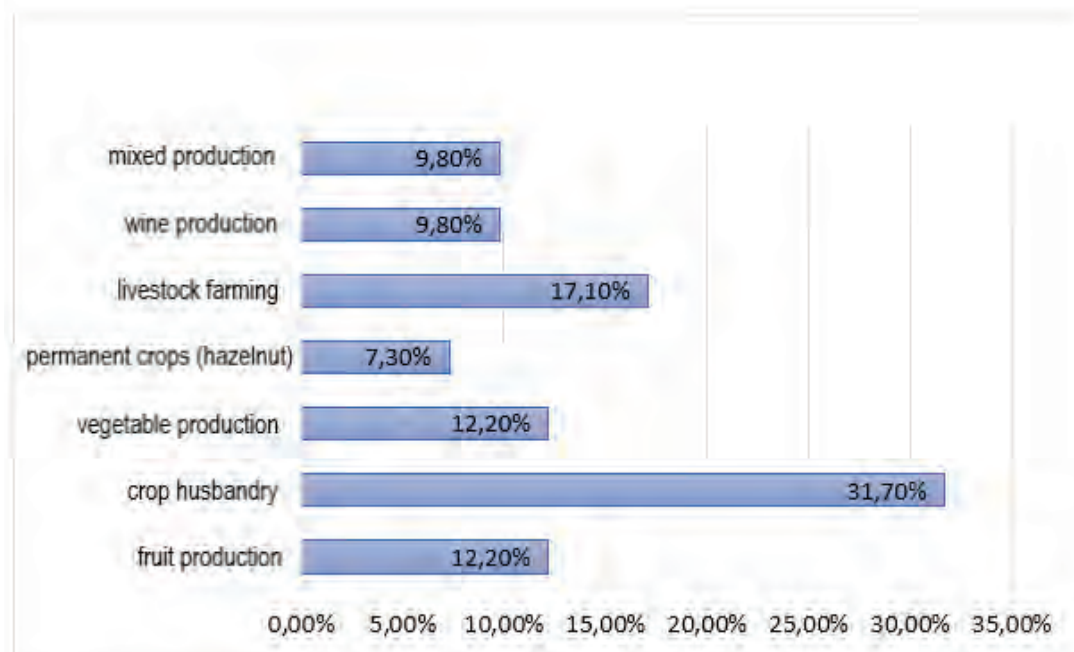
**Graph 3:** The size of the farm expressed in the number of arable hectares



Source: Authors

A large number of respondents, as many as 38%, cultivate less than 10 hectares of land. 36% of respondents cultivate between ten and fifty hectares of land. Almost 13% of respondents cultivate between 50 and 100 hectares of land, while 10% cultivate more than 100 hectares of land.

**Graph 4:** Registered activity



Source: Authors

The activities that predominate in the rural areas of Slavonia and Baranja, according to the data obtained by the survey, are crop husbandry (31.70%) and livestock farming (17.10%), which is not surprising given the fact that this is an area suitable for crop production which consequently link and engage in livestock production. Fruit growing, vegetable growing and wine production are also well-represented activities in these areas. However, the fact that

there are mostly smaller farms with only up to five employees cultivating less than 10 hectares of land is worrying.

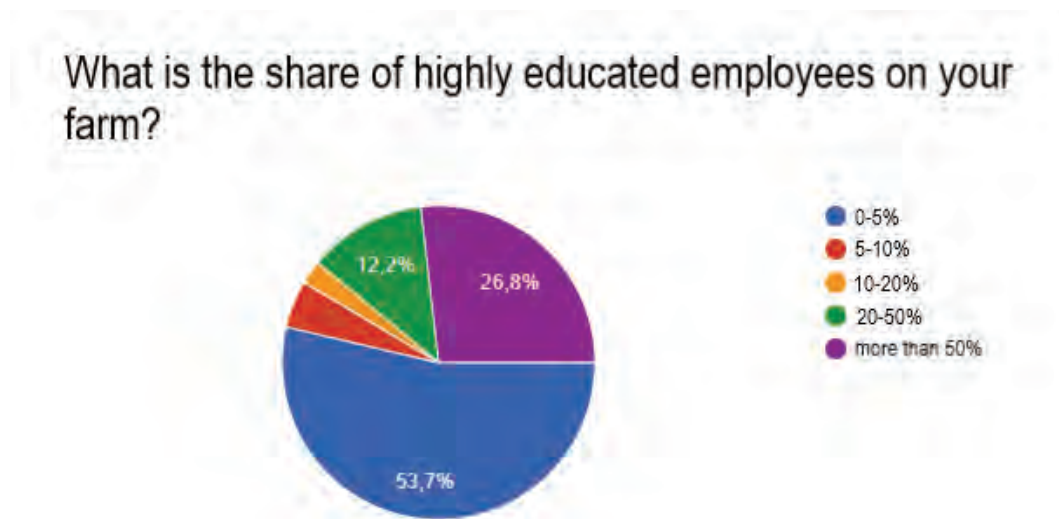
Almost half of the respondents stated that they have one employee on the family farm, almost 35% of them have up to five employees, while only 17% of them have more than five employees on the family farm.

The population on the farms of Slavonia and Baranja has undergone radical structural changes, especially in the last few years. Due to numerous socio-economic impacts, low profitability of family agriculture, there was a gradual employment of the population outside the farms, which led to a decrease in the total and working agricultural population. Today we are witnessing migration from rural areas to larger cities (Zagreb, seasonal migration to the coast, emigration of young people outside Croatia).

Since the problem of employment of members of agricultural households in Slavonia and Baranja is complex, and for young people on farms employment outside the farm represents a fundamental incentive for deagrarianization, it is necessary to implement incentive measures (supporting education, credit, market development, additional activities in agritourism, trades, etc.) in order to increase the income from agriculture and provide a desirable economic and social framework for life on farms.

One of the most important questions in the survey is the issue of education. The share of highly educated employees on the farm is shown in the following chart, which shows that the percentage of highly educated is below 5%. Only 26.8% of them have more than 50% highly educated employees on their farm.

**Graph 3:** What is the share of highly educated employees on your farm?



Source: Authors

Respondents highlighted areas of specific knowledge and skills that they consider most necessary for successful business and its improvement:

- application of modern technologies in production (58.5%)
- management (administration, organization) (17.1%)
- marketing and promotion (7.3%)

- finance, accounting, bookkeeping (7.3%)
- quality of products and services (4.8%).

Furthermore, as many as 75.6% of respondents stated that there is a need for additional training, education and instruction related to their regular business, in order to improve the business. The main reasons for not using these services so far are the following:

- unavailability of experts for specific areas (43.9%)
- insufficient funds for their financing (39%)
- lack of free time (9.6%).

7.5% of respondents believe that there is no need for additional education, training and instruction to improve their business.

Given the results of the research and the need for additional training, in order to improve the business of farms in Slavonia and Baranja, it is necessary to make a plan of professional courses important for further organization and design of educational programs in agriculture in order to increase the number of highly educated people in rural areas.

The Strategy and the Action Plan for Adult Education (2004) pointed out that education will contribute to increasing competitiveness if, among other things, the educational structure of the population is improved, which means that all other analyzed educational categories of the entire population in Croatia should be gradually increased.

Practical classes should be designed by introducing seminar papers, organizing trips to family farms in the European Union which serve as a model or increasing cooperation with foreign experts (the practical examples of EU accession experiences). Furthermore, it is advisable to work in small groups and organize classes according to the experience of attendants and to present a variety of topics, mainly with an emphasis on business and IT education.

The National Development Strategy of the Republic of Croatia until 2030 (2018), an umbrella document and a comprehensive act of strategic planning which directs the long-term development of society and economy in all important issues for Croatia, also emphasizes the importance and role of education through strategic goal 2. "Educated and employed people" in the development of sustainable economy and society. Participation rate of adults (age group 25-64) in lifelong learning in the Republic of Croatia was 3.5% in 2019, while the EU average in the same year was 10.8%. The target is to reach the EU average by 2030 (Hrvatska2030.hr, Indicators, <https://hrvatska2030.hr/pokazatelj/>). Therefore, it is planned to focus activities on harmonizing education with the needs of the labor market, and especially on the development of appropriate competencies. The most important role in achieving this goal is played by the education system, but also more effective communication and coordination of labor market stakeholders, ie labor market institutions, social partners (employers' associations and trade unions) and the education system. The coherence and effectiveness of these relationships is particularly important at the local, county and city levels.

In order to improve the cooperation of labor market stakeholders and improve market efficiency, an integrated labor market information system will be developed which will, among other things, enable the harmonization of supply and demand for workers with appropriate competencies. The need for constant harmonization and improvement of competencies in the changing conditions of the labor market and the increasing diversity of the offer in education lead to an increased need for professional development planning.

Therefore, special attention will be paid to the development of a system of lifelong career guidance and career development as an important tool for raising adaptability and employability. The implementation of programs and activities for lifelong adult education and the development of competencies, especially those aimed at strengthening digital and entrepreneurial skills and financial management and literacy, will be encouraged.

In Europe, the Education and Training Framework (ET) 2020 provided a common agenda on many issues, with the aim of creating a European Education Area by 2025. The European Commission has paid particular attention to lifelong learning, quality, efficiency, equality and innovation in education. The Council of the European Union (EU) regularly sets goals and regularly makes recommendations. Of the seven EU goals for 2020 in education and training, Croatia is below the EU average of six. The exception is the percentage of early school leavers, where Croatia has met the EU target from the beginning and is well above the EU average.

In Europe, the Education and Training (ET) 2020 framework has provided a common agenda around many issues, with the goal of creating a European Education Area by 2025. The European Commission has placed special attention on lifelong learning, quality, efficiency, equity and innovation in education. Goals have been established and recommendations are regularly made by the European Union (EU) Council. Out of seven EU targets for 2020 in education and training, Croatia places below the EU average in six. The exception is the percentage of early leavers from education and training, where Croatia met the EU target from the beginning and is significantly above the EU average (National Development Strategy Croatia 2030 Policy Note: Education and Skills, <https://hrvatska2030.hr/wp-content/uploads/2020/10/Education-and-Skills.pdf>).

Support mechanisms have been created to assist countries in overcoming common challenges and monitoring takes place on a regular basis. Funding assistance in education and training is also available to many countries, including Croatia. While member states will continue to have the primary responsibility for education policies, the EU's role in this area has been increasing over the last years based on the idea that harnessing the full potential of education is in the interest of all member states. In addition to developing overarching frameworks like ET 2020, the EU also focuses its efforts on creating guidelines and policies on different topics.

The creation of the Agricultural Knowledge and Innovation System (AKIS) certainly contributes to the necessary construction of the adult education system in agriculture, modernization of the existing and introduction of new training and education programs in order to determine the obligations of adult education providers and improve their work in connection with the requirements imposed by Croatia's accession to the EU.

Fragmented Agricultural Knowledge & Innovation System (AKIS) encompasses a relatively diverse range of public and private actors. Agriculture Knowledge and Innovation Systems (AKIS) facilitate the exchange of knowledge and support services between diverse actors in rural areas. In optimal form, the system includes a variety of actors such as public and private advisors, educators, researchers, civil society experts, and various agrifood chain actors that provide producers with relevant training, technical advice, information, and learning networks around innovations in technology, production practices and management systems, and regulatory compliance requirements. Today, a relatively diverse set of public and private actors make up Croatia's AKIS. In general, publicly funded entities dominate Croatia's AKIS with, until recently, the Croatian Agriculture and Forestry Advisory Service (CAFAS) – a specialized public agency responsible for advisory activities in agriculture, rural development, and fisheries– occupying one of the most influential positions. Other key actors include educational and research institutes, technology centers, and laboratories, as well as food industry and input providers, who are increasingly investing in research and innovation and often provide highly specialized advice to their cooperants or customers. On the other hand, civil society actors (such as NGOs and farmers association) and private advisors are the least developed components of Croatia's AKIS (National Development Strategy Croatia 2030 Policy Note: Agriculture, Fisheries, and Food Processing in Croatia's Food & Bio-Economy

(2019), [https://hrvatska2030.hr/wp-content/uploads/2020/10/Agriculture-Fisheries-and-Food-Processing-in-Croatia\\_s-Food-\\_Bio-Economy.pdf](https://hrvatska2030.hr/wp-content/uploads/2020/10/Agriculture-Fisheries-and-Food-Processing-in-Croatia_s-Food-_Bio-Economy.pdf)).

In addition to the importance of investing in lifelong learning, it is important to emphasize the role of state institutions in helping the development of rural areas. The Agricultural Strategy until 2030 emphasized support for starting a business in rural areas with an emphasis on young people and for the development of small farms. This is one of the incentives for the development of entrepreneurial thinking of farmers. The aid will be granted, inter alia, to start-ups in rural areas wishing to invest in new agricultural products, (digital) technologies and agri-food chain services, strengthening market links (for production without stocks) and renewable energy solutions. In this context, the possibilities of support for ancillary activities that will enable and facilitate the placement of agricultural products and services on the tourism market will also be considered. For successful implementation, it is necessary to ensure the transfer of knowledge and information, especially in aspects related to digital agriculture, quality systems, bioeconomy, business management, or financial planning and market promotion, which requires adequate knowledge and skills. The measure within this intervention will be mostly financed from the EU budget intended for the implementation of the common agricultural policy, with national co-financing from the state budget of the Republic of Croatia (Agricultural Strategy 2030., [https://poljoprivreda.gov.hr/UserDocsImages/dokumenti/Strategija\\_poljoprivrede\\_2020\\_2030/Strategija%20poljoprivrede%20do\\_2030.\\_732022.docx](https://poljoprivreda.gov.hr/UserDocsImages/dokumenti/Strategija_poljoprivrede_2020_2030/Strategija%20poljoprivrede%20do_2030._732022.docx)).

#### 4. Conclusion

Farmers' education must be lifelong, as food production technology is constantly evolving. Therefore, EU experience needs to be applied. These are educational training centers that would cover certain agricultural productions by region - from the production of milk and meat, fruits and vegetables to perennial vineyards and olive groves. In such centers, interested farmers and students would learn by doing.

Croatian agriculture is one of the most important sectors of the economy. It is necessary to continuously perform a number of tasks in the restructuring and modernization of all its parts and sectors (crop husbandry, livestock farming, rural areas, villages) and joint stock companies, cooperatives and family farms in order to be more competitive on the market, produce quality products and ensure higher employment.

The aim of the counselling is to analyze the skills and readiness of farmers, as well as agriculture as a branch in its totality, to determine the current situation and set directions for further action. The counselling is intended for all relevant entities that make regulations, decide, organize and implement any type of projects and programs in agriculture.

It is necessary to build a system of cooperative education from the basics, member farmers, to cooperative management, with the aim of educating them to realize business plans of cooperatives, greater association and connection, so they can use EU funds and achieve production of goods and services competitive and recognizable on the market in Croatia and in the world.

In addition to demanding a certain level of education and lifelong learning, the European Union also requires Croatian farmers to professionally handle and work with agricultural machinery. Apart from the school, farmers must also attend certain seminars and take exams on handling and operating machinery after completing the lessons.

The activities that predominate in the rural areas of Slavonia and Baranja, according to the data obtained by the survey, are crop husbandry (31.70%) and livestock farming (17.10%), which is not surprising given the fact that this is an area suitable for crop production which consequently link and engage in livestock production. Fruit growing, vegetable growing and

wine production are also well-represented activities in these areas. However, the fact that there are mostly smaller farms with only up to five employees cultivating less than 10 hectares of land is worrying.

The higher educational structure of the agricultural community will ultimately have a positive impact on the socio-economic development of rural areas and the competitiveness of Croatian agriculture. However, the data on the state of the educational structure in the rural areas of Slavonia and Baranja is devastating and the fact that the share of highly educated people is below 5%, and in general the whole of the Republic of Croatia, about 7.5%. Experts from various fields in the agricultural sector should be encouraged to organize professional courses relevant to the further organization and design of educational programs in the field of agriculture in order to increase the number of highly educated population in rural areas. The available funds from European funds intended for this purpose certainly contribute to this. Certain measures will benefit all those who are already engaged or just starting agricultural production. The funds of the program will finance their education and continuous training. In conclusion, it is necessary to build an adult education system in agriculture, modernize existing and introduce new training and education programs, determine the obligations of adult education holders and improve their work in connection with the requirements imposed by the accession of Croatia to the EU. Also, it is necessary to build a system of cooperative education from the basics, member farmers, to cooperative management, with the aim of educating them to realize business plans of cooperatives, greater association and connection, so they can use EU funds and achieve production of goods and services competitive and recognizable on the market in Croatia and in the world.

Funds from the European Agricultural Fund are awarded to support vocational training and skills acquisition activities for farmers. The purpose of this type of support is to provide specific training for farmers' holders, members of farms as well as for managers and employees in the agricultural and food sector. This contributes to an increase in the use of new production methods based on research and development results, innovative practices, competitiveness of farms, associations and a better understanding of the protection and preservation of the environment and nature. The funds are intended for legal entities registered for the activities of providing education and counselling services outside the regular education system.

On the European Union market, competition is fierce, and if Croatian farmers do not get educated in line with European Union farmers, they will quickly be "overwhelmed" by those who base their success on experience backed by knowledge up to the Union standards. Croatia has its competitive advantages, the land that has not yet been destroyed, young people who are full of knowledge. They need to be activated, supported and encouraged in order to stay on Croatian fields and cultivate Croatian land that has a lot of potential, as well as they do. The introduction of new laws and education standards to all Croatian farmers and other citizens of the country, as well as to future farmers, provides them with the opportunity to progress and acquire knowledge.

## REFERENCES

Mijatović, A. (2002): *Educational Revolution and Changes in Croatian Education*, Hrvatski geography, Zagreb

Pastuović, N. (1996): *Lifelong learning and changes in education*, Faculty of Teacher Education, University of Zagreb

Perin, V. i Terihaj, S. (2019). *Lifelong learning within the institution*. Acta Iadertina, 16 (2), 0-0, <https://hrcak.srce.hr/237509>

Žiljak, T. (2002): *The Principle of Citizenship and Adult Education*. Political Thought, Vol. 39, No. 1, pp. 109-127.

Žitinski, M. (2006): *Education is a moral concept*, University of Dubrovnik, Dubrovnik

Agricultural Strategy 2030., [https://poljoprivreda.gov.hr/UserDocsImages/dokumenti/Strategija\\_poljoprivrede\\_2020\\_2030/Strategija%20poljoprivrede%20do\\_2030.\\_732022.docx](https://poljoprivreda.gov.hr/UserDocsImages/dokumenti/Strategija_poljoprivrede_2020_2030/Strategija%20poljoprivrede%20do_2030._732022.docx)

Annual Report on the State of Agriculture in 2020, Ministry of Agriculture, Zagreb, 2021, [https://poljoprivreda.gov.hr/UserDocsImages/dokumenti/poljoprivredna\\_politika/zeleno\\_izvjesce/2021\\_12\\_15%20Zeleno%20izvjesce%202020\\_final.pdf](https://poljoprivreda.gov.hr/UserDocsImages/dokumenti/poljoprivredna_politika/zeleno_izvjesce/2021_12_15%20Zeleno%20izvjesce%202020_final.pdf)

Eurostat: <https://ec.europa.eu/eurostat/web/education-and-training/data/main-tables>

Hrvatska2030.hr (2022): Indicators, <https://hrvatska2030.hr/pokazatelji/>

National Development Strategy Croatia 2030 Policy Note: Agriculture, Fisheries, and Food Processing in Croatia's Food & Bio-Economy (2019), [https://hrvatska2030.hr/wp-content/uploads/2020/10/Agriculture-Fisheries-and-Food-Processing-in-Croatia\\_s-Food-Bio-Economy.pdf](https://hrvatska2030.hr/wp-content/uploads/2020/10/Agriculture-Fisheries-and-Food-Processing-in-Croatia_s-Food-Bio-Economy.pdf)

National Development Strategy Croatia 2030 Policy Note: Education and Skills, <https://hrvatska2030.hr/wp-content/uploads/2020/10/Education-and-Skills.pdf>



*A scientific paper*

**Ines Milohnić, Ph. D., Full Professor**

University of Rijeka, Faculty of Tourism and Hospitality Management

E-mail address: ines.milohnic@fthm.hr

**Danijel Drpić, Ph. D.**

Polytechnic of Rijeka

E-mail: ddrpic@veleri.hr

## **INTERRELATIONS BETWEEN THE QUALITY OF FACILITIES AND VISITOR SATISFACTION: EVIDENCE FROM HERITAGE BASED EVENT – RIJEKA CARNIVAL**

### ***ABSTRACT***

*Organizing a heritage-based tourist event is a comprehensive and extremely demanding task for both the event organizer and the destination management. The overall success of the event is associated with many elements of the tourist product with special emphasis on the quality of the organization and the related level of satisfaction of the needs and desires of visitors. This paper examines the basic relationships of selected elements of recognition and quality of facilities: recognition/image (before arrival), access to information, quality of event organization, originality, interest and quality of interpretation with regard to the general level of satisfaction with the visit. Empirical research was conducted by the method of interviewing on a sample of 351 respondents/holders during tourist events based on heritage - Rijeka Carnival, which is of extreme importance for the Croatian tourist offer. Data are presented using descriptive statistics and inferential statistics (regression analysis, ANOVA, and Spearman correlation coefficient). The results indicate a significant correlation between a higher level of visitor's overall satisfaction with the visit, who value more recognizability/Image (before arrival), availability of information and originality of the event. Additional tests were performed on the relationships of the observed variables. By using Spearman's correlation coefficient, the highest correlations were registered between the variables: availability of information and quality of information / propaganda materials as well as recognizability/Image (before arrival) and availability of information. These findings confirm the importance of constant monitoring the satisfaction of event visitors as well as raising the elements of quality in order to improve the tourist offer. The authors offered guidelines for the benefit of event organizers and destination management in order to achieve the desired positive effects and ensure their competitiveness.*

**Key words:** *tourism events, quality of facilities, visitor satisfaction.*

### **1. Introduction**

The management of a contemporary tourist destination is facing constant challenges and efforts to successfully create a tourist product that will meet the needs and desires of modern tourists. Tourists are looking for new and unique experiences and want to feel a sense of belonging to the local community they are visiting. On the other hand, the local community jealously guards

and protects its traditional way of life from external influences, and at the same time tends to achieve a higher level of prosperity and economic and social equality in its area.

Tourism provides a unique opportunity to create special and different, and thus unique experiences, which can be achieved by including heritage in tourist products, which is possible through tourism events.

When forming a tourism event based on heritage, particular attention should be paid to preserving heritage elements that are often very sensitive to external influences that can be positive or negative and have a direct socio-sociological and cultural impact on its participants and the wider community. Positive sociological and cultural effects can be i.e. sharing the fun experience, the increased social pride of the community that can result from celebrating national holidays and others. By adopting the strategy of sustainable development in organizing events and caring for the environment, negative impacts can be significantly reduced or even eliminated, and thus contribute to the reputation (image) of environmentally conscious destinations (Gračan & Rudančić-Lugarić, 2013; Milohnić, 2010, Hede et al., 2002).

For the purpose of this paper, research was conducted in February 2019, during the Rijeka Carnival, which is an important event of regional importance for Istria and the Croatian coast, and is based on the rich, primarily carnival heritage of that region.

The goal of the research is to determine the existence of a connection between satisfaction with visiting a tourist event and particular factors of the event that affect its successful realization. As observed variables influencing the success of a tourist event based on heritage the authors chose: recognizability/Image (before the arrival), availability of information, quality of information/propaganda materials, quality of event organization, originality of events, interestingness, and quality of interpretation of program participants/moderators-program hosts. The paper presents the elements of visitor satisfaction with visiting the event, primarily the one conditioned by the organization of the event, its originality, recognizability and uniqueness.

## **2. Tourist satisfaction and quality of events based on heritage– a theoretical background**

Creating new experiences and attractions represents the basic goal of contemporary management with the goal of achieving competitiveness and recognizability in the tourist market and attracting new or retaining existing visitors to the destination. New tourist products have a positive impact on all stakeholders in the destination, creating a positive atmosphere and strengthening the creative potential of the entire community (Vrtiprah & Sentić, 2018, p. 267).

Event tourism is a suitable model that enables the preservation of the uniqueness and identity of the destination with the realization of elements for its preservation and improvement (Getz 2008, Vrtiprah & Sentić 2018).

Contemporary knowledge and skills, along with highly motivated human resources and interested local community, form the basis of the success of the event. Destination management must therefore pay particular attention to achieving the satisfaction of all stakeholders and preventing the outflow of resources, as well as potential visitors to the destination competitors. (Drpić, 2017; Getz, 2008; Getz, 1997; Goldblatt, 1997; OTolle et al., 2010; Getz & Page, 2015).

The success of a tourism event based on heritage is ensured already in the process of its planning when the destination management according to the situation in the tourist market and

contemporary trends and global changes shapes those forms of tourism that will meet all requirements of tourism supply and demand. Contemporary challenges depend on the demand for events, the date of its organization, the economic viability of events, manifestations and festivals that are part of it, but also on contemporary social issues, legislation (copyright, logo for use ...), gender issues, meeting different cultures, demographic situation in the region, political goals, etc. (Ray, 2015; Drpić, 2017; Drpić et al., 2014).

The significance of visitor satisfaction for the success of a tourist event has not always been recognized as significant (Colgate & Stewart, 1998; Hocutt, 1998; Christou, 2011). Only at the end of the last century, it began to be realized that there is a significant relationship between visitor satisfaction, and in particular its emotional component and loyalty to the destination. Therefore, it is necessary to pay significant attention to observing visitors' attitudes about the offer of a tourist destination, about its tourist product, and tourist event (Christou, 2011).

Tourist satisfaction is a specific area of satisfaction research because tourist products differ greatly in terms of their characteristics from consumer goods and represent an intangible mix of many mutually interconnected components.

Satisfaction or dissatisfaction with one of the components of the tourist product can lead to satisfaction or dissatisfaction with the entire tourist product of the destination, from which follows the need for identifying critical points and measuring satisfaction of visitors with particular elements of the product (Pizam et al., 1978, p. 316; Roest & Pieters, 1997; Christou 2011).

The success of a tourist event based on heritage, and the tourist destination itself in which the event is taking place, depends on the satisfaction that tourists feel after visiting it. Customer satisfaction is determined by the overall feelings and attitudes after a person has purchased or consumed a product or service (Solomon, 1992; Vidić et al., 2019)

Visitor satisfaction with the tourist offer of the Republic of Croatia is the subject of regular research by the Institute of Tourism. The results of the latest one from 2019 indicate that tourists were very satisfied with the total offer of the Republic of Croatia. In the TOMAS 2019 survey, respondents expressed their satisfaction with grades from 1 (very poor) to 7 (excellent) (Institute for Tourism, 2020).

**Table 1:** Satisfaction of tourists with certain (selected) elements of Croatia's tourist offer – TOMAS 2019

Elements of offer	Republic of Croatia	Adriatic Croatia	Continental Croatia
Destination information	76,4	76,3	77,9
Safety	84,5	84,00	93,8
Marking sights	71,8	71,3	79,6
Atmosphere	82,6	82,2	88,2
Hospitality	82,6	82,1	91,1
Culture and Arts	71,2	70,6	82,7
Events and manifestations	63,2	63,1	61,8
Entertainment, nightlife	61,8	62,1	55,3
TOTAL LEVEL OF VISIT SATISFACTION	80,6	80,1	89,6

Source: Institute of Tourism (2020)

Besides the general level of satisfaction, the respondents expressed satisfaction with the available information and marking of sights and culture and art, while a lower level of satisfaction was expressed with elements of entertainment, and events and manifestations, which indicates the need of designing new and innovative tourist products in a form of events which will include elements of heritage and the traditional way of life of the local community, in which precisely a tourist event based on heritage such as the Rijeka Carnival can serve as a carrier of new and competitive tourist offer in the destination.

The quality of the tourist event and the satisfaction of the visitors are closely related and mutually conditioned. The quality of the event depends on the skill of the management to create a high quality and interesting tourist product that will find its way to potential visitors, but also on their expectations and motives, and on the services and programs provided (Skalova & Peruthova, 2016).

Achieving a high level of quality and satisfaction of visitors is a fundamental goal of management because it guarantees the retention of existing and attracting new visitors, as well as ensuring a longer life cycle of the tourist product and permanent economic benefits for the destination in which the event takes place (Kim et al., 2010, 239; Živković, 2009; Hall, 2012, p. 119; Tichaawa & Mhlanga, 2015, p. 93). It is conditioned also by the level of knowledge and skills that management possesses, and its ability to recognize and determine the market niche and marketing tools that will be used when forming and promoting the event itself (O'Toole et al., 2010; Getz, 2008, p. 403).

These claims were confirmed by numerous scientists in their research. They concluded that a satisfied visitor and user of a high-quality tourist product more frequently repeats a visit to the destination and achieves greater consumption in the destination, which has a positive impact on competitiveness and recognizability of the destination (Quintela et al., 2010; Liu et al., 2005; Djurdjevic & Dimitrovski, 2019; Vojnović, 2008; Del Bosque & Martin, 2008; Oliver, 1997; Wang et al., 2009; Bashan et al., 2021).

In conclusion, it can be argued that the quality of events and ensuring its sustainability is key to success and preservation of intangible heritage, especially because tourism, but also heritage as a phenomenon is extremely sensitive to external disturbances such as demographic disorders, globalization, and world economic, political and war crises (Getz, 2008; Lazić et al., 2013; Knešaurek & Carić, 2018, p. 17).

### **3. Characteristics of a tourist event based on heritage - Rijeka Carnival**

From the very beginnings of human civilization, man has sought to provide himself and his family with peace, happiness, and prosperity. Numerous external influences, especially in the earliest times of human civilization, have devastatingly affected the essence of man, from climatic conditions, food shortages, to attacks by other tribes and people. Mythology and mythological beings have often throughout human history been the personification of all the evil that man has gone through in his existence. Man's struggle for survival has become key to the further development of man's consciousness and his survival on earth.

Carnival is, so to speak, a time that summarizes the previously stated factors. Through terrible mythological creatures and costumes, man seeks to preserve life and prepare for a new happier time of spring.

Carnival events in Croatia are especially significant in the coast and Istria, but also in the mainland of the country. Rijeka Carnival can be characterized as an important element of the tourist offer of the city and its surroundings, which bases its intangible backbone on the mythology of the ancient Slavs, but also all the inhabitants and cultures that have intertwined in this area over the years. With its uniqueness, the Rijeka Carnival arouses the curiosity of many city visitors, summing up the rural surroundings and urban bustle.

The beginnings of the contemporary Rijeka Carnival are related to the eighties of the twentieth century and consist of numerous smaller events that end with a large carnival procession. As the carnival is lived from an early age and as it is part of an indispensable tradition, a small procession is organized, where the youngest live the Carnival and guarantee the preservation of intangible heritage in the future.

The importance of the carnival reflects also in the fact that it contains important elements of intangible heritage that are inscribed on the UNESCO list, such as the Halubaj bell ringers (Stipanović et al., 2015; Rijeka Tourist Board, 2018; Drpić et al., 2019).

Since 1995, the uniqueness and importance of the Rijeka Carnival has been recognized by the European Federation of Carnival Cities (FECC) as well, which has included it in its organization (Rijeka Tourist Board, 2013).

Due to the COVID-19 pandemic, the Rijeka Carnival has been taking place in virtual form since 2020. In the virtual procession in 2021, 72 carnival groups took part, with a retrospective visit of foreign carnival groups who visited in large numbers the past 38 carnivals and numerous other accompanying events (Rijeka Carnival, 2022). It was the pandemic that enabled the creation of new forms of carnival tourist offer, preservation of heritage and its promotion with the use of modern media and technological solutions.

#### **4. Methodology**

Visitors to the Rijeka Carnival 2019 participated in the research. Only those visitors whose permanent place of residence was not in the town where the event was being held were surveyed.

The authors conducted empirical research with primary data in which they used a structured questionnaire, translated, and offered in the Croatian and English language to participants attending the event, who voluntarily agreed to take part in the research when asked. No difficulties occurred during the gathering of data. The questionnaire consisted of six parts, focused on the socio-demographic characteristics of the respondents: the motivation to travel to the tourist destination and attendance of the event; the way information was gathered prior to arrival at the tourist destination; mode of transportation to the tourist destination, and the participants' level of satisfaction with the elements of the offering. The Likert Scale was used for determining the level of satisfaction. The questions were prepared according to the methodologies of previously undertaken research such as TOMAS (Institute for Tourism, 2009, 2020),

This research will investigate the impact of, according to the author's opinion and previously conducted research (Getz 2008; Ivančić, 2015; Drpić, 2017; Sošić, 2000), relevant selected elements of event organization that affect the overall level of satisfaction with the visit, namely: quality of interpretation of participants in programs/moderators-program managers, quality of information/propaganda materials, and quality of event organization, originality of events,

interestingness, availability of information, recognizability/image (before the arrival) on the total level of satisfaction with visiting the tourist event Rijeka Carnival.

Guidelines Survey procedures for Tourism Economic Impact Assessment of Gated Events and Festivals (Ontario Ministry of Tourism, 2005) and research of Getz (2010) were used to determine the socio-demographic characteristics of visitors, as a basic element in creating a successful event (Milohnić & Drpić, 2021; Drpić, 2017).

The significance of the applied research model will be observed with the use of regression model and the application of the ANOVA method. The Spearman correlation coefficient will be used to prove the existence of a correlation between visitor satisfaction and other observed variables (Arnerić & Protrka, 2020; Sošić, 2000).

Based on the above-stated starting points, the following research hypotheses were formulated:

H1: Visitors of the tourist event based on heritage express a high level of satisfaction with the visit of the Rijeka Carnival event.

H2: Image and availability of information and the originality of the event have a positive effect on the satisfaction with the visit

H3: The recognizability of the event and the availability and quality of the information provided are mutually conditioned and there is a positive correlation among them.

The SPSS 26 statistical package was used to process the research results. The statistical methods of regression analysis and correlation coefficient and the model of analysis of variance ANOVA and Spearman correlation coefficient were used in the paper.

## 5. Research results

Following the authors will present the results of testing the reliability of the research model as well as research results that include socio-demographic characteristics of the respondents and analysis of visitor satisfaction of the selected event based on heritage - Rijeka Carnival.

### 5.1. Reliability of the applied research model

In order to obtain reliable research results, it is necessary to test the reliability of the conducted model. The significance of the applied research will be observed by the regression model and the application of the ANOVA method. The Spearman correlation coefficient will be used to prove the existence of a correlation between visitor satisfaction and other observed variables.

**Table 2:** Review of the reliability of the appropriate model

Model	R	$R^2$	Corrected $R^2$	Standard. estimation error
1	,612 <sup>a</sup>	,374	,361	,362

*Predictors: (Constant), Quality of interpretation of participants in the program/moderator-program manager, Quality of information/propaganda materials, Quality of event organization, Originality of the event, Interestingness, Availability of information, Recognizability/Image (before the arrival)*

*Source: Authors' research*

When observing the review of the model, it can be noticed that the coefficient of determination is 0.612, which means that the regression model explained 0.612 or 61.2% of the sum of squares of the total deviations of the dependent variable from its arithmetic mean, and the unexplained part is 0.388 or 38.8%.

**Table 3:** ANOVA<sup>a</sup> - significance of the applied research model

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Deviations interpreted by the model	26,915	7	3,845	29,292	,000 <sup>b</sup>
	Unexplained deviations	45,023	343	,131		
	Total deviations	71,937	350			

*a. Dependent Variable: General level of satisfaction with the visit*

*b. Predictors: (Constant), Quality of interpretation of participants in the program/moderator-program manager, Quality of information/propaganda materials, Quality of event organization, Originality of the event, Interestingness, Availability of information, Recognizability/Image (before the arrival)*

*Source: Authors' analysis*

It can be seen from table 4 that the significance of the model is much lower than 0.05 ( $p < 0.05$ ), which means that the observed model is highly significant and predictively very reliable.

After confirming that the applied model is reliable, the socio-demographic characteristics of the respondents were investigated.

## 5.2. Socio-demographic characteristics of the respondents

Gender, age, and educational level are among the most frequently used economic and socio-demographic variables (Marrocu et al., 2015; Smolčić Jurdana et al., 2017; Getz, 2008). Using this type of information helps tourist destination managers to focus their efforts more easily on target tourist market niches and shape a high-quality tourist product, thus ensuring the lasting economic and social sustainability of their tourist product and its value for all stakeholders in the tourist destination (Milohnić & Drpić, 2020).

Of the 351 respondents participating in the study, 146 were male (41.60%) and 205 female (58.40%), with an average age of 38.17 years. The youngest respondent was 17 years old and the oldest 65 years old, with a standard deviation of 11.88. According to the educational background, majority of the respondents have secondary school qualifications (161 respondents or 45.90%) and college degrees (157 respondents or 44.70%). In order to attend the events, the largest share of the respondents stayed in hotels (137 respondents or 39,0%), followed by those staying with friends and acquaintances (111 respondents or 31,60%) and those staying in private accommodation (59 respondents or 16.80%). Most of the respondents independently arranged their trip to the event (311 respondents or 88.60%) and stayed from one to three days in the tourist destination.

## 5.3 Visitors' satisfaction with visiting a tourist event based on heritage - Rijeka Carnival

To examine the difference in the distribution of responses further, the effect that the manner of obtaining information has on the level of satisfaction with a tourism event was explored.

**Table 4:** Effect of manner of obtaining information on the general level of event satisfaction

Level of satisfaction		Total
Very satisfied	N	250
	%	71.2%
Satisfied	N	101
	%	28.8%
Total	N	351
	%	100.0%
$\bar{X}$		3,71
SD		,45

Source: Authors' research

When observing the overall satisfaction of visitors with the Rijeka Carnival event, it is visible that 71.2% of the respondents are very satisfied with the event, while 28.8% are satisfied with it. From the previously stated it can be concluded that the Rijeka Carnival event, which is based on the rich masquerade heritage of the coastal region, is a recognizable tourist brand that should be encouraged in the future and upgraded with new content in a way to preserve its originality and recognizability. H1 has been confirmed.

5.3.1. Influence of image and availability of information on satisfaction with visiting a tourist event

Based on the high level of satisfaction with the visit, the authors then explored the impact of a positive image of the destination and the availability of information and the originality of the event on the satisfaction with the visit.

**Table 5:** Influence of the observed coefficients<sup>a</sup> on general level of guest's satisfaction

Model		Non-standardized coefficients		Standardized coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2,885	,178		16,213	,000
	Recognizability/Image (before arrival)	,096	,024	,572	4,037	,000
	Availability of information	,053	,026	,282	2,030	,043
	Quality of information/propaganda materials	-,075	,036	-,146	-2,095	,037
	Quality of event organization	-,174	,053	-,205	-3,301	,001
	The originality of the event	,340	,038	,557	8,918	,000
	Interestingness	,020	,049	,027	,410	,682
	Quality of interpretation of program participants/moderators - program leaders	-,009	,037	-,016	-,243	,808

a. Dependent Variable: General level of satisfaction with the visit

Source: Authors' analysis

The results indicate that in the observed model a higher value of the general level of satisfaction with the visit have respondents who valued more recognizability/Image (before the arrival) ( $\beta = 0.572$ ,  $p < 0.05$ ), availability of information ( $\beta = 0.282$ ,  $p < 0.05$ ), originality of events ( $\beta = 0.557$ ,  $p < 0.05$ ), while negative predictive value was registered for the quality of



information/propaganda materials ( $\beta = -0.146$ ,  $p < 0.05$ ) and the quality of event organization ( $\beta = -0.205$ ,  $p < 0.05$ ). Therefore, H2 is confirmed.

### 5.3.2. The impact of event recognizability and information availability on satisfaction with the visit

The recognizability of the event and the availability and quality of the information provided are mutually conditioned and there is a positive correlation among them. The Spearman correlation coefficient was used to examine better the relationships between the observed variables.

**Table 6:** Correlation between event organization factors and visitor satisfaction

		1	2	3	4	5	6	7	8
1. General level of satisfaction with the visit	r	1,000	,236**	,238**	,249**	,124*	,162**	,125*	,008
	p	.	,000	,000	,000	,020	,002	,019	,882
	N	351	351	351	351	351	351	351	351
2. Recognizability/ Image (before the arrival)	r	,236**	1,000	,698**	,670**	,212**	-,192**	,016	,022
	p	,000	.	,000	,000	,000	,000	,772	,676
	N	351	351	351	351	351	351	351	351
3. Availability of information	r	,238**	,698**	1,000	,797**	,334**	-,126*	,037	-,001
	p	,000	,000	.	,000	,000	,019	,487	,985
	N	351	351	351	351	351	351	351	351
4. Quality of information/ propaganda materials	r	,249**	,670**	,797**	1,000	,270**	-,140**	-,082	-,053
	p	,000	,000	,000	.	,000	,008	,127	,318
	N	351	351	351	351	351	351	351	351
5. Quality of event organization	r	,124*	,212**	,334**	,270**	1,000	,409**	,579**	,388**
	p	,020	,000	,000	,000	.	,000	,000	,000
	N	351	351	351	351	351	351	351	351
6. The originality of the event	r	,162**	-,192**	-,126*	-,140**	,409**	1,000	,378**	,577**
	p	,002	,000	,019	,008	,000	.	,000	,000
	N	351	351	351	351	351	351	351	351
7. Interesting	r	,125*	,016	,037	-,082	,579**	,378**	1,000	,547**
	p	,019	,772	,487	,127	,000	,000	.	,000
	N	351	351	351	351	351	351	351	351
8. Quality of interpretation of program participants/moderators-program leaders	r	,008	,022	-,001	-,053	,388**	,577**	,547**	1,000
	p	,882	,676	,985	,318	,000	,000	,000	.
	N	351	351	351	351	351	351	351	351

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

Source: Authors' analysis

The results of the conducted analysis confirm that a positive correlation was registered between the general level of satisfaction with the visit and other observed variables. However, these are very weak correlations  $r < 0.3$ , and therefore can be taken only as indicators of weak positive relationship. However, the highest correlations were registered between the availability of information and the quality of information/propaganda materials ( $r = 0.797$ ;  $p < 0.01$ ), recognizability/Image (before arrival) and availability of information ( $r = 0.698$ ;  $p < 0.01$ ). H3 was confirmed.

## 6. Conclusion

Tourist events that base their success on elements of heritage are extremely significant for the promotion of the destination, but also for the preservation of heritage. In this sense, the selected tourist event Rijeka Carnival significantly contributes to the recognizability of the city of Rijeka in the tourist market and forms a strong sense of identity and belonging to the local community.

The research has proved a high level of satisfaction with visiting the Rijeka Carnival tourist event. A higher value of the general level of satisfaction with the visit was determined among respondents who value more recognizability/Image (before the arrival), availability of information and originality of events, while negative predictive value was recorded for the quality of information/propaganda materials and quality of event organization ( $\beta = -0.205$ ,  $p < 0.05$ ).

The results of the conducted analysis confirm that there is a positive correlation between the general level of satisfaction with the visit and other observed variables, however, these are very weak correlations, and therefore can be taken only as indicators of weak positive relationship. The highest correlations were registered among the availability of information and the quality of information/propaganda materials, recognizability/Image (before the arrival) and availability of information

In order to ensure long-term sustainability but also the satisfaction of event visitors, the authors provide guidelines to which destination management should pay more attention in order to strengthen the satisfaction of visitors, while at the same time preserving the intangible heritage:

- Promotion of events with the use of contemporary technologies (virtual reality)
- By concluding a contract about the promotion with the largest possible number of holders of the region's tourist offer (hotels, restaurants, cultural institutions)
- Enable virtual visits to destinations and carnivals
- Pay more attention towards preserving the originality of the event
- Ensure a sufficient number of adequate and tidy sanitary facilities
- Provide an offer of traditional souvenirs made in the Kvarner area
- Brand the city of Rijeka as a year-round carnival city
- Develop quality standards for Rijeka Carnival event or apply the existing ones (ISO)
- Provide workshops and education for children, youth, and tourists.

In addition to the above, it is necessary to conduct continuous market research in order to achieve maximum benefits for the destination and the local community with timely reactions to changes.

In accordance with the obtained research results, it is necessary to invest significant efforts towards improving the quality of event organization and provision of timely information to

visitors, which is possible through applying new forms of tourism promotion, such as Internet, social networks, specially designed mobile applications, etc.

The authors have identified two basic factors regarding the study's limitations. The first refers to the fact that the paper deals with only one tourist event based on heritage. Another is a relatively small number of previous researches related to the satisfaction of visitors with the offer of tourist events based on heritage, as an element of the success of the tourist offer of the destination.

In order to achieve further improvement of the existing tourist offer of the Rijeka Carnival, it is necessary to include as wide circle of stakeholders as possible in its realization and pay particular attention to stronger inclusion of elements of intangible heritage that is on the UNESCO list as a valuable element which until now was insufficiently included in the product, which will achieve greater attractiveness and visibility of events in the tourist market.

In order to further improve the level of satisfaction of visitors, the authors suggest conducting regular thematic research of visitors' attitudes and adjusting the offer of the tourist event to the needs and desires of visitors, but with significant attention paid to preserving the originality of the event and intangible heritage that they are cherishing.

## REFERENCES

Allen, J., O'Toole, W., Harris, R., & McDonnell, I. (2010): *Festival and Special Event Management (5th ed.)*, Wiley, Milton, Queensland

Arnerić, J., Protrka, K., (2020): *Modeli analize varijance (ANOVA)*, Matematičko-fizički list, Vol. 70, No.1 (2019. – 2020.), pp. 25 – 32.

Bašan, L., Kapeš, J., Kamenečki, A. (2021): *Zadovoljstvo turista kao pokretač unaprjeđenja marketinških aktivnosti destinacije: primjer opatijske rivijere*, Market-Tržište Vol. 33, No. 1 pp. 93-112.

Christou, E. (2011): *Istraživanje utjecaja zadovoljstva posjetitelja na vjernost određenoj destinaciji*, *Acta turistica*, Vol.23, No. 1, pp. 7-26.

Colgate, M., Stewart, K. (1998): *The challenge of relationships in services: a New Zealand Study*, *International Journal of Service Industry Management*, Vol. 9 No.5, pp. 454-468

Del Bosque, I. R., Martín, H. S. (2008): *Tourist satisfaction a cognitive-affective model*, *Annals of Tourism Research*, Vol. 35, No. 2, pp. 551-573.

Drpić, D. (2017): *Turistički događaji temeljeni na baštini i konkurentnost turističke ponude* [Tourist Events based on heritage and competitiveness of Tourist Offer], Doctoral Dissertation, Faculty of Tourism and Hospitality Management Opatija, Opatija

Drpić, D., Milojica, V., Petrovska, J., (2014): *Managing and promotion of Events in function of achieving competitive tourist offer of Eastern Croatia*, in: 3rd International Scientific Symposium Economy of Eastern Croatia-Vision and Growth, Sveučilište Josipa Juraja Strossmayera u Osijeku, Ekonomski fakultet u Osijeku, Osijek, 22-24 May, 2014., str. 255-266

Drpić, D., Zadel, Z., Obralić, M. (2019); *Managing Development Of Event Tourism Offer Based On Non-Material Heritage: Case Study Rijeka Carnival*, In: 5th International Scientific Conference ToSEE - Tourism in Southern and Eastern Europe 2019 Creating Innovative Tourism Experiences: The Way to Extend the Tourist Season, Faculty of Tourism and Hospitality Management Opatija, University of Rijeka, May 16-18, 2019. Vol. 5. pp. 249-262

Đurađević, M., Dimitrovski, D. (2019): *Quality analysis of event "Veseli spust": A consumer perspective*, Marketing. Vol. 50. pp. 135-142.

Getz, D. (2008): *Event Tourism: Definition, Evolution, and Research*, Tourism Management, Vol. 29, pp. 6, and 404-428

Getz, D. (2010): *Event management & Event Tourism*, Cognizant Communication Corporation, New York

Getz, D. (1997): *Event management and Event tourism* (1st ed.). Cognizant, Communications Corporation, New York

Getz, D. (2012): *Event Studies: Theory, Research and Policy for Planned Events*, Routledge, New York

Getz, D., Page, S. J. (2015): *Progress and prospects for event tourism research*, Tourism Management, Vol.52, pp.593-631

Goldbatt, J. (1997): *Special Events, Best Practices in Modern Event Management*, Van Nonstrand Reinhold, New York

Gračan, D. Rudančić - Lugarić, A. (2013): *Konkurentnost turističke destinacije – studija slučaja (case study) Riječki karneval*, Ekonomski vjesnik Zagreb, Vol.26, No.1., pp. 271-283  
Hall, C.M. (2012): *Sustainable mega-events: Beyond the myth of balanced approaches to mega-event sustainability*, Event Management, Vol. 16, No. 2, pp.119-131

Hede, A., Jago, L. Deery, M. (2002): *Special Event Research 1990-2001: Key Trends and Issues*, In: Event Research Conference: Events & Place Making, University of technology Sydney, July, 15-16 2002., pp.305-338

Hocutt, M.A. (1998): *Relationship Disolution Model: Antecenents Of Relationship Commitment and The Likelihood of Dissolving a Relationship*, International Journal od Service Industry Management, Vol. 9, No.2, pp. 189-200

Institut za turizam (2020): *Stavovi i potrošnja turista u Hrvatskoj – TOMAS HRVATSKA 2019*. <http://www.iztzg.hr/files/file/RADOVI/KNJIGE/TOMAS-Hrvatska-2019.pdf> (accessed 20 February 2022)

Institute for Tourism (2009): *TOMAS 2008 Cultural Tourism*, [http://www.iztzg.hr/UserFiles/File/novosti/2009\\_TOMAS\\_Kulturni\\_turizam\\_2008\\_Sazetak\\_i\\_Prezentacija.pdf](http://www.iztzg.hr/UserFiles/File/novosti/2009_TOMAS_Kulturni_turizam_2008_Sazetak_i_Prezentacija.pdf), (accessed 02 January 2019)

Ivančić, I. (2015): *Međuvisnost turističkih događaja u okruženju i uspješnost hotelijerstva [Interdependence of Tourist Events in surroundings and success of Hospitality]*, Doctoral Dissertation, Faculty of Tourism and Hospitality Management Opatija, Opatija

Knešaurek, J, Carić, H. (2018): *Kulturni događaji I manifestacije u turizmu*, Institut za turizam u Zagrebu i Hrvatsko društvo glazbenih umjetnika, Zagreb

Kuintela, A.J., Korreia, A.G., Attunes, J.G. (2011): *Service quality in health and wellness tourism - trends in Portugal*, International Journal of Business, Management and Social Sciences, Vol. 2, No. 3, pp. 1-8.

Lazić, J., M. Cvijanović, J., Ljumović, I. (2013): *International Standards for Quality Management in Tourism*. HITM, Vol.1., No. 2, p.p. 36-46.

Liu, J., Kil, Y., & Spears, D. (2005): *A Repeat Purchase Intention Model Based on an Empirical Study of Hawai'i Hotels*, University of Hawai'i: School of Travel Industry Management, Occasional Paper

Milohnić, I. (2010): *Specificities of cultural events management in tourism (Case study: Istrian, region)*, In: Increased Tourist Expenditure as a Result of Selective Offer, Faculty of Tourism and Hospitality Management Opatija, May 07, 2010., p.p. 164-171.

Milohnić, I., Trošt Lesić, K. Slamar T. (2016): *Understanding the Motivation for Event Participating – A Prerequisite for Sustainable Event Planning Tourism & Hospitality Industry*, In: Congress Proceedings. 23rd Biennial International Congress Tourism & Hospitality Industry, Faculty of Tourism and Hospitality Management, April 2016, pp. 204-218.

Milohnić, I., Drpić, D. (2021): *The role of sophisticated technologies in managing heritage-based tourism events* In: RED 2021 X : 10th International Scientific Symposium Region, Entrepreneurship, Development, Faculty of Economics in Osijek, Josip Juraj Strossmayer University of Osijek, June 17-19, 2021. p.p. 836-850

Oliver R. L. (1997): *Satisfaction: A behavioral perspective on the consumer*, Irwin-McGraw-Hill, New York

Ontario Ministry of Tourism (2005): *Guidelines: Survey Procedures for Tourism Economic Impact Assessments of Ungated or Open Access Events and Festivals*, <https://open.alberta.ca/dataset/73f45a53-20d2-44c9-acbd-bfcf78bc7b04/resource/fb0e8110-6691-4a35-855f-1807a21bff0a/download/6628200-2005-guidelines-survey-procedures-tourism-economic-impact-assessments-ungated.pdf>, (accessed 05 January 2019)

Pizam, A., Neumann, Y., Reichel, A. (1978): *Dimensions of tourist satisfaction with a destination area*, Annals of Tourism Research, Vol. 5, No. 3, pp. 314-322.

Rey, M. (2015): *Future of Events and Event Management*, In: Proceedings of The Multidisciplinary Academic Conference on Economics, Management and Marketing in Prague 2015, August: 1-6., 2015, pp. 341-347

- Richards, G, Palmer, R. (eds) (2012): *Eventful cities: Cultural management and urban revitalisation*, Routledge, London
- Riječki karneval (2022): *Završio Virtualni Riječki karneval 2021.*, <https://www.rijecki-karneval.hr/novosti?item=790> (accessed 09 February 2022)
- Roest, H. i Pieters, R (1997): *The nomological net of perceived service quality*, International Journal of Service Industry Management, Vol. 8, No.4., pp. 336-351
- Rudančić-Lugarić, A., (2013): *Kunkurentnost turističke destinacije – studija slučaja (case study) Riječki karneval*, Ekonomski vjesnik, Vol. 26. No.1., pp.271-282
- Skalova, E., Peruthova, A. (2016): *Quality in rural tourism services*, In: International Scientific Days at Nitra. The Agri-Food Value Chain: Challenges for Natural Resources Management and Society, Slovak University of Agriculture in Nitra, May 19-20, 2016 pp.1058-1065
- Solomon, M. R. (1992): *Consumer behavior*, Prentice-Hall, Singapore
- Sošić, I. (2000): *Uvod u statistiku*, Školska knjiga, Zagreb
- Stipanovic, C., Rudan, E. and Peršin, P. (2015): *Festival Tourism in the Repositioning of Croatian Tourism Destinations*. In the Proceedings of 3rd International Scientific Conference Tourism in Southern and Eastern Europe, Faculty of Tourism and Hospitality Management, May 13-16, 2015, Vol.3., pp. 355-367.
- Taks, M., Chalip, L., Green, C., Kesenne, S., Martyn, S. (2009): *Factors Affecting Repeat Visitation and Flow-on Tourism as Sources of Event Strategy Sustainability*, Journal of Sport & Tourism. No. 14. p.p. 121-142.
- Težak, A., Saftić, D., Šergo, Z. (2011): *Relationship between cultural/artistic events visitation and other activity-based tourism segments*, Ekonomska misao i praksa, Vol.20, No.1., pp. 121-135
- Tichaawa, T., Mhlanga, O. (2015): *Guest experiences of service quality in bed and breakfast establishments in East London*, Journal of Human Ecology, Vol. 50 No.2. pp. 93-101
- Tourist Board of the city of Rijeka (2013): *Riječki karneval monografija [Rijeka Carnival Monography]*, Printera grupa, Zagreb
- Tourist Board of the city of Rijeka (2019), data acquired through e-mail
- Vidić, G., Krce Miočić, B., Žnidar, K. (2019): *Zadovoljstvo turista destinacijom: primjer korisnika niskobudžetnih zračnih prijevoznika u zadarskoj županiji*, Acta turistica, Vol. 31, No.1, pp. 35-68
- Vojnović, B. (2008): *Upravljanje kvalitetom usluga*, Ekonomske teme, Vol. 46, No. 3, pp. 181-194

Wang, X., Zhang, J., Gu, C., & Zhen, F. (2009): *Examining antecedents and consequences of tourist satisfaction: A structural modeling approach*, Tsinghua Science and Technology, Vol. 14 No.3, p.p. 397-406.

Young, Kim & Mincheol, Kim & Goh, Ben & Antun, John. (2010): *A Comparison Between First-Timers and Repeaters at a Food Event*, Journal of Culinary Science & Technology, Vol. 7. p.p. 239-249.

Zeithaml, V.A., Berry, L.L., Parasuraman, A. (1996): *The behavioral consequences of service quality*, Journal of Marketing Vol. 60, No. 2, p.p. 31-46

Živković, R. (2009): *Ponašanje i zaštita potrošača u turizmu*, Univerzitet Singidunum, Beograd

*A scientific paper*

**Ines Milohnić, Ph. D., Full Professor**

University of Rijeka, Faculty of Tourism and Hospitality Management

E-mail address: ines.milohnic@fthm.hr

**Ana-Marija Vrtodušić Hrgović, Ph. D., Associate Professor**

University of Rijeka, Faculty of Tourism and Hospitality Management

E-mail address: anamariv@fthm.hr

**Emma Petaković, Ph. D. student, Assistant**

University of Rijeka, Faculty of Tourism and Hospitality Management

E-mail address: emma.petakovic@fthm.hr

## **IMPORTANCE OF ADDITIONAL FACILITIES IN TOURIST ACCOMMODATION IN HOUSEHOLDS: THE GUEST PERSPECTIVE**

### **ABSTRACT**

*Recognizing the role and importance of tourist accommodation in households in Croatia as well as the fact that quality is one of the fundamental factors of competitive advantage, this paper focuses on analysing the importance of additional facilities in that segment of the accommodation offering. Accordingly, the paper seeks to determine the role and importance of additional facilities in ensuring and enhancing quality, with special reference to types of accommodation (rooms, apartments, studio-type suites and holiday homes). A survey was carried out during the summer months of 2020, on a sample of 168 guests in tourist accommodation in households, in tourist destinations in ten Croatian counties. The research was based on a structured questionnaire in Croatian, English, German and Italian. Research results were analysed using the methods of descriptive and inferential statistical analysis. Statistical differences between multiple groups were examined by the Kruskal-Wallis H test using SPSS 23 statistical software. The results focus on identifying statistical differences in the perceived importance of additional services in relation to the type of accommodation.*

*The study found that the availability of the following facilities has the greatest importance for guests staying in rooms: sauna, satellite channels, facilities for people with reduced mobility, transportation to and from the airport, and ironing/laundry service. Additional facilities such as a swimming pool and facilities for children have the greatest importance for tourists staying in holiday homes. The scientific contribution of the paper is based on its analysis of the importance of additional facilities as a prerequisite for ensuring and improving service quality. The paper's applicative contribution is based on its recommendations to vacation rental owners and destination management to improve the quality of additional facilities in accordance with the needs and expectations of guests.*

**Key words:** *quality, tourist accommodation in households, additional facilities.*

### **1. Introduction**

Continuously improving service quality in tourist accommodation in households is essential, given the importance of this segment of the accommodation offering, which is underlined by



the fact that it accounts for almost 60% of all accommodation capacities. Hence, this study was conducted with the aim of helping to ensure service quality improvement in tourist accommodation in households, in particular with regard to the quality of additional facilities. To provide a more-comprehensive overview of the importance and special features of tourist accommodation in households, the paper in particular examines the role and importance of tourist accommodation in households with regard to tourist traffic, travel motivations, and trends.

As guest perceptions of service quality vary, it is necessary to take into consideration the specific features of service provision in tourist accommodation in households. The qualitative aspects of the offering of tourist accommodation in households are examined, together with the overall process of providing services (both the material and functional aspects), as one of the major preconditions to successful differentiation in the market, in line with the needs and wants of modern guests. Additional facilities provided in tourist accommodation in households can contribute towards enhancing guest satisfaction and boosting guest loyalty. The fundamental assumption of loyalty is that the needs and expectations of guests should be met to such an extent that guests will want to consume the service again in the future.

With regard to the quality of additional facilities, this study aimed to determine whether there are any differences in the perceived importance of the quality of additional facilities, between guests staying in different types of accommodation facilities (rooms, apartments, studio-type suites and holiday homes). To that end, the Kruskal-Wallis H test – a nonparametric test for testing assumptions about differences between three or more groups – was used.

The results of the conducted study show that there is a difference in the perceived importance of a total of seven additional facilities, with five additional facilities (sauna, satellite channels, facilities for people with reduced mobility, transportation to and from the airport, and ironing/laundry service) having the greatest importance for guests staying in rooms, and two additional facilities (swimming pool and facilities for children), for guests staying in holiday homes. The obtained results provide a sound framework for vacation rental owners to focus on those additional facilities that guests rated as having the greatest importance in specific types of tourist accommodation in households.

## **2. Role and importance of tourist accommodation in households**

### **2.1. Special features of hospitality services in tourist accommodation in households**

Accommodation services in households are the oldest accommodation services in hospitality. These services are provided in specially equipped and fitted accommodation facilities that are categorised according to the valid laws of the Republic of Croatia (Hospitality and Catering Industry Act, and the Ordinance on the classification and categorisation of establishments that provide hospitality services in households). These accommodation facilities are rooms, apartments, studio-type suites, holiday homes, and campsites.

Pursuant to the Act, hospitality services provided in households include the following services (Hospitality and Catering Industry Act, Official Gazette 85/2015):

1. Accommodation in a room, apartment or holiday home of the vacation rental owner, having up to 10 rooms or 20 beds, not including spare beds

2. Accommodation in a camping site and/or quickstop campsite, located on the vacation rental owner's land, having up to 10 accommodation units or up to 30 guests at one time, not including children up to the age of 12
3. Breakfast, half board or full board services to guests to whom the vacation rental owner provides accommodation services in a room, apartment or holiday home.

The types of accommodation facilities in households, as shown in Table 1, are classified according to the hospitality services provided.

**Table 1:** Type and category of accommodation facilities in households

Type of facility	Facility category			
	**	***	****	*****
Room	√	√	√	
Apartment	√	√	√	√
Studio-type suite	√	√	√	
Holiday home	√	√	√	√
Camping site	√	√	√	√
Quickstop campsite				

Source: Ordinance on classification of establishments that provide hospitality services in households "Official Gazette" 9/2016.

The above-mentioned Ordinance prescribes the minimal conditions required for each individual type of hospitality service. Today's guests choosing this type of accommodation, however, tend to find these conditions as being inadequate and expect far greater quality in terms of safety and functionality communication and technical equipment, and in particular with regard to the quality of additional facilities and services provided.

## 2.2. Motivations for choosing tourist accommodation in households

The primary motivations for choosing tourist accommodation in households are linked to the unique experiences that guests can have when staying in small-scale facilities with hosts or in professionally managed luxury holiday homes (Vlahov, A., 2021, 204). These types of facilities have been shown to possess the greatest degree of flexibility in terms of adapting to modern trends and rapidly adjusting to the changing needs of guests who are very discerning and expect high-quality services together with an invariably unique and authentic experience of the facility and the destination.

**Table 2:** Travel motivations, by type of accommodation (%)

MOTIVES	TOTAL ACCOMMODATION IN CROATIA	ACCOMMODATION IN HOUSEHOLDS
The sea	77	78.8
Nature	54.9	52.5
Cities (city break)	23.9	24
Touring, sightseeing	21.3	21.2
Culture and art	12.8	13.2
Other sports and recreation	11.2	12.6
Gastronomy (food and drink)	6.6	6.7
Entertainment and festivals	5.5	5.5
Villages, rural areas	4.8	4.8
Events	4.3	4.4

<i>MOTIVES</i>	<i>TOTAL ACCOMMODATION IN CROATIA</i>	<i>ACCOMMODATION IN HOUSEHOLDS</i>
<i>Business</i>	4.1	3.1
<i>Wellness, thermal spa</i>	3.4	2.7
<i>Hiking, walking</i>	3.2	3.6
<i>Other leisure motives</i>	2.8	2.6
<i>Visit to family and friends</i>	1.9	2.2
<i>Cycling, mountain biking</i>	1.6	1.6
<i>Other reasons</i>	1.2	1
<i>Health reasons</i>	1	1.1
<i>Education</i>	0.5	0.5
<i>Religious reasons</i>	0.3	0.3

Source: TOMAS (2019): *Tourist Attitudes and Expenditure in Croatia*, Institute for Tourism, Zagreb, p. 189

In the 2019 TOMAS Croatia survey, respondents were given a list of twenty main travel motivations, and the results were analysed by type of accommodation. The total percentage of selected responses for all types of establishments (hotels, hostels, campsites and tourist accommodation in households) is shown, while the results for tourist accommodation in households are additionally broken down for comparison. Similar to tourists staying in other types of accommodation, the most important travel motivations for tourists staying in tourist accommodation in households are the sea (78.8%) and nature (52.5%), followed by city break (24%), touring and sightseeing (21.2%), culture and art (13.2%), sports and recreation (12.6%), gastronomy (6.7%), and entertainment and festivals (5.5%).

Monitoring guest habits and behaviour is becoming ever more important, through portals such as booking.com, Airbnb and Expedia, as is monitoring demand for tourist accommodation in households and staying current on trends (eco-accommodation, sustainability, digital opportunities, and the use of novel technologies). Continuous guest care implies a concern for continuously improving the quality of services provided in tourist accommodation in households and for creating new value added, as a vital direction in ensuring the further development, long-term sustainability, and market competitiveness of this sector.

To this effect, it is necessary to make an about-turn towards new quality, while enforcing higher standards, maintaining ecological equilibrium, and monitoring market trends as well as guest needs and motivations, to ensure the competitiveness of both the sector and tourist destinations (Cerović, Z., et al., 2014, 27).

### 2.3. Tourist traffic in tourist accommodation in households

This segment of the accommodation offering accounts for the greatest share of tourist arrivals and overnights. The following section illustrates the segment's importance in Croatia's total accommodation capacity, measured by the number of rooms, beds, arrivals and overnight stays.

**Table 3:** Share of tourist accommodation in households in the total number of rooms and beds in Croatia, in 2020

	<i>Accommodation in households</i>	<i>Total number in Croatia</i>	<i>Share</i>
<i>Rooms</i>	229,575	398,504	57.61%
<i>Beds</i>	721,204	1,170,126	61.63%
<i>Arrivals</i>	3,638	7,001	51.96%
<i>Overnights</i>	24,181	40,794	59.27%

Source: Croatian Bureau of Statistics, [https://www.dzs.hr/Hrv\\_Eng/publication/2021/SI-1683.pdf](https://www.dzs.hr/Hrv_Eng/publication/2021/SI-1683.pdf) (31 January 2022)

Tourist accommodation in households represents a significant part of the total accommodation capacity in Croatia. In 2020, this category of accommodation accounted for 57.6% of all rooms and 61.6% of all beds. In terms of overnight stays and arrivals, tourist accommodation in households accounted for 59.2% of overnight stays and 51.9% of arrivals.

**Table 4:** Arrivals and overnights in the category “Rooms, apartments, studio-type suites and holiday homes” 2015 – 2020

	2015	2016	2017	2018	2019	2020
Arrivals	4,935	5,811	6,985	7,682	8,135	3,638
Overnights	30,664	35,545	40,851	43,382	44,531	24,181

Source: Croatian Bureau of Statistics, [https://www.dzs.hr/Hrv\\_Eng/publication/2021/SI-1683.pdf](https://www.dzs.hr/Hrv_Eng/publication/2021/SI-1683.pdf) (31 January 2022)

The growing importance of this segment of the offering can be seen when comparing the total number of overnight stays and arrivals in the last six years. In the period 2014-2019, the average annual rate of tourist arrivals in tourist accommodation in households grew by 13.9%, and the number of overnights increased at a rate of 10.3% per year.

### 3. Quality of additional facilities

The term “quality” is derived from the Latin “qualitas”, meaning quality, property and referring to the excellence of something, value, characteristic, feature, ability (Klaić, B, 1990, 774). The ISO 9000:2015 standard, which defines quality as the “degree to which a set of inherent characteristics of an object fulfils requirements” (ISO 9000:2015,47), highlights the importance of customers and their requirements. Service quality continues to be one of the major competitive factors in tourism and hospitality. In their studies, Parasuraman, Zeithaml and Berry identified five key dimensions of service quality: assurance, reliability, tangibility, responsiveness, and empathy (O’Neill, 2001 in Parasuraman et al., 1988), while Grönross (1983), for example, linked perceived (experienced) quality to the technical and functional dimensions of service provision.

Improving service quality in tourist accommodation in households represents one of the most important preconditions for the successful positioning and differentiation of Croatian tourism in the international market. To that end, focus needs to be placed on quality improvement in this segment of accommodation with special attention on guest needs and expectations.

Trends in the supply of accommodation are evolving to meet the demand of tourists for yet higher and higher comfort in accommodation and greater quality of services and equipment. Tourists are becoming increasingly more sophisticated in their requirements and, in addition to special features, they also expect a well-preserved environment. To ensure that service quality in this segment of the offering matches the guests’ requirements, studies have been conducted focusing on service quality in tourist accommodation in households.

For example, in their study concerning Airbnb accommodation facilities, Ranjbari et al. (2020) argue that the most important dimensions of quality are the price of accommodation, privacy, security, and cleanliness. A study by Hyunsuk, C. et al. (2018) identified a total of 27 dimensions of service quality in rural accommodation facilities.

Gunasekaran and Anandkumar (2012) investigated the elements that influence choosing alternative accommodation, including tourist accommodation in households. They found that a homely atmosphere, value for money, local touch, and the guest-host relationship represent four

of the most important elements and key motivators for choosing this type of accommodation. Using the Airbnb Internet reservation platform, Guttentag et al. (2018) analysed motivators for choosing tourist accommodation in households, and concluded that the most important elements are the elements of functional quality such as interaction with the hosts, home benefits, and local authenticity. Priporas et al. (2017) found that guests value the convenience and flexibility offered by tourist accommodation in households and especially appreciate the warm hospitality provided by the host.

The results of a recent study (Vrtodušić Hrgović et al. 2021) using Importance-Performance Analysis show that the performance and importance levels of quality dimensions rated by the guests are generally high, with the lowest overall performance score being 4.1 and the lowest importance score, 4.0. This indicates that tourist accommodation in households provides overall good-quality services. The results, however, also suggest the need for certain improvements, in particular with regard to Wi-Fi quality.

#### 4. Methodology and results

As part of the research, a primary survey was conducted based on a questionnaire. The aim of the research was to determine the habits and motivations of tourists staying in tourist accommodation in households (rooms, apartments, studio-type suites and holiday homes) and to analyse the importance of additional facilities in this segment of the accommodation offering. As the questionnaire targeted tourists staying in tourist accommodation in households, it was prepared in four languages and adapted to the main tourist groups in Croatia (Croatian, English, German and Italian). The survey was conducted during the 2020 tourist season, and 168 tourists from 17 countries participated in the study. The questionnaire consisted of closed-ended questions, rated on a 5-point Likert scale, anchored at 1 = not at all important and 5 = very important. Multiple-choice questions were used to evaluate motivators and ways of seeking information and the way of booking. The questionnaire was based on recent and relevant scientific papers in the field, dealing with this particular type of accommodation (Gunasekaran and Anandkumar, 2012; Guttentag, Smith, Potwarka, Havitz, 2018; Hyunsuk et al. 2018; Ingram, 1996; Moreno-Gil, 2013; Priporas et al. 2017; Raspor 2012; Tussyadiah, 2016; TOMAS Summer 2017 – Tourist Attitudes and Expenditure in Croatia, Institute for Tourism, Zagreb; Booking.com, www.booking.com; National Programme for the Improvement of Tourist Accommodation in Households; 2013, Ministry of Tourism, Zagreb). Closed-ended questions were also used to define the socio-demographic characteristics of the sample, which are detailed in the Table 5.

**Table 5:** Socio-demographic characteristics of the sample and travel characteristics

<i>Characteristics</i>	<i>N</i>	<i>Share %</i>	<i>Characteristics</i>	<i>N</i>	<i>Share %</i>
<b>Gender</b>			<b>Frequency of stay in the facility</b>		
Male	77	46.1	First visit	126	75.4
Female	90	53.9	Multiple visits	41	24.6
<b>Education level</b>			<b>Way of booking accommodation</b>		
High school	53	31.7	Booking.com	46	29.5
Undergraduate	69	41.3	Airbnb	31	19.9
Master/PhD	45	26.9	Expedia	3	1.9
<b>Status</b>			Tourist Agency	16	10.3
Employed	133	79.2	Direct contact with the host	51	32.7
Unemployed	3	1.8	Web page	7	4.5
Student	25	14.9	<b>Motive for choosing accommodation</b>		
Retired	7	4.2	Price	108	64.3

<i>Characteristics</i>	<i>N</i>	<i>Share %</i>	<i>Characteristics</i>	<i>N</i>	<i>Share %</i>
<b>Age group</b>			Location	108	64.3
<19 years	7	4.2	Relaxation	77	45.8
20 - 29 years	53	32.5	Family atmosphere	58	34.5
30-39 years	47	28.3	Ratings of previous visitors	43	25.6
40-59 years	47	28.3	Events	18	10.07
60-77 years	11	6.6	Understanding local customs	15	8.9
>78 years	0	0.0	Engaging in sports/recreation	13	7.7
<b>Type of accommodation</b>			Visiting relatives & friends	13	7.7
Rooms	32	19.0	<b>Reading online reviews before booking</b>		
Apartments	99	58.9	Yes, always	92	58.2
Studio-type suites	13	7.7	Sometimes	52	32.9
Holiday homes	24	14.3	No	14	8.9

*Source: Author's research*

Table 5 shows the demographic and travel characteristics of the sample. The majority of respondents were women (53.9%). Broken down by age, 36.7% of respondents were under the age of 30; an equal share of respondents (28.3%) were aged 30 to 39 and 40 to 59, and 6.6% were over the age of 66. Almost 80% of respondents were employed, 14.9% were students, 4.2% were retired, and only 1.8% were unemployed.

Regarding travel characteristics, most of the respondents stayed in apartments (58.9%), followed by holiday homes (14.3%), rooms (19.0%), and studio-type suites (7.7%). For 75.4% of respondents, this was their first visit to the facility. Regarding the type of booking, 32.7% booked the accommodation directly with the host, 29.5% through the booking.com platform, 19.9% through the Airbnb platform, followed by booking through a travel agency (10.3%), the facility's website (4.5%) and Expedia (1.9%). Respondents were asked to indicate a motive (multiple-choice question) for choosing peer-to-peer tourist accommodation in households, such as price (64.3%), location (64.3%), relaxation (45.8%), family atmosphere (34.5%), events (10.7%), understanding local customs (8.9%), sports and recreation (7.7%), and visiting relatives and friends (7.7%). Of the respondents, 25.6% said that they chose this type of accommodation based on the reviews of previous visitors. Reviews are extremely important as basic guidelines for service providers to not only meet, but exceed guest expectations. It is necessary to emphasize the growing importance of online reviews in tourist accommodation in households, especially when it comes to additional facilities that establishments offer their guests. The results of the survey show that almost 60% of guests always read reviews of previous visitors when choosing accommodation, 32% sometimes reads reviews, and 8.9% do not pay them any attention at all.

Descriptive statistics was used to examine central tendency measures (mean and median) and standard deviation, shown in Table 6, regarding the assessment of the importance of additional services.

**Table 6:** Importance scores of additional facilities

<i>Additional facilities</i>	<i>Mean</i>	<i>Median</i>	<i>St dev</i>
<i>Swimming pool</i>	2.90	3.00	1.530
<i>Sauna</i>	2.13	2.00	1.289
<i>Barbecue</i>	3.52	4.00	1.387
<i>Pet friendly accommodation</i>	3.27	4.00	1.523
<i>Satellite programs</i>	3.37	4.00	1.377
<i>Waste recycling</i>	3.51	4.00	1.298
<i>Facilities for children</i>	3.12	3.00	1.488
<i>Facilities for people with reduced mobility</i>	2.98	3.00	1.539

<i>Additional facilities</i>	<i>Mean</i>	<i>Median</i>	<i>St dev</i>
<i>Transportation to and from the airport</i>	2.73	3.00	1.474
<i>Rental of equipment (bicycles, boats)</i>	2.97	3.00	1.395
<i>Equipment storage place (bicycles, boats, diving equipment)</i>	2.96	3.00	1.392
<i>Organizing site tours, fishing and other activities for the guests</i>	3.28	3.00	1.317
<i>Ironing / laundry services</i>	3.31	3.00	1.245
<i>Info maps (gastronomic offer, events, cultural events)</i>	4.00	4.00	1.090
<i>The possibility of eating organic food</i>	3.43	4.00	1.373
<i>Safe</i>	3.59	4.00	1.428

Source: Author's research

In Table 6, standard deviations, linked to the dispersion of the data (scores) from the mean for each variable, suggest that the sample consists of an exceptionally heterogenous group of guests, with different perceptions of the importance of additional facilities. In accordance with previously mentioned results, it is clear that there is no consensus regarding the importance of individual additional facilities. Hence, the authors opted to conduct additional analysis. The observed groups of respondents have mutually different preferences, resulting in differences in the perceived importance of additional facilities. The following section presents the in-depth analysis conducted to better understand the specific characteristics of the sample and the importance of additional facilities in tourist accommodation in households. The analysis was focused on the individual types of tourist accommodation in households.

For the purposes of further statistical analysis, a normality test was conducted to determine how the data were distributed. Tests have shown that the distribution differs from the normal distribution. The significance values of the Kolmogorov-Smirnov and Shapiro-Wilk tests do not exceed 0.05, and nonparametric statistical processing procedures were used to interpret the data. In this study, the Kruskal-Wallis H test was used, in SPSS 23 statistical software, as a substitute for the ANOVA test.

Kruskal-Wallis H is a nonparametric statistical test used to assess differences between three or more independently studied groups (Ostertagová et al., 2014, 115). The Kruskal-Wallis H test is commonly used to determine whether the sums of ranks are so different that they are unlikely to belong to samples from the same group (Horvat, Mijoč, 2019, 516).

The Kruskal-Wallis H test is used to compare the perception of importance of additional services by type of accommodation (Room, Apartment, Studio-type suites, Holiday homes). The goal of this test is to determine if there are differences that are statistically significant. Differences between groups were verified, and results are shown in Table 7.

**Table 7:** Results of Kruskal-Wallis H Test regarding the offering of additional facilities

<i>Additional facilities</i>	<i>Chi-Square</i>	<i>df</i>	<i>Asymp. Sig.</i>
<i>Swimming pool</i>	<b>23.106</b>	<b>3</b>	<b>.000</b>
<i>Sauna</i>	<b>9.684</b>	<b>3</b>	<b>.021</b>
<i>Barbecue</i>	7.032	3	.071
<i>Pet friendly accommodation</i>	.563	3	.905
<i>Satellite programs</i>	<b>12.024</b>	<b>3</b>	<b>.007</b>
<i>Waste recycling</i>	1.812	3	.612
<i>Facilities for children</i>	<b>8.235</b>	<b>3</b>	<b>.041</b>
<i>Facilities for people with reduced mobility</i>	<b>14.593</b>	<b>3</b>	<b>.002</b>
<i>Transportation to and from the airport</i>	<b>11.516</b>	<b>3</b>	<b>.009</b>
<i>Rental of equipment (bicycles, boats)</i>	1.631	3	.652

<i>Additional facilities</i>	<i>Chi-Square</i>	<i>df</i>	<i>Asymp. Sig.</i>
<i>Equipment storage place (bicycles, boats, diving equipment)</i>	6.860	3	.076
<i>Organizing site tours, fishing and other activities for the guests</i>	6.495	3	.090
<b><i>Ironing / laundry services</i></b>	<b>7.899</b>	<b>3</b>	<b>.048</b>
<i>Info maps (gastronomic offer, events, cultural events)</i>	6.255	3	.100
<i>The possibility of eating organic food</i>	2.278	3	.517
<i>Safe</i>	5.216	3	.157

Source: Author's research

The results show that in a total of seven statistically significant additional facilities there are differences in the perceived importance of additional facilities with regard to type of accommodation facility. Of the seven additional facilities, five have the greatest importance to guests staying in rooms, and two, to guests staying in holiday homes. The differences were established based on the Chi-square test values and level of significance of the elements. Table 8 provides a detailed overview of the seven additional facilities for which statistical significance was determined.

**Table 8:** Results of Kruskal-Wallis H Test regarding the offering of additional services, by type of accommodation

<i>Ranks</i>	<i>Type of accommodation</i>	<i>Mean Rank</i>	<i>Ranks</i>	<i>Type of accommodation</i>	<i>Mean Rank</i>
<i>Swimming pool</i>	Room	107.69	<i>Facilities for people with reduced mobility</i>	Room	108.94
	Apartment	71.69		Apartment	82.38
	Studio-type suite	71.88		Studio-type suite	60.12
	Holiday home	110.87		Holiday home	69.78
<i>Sauna</i>	Room	105.68	<i>Transportation to and from the airport</i>	Room	100.19
	Apartment	78.09		Apartment	85.42
	Studio-type suite	71.69		Studio-type suite	71.73
	Holiday home	83.59		Holiday home	58.74
<i>Satellite programs</i>	Room	107.03	<i>Ironing / laundry services</i>	Room	102.77
	Apartment	82.11		Apartment	78.70
	Studio-type suite	75.81		Studio-type suite	69.54
	Holiday home	64.74		Holiday home	88.87
<i>Facilities for children</i>	Rooms	97.00			
	Apartment	79.66			
	Studio-type suite	61.08			
	Holiday home	97.57			

Source: Author's research

The results of the Kruskal-Wallis H test indicate that there are statistically significant differences between the importance scores of the seven additional facilities with regard to the type of accommodation.

Sauna, Satellite programmes, Facilities for people with reduced mobility, Transportation to and from the airport, and Ironing/laundry services are the additional facilities that have the greatest importance for tourists staying in rooms, while Swimming pool and Facilities for children have the greatest importance for tourists staying in holiday homes.

### 5. Conclusion

The continuous improvement of service quality and its role in creating and delivering added value to tourist accommodation in households is a major and vital challenge for Croatia's tourism industry and economy. Good business performance relies on providing continuous



guest care and ensuring service quality and the quality of additional facilities. The business results achieved in both the period prior to and the period during the COVID-19 pandemic bear witness to that fact, confirming the exceptional potential of tourist accommodation in households and opportunities for further development, with special emphasis on quality improvement.

The results of the conducted study referring to the importance analysis of additional facilities in tourist accommodation in households demonstrate that there are significant differences with regard to the type of accommodation in which tourists are staying. In particular, the results highlight the importance of certain additional facilities and services – namely, sauna, satellite programmes, facilities for people with reduced mobility, transportation to and from the airport, and ironing/laundry services – for guests staying in rooms in households. The results further show that swimming pools and facilities for children are additional facilities of great importance to guests choosing to stay in holiday homes.

The many benefits of the study conducted on the importance of additional facilities to guests who chose to stay in tourist accommodation in households should also be pointed out, such as:

- digital platforms that can help vacation rental owners earn additional income,
- gaining and maintaining competitive advantages,
- vital elements of accommodation facility promotion and,
- building guest loyalty.

The authors have identified two basic factors with regard to the study's limitations. The first refers to the sample size, and the second to the lack of previous studies in the field. To obtain a comprehensive picture of the role and importance of additional facilities in tourist accommodation in households, studies such as this need to be carried out longitudinally, over a longer period of time, while monitoring and taking into account changes in guests' needs, motivations and wants. The authors suggest that future research should include a larger number of guests based on their selection of accommodation in households according to type of accommodation (room, apartment, study-type suite, holiday home).

This research should be continued in the future period, with emphasis on further testing the results of the study to examine the differences established between the observed groups. The authors also suggest that research should be expanded to include the attitudes and opinions of vacation rental owners who provide tourist accommodation services in households as well as destination managers as vital stakeholders involved in creating and improving the quality of a tourist destination's overall tourism product.

Finally, the authors' scientific contribution is based on the importance analysis of additional facilities as preconditions to ensuring and improving service quality, while the study's contribution to application is evident in the guidelines for rental owners of tourist accommodation in households and destination managers that underline the importance of making quality improvements to additional facilities in accordance with the needs and expectations of guests.

Innovation, sophisticated technologies, and investment in improving the quality of facilities and services are at the core of competitiveness, while flexibility and the speed of adjustment are fundamental properties of the observed segment, which help to ensure competitive excellence in an increasingly discerning tourism market.

### **Acknowledgements:**

“This paper was funded under the project line ZIP UNIRI of the University of Rijeka, for the project ZIP-UNIRI-116-3-19”

## REFERENCES

- Cerović, Z., Milohnić, I., Grudić Kvasić, S. (2014): *Entrepreneurial Management of Private Accommodation in Times of Crisis: a Comparative Approach*. Tourism and hospitality management, Vol. 20, No. 1, pp. 15-28.
- Croatian Bureau of Statistics, **Tourism in 2019**, [https://www.dzs.hr/Hrv\\_Eng/publication/2021/SI-1683.pdf](https://www.dzs.hr/Hrv_Eng/publication/2021/SI-1683.pdf) (accessed 31 January 2022.)
- Grönroos, C. (1983): *Strategic Management and Marketing in the Service Sector*, Helsingfors: Swedish School of Economics and Business Administration, Helsinki
- Gunasekaran, N., Anandkumar, V. (2012): *Factors of influence in choosing alternative accommodation: A study with reference to Pondicherry*, a coastal heritage town, Procedia – Social and Behavioral Sciences, Vol. 62, pp. 1127-1132.
- Guttentag, D., Smith, S., Potwarka, L., Havitz, M. (2018): *Why Tourists Choose Airbnb: A Motivation-Based Segmentation Study*, Journal of Travel Research, Vol. 57, No. 3, pp. 342–359.
- Horvat, J., Mijoč, J. (2019): *Istraživački SPaSS*, Naklada Ljevak, Zagreb
- Hyunsuk, C., Saehya, A., Kwang-Woo, L., Duk-Byeong, P. (2018): *Measuring Service Quality of Rural Accommodations*, Sustainability, Vol. 10, No. 2, pp. 1-15.
- Ingram, H. (1996): *Classification and grading of smaller hotels, guesthouses and bed and breakfast accommodation*, International Journal of Contemporary Hospitality Management, Vol. 8, No. 5, pp. 30-34.
- Hrvatski zavod za norme, *Quality management systems — Fundamentals and vocabulary*, HRN EN ISO 9000:2015, Zagreb
- Klaić, B. (1990): *Rječnik stranih riječi*, Nakladni zavod Matice Hrvatske, Zagreb
- Moreno-Gil, S., Martín-Santana, J. D. (2015): *Understanding the Image of Self-Contained and Serviced Apartments: The Case of Sun and Beach Destinations*, Journal of Hospitality & Tourism Research, Vol. 39, No. 3, pp. 373-400.
- Ministry of Tourism (2013): *National Programme for the Improvement of Tourist Accommodation in Households*, Zagreb [https://mint.gov.hr/UserDocsImages/arhiva/009\\_160128\\_obiteljski.pdf](https://mint.gov.hr/UserDocsImages/arhiva/009_160128_obiteljski.pdf), (accessed February 2, 2022)
- Ministry of Tourism (2019): *Pravilnik o razvrstavanju i kategorizaciji objekata u kojima se pružaju ugostiteljske usluge u domaćinstvu* (NN 9/16, NN54/16, NN 61/16, NN 69/17, NN 120/19) (accessed February 4, 2022)
- Ministry of Tourism (2019): *Zakon o ugostiteljskoj djelatnosti* (NN 85/15, NN 121/16, NN 99/18, NN 25/19, and NN 98/19) (accessed February 4, 2022)

O'Neill, M. (2011): *Measuring Service Quality and Customer Satisfaction*, in: Kandampully, J., Mok, C., Sparks, B. (Ed.): *Service Quality Management in Hospitality, Tourism and Leisure*, the Haworth Hospitality Press, New York

Ostertagová, E., Ostertag, O., Kováč, J. (2014): *Methodology and Application of the Kruskal-Wallis Tes*, *Applied Mechanics and Materials*, Vol. 611, pp. 115–120.

Priporas, C.-V., Stylos, N., Rahimi, R., Vedanthachari, L.N. (2017): *Unraveling the diverse nature of service quality in a sharing economy: A social exchange theory perspective of Airbnb accommodation*, *International Journal of Contemporary Hospitality Management*, Vol. 29, No. 9, pp. 2279-2301.

Ranjbari, M., Shams Esfandabadi, Z., Scagnelli, S.D. (2020): *A big data approach to map the service quality of short-stay accommodation sharing*, *International Journal of Contemporary Hospitality Management*, Vol. 32, No. 8, pp. 2575-2592.

Vlahov, A. (2021): *Izazovi Unaprjeđenja Poslovanja Privatnog Smještaja u Republici Hrvatskoj*, *Acta Turistica*, Vol. 33, No. 2, pp. 203-236.

Vrtodušić Hrgović, A., Milohnić, I., Petaković, E. (2021): *Quality Dimensions of Tourist Accommodation in Households*, in Barković, D., Dernoscheg, K., Erceg, A., Glavaš, J., Pap, N., Runzheimer, B., Wetzel, D. (ur.) *Interdisciplinary Management Research XVII*, Osijek, pp. 123-143.

Raspor, S. (2012): *Multivariate statistical analysis of customer satisfaction in hotel industry*, doctoral dissertation, Faculty of Tourism and Hospitality Management, Opatija

TOMAS (2017): *Tourist Attitudes and Expenditure in Croatia*, Institute for Tourism, Zagreb, <https://www.htz.hr/sites/default/files/2019-07/Tomas-Ljeto-2017-Stavovi-i-potrosnja-turista-u-Hrvatskoj.pdf> (accessed February 2, 2022)

TOMAS (2019): *Tourist Attitudes and Expenditure in Croatia*, Institute for Tourism, Zagreb, pp. 189, [https://www.htz.hr/sites/default/files/2020-10/TOMAS%20Hrvatska%202019\\_0.pdf](https://www.htz.hr/sites/default/files/2020-10/TOMAS%20Hrvatska%202019_0.pdf) (accessed February 2, 2022)

Tussyadiah, I. (2016): *Factors of satisfaction and intention to use peer-to-peer accommodation*, *International Journal of Hospitality Management*, Vol. 55, pp. 70-80.

*A scientific paper***Marija Opačak, Ph. D.**

Institute of Public Finance

E-mail address: marija.opacak@ijf.hr

## **A REVIEW OF THEORETICAL AND CONCEPTUAL FOUNDATIONS FOR CONSOLIDATED ANALYSIS OF CVM AND CBA FOR NATURAL AND ENVIRONMENTAL RESOURCES**

### **ABSTRACT**

*This paper outlines a theoretical framework for non-market valuation, and theoretical and conceptual foundations of cost-benefit analysis for natural and environmental resources. Despite the fact that contingent valuation estimates may contain errors, it is still recommended for policy makers to use estimated values of willingness to pay of important public goods than to ignore them. If their value is not assessed, it is simply considered a zero. Cost-benefit analysis (CBA) can apply to policies, projects, regulations, and other government interventions. It is an assessment approach that puts a monetary value on policies' consequences to justify the feasibility of a project. Building and understanding the conceptual foundations of CBA is crucial for ascertaining whether it can be used as a decision rule or not. To achieve environmentally and socially reliable management, it is recommended to involve everyone who will be affected by the policy implementation in a way that the study can reveal their interests and preferences related to a specific environmental issue or policy change. The paper points out the most relevant aspects to be taken into consideration when applying non-market valuation were generated.*

**Key words:** *Contingent valuation method, CBA, Landfill conversion, Welfare economics.*

### **1. Introduction**

To understand the non-market valuation (NMV) and subsequently the contingent valuation (CV), it is important to define market goods and market value, and their distinctive features from non-market goods and non-market value. Market goods and services are products (items or activities) traded on the market at a price determined by demand and supply. Their monetary values are measured by price times quantity (Samuelson & Nordhaus, 2009). Some of the examples of market goods (or items) are food, furniture, toys, and clothes. A service (or activity) infer any action done by one person for someone else. For instance, medical check-ups, haircuts, delivery, and teaching. Non-market goods and services, on the other hand, are not subject to markets, e.g. environmental services and health (J. B. Loomis, 2002). Simply, no one is charged for cleaner air. Therefore, non-market valuation refers to values for non-market resources. It is employed to assess project benefits by quantifying the economic values of goods and services that are not traded in the market (J. B. Loomis & Walsh, 1997). The concept of non-market valuation used to value non-market resources – willingness to pay (WTP) – is the same concept used to value market goods and services. Price in the market is simply WTP for the good, or it represents trade-offs that people make. NMV considerably resembles detective work in estimating the monetary WTP for natural and environmental resources from transactions such as higher level of environmental quality, distances traveled

for recreation, jobs accepted, or home purchases. A summary of the fundamental reasons for NMV is as follows:

- Conservation of natural and environmental resources (Pearce, 2013),
- Resource conservation policies support (Hanley et al., 2001),
- Comparison of the benefits assessed for natural and environmental resources and alternative resource use options (Nunes & van den Bergh, 2001),
- Application of the obtained valuations in cost-benefit analyses of public projects (Lipton et al., 1995).

As the need for a cleaner and safer environment was developing, obvious questions started to emerge. How clean should the air be? What is the level of impurity that we should tolerate in the drinking water? What is the acceptable level of national park system expansion for the public? What is the value that public healthcare recipients put on access to their traditional doctor instead of being registered in a health preservation organization? How much do people care about a specific public good? What is a dollar value for keeping the option of swimming in a lake inside of a national park? The demand for answers was increasing and consequently, economists started to develop economic models that can address these questions. Policy makers were particularly interested in non-market valuations because it gave them information about the potential benefits of public goods<sup>1</sup> that they could balance against their costs and arrive at more rational choices.

The contingent valuation represents one of the most guaranteed approaches to measure non-use values in monetary terms, which makes its major advantage. The CVM is a survey technique that composes “*a hypothetical market to measure willingness to pay or accept compensation for different levels of non-marketed natural and environmental resources*” (J. Loomis & Helfand, 2003, p. 184). It can measure both passive use values (e.g. benefits for a society from the existence of a natural environment) and the value of outdoor recreation at the alternative attribute level (e.g. crowding and wildlife abundance). In environmental valuation, passive use values play a significant role because many respondents are showing positive WTP values for changes in environmental quality, that are not reflected in observable behavior (Hoyos & Mariel, 2013).

The main idea of CVM is to assess an individual's WTP for “buying” use or preservation of a non-marketed natural resource by using hypothetical situations (J. Loomis & Helfand, 2003). According to Loomis & Helfand (2003), there are three key features of the market: (1) description of the change in environmental quality being valued, (2) payment vehicle, and (3) WTP or WTA question. The responds can be obtained in-person, through telephone interviews or mail questionnaires. The CVM is a direct form of the stated preference methods, as the obtained value estimates are dependent on the specifics presented to respondents in a survey. It is seriously underpinned in welfare economics and the neoclassical concept under the individual utility maximization framework.

## 2. The Basis of Welfare Economics

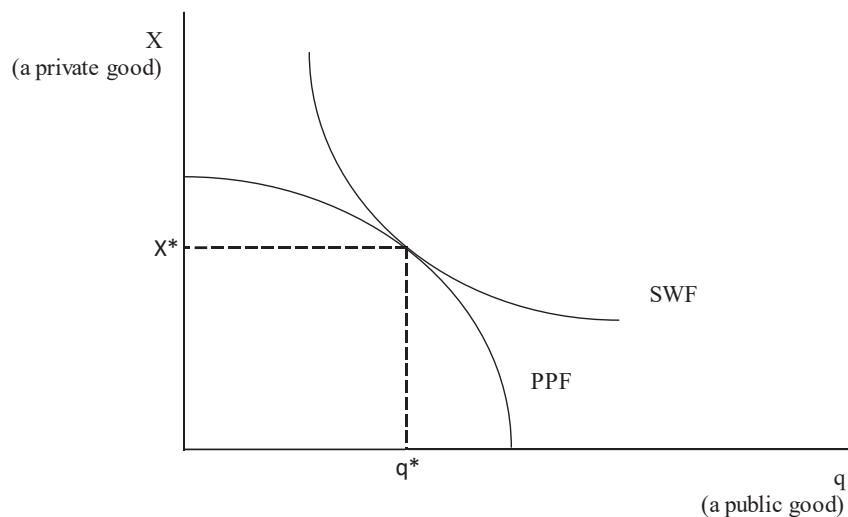
Economists differentiate two branches of modern economics, positive and normative (Stiglitz, 1986). The positive economics relies on verifiable statements about the world whereas the

---

<sup>1</sup> A pure public good is perfectly non-excludable and non-rivalrous between the individuals who wish to use the good (Cornes & Sandler, 1996). There are few public goods that in reality meet these conditions, for instance air and national defense.

normative or welfare economics seeks to evaluate the effects of economic policies on the well-being of the community based on opinions or judgements. Throughout history, the concept of a social welfare function (SWF) was essential for welfare economics, and the level of optimal production was defined as the tangent between production possibility frontier (PPF) and SWF (Figure 1). By the late 1930s, the idea of measuring individuals' satisfaction in quantitative terms was almost completely abandoned, and experts replaced cardinal utility for an ordinal, which has severely compromised the theoretical basis of the SWF. In 1951, Arrow's Impossibility Theorem showed that it is impossible to aggregate preference into an SWF without violating a few premises of behavior and choice. Due to these events, the SWF does not play an important role in applied economics, but it remains used in economics texts for explanatory purposes. Instead, a Pareto-improving<sup>2</sup> criterion is used by welfare economics to judge on a certain policy.

**Figure 1: Point of Optimal Production**



*Source: According to Rosser (1988), p. 280.*

In applied modern welfare economics, a cost-benefit analysis attempts to monetize the gains and losses to economic agents (individuals, consumers, households, or firms) affected by alternative levels<sup>3</sup> of supply of a public good (Mitchell & Carson, 1989). In practice, that would allow the gainers (from a policy change) to offset the losers. Consequently, if an economic agent is better off while not making another worse off, the Pareto criterion is met. One of the advantages of CV is its capability of providing the information necessary to evaluate benefits by different criteria, including potential Pareto-improvement criterion.

## 2.1. Choice of Benefit Measure

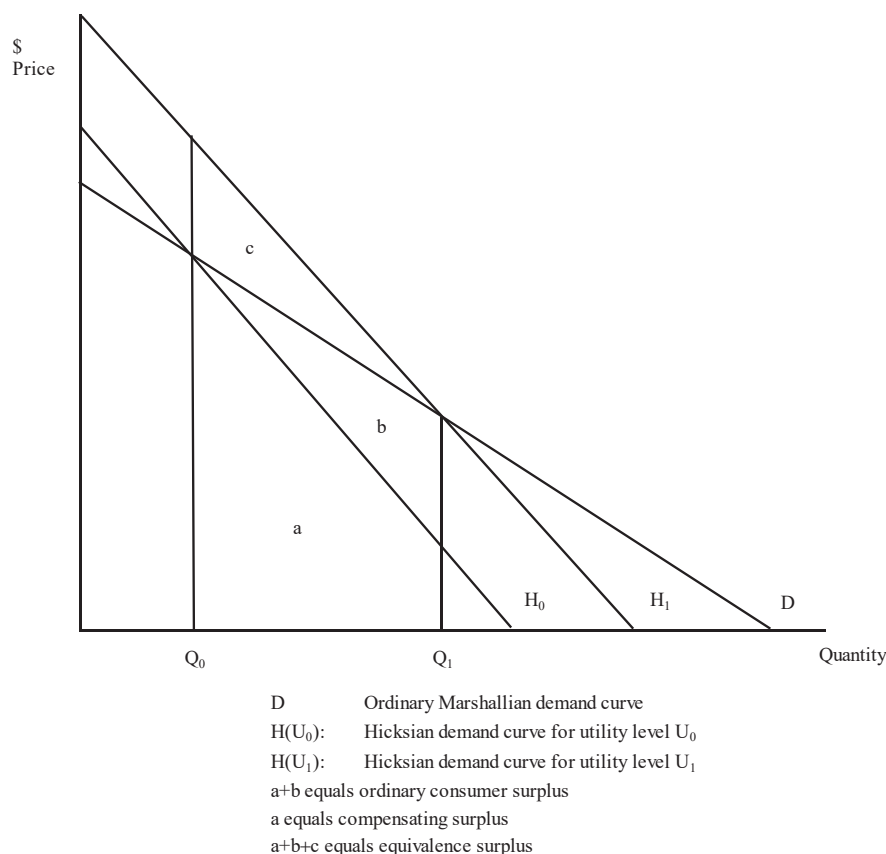
Traditionally, consumer surplus (CS) is the measure of consumer benefit (Ward & Beal, 2000). The idea itself was created by a French engineer, Jules Dupuit, in 1844, but rediscovered and renamed by a British economist, Alfred Marshall (Houghton, 1958). The area under the Marshallian demand curve and above the price line depicts CS. In figure 2, the

<sup>2</sup> A Pareto-improving policy change is a change in relative efficiency, or a change which moves an economy from a less preferred (Pareto-inferior) position to a preferred (Pareto-superior) position.

<sup>3</sup> The terms level, quality, and quantity of a public good are used interchangeably, depending on the nature of a good.

ordinary demand curve is the line marked D and price is assumed to be zero, as it is an example of a pure public good. The area  $a+b$  represents the change in consumer surplus resulting from an increase in supply of the public good from  $Q_0$  to  $Q_1$ . As a measure of benefits resulting from quantity or price changes, the concept of CS has showed numerous problems. They are mostly related to the fact that the ordinary demand curve holds income constant, rather than the level of utility (or satisfaction). A British economist, John Richard Hicks, suggested different CS measures, known as the Hicksian consumer surplus measures (HCS) (Blackorby et al., 2008), which was considered Marshallian CS measures calculated from demand curves, holding total utility constant at certain levels. Based on how an economic good is used and owned, the four measures can involve either compensation or payment to maintain utility at the specified level (Table 1). According to Randall & Stoll (1980), the Hicksian variation measures are used when the consumer can alter the level of the good and the CS measures when the levels of the good to purchase are fixed. The compensating surplus measure can be explained as the consumer's WTP for an increase in quantity such as the level of air visibility. For a decrease in visibility, on the other hand, the compensating surplus measure can be interpreted as the minimum damage that the consumer is willing to accept in return for receiving the decreased level of a good.

**Figure 2:** Surplus Measures for a Change in Quality



Source: According to Silberberg (2016)

**Table 1:** Hicksian Welfare Measures for CV Surveys

	WTP	WTA
Quantity increase	CS	ES
Price decrease	CS; CV	ES; EV
Quantity decrease	ES	CS
Price increase	ES; EV	CS; CV

*Definitions:*

WTP-willingness to pay

WTA-willingness to accept

CS-compensating surplus

CV-compensating variation

ES-equivalence surplus

EV-equivalence variation

WTP is the amount of money an agent would be willing to give up to obtain a change and still be as well off as with his previous entitlement.

WTA is the amount of money that would have to be given to an agent, with a specified entitlement, to forgo a change and still be as well off as if the change had occurred.

Compensating measures assume that the agent is entitled to his current level of utility, or, alternatively, his status quo endowment of property rights.

Equivalence measures assume that the agent is entitled to some alternative level of utility, or, alternatively, to a set of property rights different from those currently held.

Surplus measures constrain the quantity of the good being considered at the quantity, which would be purchased at the new (old) price in the absence of compensation for the compensating (equivalence) surplus.

Variation measures do not constrain the quantity of the good the agent would purchase.

*Source: Mitchell, R.C. and Carson, R.T. (1989) Using Surveys to Value Public Goods: The Contingent Valuation Method. Resources for the Future, Washington DC, p. 25.*

Based on data needs and assumptions about physical environments and economics agents, different methods of measuring benefits can be used for public goods. They can be divided into two major categories, behavioral linkage methods and physical linkage methods. Table 2 summarizes the first measurement technique.

**Table 2:** Behavior-Based Methods of Valuing Public Goods

	Direct	Indirect
Observed market behavior	<b>OBSERVED/DIRECT</b> Referenda Simulated markets Parallel private markets	<b>OBSERVED/INDIRECT</b> Household production Hedonic pricing Actions of bureaucrats or politicians
Responses to hypothetical markets	<b>HYPOTHETICAL/DIRECT</b> Contingent valuation Allocation game with a tax refund Spend more-same-less survey question	<b>HYPOTHETICAL/INDIRECT</b> Contingent ranking Willingness-to-(behavior) Allocation games Priority evaluation technique Conjoint analysis Indifference curve mapping

*Source: Mitchell, R.C. and Carson, R.T. (1989) Using Surveys to Value Public Goods: The Contingent Valuation Method. Resources for the Future, Washington DC, p. 75.*



The damage function approach (or physical linkage method) uses marketplace prices to value the estimated effects. It is based on the presumption that there is a technical relationship, a biological or an engineering, between the consumer and the public good in question. For instance, temperature as a specific water characteristic is related to trout fishing, rather than the behavioral motivation of economic agents (e.g. fishermen). These methods cannot be used in existence or indirect-use benefit valuations. Contingent valuation is based on behavioral linkage between changes in amenities and their effects. Depending on the type of behavioral linkage and how preferences are revealed, four classes of behavior-based methods of the public good valuations can be distinguished: observed/direct, observed/indirect, hypothetical/direct, and hypothetical/indirect. Key properties of these benefit measurement methods and advantages of the CVM, especially hypothetical/direct methods, are described in the Theoretical Foundations section.

## 2.2. Willingness to Pay versus Willingness to Accept Measures

Formulating an elicitation question as WTP or WTA depends on which HCS measure the researcher wants to use for a given welfare change. The choice is a matter of property rights; whether the agent has to buy the good concerned if he wants to enjoy it, or he has the right to sell it (Cornes & Sandler, 1996; Faure, 1992). Concerning the public goods, it is not always easy to answer this question, mainly because the rights are collective. Unlike HCS, the Marshallian CS manages to avoid the problem of deciding on the appropriate property right, but on the other hand, it is not a true measure of the agent's welfare change. In case the researcher wants to measure both WTP and WTA for the same amenity (a change in a public good), he can rely on the CVM as the only direct measure of the two. The readers are encouraged to read more on the WTP-WTA dilemma in extensive literature (Arrow & Fisher, 1974; Bishop & Heberlein, 1979; Cummings et al., 1986; Randall & Stoll, 1980). For public goods that require annual or periodic payments to maintain the same level of the good, like air quality, neither use nor ownership can capture the pertinent relationship between a change in a public good valued and the consumer. Table 3 presents the summary of implications for Hicksian surplus measures for private and public goods, and their property rights.

**Table 3:** Hicksian Surplus Measures for Private and Public Goods

	Private goods		Public goods <sup>a</sup>		
	Own	Not own		Individually held	Collectively held
Use	CS <sub>WTA</sub> (decrease) <sup>b</sup>	ES <sub>WTP</sub>	Level currently accessible	CS <sub>WTA</sub>	CS <sub>WTP</sub> (decrease) <sup>b</sup>
Do not use	ES <sub>WTA</sub>	CS <sub>WTP</sub> (increase) <sup>b</sup>	Level not currently accessible	CS <sub>WTP</sub>	CS <sub>WTP</sub> (increase) <sup>b</sup>
<sup>a</sup>	For public goods that require annual payments (or their equivalents) to maintain a given level of the good.				
<sup>b</sup>	Indicated measure for a decrease (increase) in the amenity from the status quo.				

Source: Mitchell, R.C. and Carson, R.T. (1989) *Using Surveys to Value Public Goods: The Contingent Valuation Method. Resources for the Future, Washington DC, p. 39.*

### 2.3. Aggregation Issues

Once WTP amount estimations have been obtained for individuals by a CV survey, the researcher has to see if it is possible to translate the estimates on the relevant population and to obtain the total benefit.

- 1) Aggregation of individual benefits – it is necessary to make a few assumptions to make sure that the findings of a CV study can be used to obtain the accurate estimate of aggregate individual WTP for a specific quantity: (i) a weighting scheme has to be chosen because a dollar of a person's WTP has an equal weight in an SWF. Other weighting schemes are possible to use, because WTP involves an income constraint; (ii) a design of payment structure has to be made to accumulate all the revenues that the respondents revealed they are willing to pay in a CV survey.
- 2) Subcomponent aggregation – this includes combining separately measured components of benefits in a CV study for: (i) different geographical locations; (ii) different types of benefits as parts of a bigger program, e.g. the air and water quality of a larger national environmental program.
- 3) Distribution of individual WTP or distribution of benefits from a policy change – policy makers may more desire this kind of information than the aggregate comparison of benefits and costs if it is considerably clear that the policy change debated would be Pareto-improving and the distributional information is available from a CV survey.

### 3. A Review of the Contingent Valuation Method

If we compare four different classes of benefit measurement methods based on five criteria—ability to measure option price, ability to value good not previously available, ability to estimate all existence-class benefits, ability to directly estimate the relevant ordinary and Hicksian inverse demand curves—the advantages of hypothetical methods are noticeable, particularly the flexibility of hypothetical/direct methods (Table 4). This is the method to directly measure people's valuation of specific hypothetical changes in quality and quantity of public goods. These methods, including contingent valuation, put forward institutional links between amenity levels and individual behavior (Smith & Krutilla, 1982). The institutional assumption implies that a respondent's answer to hypothetical markets is perfectly comparable to existing markets. If this premise is established, methods unique in simplicity, the ability to assess different benefit categories, and theoretical justification become available (Mitchell & Carson, 1989). Unlike observed methods (e.g. Travel Cost Method), hypothetical methods (e.g. CVM) are able to obtain WTP amounts of respondents that include both use and existence value. In addition, the hypothetical characteristic of CV allows the respondent to make his own tradeoffs in terms of money, as it has the ability to directly measure concrete points on an individual's compensated demand curve.

**Table 4:** Key Properties of the Benefit Measurement Methods

Desirable properties	Method			
	Observed/ Direct <sup>a</sup>	Observed/ Indirect	Hypothetical/ Indirect	<b>Hypothetical/ Direct</b>
Able to obtain option price estimates in the presence of uncertainty	No	No	Yes	<b>Yes</b>
Able to value goods not previously available	Yes	No	Yes	<b>Yes</b>
Able to estimate all existence class benefits	Yes	No	Yes	<b>Yes</b>
Relevant ordinary (or inverse) demand curve is directly estimable	Yes	No	No	<b>Yes</b>
Relevant Hicksian compensated demand (or inverse demand) curve is directly estimable	No	No	No	<b>Yes</b>

<sup>a</sup> In some cases, only referenda have the desired property.

Source: Mitchell, R.C. and Carson, R.T. (1989) *Using Surveys to Value Public Goods: The Contingent Valuation Method. Resources for the Future, Washington DC, p. 88.*

### 3.1. Validation and Reliability of WTP

The validity of the CVM has been disputed as unreliable and biased as it uses hypothetical data that affects the veracity of estimated values (Ajzen et al., 2007; Bengochea-Morancho et al., 2005; Bennett et al., 2013; Collins & Vossler, 2009; Hausman, 2012). In fact, it is reasonable for people to question if respondents would really pay the amount they stated. The empirical evidence indicates that, when the question is referred to as WTP rather than WTA, the respondents would pay as much as stated if they have consumed the good before (J. Loomis & Helfand, 2003).

To use WTP estimates for policy analysis, a certain degree of accuracy and credibility of environmental valuation has to be proved (Bateman et al., 2004). Several validity checks have emerged and widely used: content, construct, criterion and convergent validities (Mitchell & Carson, 1989). Content validity evaluates how appropriate the questions were for obtaining credible estimates of WTP, and whether the questions were asked in a clear, neutral, understandable and meaningful manner. Essentially, content validity assessments are subjective.

Construct or theoretical validity test evaluates the consistency of the CVM results with other studies (convergent validity) and with economic theory, intuition and prior expectation (expectation-based validity) (Pearce, 2013). Criterion validity in CV is a measure of validity or degree of a survey to estimate true WTP. It should be able to assess if the respondents understand the CV questions or they are responsive to the crucial parts of the hypothetical scenario, and whether the elicited WTP reveals the actual amount the respondent is willing to pay if a hypothetical market existed. Convergent validity tests if the WTP estimates for a good would turn out to be the same regardless of the valuation approach used. The convergent validity test is generally evaluated by comparing actual behavior-based methods with

hypothetical markets used in CVM (J. Loomis & Helfand, 2003). It is important to say that both measures may be equally valid as well as invalid. In case of dealing with non-market impacts, where observable market data to verify the reliability of the WTP estimates does not exist, the results can be compared with those of similar studies (Pearce, 2013).

The other aspect of accuracy is reliability, which is related to consistency between true variation and measurement error. Based on J. B. Loomis (1993), one can be certain that the statement of WTP elicited in CV surveys resembles the behavior that would be captured if the situation would be real and not hypothetical. Despite the fact that CVM estimates may contain errors, many economists still prefer to use estimated values of WTP of important public goods than to ignore such values in policy analysis (J. Loomis & Helfand, 2003). The error in CVM estimates for passive incuse values is comparatively less relevant than the error of implying a zero value. Public good that have not been quantified would simply seem to be less relevant and their costs would not be as comparable.

To assess reliability in CVM, the test-retest reliability, the split-half, or the alternate form is employed. The test-retest is a measure of stability and reliability of a survey instrument over time. The instrument and the participants to be tested are identical. The split-half validity test involves dividing the sample into two equal parts, e.g. geographical areas (Bennett et al., 1998), and the respondent's WTP response for both halves of the test is compared. The correlation between the two halves provide the split-half reliability (Kline, 2005). The alternate form reliability refers to the consistency of test results between two different forms of a test. The two forms should be equivalent in all aspects, but administered at different times or in succession.

#### **4. The Foundations of Cost-Benefit Analysis for Non-Market Valuations**

The evidence of the use of CBA in practice can be found in American legislation in the 1930s when an investigation that endorsed social accounting prevailed on the Flood control Act of 1936. That Act (United States of America, 1936) authorized the United States Army Corps of Engineers to construct projects, such as dams, levees and flood gates, to provide flood protection if "the benefits to whomsoever they may accrue are in excess of the estimated costs...". This became a requirement to estimate all potential values a policy could generate. About 15 years later, the first CBA manual was published, the so-called "Green Book", and the first non-market valuation methods were suggested. In 1965, the former president Lyndon Johnson ordered all federal authorities to apply Program Planning and Budgeting (PBB), which became basically CBA. Scientific research on non-market valuation methods increased during this period not only in the US but also in Europe (e.g. the Amsterdam Treaty). Nevertheless, not many countries use CBA regularly.

##### **4.1. Theoretical Foundations**

When evaluating different investment alternatives, a company or an individual tends to consider only the costs and benefits that incurred to it. In a very similar way, we tend to consider all of the costs and benefits to society as a whole, that is why CBA is frequently regarded as social cost-benefit analysis (Boardman et al., 2007). CBA can apply to policies, projects, regulations, and other government interventions. It is an assessment approach that monetizes all consequences of a policy to all members of society to justify the feasibility of a project. The total value of a policy is defined by its net social benefits (NSB) that equal the social benefits (B) minus the social costs (C):

$$NSB = B - C \quad (1)$$

The main two types of CBA include *ex ante* and *ex post*. The standard CBA is referred as *ex ante*, and is conducted before the project is implemented. *Ex post* analyses are conducted at the end of a project and they provide information about the class of an intervention, and consequently whether particular classes of projects/policies are feasible. The third type of CBA, *in medias res*, is performed during the project and it can influence a decision on continuing with the project or ceasing it. The fourth type compares an *ex ante* with an *ex post* or *in medias res* of the same project. Whereas the comparative type of CBA is significantly useful to policy makers, it is the least implemented among the four. The summary of values of the four types of CBA for government decision making is presented in table 5.

**Table 5:** Value of Different Classes of CBA

Value	Class of Analysis			Ex Ante/Ex Post or Ex Ante/ In Medias Res Comparison
	Ex Ante	In Medias Res	Ex Post	
Resource allocation decision for this project.	Yes—helps to select the best project or make "go" versus "no-go" decisions, if accurate.	If low sunk costs, can still shift resources. If high sunk costs, usually recommends continuation.	Too late—the project is over.	Same as <i>in medias res</i> or <i>ex post</i> analysis.
Learning about actual value of specific project.	Poor estimate—high uncertainty about future benefits and costs.	Better—reduced uncertainty.	Excellent—although some errors may remain. May have to wait long for study.	Same as <i>in medias res</i> or <i>ex post</i> analysis.
Contributing to learning about actual value or similar projects.	Unlikely to add much.	Good—contribution increases as performed later. Need to adjust for uniqueness.	Very useful—although may be some errors and need to adjust for uniqueness. May have to wait long for project completion.	Same as <i>in medias res</i> or <i>ex post</i> analysis.
Learning about omission, forecasting, measurement and evaluation errors in CBA.	No	No	No	Yes, provides information about these errors and about the accuracy of CBA for similar projects.

Source: Boardman A, Greenberg D., Vining A., Weimer D. *Cost-Benefit Analysis: Concepts and Practice*. 4th ed. Pearson series in economics; 2007. 61–95, p. 4.

One way of determining whether a project is worthwhile is by comparing a project's inputs and outputs (benefits). In other words, by using the total of the present values of its benefits minus the total of the present values of its costs, i.e. net present value (NPV). If the NPV is greater than zero (NPV>0), the project is worth doing. In the case of several alternatives, the rational criterion implies choosing the project which maximizes the NPV in the search for the

efficiency of resource allocation. Two of the most common alternatives to NPV are the benefit-cost ratio (B/C) and the internal rate of return (IRR). The project should be done if the B/C is greater than one ( $B/C > 1$ ). In addition, the higher the B/C ratio, the more efficient is the resource allocation (Stewart & Possingham, 2005). The IRR is the interest rate that sets the NPV of a project to zero. The general decision rule says that if the IRR for a project is greater than a target value, the project is desirable.

The NPV of a project equals the sum of the present values of its benefits ( $B_t$ ) minus the sum of the present values of its costs ( $C_t$ ) incurred in period  $t$  (for  $t=0,1,\dots,T$ ) (Zerbe Jr. & Bellas, 2006).

$$NPV = \sum_{t=0}^T \frac{B_t - C_t}{(1+i)^t} \quad (2)$$

where:

$B_t$  = benefits in period  $t$ ;

$C_t$  = costs in period  $t$ ;

$i$  = interest rate for period  $t$ ; and

$T$  = number of periods the project will last.

The B/C ratio is equal to the present value (PV) of a project's benefits divided by the PV of its costs. In an equation this is:

$$B/C \text{ ratio} = \frac{\sum_{t=0}^T \frac{B_t}{(1+i)^t}}{\sum_{t=0}^T \frac{C_t}{(1+i)^t}} \quad (3)$$

where:

$i$  = the discount factor for period  $t$ ; and

$T$  = the total number of periods under consideration.

The IRR of a project is the interest rate that will generate an NPV of zero, that is:

$$\sum_{t=0}^T \frac{B_t - C_t}{(1+i_{IRR})^t} = 0 \quad (4)$$

where:

$B_t$  = benefits in period  $t$ ;

$C_t$  = costs in period  $t$ ; and

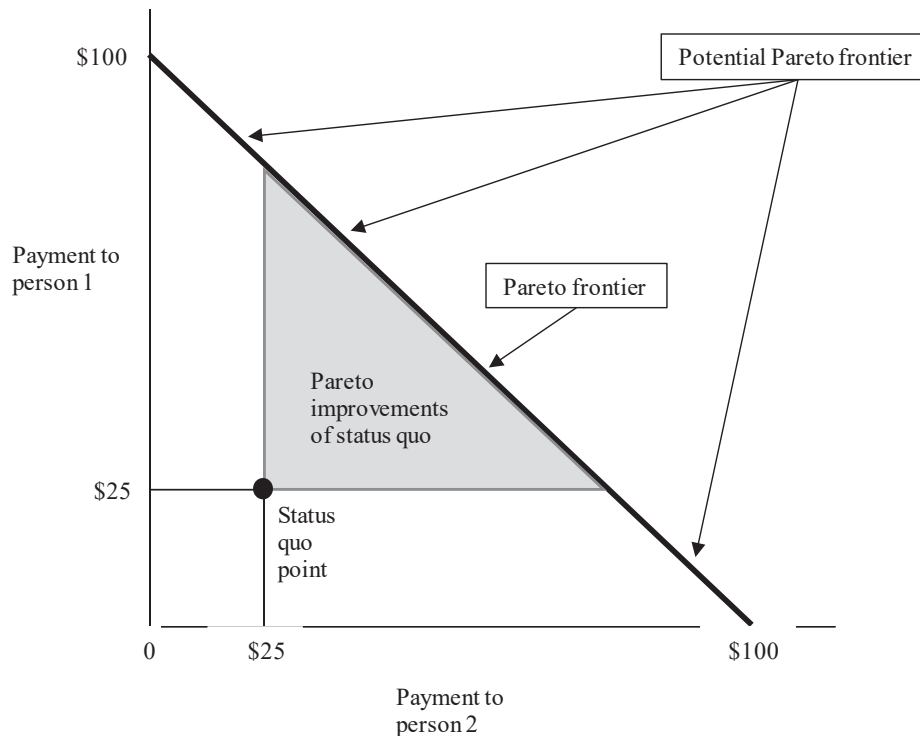
$i_{IRR}$  = the internal rate of return.

## 4.2. Conceptual Foundations

If we think about our daily actions, we realize that we somehow face their benefits and costs, and it seems natural to think in the same way about public policy alternatives evaluation. We want to measure and directly compare the efficiency of different alternatives. In that sense, building and understanding the conceptual foundations of CBA is crucial for ascertaining whether it can be used as a decision rule or not. In modern welfare economics and CBA, efficiency is referred to as allocative or Pareto efficiency. That means that a distribution of goods is Pareto efficient if there is no alternative to it that can make at least one person better off without making somebody else worse off (Boardman et al., 2007). Therefore, as long as an

alternative allocation that would make at least one person better off without making the other worse off exists, it is not Pareto efficient. This concept is graphically explained in figure 3 in a very simple situation that involves the allocation of \$100 between two persons.

**Figure 3: Pareto Efficiency**



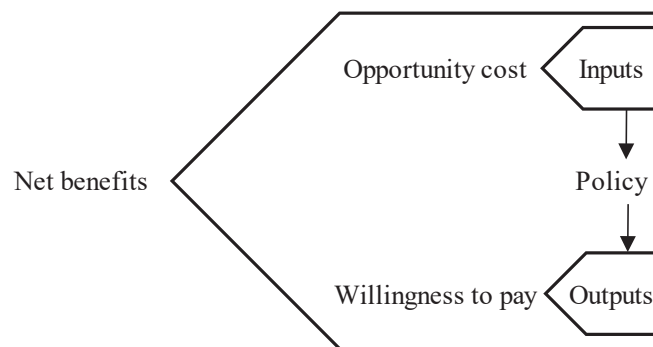
Source: Boardman, A. E. (2001). *Cost-benefit analysis: Concepts and practice*. Upper Saddle River, NJ: Prentice Hall, p. 28.

The horizontal axis represents the amount of money received by person 2, and the vertical axis represents the amount of money received by person 1. The maximum amount that each can receive is \$100, and this is labeled as \$100 on the two axes. The line that connects these two points is called the potential Pareto frontier. If the two persons agree on how to divide the total amount between themselves, they will receive any amount of money of up to \$100. On the other hand, if they do not agree, then they will receive only \$25 each (the status quo point). The Pareto frontier is the segment of the potential Pareto frontier that gives each person at least as much as the status quo. The shaded triangle that goes through the status quo point and the Pareto frontier represents all the possible alternative distributions that would make at least one them better off than the status quo without making the other person worse off. This implies that the status quo is not Pareto efficient, and moving to any of these points represents Pareto improvement (until reaching the potential Pareto frontier). In the concept of Pareto efficiency, implicit are the initial starting positions of the society members.

When it comes to net (social) benefits and Pareto efficiency, the connection is clear: “if a policy has positive net benefits, then it is possible to find a set of transfers, or “side payments”, that makes at least one person better off without making anyone else worse off” (Boardman et al., 2007, p. 27). To fully grasp this link, it is important to indicate how benefits and costs in CBA are measured. Specifically, it is required to regard WTP as the policy outputs valuation method and opportunity costs (OC) as the policy inputs (or resources)

valuation method (Figure 4). Only if the total net benefits of the policy in question measured by the WTP are positive, then there are sets of payments and contributions that would make this policy a Pareto improvement over the status quo. In CBA, the OC is used in order to monetize the inputs for a policy implementation. “*The opportunity cost of using inputs to implement a policy is its value in its best alternative use*” (Boardman et al., 2007, p. 31). In other words, OC measures the value that society must forgo to use the input to implement a specific policy. The policy is Pareto efficient if it produces enough benefits that allows everyone who bears costs to be completely compensated. Generally speaking, a policy is potentially Pareto improving if the net benefits to society are positive.

**Figure 4:** Categorization of Net Benefits of Projects



Source: Boardman, A. E. (2001). *Cost-benefit analysis: Concepts and practice*. Upper Saddle River, NJ: Prentice Hall, p. 29.

**5. Consolidated Analysis of CVM and CBA**

The CBA is a broadly used and accepted framework for supporting social decision-making and making it more rational (Boardman et al., 2007). It is an analytical tool used to analyze the efficiency of a government project by deriving the present value of the net benefits (PVNB) of a policy,

$$PVNB = \sum_{t=0}^T \frac{B_t - C_t}{(1 + r)^t}$$

where  $B_t$  represents the social benefits of the policy in time  $t$ ,  $C_t$  represents the social costs of the policy in time  $t$ ,  $r$  is the discount rate and  $T$  is the number of time periods that define the life of the policy (Alberini & Kahn, 2006, p. 92). The CBA estimates and aggregates the monetary value of projects’ advantages (benefits) and disadvantages (costs) to a society to establish whether they are effective, which implies that the CBA is based on welfare theory. To estimate the costs of a public project as precisely as possible, it is recommended to refer to the existing examples. Here, landfill conversions and restorations are used as examples of environmental improvement projects (tables 6 and 7).



**Table 6:** General Information about Converted Landfills in Hong Kong

Landfill Site	Location	Area (ha)	Total Waste Received (Mt)	Landfill Closed (Year)
Jordan Valley	New Clear Water Bay Road, Jordan Valley	11	1.5	1990
Ma Yau Tong Central	Lin Tak Road, Lam Tin	11	1	1986
Ma Yau Tong West	Tseung Kwan O Road, Lam Tin	6	0.6	1981
Sai Tso Wan	Sin Fat Road, Lam Tin	9	1.6	1981
Ngau Chi Wan	Fung Shing Street, Ngau Chi Wan	8	0.7	1977
Siu Lang Shui	Tuen Mun	12	1.2	1983
Ma Tso Lung	Pak Shek Au	2	0.2	1979
Ngau Tam Mei	Yuen Long	2	0.15	1975
Gin Drinkers Bay	Kwai Chung	29	3.5	1979
Tseung Kwan O Stage I	TKO development area 77	68	15.2	1995
Tseung Kwan O Stage II/III	TKO development area 105	42	12.6	1994
Shuen Wan	Ting Kok Road, Tai Po	55	15	1995
Pillar Point Valley	Part within Tuen Mun Area 46 and part within Castle Peak Firing Range	65	11	1996

Source: [www.epd.gov.hk/epd/english/environmentinhk/waste/prob\\_solutions/msw\\_si\\_lra.html](http://www.epd.gov.hk/epd/english/environmentinhk/waste/prob_solutions/msw_si_lra.html)

**Table 7: Landfill Restorations in Hong Kong**

Landfill Site	Period of Restoration Works	Capital Cost* (\$M)	Commissioning of Restoration Facilities	Estimated Operation Cost* (\$M/yr)
Jordan Valley				
Ma Yau Tong Central				
Ma Yau Tong West	1997-1998	249	1998	9
Sai Tso Wan				
Ngau Chi Wan**				
Siu Lang Shui				
Ma Tso Lung				
Ngau Tam Mei	1999-2000	332	2000	21
Gin Drinkers Bay				
Tseung Kwan O Stage I				
Tseung Kwan O Stage II/III	1997-1999	369	1999	21
Shuen Wan	1996-1997	168	1997	5
Pillar Point Valley	2004-2006	199	2006	15

Note:

\* All capital cost shown are actual costs; all operation costs are estimated at 2014/15 level.

\*\* The restoration work for Ngau Chi Wan Landfill was carried out from 1998-2000 and the restoration facility was fully commissioned in 2000.

Source: [www.epd.gov.hk/epd/english/environmentinhk/waste/prob\\_solutions/msw\\_si\\_lra.html](http://www.epd.gov.hk/epd/english/environmentinhk/waste/prob_solutions/msw_si_lra.html)

Essentially, if the discounted PV of the benefits are greater the discounted PV of the costs, then the project is feasible. A CBA includes various types of limitations, such as distributional issues, choosing a discount rate, excluding environmental issues, etc. Economists tend to combine WTP with CBA to add the social element into it as the valuation method based on CBA is often considered too simple to address environmental values properly (Verlicchi et al., 2012) or healthcare problems (Haefeli et al., 2008; Koopmanschap et al., 2008). To achieve environmentally and socially reliable management, it is recommended to involve local residents (or others who will be influenced by the policy implementation) in a way that the study can reveal their interests and preferences related to a specific environmental issue or policy change.

## 6. Conclusion

Many researchers use the CVM to estimate economic benefits with respect to changes in the landscape. In the present paper a review of theoretical and conceptual foundations for consolidated analysis of CVM and CBA for landfill-to-park conversions is given. The following aspects as the most relevant to be taken into consideration when applying non-market valuation were generated:

- The money should be used as announced to respondents during an examination procedure;
- Nature protection and conservation and environmental improvement (water, landscape, air, etc.) should be involved;
- Different scenarios should be involved;
- The effects of landscape changes on the benefits of visitors;
- The prevention of further degradation of the ecological quality should be ascertained;
- A combination of WTP and CBA approaches should be applied to properly measure the environmental values as the estimations of social preferences;
- The management that will use the estimations should use the increased capital in part to compensate the population, not only for environmental purposes. In that case, the WTP should be measured before the compensation methods are applied and after the respondents are informed on spending plans.

CBA is a broadly used and accepted framework for supporting social decision-making. It can be applied to policies, projects, regulations, and other government interventions. As an assessment approach that monetizes consequences of a policy to a society, it is essential for identifying whether a government project is efficient.

## REFERENCES

- Ajzen, I., Brown, T. C., & Carvajal, F. (2007): *Personality and Social Psychology Bulletin Explaining the Discrepancy Between Intentions and Actions: The Case of Hypothetical Bias in Contingent Valuation*, *Society*, 30(9), <https://doi.org/10.1177/0146167204264079>
- Alberini, A., & Kahn, J. R. (Eds.). (2006): *Handbook On Contingent Valuation*, Edward Elgar Publishing Limited.
- Arrow, K. J., & Fisher, A. C. (1974): *Environmental Preservation, Uncertainty, and Irreversibility*, *The Quarterly Journal of Economics*, 88(2), 312–319, <https://doi.org/10.2307/1883074>
- Bateman, I., Carson, R., Day, B., Hanemann, M., Hanleys, N., Hett, T., Jones-Lee, M. J., Loomes, G., Mourato, S., Ozdemiroglu, E., Pearce, D., Sugden, R., & Swanson, J. (2004): *Economic Valuation with Stated Preference Techniques: A Manual*, Ecological Economics. <https://doi.org/10.4337/9781781009727>
- Bengochea-Morancho, A., Fuertes-Eugenio, A. M., & del Saz-Salazar, S. (2005). *A comparison of empirical models used to infer the willingness to pay in contingent valuation*, *Empirical Economics*, 30(1), 235–244, <https://doi.org/10.1007/s00181-005-0236-x>
- Bennett, J., Morrison, M., & Blamey, R. (1998): *Testing the validity of responses to contingent valuation questioning*, *The Australian Journal of Agricultural and Resource Economics*, 42(2), 131–148.
- Bennett, J., Poe, G. L., & Vossler, C. A. (2013): *Consequentiality and Contingent Values: An Emerging Paradigm*, *The International Handbook on Non-Market Environmental Valuation*, May, <https://doi.org/10.4337/9780857931191.00012>
- Bishop, R. C., & Heberlein, T. A. (1979): *Measuring Values of Extramarket Goods: Are Indirect Measures Biased?*, *American Journal of Agricultural Economics*, 61(5), 926–930, <https://econpapers.repec.org/RePEc:oup:ajagec:v:61:y:1979:i:5:p:926-930>.
- Blackorby, C., Donaldson, D., & Weymark, J. A. (2008): *Hicksian Surplus Measures of*

- Individual Welfare Change When There is Price and Income Uncertainty BT - Rational Choice and Social Welfare: Theory and Applications Essays***, in Honor of Kotaro Suzumura, P. K. Pattanaik, K. Tadenuma, Y. Xu, & N. Yoshihara (Eds.), Springer Berlin Heidelberg, pp. 195–213, [https://doi.org/10.1007/978-3-540-79832-3\\_11](https://doi.org/10.1007/978-3-540-79832-3_11)
- Boardman, A., Greenberg, D., Vining, A., & Weimer, D. (2007): ***Cost-Benefit Analysis: Concepts and Practice***, Pearson series in economics, 4th ed.
- Collins, J. P., & Vossler, C. A. (2009): ***Incentive compatibility tests of choice experiment value elicitation questions***, *Journal of Environmental Economics and Management*, 58(2), 226–235, <https://doi.org/10.1016/J.JEEM.2009.04.004>
- Cornes, R., & Sandler, T. (1996): ***The Theory of Externalities, Public Goods, and Club Goods***, Cambridge University Press, <https://econpapers.repec.org/RePEc:cup:cbooks:9780521477185>
- Cummings, R. G., Brookshire, D. S., & Schulze, W. D. (1986): ***Valuing Environmental Goods: An Assessment of the Contingent Valuation Method***, Rowman and Allanheld.
- Faure, M. G. (1992): ***Introduction: The Law and Economics of Environmental Policy***, in *The Geneva Papers on Risk and Insurance - Issues and Practice*, Vol. 17, Issue 4, <https://doi.org/10.1057/gpp.1992.33>
- Haefeli, M., Elfering, A., McIntosh, E., Gray, A., Sukthankar, A., & Boos, N. (2008): ***A Cost-Benefit Analysis Using Contingent Valuation Techniques: A Feasibility Study in Spinal Surgery***, *Value in Health*, 11(4), 575–588, <https://doi.org/10.1111/J.1524-4733.2007.00282.X>
- Koopmanschap, M. A., van Exel, J. N. A., van den Berg, B., & Brouwer, W. B. F. (2008): ***An overview of methods and applications to value informal care in economic evaluations of healthcare***, *PharmacoEconomics*, 26(4), 269–280, <https://doi.org/10.2165/00019053-200826040-00001>
- Hanley, N., Shogren, J. F., & White, B. (2001): ***Introduction to Environmental Economics***, Oxford University Press.
- Hausman, J. (2012): ***Contingent Valuation: From Dubious to Hopeless***, *Journal of Economic Perspectives*, 26(4), 43–56, <https://doi.org/10.1257/jep.26.4.43>
- Houghton, R. W. (1958): ***A Note on the Early History of Consumer 's Surplus***, *Economica*, 25(97), 49–57, <https://doi.org/10.2307/2550693>
- Hoyos, D., & Mariel, P. (2013): ***Contingent Valuation: Past, Present and Future***, *Prague Economic Paper*, May, <https://doi.org/10.18267/j.pep.380>
- Kline, T. J. B. (2005): ***Psychological Testing: A Practical Approach to Design and Evaluation***, SAGE Publications, <https://books.google.com.hk/books?id=9FluBwAAQBAJ>
- Lipton, D. W., Wellman, K., Sheifer, I. C., & Weiher, R. F. (1995): ***Economic Valuation of Natural Resources - A Handbook for Coastal Resource Policymakers***, in NOAA Coastal Ocean Program Decision Analysis, Series No. 5.
- Loomis, J. B. (1993): ***An investigation into the reliability of intended visitation behavior***, *Environmental & Resource Economics*, 3(2), 183–191, <https://doi.org/10.1007/BF00338784>
- Loomis, J. B. (2002): ***Integrated Public Lands Management: Principles and Applications to National Forests, Parks, Wildlife Refuges, and BLM Lands***, Columbia University Press.
- Loomis, J. B., & Walsh, R. G. (1997): ***Recreation Economic Decisions: Comparing Benefits & Costs***, Venture Pub, Revised ed.

- Loomis, J., & Helfand, G. (2003): *Environmental policy analysis for decision making*, in Environmental Impact Assessment Review, Vol. 22, Issue 4, [https://doi.org/10.1016/S0195-9255\(02\)00014-8](https://doi.org/10.1016/S0195-9255(02)00014-8)
- Mitchell, R. C., & Carson, R. T. (1989): *Using Surveys to Value Public Goods: The Contingent Valuation Method*, Resources for the Future.
- Nunes, P., & van den Bergh, J. (2001): *Economic valuation of biodiversity: sense or nonsense?*, Ecological Economics, 39, 203–222, [https://doi.org/10.1016/S0921-8009\(01\)00233-6](https://doi.org/10.1016/S0921-8009(01)00233-6)
- Pearce, D. (2013): *Environmental Valuation in Developed Countries*, Edward Elgar Publishing, <https://doi.org/10.4337/9781847201768>
- Randall, A., & Stoll, J. R. (1980): *Consumer's Surplus in Commodity Space*, American Economic Review, 70(3), 449–455, <https://econpapers.repec.org/RePEc:aea:aecrev:v:70:y:1980:i:3:p:449-55>
- Rosser, M. (1988): *Microeconomics: the firm and the market economy*, Macmillan Education.
- Samuelson, P. A., & Nordhaus, W. D. (2009): *Economics 19th Edition*, McGraw Hill.
- Silberberg, E. (2016): *Hicksian and Marshallian Demands BT - The New Palgrave Dictionary of Economics*, Palgrave Macmillan UK, pp. 1–7, [https://doi.org/10.1057/978-1-349-95121-5\\_2702-1](https://doi.org/10.1057/978-1-349-95121-5_2702-1)
- Smith, V., & Krutilla, J. V. (1982): *Explorations in Natural Resource Economics*, United States.
- Stewart, R. R., & Possingham, H. P. (2005): *Efficiency, costs and trade-offs in marine reserve system design*, Environmental Modeling and Assessment, 10(3), 203–213, <https://doi.org/10.1007/s10666-005-9001-y>
- Stiglitz, J. E. (1986): *The General Theory of Tax Avoidance*, National Tax Journal, Volume XXXVIII, No. 3, September 1985, pp. 325-338, <https://ssrn.com/abstract=288467>
- United States of America. (1936): *Public Law 74-738*, Flood Control Act.
- Verlicchi, P., Al Aukidy, M., Galletti, A., Zambello, E., Zanni, G., & Masotti, L. (2012): *A project of reuse of reclaimed wastewater in the Po Valley, Italy: Polishing sequence and cost benefit analysis*, Journal of Hydrology, 432–433, 127–136, <https://doi.org/10.1016/j.jhydrol.2012.02.024>
- Ward, F. A., & Beal, D. (2000): *Valuing Nature with Travel Cost Models*, Edward Elgar Publishing.
- Zerbe Jr., R. O., & Bellas, A. S. (2006): *A Primer for Benefit-Cost Analysis*, Edward Elgar Publishing.

*A scientific paper***Ana Pap Vorkapić, Ph. D.**

Faculty of Economics in Osijek

E-mail address: ana.pap@efos.hr

**Dario Šebalj, Ph. D.**

Faculty of Economics in Osijek

E-mail address: dario.sebalj@efos.hr

**Ana Živković, Ph. D.**

Faculty of Economics in Osijek

E-mail address: ana.zivkovic@efos.hr

## **POLITICAL MARKETING AS A KEY ACTIVITY FOR REDUCING POLITICAL CYNICISM**

### ***ABSTRACT***

*With the emergence of the marketing concept in politics, the focus, instead of the political party and candidates, comes the electorate and their desires. Political marketing activities are aimed at understanding voters and adapting marketing strategies to selected identified segments. To reach voters, it is necessary to know the influential factors that shape their final election decision. But the fact is that in today's democratic world, political participation is declining at all levels. Therefore, it is necessary, first of all, to investigate the influential factors on political participation to be able to act to encourage positive influencing factors and to reduce negative influencing factors. One of the most significant negative factors of political involvement of citizens is certainly political cynicism. The high level of political cynicism in modern democratic societies is considered a serious threat to democracy because it causes a decrease in political participation at all its levels. The purpose of this paper is to determine the existence and strength of the influence of political cynicism on political participation at the grassroots level (voting) in Eastern Croatia and the role of political information seeking. Also, the paper will analyse the potential causes and consequences of political cynicism and derive implications for reducing political cynicism using political marketing activities. The research was conducted with a personal survey method using a highly structured questionnaire in five Slavonian counties on a sample of 662 respondents. Data were processed using SPSS 26.0 (descriptive research results) and the Amos program for structural modeling which established cause-and-effect relationships. The research results showed a high level of political cynicism among the respondents. Structural modeling results have identified a significant direct negative impact of political cynicism on the intention to vote in the future and also direct significant negative impact of political information seeking on political cynicism and its direct significant positive impact on intention to vote.*

**Key words:** *political marketing, political cynicism, political participation, voter behavior, Media.*

## 1. Introduction

The application of marketing in the political system has led to a revolution of sorts, and the concept of political marketing itself has led to new ways of developing political strategies and political programs. With the emergence of the marketing concept in politics, the focus shifts to voters and their desires instead of the political party and candidates. Political programs should be based on the results of the analysis of voters' wants and needs (as in commercial marketing, a particular product/service should be produced based on consumers' wants and needs). The use of political marketing is more widespread in the United States and the more developed European countries. In Eastern European countries, i.e., countries that are relatively young democracies and have been part of the socialist system for many years, political marketing is still in its infancy. In these countries, political marketing is usually equated with election marketing, which is limited to pre-election marketing activities (usually aggressive advertising). However, there is another important aspect in the political system that should not be overlooked. Political parties/candidates, in their creation of political programs, in addition to the wishes of voters, must consider social welfare. Political parties/candidates guided by an improved marketing concept design their activities based not only on voter desires but also on social needs. Since political participation is necessary for the functioning of any democratic society, encouraging and promoting political participation can be considered a social good. Political parties, as one of the main actors in the political market, have a key role to play in promoting political participation. By promoting political participation, political parties not only benefit themselves, but also contribute to social welfare.

One of the most important limiting factors for political participation is political cynicism, i.e., distrust of politics and politicians (Patterson, 2002; Bélanger & Nadeau, 2005). Scholars often point out that increases in political cynicism contribute to a decline in interest in public issues and decrease voter turnout and information (Ansolabehere et al., 1993; Cappella & Jamieson, 1997). The purpose and goal of this paper is to determine the existence and strength of the influence of political cynicism on political participation at the grassroots level (going to the polls) and also the role of political information seeking. Several studies have tested the influence of political cynicism on voting intention, but there have been no studies linking the same model to political information seeking. It is hypothesised that political information seeking has a negative influence on political cynicism and a positive influence on voting intention. Also, the paper will outline the implications for reducing political cynicism through political marketing activities, which should ultimately lead to higher voter turnout and higher levels of political participation.

## 2. Political marketing

There are numerous definitions of political marketing. But perhaps the most comprehensive conception of political marketing, when compared to marketing in business, is explained by Šiber (2003:13), who states that marketing in business is a set of techniques aimed at adapting products to the market, creating measurable differences in competition, finding and getting to know consumers, and finding an adjustable ratio of profit to sales with the least amount of resources. Political marketing is a set of techniques aimed at increasing the electability of a candidate, political party, or list to a given electoral potential, attracting as many voters as possible, identifying clear differences between them, and optimizing the number of important votes with minimal resources during the campaign. Šiber (2003:16) also explains that political marketing is a comprehensive, complex process that includes:

1. market research - structures of needs and interests, value orientations, fears and hopes,
2. creation of a political product,
3. adaptation to the political market,
4. influencing the market to accept a particular "political product".

It is necessary to realise how the concept of political marketing differs from that of election marketing. Election marketing is the marketing that accompanies an election campaign. The fundamental characteristic of election marketing is timing. It monitors the election process, the campaign of candidates or parties. Election marketing is used in local, parliamentary, and presidential elections, and possibly in referendums. It implies an active approach to campaigning in the truest sense of the word. With the end of the electoral process, i.e. the selection of candidates, election marketing ends and the period of regular or political marketing begins again (Tomić, 2014).

Meler (2003:329) explains how political marketing can be applied in various ways as follows:

- As a political action in the interest of the population of a community and thus as a rational, efficient, and controlled solution to economic, political, cultural, and other problems of a particular community or region.
- As an activity to attract political voters in elections, which can be described as part of political marketing - the so-called pre-election and election marketing.
- As an active philosophy that is primarily in the interest of the quality of life of a particular population.
- As state (integral) marketing, which primarily places state policy above party interests. In this case, the goal is to synchronise and ensure the smooth and democratic operation of economic, cultural, social and similar processes.
- As an educational function of socially placed political marketing, in which a political party politically educates its existing and potential voters (target groups) for its benefit.

From the above, it is clear how political marketing can be viewed from different aspects and how it can be used for different purposes, not only to attract voters. Political marketing, which is a continuous process, can also reduce political cynicism, but it is a complex and time-consuming process. Political marketing must be accepted first and foremost as an existential philosophy, which means that it is first necessary for political parties to shift their political focus from party to voters. It is necessary to put the voter and his wishes and needs at the centre of political activities and, based on this knowledge, to form a marketing strategy according to selected target segments resulting from the detailed segmentation of the political market. In addition to political parties, the state itself should also incorporate political marketing activities into its business and existence, primarily to work on developing citizens' trust, interest and participation in politics.

### **3. Political cynicism**

Before defining political cynicism, it is necessary to define the more general concept of social cynicism (i.e., cynicism toward society and its members). The term cynicism comes from the Hellenistic school of philosophers known for their criticism of ancient Greek society. By publicly ridiculing anyone who appeared pompous, materialistic, or pretentious, they held a mirror up to society in hopes of changing it. In modern society, the term cynicism has a different, more negative connotation. The Oxford English Dictionary defines a cynic as "one who shows a tendency not to believe in the sincerity or goodness of human motives and deeds



and expresses it with mockery and sarcasm". Modern cynics, then, have a decidedly negative view of human nature because they question the selflessness of every human action. Therefore, modern cynics seem to criticize the society in which they live just as ancient cynics did. However, while the critique of most contemporary cynics is based on a deep distrust of human nature, ancient cynics were inspired by an ideology based on virtue and rejecting flawed social norms and goals (Pattyn et al., 2011).

The specific concept of political cynicism was introduced into the literature by Agger et al., (1961). They defined it as "the extent to which people consider politicians and politics notorious; the extent to which these words symbolize something negative rather than something positive" (Agger et al., 1961:477). Ever since the concept of political cynicism was introduced into the literature, political scientists have noticed its gradual increase in Western societies (Hetherington, 1998; Newton & Norris, 2000; Dalton, 2004) as well as complaints from politicians about the high level of cynicism among voters (Eisinger, 2000). For this reason, sociologists and political scientists have paid increasing attention to political cynicism in recent years, examining its social, demographic, and political causes and consequences. The cynical voter believes that the government and political system are corrupt and problematic and cannot be trusted (Cappella & Jamieson, 1997).

Political cynicism can also be described as a lack of trust in politics and political institutions (Dennis & Webster, 1975; Lau & Erber, 1985; Bandura, 1986). Given its consequences, political cynicism is often considered potentially dangerous to democracy because it disrupts basic democratic processes by reducing voter turnout and political participation (Patterson, 2002), increasing support for extreme protest parties (Bélanger & Aarts, 2006), and discouraging democratic thinking (Ansolabehere & Iyengar, 1995). Easton (1965) notes that democratic political systems depend largely on the extent to which the electorate trusts the government to do the right thing, at least most of the time. Also, the aforementioned paper argues that a low rate of cynicism is "healthy" because it encourages the debate necessary for political change. However, persistent discontent among a large portion of the electorate is seen as harmful to the political system.

Scholars often blame the rise of political cynicism on negative campaign tactics, believing that this leads to low interest in public issues and lower voter turnout (Cappella & Jamieson, 1997; McChesney, 1999). The aforementioned authors argue that negative political campaigns only affect uninformed and uninvolved voters. Research by Chaffee & Roser (1986) has shown that individuals who are highly involved in politics exhibit a high degree of consistency among their knowledge, attitudes, and behavior. In this case, the attitudes of highly involved individuals are a product of sound knowledge and are considered a reliable predictor of behavior. However, when highly involved voters are exposed to negative political advertising by a credible candidate, they are likely to develop higher levels of cynicism because of the inconsistency between their perception of a candidate's credibility and that candidate's behavior. Individuals believe that, among other things, the ideal candidate is persuasive, good, fair, honest, and responsible (Hellweg, 1979). In this case, the candidate's behavior would be contrary to the perception of individuals that the candidate is credible and worthy of their support.

Chanley et al. (2000) find that negative perceptions of the economy, political scandals, and public concerns about crime reduce citizens' trust in government. The increase in political cynicism is sometimes seen as justified because politicians appear to be polarized and increasingly unresponsive to voter demands (Newton, 2006). However, the increase in political cynicism is most often blamed on the media, which focuses on negative news, uses

aggressive interview techniques, focuses on political actors and scandals rather than content, pays too much attention to crime, and portrays politics as a game (Erber & Lau, 1990; Cappella & Jamieson, 1997). Since the early 1980s, many studies have found that the media is largely responsible for the rise in public cynicism. Lipset & Schneider (1983) were among the first authors to make this claim, stating that: "because the media are primarily responsible for informing the public about government institutions, because there is more bad news than good news about these institutions, there is a declining trust in those institutions." Patterson (1993) found that the tone of the media is increasingly unfavorable to candidates when they run for office. Jamieson (1992) noted that campaign coverage has dramatically turned into reports that characterize elections as "horse races" between candidates. However, the effect of negative political news on political cynicism still appears to be strongly influenced by factors such as interest in politics, social networks, and personal values (Newton, 2006).

Based on the previous research, the first hypothesis was developed:

*H1: Political cynicism has a direct negative influence on voting intention.*

#### **4. Political information seeking**

Previous research has shown that being informed about politics influences the development of interest in politics and political knowledge, and thus the level of participation in politics, because it makes citizens more aware of the situation around them and informs them about political events and how to influence them (Buckingham, 1999; Norris, 2000; Kim and Han, 2005; Casero-Ripolles, 2012; Wattenberg, 2012). In addition, individuals with increased receptivity and knowledge of political events are more likely to discuss politics with friends and peers, which may also promote their political interest and engagement (Buckingham, 1999; Soule, 2001; van Deth et al., 2011; Wattenberg, 2012). These individuals thus develop the habit of thinking about and discussing political issues, leading to the assumption that they will continue to do so in the future (Roker et al., 2009). Consuming political news also increases individuals' perceptions of political efficacy because they have greater knowledge about political processes and political issues (McLeod, 2000; Wattenberg, 2012). In addition, Delli Carpini and Keeter (1996) and Wattenberg (2012) have shown that the habit of consuming news through the media supports concepts that view voting as a duty. By developing habits of consuming political news, individuals develop an interest in politics, knowledge, efficacy, and engagement in politics because it ultimately leads to political activity both outside and inside the political arena (Buckingham, 1999; McLeod, 2000; Soule, 2001; Roker et al. dr., 2009; Wattenberg, 2012). It was previously seen as the result of two processes of modernization of society: the increase in the number of media and the fragmentation of media consumption. The increase in the number of media is primarily the result of technological progress. The rapid development of the Internet and social networks, as well as the emergence of a large number of new television and radio channels, has given individuals the widest choice of media to date (Baumgartner and Morris, 2010; Wayne et al., 2010; Casero-Ripolles, 2012; Wattenberg, 2012).

Based on these results, it is possible to assume that political information seeking i.e., being informed about politics, has a negative effect on political cynicism and a positive effect on voting intention.

*H2: Political information seeking has a direct negative influence on political cynicism.*

*H3: Political information seeking has a direct positive influence on voting intention.*

## 5. Research methodology

### 5.1. Data collection

The main data were collected with an in-person survey conducted on a convenient sample of all persons over 18 years of age, i.e., all persons with legal voting rights. The research instrument used was a structured questionnaire based on previous research in the field. The research was conducted on a sample of five Slavonian counties: Brodsko - Posavska, Osječko - Baranjska, Požeško - Slavonska, Virovitičko - Podravska, and Vukovarsko - Srijemska. The investigators were instructed to examine one woman and one man from each age group (18-31 years, 32-45 years, 46-59 years, and 60 years and older) to ensure equal representation of all age and gender groups. The sociodemographic characteristics of the sample are shown in Table 1.

**Table 1:** Sample characteristics

		n	%
<b>Gender</b>		<b>658</b>	<b>100</b>
	Male	328	49,7
	Female	331	50,3
<b>Age group</b>		<b>657</b>	<b>100</b>
	18 – 31	170	25,9
	32 – 45	169	25,7
	46 – 59	163	24,8
	60+	155	23,6
<b>Level of education</b>		<b>658</b>	<b>100</b>
	Elementary school	62	9,4
	High school	372	56,5
	Faculty	221	33,4
	PhD	3	0,7
<b>Employment</b>		<b>662</b>	<b>100</b>
	Student	110	16,6
	Unemployed	64	9,7
	Employed	320	48,3
	Retired	168	25,4
<b>Place of residence</b>		<b>660</b>	<b>100</b>
	City	419	63,5
	Suburbs	90	13,6
	Counry	151	22,9
<b>Household income</b>		<b>650</b>	<b>100</b>
	> 3.000 kn	67	10,3
	3.001 – 6.000 kn	192	29,5
	6.001 – 9.000 kn	173	26,6
	9.001 – 12.000 kn	129	19,8
	12.001 – 15.000 kn	51	7,8
	<15.000 kn	38	6

Source: Authors

## 5.2. Variables and measurement

A total of 3 measurement scales were used for the research, one of which was adapted from previous studies, while the other two were developed specifically for this study. Table 2 shows the scales used, their description, and the source from which they were taken. All scales were measured on a Likert scale from 1 to 5, where a value of 1 indicated marked disagreement with the statement and a value of 5 marked agreement with the statement.

**Table 2:** Descriptions, sources and measurement scales for the variables

Variable	N of items	Description	Source
Political cynicism	4	Evaluation of the degree of agreement or disagreement with statements related to political cynicism or mistrust.	Pinkleton & Austin (2009)
Political information seeking	3	Evaluation of the frequency of informing on politics through individual media.	Own construct
Intention to vote	4	Evaluation of the intention to vote in local, parliamentary and presidential elections in the future.	Own construct

*Source: Authors*

## 6. Research results

### 6.1. Descriptive statistics

Descriptive analysis of political cynicism was conducted to determine the current level of political cynicism. The results are presented in Table 3.

**Table 3:** Levels of political cynicism

Item	N	Min	Max	Mean	Std. Deviation
Politicians care only for themselves and for someone's special interests.	662	1	5	3.91	1.142
Our government is run by several large interest lobbies that only take care of themselves.	662	1	5	3.95	1.211
Politicians lose contact with people very soon after they come to power.	662	1	5	4.16	1.080
Politicians have no contact with the real world.	662	1	5	3.88	1.194
Valid N (listwise)	662				

*Source: Authors*

As shown in Table 3, it can be concluded that respondents have a fairly high level of political cynicism, as the mean scores for all items are above 3.8. The respondents mostly and completely agree with the given items describing political cynicism.

### 6.2. Exploratory factor analysis

An exploratory factor analysis in SPSS was undertaken to identify and confirm the factors under each construct. The Kaiser-Meyer-Olkin measure of sampling adequacy had a value of 0.831 while Bartlett's test of sphericity was significant, indicating that the data were suitable

for a factor analysis. Oblique rotation was used due to high correlations between factors. Items with loadings less than 0.4 were dropped from further analysis. Table 4 shows the items, factor loadings for each item and Cronbach's alpha coefficients for each construct.

**Table 4:** Results of exploratory factor analysis

Variable	Item abbreviation	Item	Factor loading
<b>Political cynicism</b>	PC1	Politicians care only for themselves and for someone's special interests.	0.808
	PC2	Our government is run by several large interest lobbies that only take care of themselves.	0.803
	PC3	Politicians lose contact with people very soon after they come to power.	0.867
	PC4	Politicians have no contact with the real world.	0.734
	Mean: 3.97 Variance: 1.34 <b>Cronbach's alpha coefficient: 0.877</b>		
<b>Political information seeking</b>	PIS1	Indicate the extent to which you seek information about politics through television.	0.715
	PIS2	Indicate the extent to which you seek information about politics through radio	0.675
	PIS3	Indicate the extent to which you seek information about politics through newspapers and magazines.	0.630
	Mean: 3.13 Variance: 1.79 <b>Cronbach's alpha coefficient: 0.712</b>		
<b>Intention to vote</b>	INT1	I intend to vote on the next local elections.	0.948
	INT2	I intend to vote on the next presidential elections.	0.950
	INT3	I intend to vote on the next parliamentary elections.	0.985
	INT4	I intend to vote on the elections in the future.	0.874
	Mean: 4.25 Variance: 1.66 <b>Cronbach's alpha coefficient: 0.966</b>		

*Source: Authors*

### 6.3. Confirmatory factor analysis

Data were analysed using AMOS structural equation modelling software. Bollen's (1990) recommendation to examine multiple indices of model fit was followed to evaluate both the measurement and structural models, since it is possible for a model to be adequate on one fit index but inadequate on many others. Indexes were selected based on the recommendations of Hu and Bentler (1995).

**Table 5:** Results of confirmatory factor analysis

Variable	Item	Standard loading	CR	AVE
Political cynicism	PC1	0.853	0.868	0.624
	PC2	0.660		
	PC3	0.791		
	PC4	0.840		
Political information seeking	PI1	0.728	0.750	0.500
	PI2	0.669		
	PI3	0.723		
Intention to vote	N1	0.941	0.968	0.883
	N2	0.956		
	N3	0.986		
	N4	0.873		
<b>Model fit indicators (recommended values)</b>		<b>Values</b>		
$\chi^2/DF$ (1 to 3)		1.475		
CFI (>0.90)		0.997		
GFI (>0.95)		0.984		
AGFI (>0.80)		0.973		
IFI (>0.90)		0.997		
TLI (>0.90)		0.995		
RMSEA (<0.08)		0.027		

Source: Authors

As depicted in Table 4, factor loadings for the latent constructs ranged from 0.660 to 0.986, indicating strong support for construct validity (Hair et al., 2010). The values of the average variance extracted (AVE) for almost all constructs were higher than the guideline value of 0.50 recommended by Fornell and Larcker (1981). Only the variable political information seeking is considered borderline but can be accepted (0.500). The composite reliability coefficients for all constructs were higher than 0.70, suggesting high internal reliability (Fornell and Larcker, 1981). In addition, all scores from CR were higher than scores from AVE, demonstrating convergent validity. The goodness-of-fit statistics of the measurement model also showed very good agreement with the data ( $\chi^2/df = 1.475$ ; CFI = 0.9997; GFI = 0.984; AGFI=0.973; IFI = 0.997; TLI = 0.995; RMSEA = 0.027).

Discriminant validity was established because none of the root squared correlations between constructs were greater than the AVE values of the constructs. Also, as depicted in Table 4, average shared square variance (ASV) values were also no greater than the AVE values for each construct (Fornell and Lacker, 1981). The correlations between the constructs are presented in Table 6.

**Table 6:** Discriminant validity

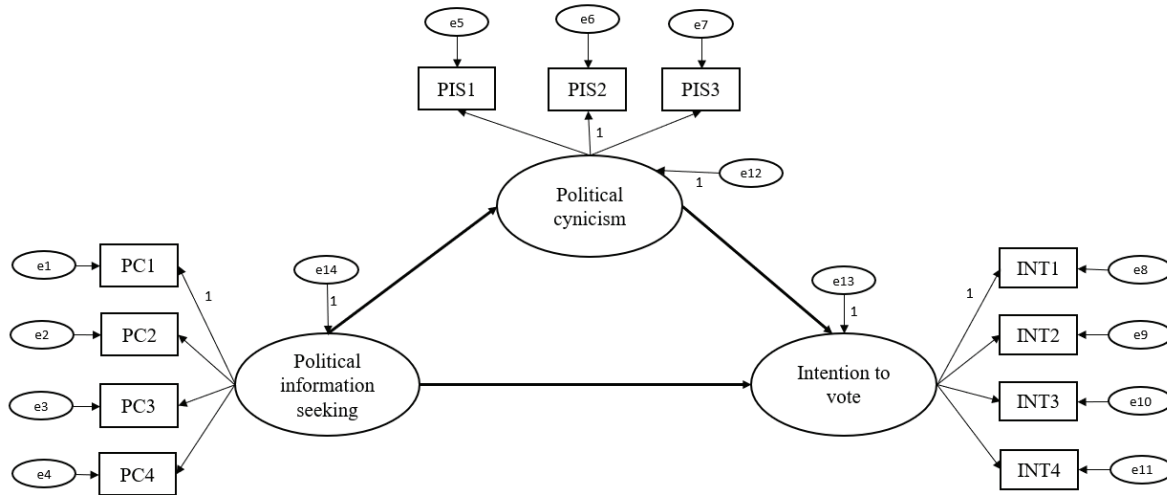
Variables	Correlation	Square root correlation ( $r^2$ )	AVE1 ( $AVE1 > r^2$ )	AVE2 ( $AVE2 > r^2$ )	Discriminant validity
PC<-> INT	-0.183	0.0334	0.624	0.883	Established
PC <-> PIS	-0.124	0.0153	0.624	0.500	Established
PIS <-> INT	0.298	0.0888	0.500	0.883	Established

Source: Authors

### 6.4. Structural model testing

A hypothesized structural model (Figure 1) was developed to test the impact of political information seeking and political cynicism on the intention to vote and the impact of political cynicism on the intention to vote.

**Figure 1: Hypothesised model**



Source: Authors

Evaluation of the structural model indicated a great model fit in terms of its goodness-of-fit indexes, since all of the suggested values were met ( $\chi^2/df = 1.475$ ; GFI = 0.984; NFI = 0.989; CFI = 0.997; IFI = 0.997; TLI = 0.995; RMSEA = 0.027).

Results of the model testing are depicted in Table 7.

**Table 7: Results of the analysis**

Relationship		Standardized total effects	Hypothesis	
Political information seeking	→	Political cynicism	-0.194*	Accepted
Political cynicism	→	Intention to vote	-0.334**	Accepted
Political information seeking	→	Intention to vote	0.248*	Accepted

\*p<0.05; \*\* p < 0.01

Source: Authors

### 6.5. Discussion

The purpose of the research was to examine the direction and strength of the influence of political cynicism on the intention to vote and the role of political information seeking in generating political cynicism and the intention to vote. The results of the structural model analysis show that political information seeking has a direct negative influence on political cynicism (-0.194\*), political cynicism has a direct negative influence on the intention to vote (-0.334\*\*), and political information seeking has a positive direct influence on the intention to vote (0.248\*). Therefore, hypotheses H1, H2, and H3 are supported. It is evident that both political cynicism and political information seeking have a strong influence on voting

intention, just in different directions. The results are consistent with previous research suggesting a negative influence of political cynicism on political participation (Cappella & Jamieson, 1997; McChesney, 1999). Moreover, the results are consistent with several previous studies (Buckingham, 1999; Norris, 2000; Kim and Han, 2005; Casero-Ripolles, 2012; Wattenberg, 2012) that have shown that being informed about politics influences the development of interest in politics and political knowledge, and thus the level of political participation (in this case, only voting). Being informed about politics also significantly reduces political cynicism as a negative predictor of voting intention and thus indirectly positively influencing voting intention.

## 7. Conclusion

There is no doubt that in various political systems, both in Europe and abroad, there is a high level of political cynicism and political distrust, which significantly limits political participation. The results of this research have showed high levels of political cynicism in Eastern Croatia and confirmed its very strong influence on voting intention. The results have also shown that political cynicism can be influenced and reduced by providing better political information to voters. It is also confirmed that people who are more likely to inform about politics have a stronger voting intention.

The political marketing activities on the reduction of political cynicism, can (and should) be undertaken by different actors in the democratic system: political parties and civil and government institutions. Political parties should and must work to build trust, not only in political actors, but also in the political system and its functioning as a whole. Since previous research has shown that negative political campaigns (involving all kinds of attacks on opponents and based on highlighting opponents' bad points rather than their own good points) contribute to the development of political cynicism, their use in political parties' marketing activities is not recommended. It is also necessary for political parties to develop a communication strategy that transparently presents the party's work, its financing, and the assets of the party's leaders and leading members.

In addition to political parties, state institutions can also reduce political cynicism. Citizens express a high level of distrust toward the political system, institutions, and politicians. One of the ways to reduce political cynicism is to make the work of state institutions, as well as the electoral process itself, transparent. Transparency is important because it means that all relevant information is publicly available so that citizens can make their political judgments and decisions in the most informed way possible. Fighting corruption in politics and the judiciary is also crucial to reducing political cynicism. State institutions can help reduce political cynicism by enacting laws that prevent the use of public funds for private purposes.

However, the media plays a key role in reducing political cynicism. The media are the primary transmitters of political information, and political parties and civic and government institutions should develop their own media marketing strategy. In addition to reducing political bias in the media, the media must also be encouraged to focus more on political content and important policy issues than on political scandals and various rumors. This would not only reduce political cynicism, but also increase citizens' search for political information, which is another prerequisite for political engagement and participation.

The limitations of the study are related to the use of a convenient sample. The research was conducted in only 5 of the 21 counties in Croatia, so its generalizability to the entire population is questionable. Further research should aim to investigate some other factors influencing political cynicism in order to reduce it, and also to investigate some other factors influencing voting intention in order to promote it.



## REFERENCES

- Agger, R. E., Goldstein, M. N., Pearl, S. A. (1961): *Political cynicism: Measurement and meaning*, The Journal of Politics, Vol. 23, No. 3), pp. 477-506.
- Ansolabehere, S., Behr, R., Iyengar, S. (1993): *The Media Game*, Macmillan, New York.
- Ansolabehere, S., Iyengar, S. (1995): *Going negative: How political advertisements shrink and polarize the electorate*, The Free Press, New York.
- Bandura, A. (1986): *Social foundations of thought and action: A social cognitive theory*, Prentice Hall, Englewood Cliffs, NJ.
- Baumgartner, J. C., Morris, J. S. (2010): *MyFaceTube politics: Social networking web sites and political engagement of young adults*, Social Science Computer Review, Vol. 28, No. 1, pp. 24-44.
- Bélanger, E., Nadeau, R. (2005): *Political trust and the vote in multiparty elections: The Canadian case*, European Journal of Political Research, Vol. 44, pp. 121–146.
- Bélanger, E., Aarts, K. (2006): *Explaining the rise of the LPF: Issues, discontent and the 2002 Dutch election*, Acta Politica, Vol. 41, No. 1, pp. 4-20.
- Buckingham, D. (1999): *Young people, politics and news media: Beyond political socialisation*, Oxford Review of Education, Vol. 25, No. 1-2, pp. 171-184.
- Cappella, J. N., Jamieson, K. H. (1997): *Spiral of Cynicism: The Press and the Public Good*, Oxford University Press, New York.
- Casero-Ripolles, A. (2012): *Beyond newspapers: News consumption among young people in the digital era*, Comunicar, Vol. 20, No. 39, pp. 151-158.
- Chaffee, S. H., Roser, C. (1986): *Involvement and the consistency of knowledge, attitudes, and behaviors*, Communication Research, Vol. 13, No. 3, pp. 373-399.
- Chanley, V. A., Rudolph, T. J., & Rahn, W. M. (2000): *The origins and consequences of public trust in government. A time series analysis*, Public Opinion Quarterly, Vol. 64, pp. 239–256.
- Dalton, R. J. (2004): *Democratic challenges, democratic choices; The erosion of political support in advanced industrial democracies*, University Press, Oxford.
- Delli Carpini, M. X., Keeter, S. (1996): *What Americans don't know about politics and why it matters*, New Haven, CT: Yale University Press.
- Dennis, J., Webster, C. (1975): *Children's images of the president and of government in 1962 and 1974*, American Politics Quarterly, Vol. 3, No. 4, pp. 386-405.
- Easton, D. (1965): *A systems analysis of political life*, John Wiley, New York.

- Eisinger, R. M. (2000): *Questioning cynicism*, Society, Vol. 37, No. 5, pp. 55-60.
- Erber, R., Lau, R. R. (1990): *Political cynicism revisited: An information-processing reconciliation of policy-based and incumbency-based interpretations of changes in trust in government*, American Journal of Political Science, Vol. 34, No. 1, pp. 236-253.
- Hellweg, S. (1979): *An examination of voter conceptualizations of the ideal political candidate*, Southern Speech Communication Journal, Vol. 44, No. 4, pp. 373-385.
- Hetherington, M. J. (1998): *The political relevance of political trust*, American Political Science Review, Vol. 92, No. 4, pp. 791-808.
- Jamieson, K. H. (1992): *Dirty politics*, Oxford University Press, New York.
- Kim, S. H., Han, M. (2005): *Media use and participatory democracy in South Korea*, Mass Communication & Society, Vol. 8, No. 2, pp. 133-153.
- Lau, R. R., Erber, R. (1985): *Political sophistication: An information-processing perspective*, In: Kraus, S., Perloff, R. M., ed.: Mass media and political thought. Beverly Hills, CA: Sage, pp. 37-64.
- Lipset, S. M., Schneider, W. (1983): *The decline of confidence in American institutions*, Political Science Quarterly, Vol. 98, No. 3, pp. 379-400.
- McChesney, R. (1999): *Rich Media, Poor Democracy*, University of Illinois Press, Urbana, IL.
- McLeod, J. M. (2000): *Media and the civic socialisation of youth*, Journal of Adolescent Health, Vol. 27, No. 2, pp. 45-51.
- Meler, M. (2003): *Neprofitni marketing*, Ekonomski fakultet u Osijeku, Osijek.
- Newton, K. i Norris, P. (2000): *Confidence in public institutions: Faith, culture, or performance?*, In: Pharr, S. J., Putnam, R. D., ed.: Disaffected democracies. What's troubling the trilateral countries? Princeton, NJ: Princeton University Press, pp. 52-73.
- Newton, K. (2006): *May the weak force be with you: The power of the mass media in modern politics*, European Journal of Political Research, Vol. 45, No. 2, pp. 209-234.
- Norris, P. (2000): *A virtuous circle: Political communications in postindustrial societies*, Cambridge University Press, Cambridge, UK.
- Patterson, T. E. (1993): *Out of order*, Knopf, New York.
- Patterson, T. E. (2002): *The vanishing voter: Public involvement in an age of uncertainty*, Alfred Knopf, New York.
- Pattyn, S., van Hiel, A., Dhont, K., Onraet, E. (2011): *Stripping the political cynic: A psychological exploration of the concept of political cynicism*, European Journal of Personality, Vol. 26, No. 6, pp. 566-579.

Roker, D., Player, K., Coleman, J. (1999): *Young people's voluntary and campaigning activities as sources of political education*, Oxford Review of Education, Vol. 25, No. 1-2, pp. 185-198.

Soule, S. (2001): *Will they engage? Political knowledge, participation and attitudes of generation X and Y*. Available at: [http://www.civiced.org/papers/research\\_engage.pdf](http://www.civiced.org/papers/research_engage.pdf) [accessed: March 15, 2022].

Šiber, I. (2003): *Politički marketing*, Politička kultura, Zagreb.

Tomić, Z. (2014): *Politički marketing: načela i primjene*, Sveučilište u Mostaru, Mostar/Zagreb/Sarajevo.

van Deth, J. W., Abendschon, S., Vollmar, M. (2011): *Children and politics: An empirical reassessment of early political socialisation*, Political Psychology, Vol. 32, No. 1, pp. 147-174.

Wattenberg, M. P. (2012): *Is voting for young People?*, Third Ed., Routledge, London.

Wayne, M., Petley, J., Murray, C., Henderson, L. (2010): *Television news, politics and young people: Generation disconnected?* Springer.

*A scientific paper*

**Anita Papić, Ph. D., Associate Professor**

Faculty of Humanities and Social Sciences in Osijek

E-mail address: apapic@ffos.hr

**Katarina Knol Radoja, Ph. D., Associate Professor**

Faculty of Law in Osijek

E-mail address: kknol@pravos.hr

**Donata Szombathelyi, Bachelor of Informatology**

Faculty of Humanities and Social Sciences in Osijek

E-mail address: dszombathelyi@ffos.hr

## **CYBER SECURITY AWARENESS OF CROATIAN STUDENTS AND THE PERSONAL DATA PROTECTION<sup>1</sup>**

### **ABSTRACT**

*Cyber security is a combination of recognizing and acting to protect information property. Cyber security can be defined as a collection of tools, policies, actions, educations, the best praxis, security concepts, security guidelines, risk management, and technology that can be used to protect the cyber environment of the organization or the end-user. The cyberspace is the fourth domain of humans' territory next to the earth, the sea, and the air and unfortunately, cyberwarfare, as well as cyber terrorism, are already here. Also, the new term of cyber immunity aroused. The aims of this paper are (1) to give theoretical insights into cyber security especially about similar but different terms such as information security, application security, Internet security, and network security, (2) to conduct a research of students' cyber security awareness through the quantitative method of online survey and (3) to explore, through the qualitative method of comparative analysis, legal frameworks of cyber security and personal data protection at national and international level with special emphasis on cyber security assurance within HEI – higher education institutions. According to the research results regarding students' cyber security awareness, it can be concluded that students have a satisfying level of cyber security awareness although there is also a lot of space for improvement of the cyber security awareness. Students think that for raising cybersecurity awareness are the most responsible providers of the Internet services and the educational system but also the media, the end-user and the government.*

**Key words:** *cyber immunity, cyber security, digital trust, higher education, personal data protection.*

---

<sup>1</sup> This paper is a product of work that has been fully supported by the Faculty of Law Osijek Josip Juraj Strossmayer University of Osijek under the project nr. IP-PRAVOS-10 „Contemporary Tendencies in the Development of Croatian Civil Justice“.

## 1. Introduction

Different legal frameworks protect certain categories of data in cyberspace, such as trade secrets, intellectual property, and classified information but personal data protection is referenced as the most potential obstacle to information sharing (Skopik, 2017.). Therefore, it is important to moderate these barriers by knowing and respecting the legal framework designed to protect this information so that its flow would be unimpeded and without violating the personal rights of individuals and companies. The global information society depends upon technology and every problem which happens in cyberspace impacts all segments of society. Thus, the awareness of cyber security is very important. Cyber security can be defined as the collection of tools, policies, actions, educations, the best praxis, security concepts, security guidelines, risk management, and technology that can be used to protect the cyber environment of the organization or the end-user (Hamidović, 2015, 82). The cyberspace is the fourth domain of humans' territory next to the earth, the sea, and the air and unfortunately, cyberwarfare, as well as cyber terrorism, are already here Crowther, 2017, 63). Eugene Kaspersky introduced the new term of cyber immunity which is similar to human immunity and he believes that this term will be a synonym for cyber security very soon (Kaspersky, 2019). The World Economic Forum's Centre for Cybersecurity is a initiative seeks to establish a global consensus among key stakeholders around what digital trust means because there is no agreement on what digital trust requires, globally. This initiative encourages stakeholders to prioritize the cybersecurity and responsibility aspects of technology use in order to rebuild digital trust.

## 2. Methodology

The aims of this paper are (1) to give theoretical insights into cyber security, (2) to conduct a research of students' cyber security awareness through the quantitative method of online survey and (3) to explore, through the qualitative method of comparative analysis, legal frameworks of cyber security and personal data protection at national and international level with special emphasis on cyber security assurance within HEI – higher education institutions. This study had a goal to explore students' cyber security awareness through the quantitative method of an online survey. A research has been conducted in February of 2022 using an online questionnaire answered by 110 students from the University of Josip Juraj Strossmayer in Osijek - Faculty of Humanities and Social Sciences in Osijek and Faculty of Law in Osijek. The online questionnaire was developed in Google Forms. The first part of the questionnaire was about demographics and the second part was about students' cyber security awareness. The recent conducted research (Alzubaidi, 2021) about students' cyber security awareness was the starting point for the development of an online questionnaire. In Croatia a research of students' cyber security awareness was conducted at two faculties of the University of Josip Juraj Strossmayer in Osijek - Faculty of Humanities and Social Sciences in Osijek and Faculty of Law in Osijek.

## 3. Review of literature

According to Hamidović cyber security can be successful only if we pay enough attention to information security, application security, Internet security and network security (Hamidović, 2015, 84). Information security, application security, Internet security and network security are subdisciplines of cyber security.

### 3.1. The legal framework for protection in cyberspace

The legal framework for protection in cyberspace is extremely broad because it covers many legal categories. The Convention on cybercrime<sup>2</sup> is one of the most relevant international agreements on crimes committed via the Internet and other computer networks, dealing particularly with infringements of copyright, computer-related fraud, child pornography and violations of network security. It also contains a series of powers and procedures such as the search of computer networks and interception.<sup>3</sup> The Convention was opened for signature in Budapest, Hungary in November 2001., and it is also signed by the Republic of Croatia. In the European Union (EU), there are several legal documents aimed to ensure cybersecurity and increasing trust in digital technologies (Duić, 2021, 101) and in this paper will be mentioned some of them. Regulation (EC) no 460/2004 of the European Parliament and the Council<sup>4</sup> established the European Union Agency for Cybersecurity (hereinafter: ENISA) to contribute to the goals of ensuring a higher level of information security for the benefit of citizens, consumers, companies and public administrations. A few further regulations extended ENISA's mandate until 19 June 2020. In 2013., the Cybersecurity Strategy of the EU<sup>5</sup> was adopted to guide the Union's response to cyber risks and threats. In an effort to better protect citizens in cyberspace, the Union's first legal act was adopted in 2016. in the form of Directive (EU) 2016/1148 of the European Parliament and of the Council.<sup>6</sup> This Directive sets out requirements regarding national capabilities in the field of cybersecurity, established the first mechanisms of cooperation between the Member States, and introduced obligations concerning incident notifications and security measures which are vital for the society and economy. In addition to the above acts other legal acts such as Regulation (EU) 2016/679 of the European Parliament and the Council<sup>7</sup> and Directives 2002/58/EC<sup>8</sup> and (EU) 2018/1972<sup>9</sup> of the European Parliament and the Council also contribute to a high level of cybersecurity. With the latest regulation - Regulation (EU) 2019/881 Of The European Parliament and of the Council of 17 April 2019 on ENISA and on information and communications technology cybersecurity certification and repealing Regulation (EU) No 526/2013 (Cybersecurity Act)<sup>10</sup> efficiency of cybersecurity policies should be also expanded. „With a view to ensuring the proper functioning of the internal market while aiming to achieve a high level of cybersecurity, cyber

---

<sup>2</sup> Convention on cybercrime, Official Gazette, International Treaties, no. 9/2002.

<sup>3</sup> Council of Europe, <https://www.coe.int/en/web/impact-convention-human-rights/convention-on-cybercrime#/>

<sup>4</sup> Regulation (EC) No 460/2004 of the European Parliament and of the Council of 10 March 2004 establishing the European Network and Information Security Agency (OJ L 77, 13.3.2004, p. 1).

<sup>5</sup> Joint Communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Cybersecurity Strategy of the European Union: An Open, Safe and Secure Cyberspace/\* JOIN/2013/01 final \*/, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52013JC0001>

<sup>6</sup> Directive (EU) 2016/1148 of the European Parliament and of the Council of 6 July 2016 concerning measures for a high common level of security of network and information systems across the Union (OJ L 194, 19.7.2016, p. 1).

<sup>7</sup> Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) (OJ L 119, 4.5.2016, p. 1).

<sup>8</sup> Directive 2002/58/EC of the European Parliament and of the Council of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector (Directive on privacy and electronic communications) (OJ L 201, 31.7.2002, p. 37).

<sup>9</sup> Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code (OJ L 321, 17.12.2018, p. 36).

<sup>10</sup> Regulation (EU) 2019/881 of the European Parliament and of the Council of 17 April 2019 on ENISA (the European Union Agency for Cybersecurity) and on information and communications technology cybersecurity certification and repealing Regulation (EU) No 526/2013 (Cybersecurity Act) PE/86/2018/REV/IOJ L 151, 7.6.2019, p. 15–69 .

resilience and trust within the Union, Cybersecurity Act lays down: objectives, tasks and organisational matters relating to ENISA and a framework for the establishment of European cybersecurity certification schemes for the purpose of ensuring an adequate level of cybersecurity for ICT products, ICT services and ICT processes in the Union, as well as for the purpose of avoiding the fragmentation of the internal market with regard to cybersecurity certification schemes in the Union“ (Cybersecurity Act, Art. 1.). In addition, a Proposal for a Regulation of the European Parliament and of the Council on a single market for digital services (Digital Services Act) and amending Directive 2000/31/EC has been made in December of 2020.<sup>11</sup> The aim of this proposal is to create safer cyberspace in which the fundamental rights of all users of digital services are protected.

The basic act dealing with protection in cyberspace in the Republic of Croatia is the Cyber Security Act of Operators of Essential Services and Digital Service Providers,<sup>12</sup> which was passed in July 2018. In addition to this general regulation, there are a number of special laws that include cybersecurity provisions.

Regarding the protection of personal data the European Convention for the Protection of Human Rights and Fundamental Freedoms (hereinafter: the European Convention)<sup>13</sup> in article 8. stipulates that everyone has the right to respect of his privacy and family life, but does not contain specific provisions on the protection of personal data. However, the case law of the European Court of Human Rights shows that, by applying Article 8. of the European Convention, this Court also valued the right to the protection of personal data (for example see cases: *S. and Marper*, 2008.; *Flinkkilä and Others v. Finland*, 2010.; *Saaristo and Others v. Finland*, 2010.). Unlike the European Convention, the EU Charter, in addition to defining the general right to privacy, separately in Article 8 defines the right to protection of personal data and also lays down a few specific guarantees and these are that ”such data must be processed fairly for specified purposes and on the basis of the consent of the person concerned or some other legitimate basis laid down by law, and that everyone has the right of access to data which has been collected concerning him or her, and the right to have it rectified. Compliance with these rules shall be subject to control by an independent authority.” However, despite the clear distinction in the Charter, the Court of Justice of the European Union in its previous case law has not made a clear separation of these rights (for more see: *Papić, Knol Radoja, Arežina*, 2020.; *Petrašević, Duić*, 2021.). In addition to the Charter, in the European Union provisions on the protection of personal data can also be found in Articles 6. and 39. of the Treaty on European Union and Article 16. of the Treaty on the Functioning of the European Union.<sup>14</sup> But the most detailed regulation governing the protection of personal data in the European Union is the Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (hereinafter: General Data Protection

---

<sup>11</sup> Proposal for a Regulation of the European Parliament and of the Council on a single market for digital services (Digital Services Act) and amending Directive 2000/31/EC, retrieved 8 February 2022 from <https://ec.europa.eu/digital-single-market/en/news/proposal-regulation-european-parliament-and-council-single-market-digital-services-digital>

<sup>12</sup> Cyber Security Act of Operators of Essential Services and Digital Service Providers, Official Gazette, no. 64/18

<sup>13</sup> European Convention for the Protection of Human Rights and Fundamental Freedoms, Official Gazette, International Treaties, no. 18/1997., 6/1999., 14/2002., 13/2003., 9/2005., 1/2006., 2/2010.

<sup>14</sup> Consolidated versions of the Treaty on European Union and the Treaty on the Functioning of the European Union, OJ C 202 od 7.6.2016, p. 1.–388.; <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ%3AC%3A2016%3A202%3ATOC>, accessed: 7. January 2022.

Regulation, GDPR)<sup>15</sup> which entered into force on 25 May 2016.<sup>16</sup> Although the General Data Protection Regulation is an EU document, some authors take under advisement that it actually has a global impact (Goddard, 2017, 703). In the legislation of the Republic of Croatia this Regulation is applicable from 25 May 2018.

### 3.2. Protection of personal data in cyberspace

Since the subject of interest in this paper is primarily the protection of personal data in the digital environment, it will be written about the regulation that prescribes such protection in more detail, and that is General Data Protection Regulation. Although this Regulation governs the protection of personal data not only in cyberspace but also beyond, the impact of the General Data Protection Regulation on cybersecurity is unquestionable (Schwartz, Peifer, 2017, 122). GDPR defines personal data as anything that can be used to identify an individual person. This includes personally identifiable details such as names, birth dates, email addresses, telephone numbers, social security numbers, IP addresses, location data, as well as other information related to social, economic, genetic or cultural identity (Calder, 2016, 63). Personal data security vulnerability leads to a negative impact on consumer trust. So, gaining consumer trust around data privacy in cyberspace could lead to more sales and translate into a competitive advantage (He Li, Lu Yu & Wu He, 2019, 3). GDPR provides a high degree of control, such as the right to withdraw consent (Art. 7 GDPR) and to be forgotten (Art.17 GDPR) (for more see: Politou, Alepis, Patsakis, 2018). On the other side, high requirements are put forward for data controllers and processors as it requires that personal data must be securely processed with the use of appropriate technical and organizational measures. Organizations that process personal data will be held liable for non-compliance with GDPR. In particular, technology companies, data center providers, cloud service providers and marketers will have to adapt to stricter security measures to protect and process personal data to ensure their compliance with GDPR (Mackay, 2017). Otherwise, they will potentially receive large fines from the EU. The regulation does not impose a specific set of measures to achieve cyber security, but some appropriate actions are expected. What is appropriate will depend on the different circumstances, as well as the data being processed and thus the risks they pose. There are several GDPR articles that have specific cyber security requirements and these are especially 5., 24., 32., 33. and 34. Article 5. provides basic principles for the processing of personal data aimed to prevent the intrusions of unauthorized persons into personal data, but also to reduce the impact of such attacks if they occur. Article 24. sets out the obligations of the controller. Inside Article 32. are prescribed some specific measures for data security (eg. pseudonymization, encryption, regular testing, etc.). However, it is not necessary to apply all those measures to all data but to include them as needed. Relevant procedures can be found in articles 33. and 34. In the event of a personal data breach, it is mandatory to contact the supervisory authority. The controller should report a personal data breach to the supervisory authorities as soon as possible, but no later than 72 hours after having become aware of it. The report of the breach should include a description and nature of the violation, categories and estimate of the number of victims, contact details of data protection officers within the company, a description of possible consequences of the violation and a description of measures taken to reduce the harmful

---

<sup>15</sup> Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC, Official Journal of the European Union, L 119, 4 May 2016, p. 1–88.

<sup>16</sup> Prior to the adoption of this Regulation, the basic regulation governing the protection of personal data in the European Union was the Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data, 95/46/ EC, <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A31995L0046>, accessed: 24 January 2022.



consequences of the violation. Also, it is necessary to determine whether the breach resulted in a high risk to the rights and freedoms of natural persons, because if it is „the controller shall communicate the personal data breach to the data subject without undue delay“ (Art. 34. GDPR). Therefore, in case the injury is a high risk, it is necessary to report it to the persons whose data are endangered, and especially if sensitive data are violated. If so many persons are involved that it would be impractical to contact each of them, public announcement through the media is considered sufficient. The penalty for not notifying the supervisory authority is up to 10 million EUR, or up to 2% of the total worldwide annual turnover of the preceding financial year, whichever is higher (Art. 83/4. GDPR). If serious breaches such as illegal data processing, non-transparency, breaches of respondents' rights or illegal data transfers to third countries are proven, fines can be doubled up to 20 million EUR, or up to 4% of the total worldwide annual turnover of the preceding financial year, whichever is higher (Art. 83/5. GDPR).

## 4. Results and discussion

### 4.1. Demographics of students participated

According to students' gender, 72.7% of students who participated in the research were female and only 27.3% of students who participated in the research were male. Although, the gender differences regarding the topic of the research were not examined it should be accentuated that the majority of students who participated within the research were female, even 72.7%. Table 1. shows the students' age, 49.1% of students were in the age group from 18 to 20 years old, 46.4% of students were in the age group from 21 to 30 years old and 4.5% of students were older than 30 years old.

**Table 1:** Students' age (%)

18 – 20 years	49.1%
21 – 30 years	46.4%
30 – years	4.5%

*Source: Authors*

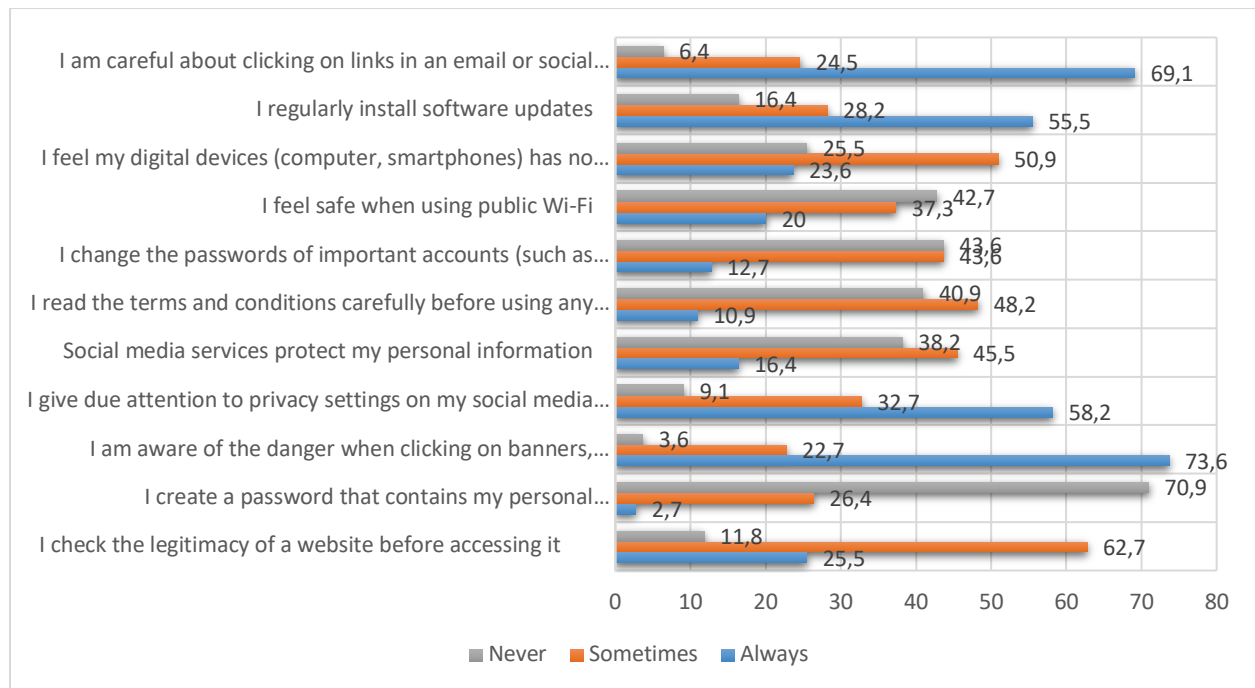
81. 8% of students were from the Faculty of Humanities and Social Sciences in Osijek and 18.2% of students were from the Faculty of Law in Osijek.

### 4.2. Cyber security awareness of students

Figure 1. shows the research results on cybersecurity awareness of students. The majority of students (62.7%) sometimes check the legitimacy of a website before accessing it. The majority of students (70.9%) never create a password that contains their personal information (e.g. last name, date of birth etc.). The majority of students (73.6%) are always aware of the danger when clicking on banners, advertisements or pop-up screens that appear when surfing the Internet. More than half of students (58.2%) always give due attention to privacy settings on their social media account(s). About one-third of students (38.2%) think that social media services never protect their personal information. Almost half of the students (40.9%) never read the terms and conditions carefully before using any website. Almost half of the students (43.6%) never change the passwords of important accounts (such as online banking) frequently. Almost half of the students (42.7%) never feel safe when using public Wi-Fi. The majority of students (74.5%) always or sometimes feel that their digital devices (computers, smartphones) have no value to hackers, and that they do not target them. Almost all students (93.6%) are careful about clicking on links in an e-mail or social media post. According to the research results regarding

students' cyber security awareness, it can be concluded that students have a satisfying level of cyber security awareness.

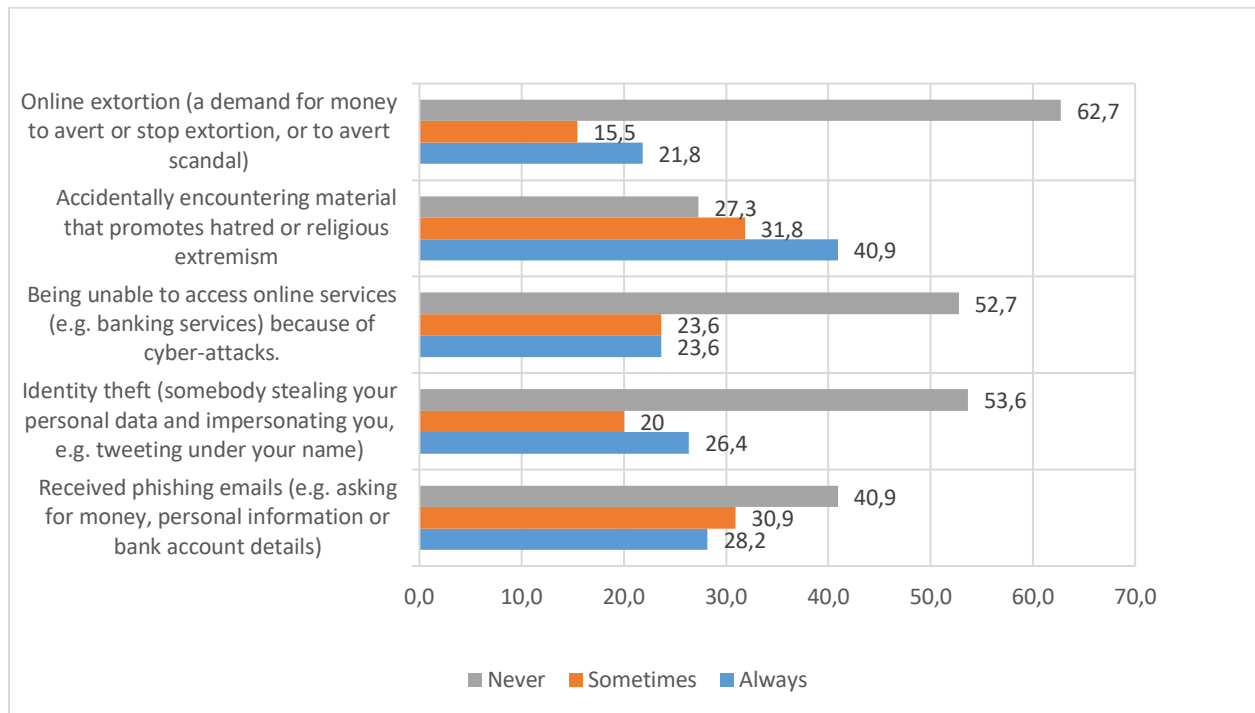
**Figure 1:** Cybersecurity awareness of students (%)



Source: Authors

### 4.3. Cyber security concerns of students

Figure 2. shows the research results on cyber security concerns of students. Less than half of students (40.9%) had never received phishing e-mails (e.g. asking for money, personal information or bank account details). More than half of students (53.6%) were never concerned regarding potential identity theft (somebody stealing your personal data and impersonating you, e.g. tweeting under your name). More than half of students (52.7%) were never concerned that they would not be able to access online services (e.g. banking services) because of cyber-attacks. The majority of students (72.7%) were always or sometimes concerned regarding material that promotes hatred or religious extremism which they encountered accidentally on the Internet. The majority of students (62.7%) were not concerned regarding potential online extortion (demand for money to avert or stop the extortion, or to avert scandal). According to the research results regarding students' cyber security concerns, it can be concluded that more than half of students were not concerned regarding potential cyber security threats.

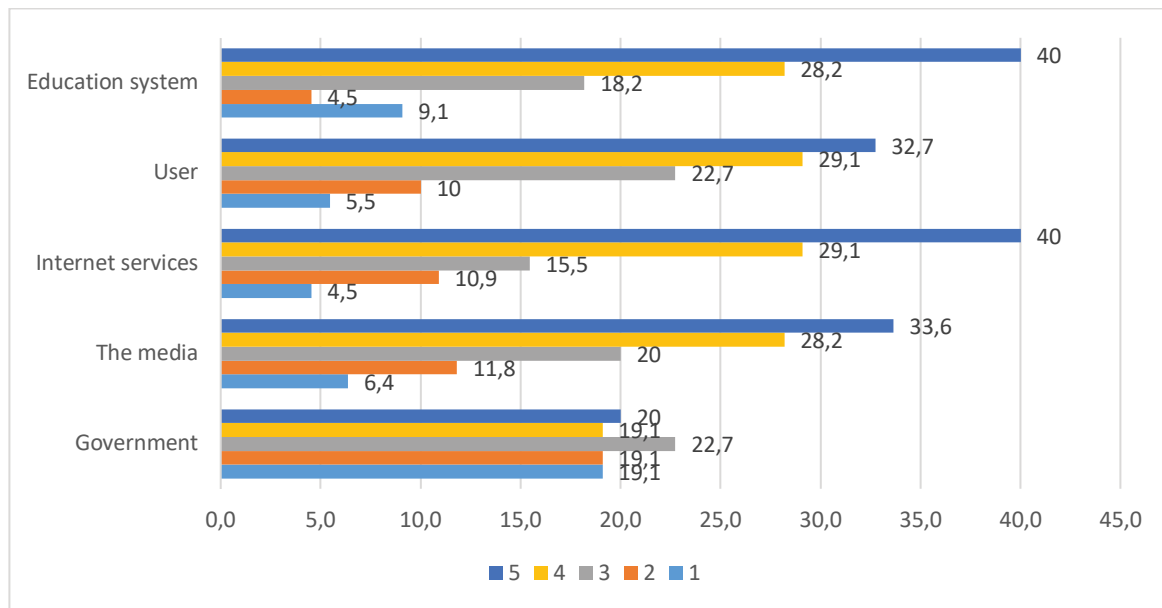
**Figure 2: Cybersecurity concerns of students (%)**

Source: Authors

#### 4.4. Rating the entities responsible for raising cybersecurity awareness among students

Figure 3. shows the research results of rating the entities responsible for raising cybersecurity awareness among students. Students rated entities responsible for raising cybersecurity awareness in the following order: (1) providers of the Internet services, (2) the educational system, (3) the media, (4) the end-user and (5) the government. According to the research results regarding rating the entities responsible for raising cybersecurity awareness among students, students think that the most active in raising cybersecurity awareness among students should be providers of the Internet services but also the educational system.

**Figure 3:** Rating of entities responsible for raising cybersecurity awareness among students (%)



Source: Authors

#### 4.5. Limitations and possibilities for further research

Limitations of the research are mainly consisted in the fact that this research is conducted within two Croatian faculties and could not be generalized to the whole higher education community in Croatia. The possibilities for further research could go in the direction of conducting the research on the larger sample of students as well as to include the professors in the sample thus they can suggest the ways in which educational system could raise the cybersecurity awareness among students.

#### 5. Conclusion

According to the research results regarding students' cyber security awareness, it can be concluded that students have a satisfying level of cyber security awareness although there is also a lot of space for improvement of the cyber security awareness. Students think that for raising cybersecurity awareness are the most responsible providers of the Internet services and the educational system but also the media, the end-user and the government. Not surprisingly, the GDPR is a key driver of cyber security as it has significantly raised awareness of personal data breaches resulting from cybercrime and the need for protection. The GDPR managed to force action that has been delayed for a long time. The cybersecurity community, mostly in the field of network security and operations, had to accept an extended definition of personal data that, under GDPR, includes IP addresses and other identifiers used in network communication that can very easily identify their users, whose privacy should be preserved. Also, the GDPR imposes an obligation to control the intrusion of such data by various malicious actors, whose activities need to be investigated and mitigated. The GDPR has given weight to cybersecurity by giving cybercrime more tangible consequences by threatening with drastic financial penalties. Fear of penalties has also changed the way organizations think about data protection and security. Many companies have taken a closer look at their data footprint and data privacy controls and invested in data asset protection. Constant awareness of personal data protection

requirements and endeavor to get complied with the GDPR will not only make them avoid penalties but most importantly will build trust by their users.

## REFERENCES

Alzubaidi, A. (2021): *Cybercrime Awareness among Saudi Nationals: Dataset*, Data in Brief, Vol. 36.

Calder, A. (2016): *EU GDPR, A Pocket Guide*, IT Governance Publishing, Cambridgeshire.

Crowther, G. A. (2017). *The cyber domain*. The Cyber Defense Review, 2(3), 63-78.

Convention on cybercrime, Official Gazette, International Treaties, no. 9/2002.

Consolidated versions of the Treaty on European Union and the Treaty on the Functioning of the European Union, OJ C 202 od 7.6.2016, p. 1.–388.; <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ%3AC%3A2016%3A202%3ATOC>, 7 February 2022.

Council of Europe, [https://www.coe.int/en/web/impact-convention-human-rights/convention-on-cybercrime#/,](https://www.coe.int/en/web/impact-convention-human-rights/convention-on-cybercrime#/) 3 February 2022.

Cyber Security Act of Operators of Essential Services and Digital Service Providers, Official Gazette, no. 64/18.

Directive (EU) 2016/1148 of the European Parliament and of the Council of 6 July 2016 concerning measures for a high common level of security of network and information systems across the Union (OJ L 194, 19.7.2016, p. 1).

Directive 2002/58/EC of the European Parliament and of the Council of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector (Directive on privacy and electronic communications) (OJ L 201, 31.7.2002, p. 37).

Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code (OJ L 321, 17.12.2018, p. 36).

Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data, 95/46/ EC, [https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A31995L0046,](https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A31995L0046) 12 February 2022.

Duić, D. (2021): *The EEAS as a Navigator of EU Defence Aspects in Cyberspace*, European foreign affairs review, Vol. 26, No. 1, pp. 101-114.

European Convention for the Protection of Human Rights and Fundamental Freedoms, Official Gazette, International Treaties, no. 18/1997., 6/1999., 14/2002., 13/2003., 9/2005., 1/2006., 2/2010.

Flinkkilä and Others v. Finland, Application no. 25576/04, 6 April 2010.

Goddard, M. (2017): *The EU General Data Protection Regulation (GDPR): European Regulation that has a Global Impact*, International Journal of Market Research, Vol. 59., No. 6., pp. 703–705.

Hamidović, Haris. (2015): *The place and role of cyber security in the development of modern societies* (Mjesto i uloga cyber sigurnosti u razvoju modernih društava), Sarajevski žurnal za društvena pitanja, Vol. 4, No. 1-2, p. 82, [https://www.researchgate.net/publication/302901758\\_Mjesto\\_i\\_uloga\\_cyber\\_sigurnosti\\_u\\_razvoju\\_modernih\\_drustava](https://www.researchgate.net/publication/302901758_Mjesto_i_uloga_cyber_sigurnosti_u_razvoju_modernih_drustava), 6 February 2022.

He Li, Lu Yu & Wu He (2019): *The Impact of GDPR on Global Technology Development*, Journal of Global Information Technology Management, Vol. 22, No. 1, pp1-6.

Kaspersky, E. (2019): *How will cybersecurity change by 2050?* Cybersecurity 38, Technology News, Secure Futures, <https://www.kaspersky.com/blog/secure-futures-magazine/earth-2050-cybersecurity/28313/>, 5 February 2022.

Mackay, D. (2017): *The impact of GDPR from a technology perspective – is your platform ready?* <https://www.itproportal.com/features/technology-and-gdpr-is-your-platform-ready/>, 2 February 2022.

Papić, A.; Knol Radoja, K.; Arežina, I. (2020): *Legal perspectives on post-GDPR developments among law students and information science students at University of Osijek*, Region, Entrepreneurship, Development: 9th International Scientific Symposium, Leko Šimić, Mirna; Crković, Boris (ur.). Osijek: Faculty of Economics in Osijek, pp. 1174-1184.

Petrašević, T.; Duić, D. (2021): *Standards of Human Rights Protection in the Domain of Personal Data Protection: Strasburg vs Luxemburg*, Exploring the Social Dimension of Europe - Essays in Honour of Nada Bodiroga-Vukobrat. Sander, Gerald G., Poščić, A., Martinović, A. (ur.). Hamburg: Verlag Dr. Kovač, pp. 215-229.

Politou, E., Alepis, E., & Patsakis, C. (2018): *Forgetting personal data and revoking consent under the GDPR: Challenges and proposed solutions*. Journal of Cybersecurity, Vol. 4, No. 1, pp. 1-20.

Proposal for a Regulation of the European Parliament and of the Council on a single market for digital services (Digital Services Act) and amending Directive 2000/31/EC, <https://ec.europa.eu/digital-single-market/en/news/proposal-regulation-european-parliament-and-council-single-market-digital-services-digital>, 8 February 2022.

Regulation (EC) No 460/2004 of the European Parliament and of the Council of 10 March 2004 establishing the European Network and Information Security Agency (OJ L 77, 13.3.2004, p. 1).

Joint Communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Cybersecurity Strategy of the European Union: An Open, Safe and Secure Cyberspace/\* JOIN/2013/01 final \*//, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52013JC0001>

Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) (OJ L 119, 4.5.2016, p. 1).

Regulation (EU) 2019/881 of the European Parliament and of the Council of 17 April 2019 on ENISA (the European Union Agency for Cybersecurity) and on information and communications technology cybersecurity certification and repealing Regulation (EU) No 526/2013 (Cybersecurity Act) PE/86/2018/REV/1OJ L 151, 7.6.2019, p. 15–69 .

Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC, Official Journal of the European Union, L 119, 4 May 2016, p. 1–88.

Saaristo and Others v. Finland, Application no. 184/06, 12 October 2010.

S. and Marper v. the United Kingdom [GC], Application no. 30562/04 and 30566/04, 4 December 2008.

Schwartz, P. M., Peifer, K. (2017): *Transatlantic Data Privacy Law*, 106 Georgetown Law Journal Vol. 106., pp. 119–122.

Skopik, F. (2017): *Collaborative cyber threat intelligence: detecting and responding to advanced cyber attacks at the national level*. CRC Press.

*A scientific paper*

**Ena Pecina, Ph. D.**

Faculty of Economics and Business Zagreb

E-mail address: epecina@efzg.hr

**Irena Raguž Krištić, Ph. D.**

Faculty of Economics and Business Zagreb

E-mail address: iraguzkristic@efzg.hr

**Andrija Sabol, Ph. D.**

Faculty of Economics and Business Zagreb

E-mail address: asabol@efzg.hr

## **DRIVERS OF FINANCIAL BEHAVIOUR: ARE THERE DIFFERENCES BETWEEN THE EU COUNTRIES**

### **ABSTRACT**

*The aim of this paper is to examine whether there are statistically significant differences in the capital structure determinants between the firms operating in the three top and three lowest performing EU countries, where the countries in sample were selected based on their average real GDP per capita. These countries clearly differ in their levels of economic development, but also in terms of financial system, efficiency of institutional governance, legal protection and overall macroeconomic conditions. Accordingly, this seems as a useful framework to study if there are some firm-specific determinants of capital structure that systematically influence firms' financial behaviour, regardless of their development status. The analysis is conducted on more than 30 000 medium, large and very large non-financial companies from the following countries: Luxembourg, Ireland, Denmark, Latvia, Romania and Bulgaria. For the period 2009 – 2017, using static panel fixed effects model, we test the influence of selected firm-specific determinants on the three models of financial leverage: total, long- and short-term debt. Results on the total sample indicate that all the analysed determinants (i.e. size, profitability, asset tangibility, non-debt tax shield, liquidity and operating leverage) have statistically significant impact on total and long-term debt, while size, profitability, liquidity and non-debt tax shield are significant also for short-term debt. However, there are significant differences in the impact of these determinants depending on country subsamples, not only in strength but also in the direction of impact. Such results suggest the need for further study of macroeconomic and other variables that potentially cause different financial behaviour of the analysed companies.*

**Key words:** *capital structure, determinants, financial leverage, EU countries.*

### **1. Introduction**

After the Modigliani & Miller's (1958) irrelevance model was introduced, the area of capital structure has significantly emerged. Researchers began with abandoning unrealistic prepositions of the underlying model, i.e. perfect market assumptions trying to find conditions under which the debt-equity choice will influence firm's value. Two theories prevailed: the trade-off (thereinafter "TOT") and the pecking order (thereinafter "POT") theory. These two



theories have opposite postulates of the existence of an optimal capital structure and, in general, of firm's financial behaviour, consequently leading to different predictions regarding some firm-specific factors affecting capital structure.

Numerous empirical studies have investigated the effects of certain firm characteristics on financial leverage, but these studies are largely focused on large, publicly listed companies operating in mature market economies, such as the United States and the United Kingdom. As noted in Bats & Houben (2020, 16), unlike the United States and the United Kingdom, the European financial structure is mostly bank-based, meaning that companies operating in such financial systems predominantly use bank loans as financing instruments, thus narrowing the choice of financing and the possibility of fast and at lower cost adjustments of the capital structure. The model of the financial system together with other country-specific differences (eg economic development, legal protection, macroeconomic (uncertainty), institutional development, etc.) certainly affects the supply of funds, but also the financial behavior of companies, as previously discussed in Demirgüç-Kunt & Maksimovic (2002), Antoniou, Guney, & Paudyal, (2008), de Jong, Kabir, & Nguyen (2008), Kayo & Kimura (2011), Mertzanis (2019) and others. The pioneer studies on capital structure determinants, such as Titman & Wessels (1988), Harris & Raviv (1991), Rajan & Zingales (1995) have asserted the dominant firm-specific factors influencing financing decisions of large, quoted firms of mature market economies, but it is still fuzzy how these findings apply to firms in different macroeconomic contexts, geographical locations and time periods (Moradi & Paulet, 2019, 152).

The aim of this paper is to contribute to the existing literature on capital structure by testing the prevailing firm-specific determinants in different countries with different macroeconomic environment and level of economic development. The intention is to examine if determinants confirmed in referenced studies also apply to other country samples regardless of their economies' specifics. If in deed they confirm to systematically and consistently influence the debt-equity choice as asserted in aforementioned studies, this could indicate that existing theories, TOT and POT, are applicable and sufficient to explain financing behaviour of firms in a hugely different settings of economic and developmental stages, in relation to those for which they were originally created.

## 2. Literature review

The modern capital structure theory started in 1958 with the publication of Modigliani and Miller's irrelevance model, where, under perfect market conditions, firm value is not affected by its financing decisions. Perfect market assumptions have been relaxed in their follow-up paper in 1963 with the introduction of corporate taxes, which resulted in an unrealistic conclusion that firms should use exclusively debt in financing because it is cheaper than equity and interest deliver a tax shield. In the following decades a plethora of research into capital structure of firms had been conducted and a number of initial assumptions of the irrelevance model had been violated. By introducing real-world conditions, such as agency costs, information asymmetry and financial distress costs, the endeavours resulted in two dominant theories: trade-off theory (TOT) and pecking order theory (POT). Most common version of TOT suggests the existence of an optimal capital structure, by making a trade-off between debt tax savings and costs of potential bankruptcy (Miller, 1977; Modigliani & Miller, 1963). On the other hand, POT asserts that, given adverse selection and information asymmetry, firms favour internal over external financing and debt over equity (Donaldson, 1961; Myers, 1984; Myers & Majluf, 1984), thus following a strict hierarchy of financing sources. Albeit neither

theory is completely acceptable, both of them proved crucial in recognizing and explaining rationale of firm's financing decisions.

The TOT and POT theories are predicated on rather different premises, and yet both are used to examine a number of firm-specific traits which have an effect on firm leverage. These internal features include, but are not limited to, profitability, firm size, asset tangibility, liquidity, tax, non-debt tax shield, growth opportunities, product uniqueness, most of them explored in spearheading papers on capital structure determinants (Marsh, 1982; Bradley, Jarrell, & Kim, 1984; Titman & Wessels, 1988; Harris & Raviv, 1991; Rajan & Zingales, 1995; Frank & Goyal, 2009). As the premises of TOT and POT differ, there are conflicting expectations of these theories about the effect of some firm-specific features on company's financial behaviour. Most commonly used determinant to distinguish between TOT and POT is *profitability*. As TOT assumes there is an optimal leverage ratio that is established at the point where marginal value of tax shield is offset by the marginal costs of financial distress, highly profitable firms should use more debt in financing to exploit these debt tax benefits, but also because they have lower probability of default (Mostarac & Petrović, 2013, 154 - 155). The reasoning is similar for *firm size*. As the probability of default declines with firm size, due to their higher level of diversification and transparency, lower cash volatility and easier access to capital markets (Titman & Wessels, 1988, 6; Dang, Kim, & Shin, 2012, 470), TOT predicts higher use of leverage for large firms. *Liquidity*, taken as the ability to pay off liabilities as they mature, should according to TOT positively impact financial leverage. In contrast, POT assumes the opposite, negative relationship between financial leverage and profitability, firm size and liquidity. Since large, highly profitable, liquid firms generate enough stable earnings to finance investments, thus having no specific need for external funding, as supported in numerous empirical papers (Bartoloni, 2013). TOT and POT share the same predictions about relationship between leverage and *asset tangibility*. Firms with assets that can be used as collateral are likely to have lower bankruptcy costs, and thus higher debt capacity (Cook & Tang, 2010, 77). TOT predicts such companies with a lot of tangible assets will be motivated to exploit tax benefits of debt since they have a lower risk of bankruptcy. POT assumes that when and if companies decide to finance externally, they will use debt and use tangible assets as collateral. *Depreciation* can be viewed and explored as an alternative or non-debt tax shield that also creates such benefits (DeAngelo & Masulis, 1980, 4). Firms with more depreciation expenses can use its benefits in lieu of the debt tax shield, which means that a negative correlation is predicted. *Operating leverage* is reflected in intensive use of fixed costs, which can in turn increase net earnings. Firms with high fixed operating costs will avoid using financial leverage to reduce the risk of default, which is why TOT assumes a negative relationship between financial and operating leverage. Although, firms can use debt to finance higher operating costs when internal funds are not sufficient, but this is ultimately a poor strategy down the road.

Capital structure theory is established and developed in mature market economy of the United States, so it is not surprising that most empirical studies of capital structure deal with companies in developed countries, again primarily the United States and the United Kingdom. Only recently have developing countries received more attention. The aim of the latter studies is to focus on the differences in capital structure of firms doing business in different institutional and macroeconomic environment. Furthermore, as will be discussed in this paper (by taking GDP per capita as a proxy for economic development), the literature also recognizes the issue of country-specific factors which influence capital structure decisions (Demirgüç-Kunt & Maksimovic, 1996, 1999; Booth, Aivazian, Demirgüç-Kunt, & Maksimovic, 2001; Klapper, Sarria-Allende, & Sulla, 2002; Hall, Hutchinson, & Michaelas, 2004; Delcours, 2007; Mitton,

2007; de Jong, Kabir, & Nguyen, 2008; Bokpin, 2009; Aggarwal & Kyaw, 2009; Alves & Ferreira, 2011, Kayo & Kimura, 2011; Fan, Titman, & Twite, 2012; Hernádi & Ormos, 2012; Mateev, Poutziouris, & Ivanov, 2013; Arsov & Naumoski, 2016). A number of country features, such as the macroeconomic environment, the institutional structure and support and the development of the financial system, influence capital structure. For instance, Wald (1999) find that institutional framework differences have a notable influence on corporate financing behaviour and that these differences could produce agency problem gaps between countries, resulting in variations in capital structure decisions. Booth, Aivazian, Demirgüç-Kunt, & Maksimovic (2001) explore ten developing countries and conclude that capital structure decisions are determined by the same variables as in developed countries and that the differences arise from country-specific factors. On the sample of transitional countries Delcours (2007) concludes that none of the theories give an acceptable explanation of capital structure decision making, with only POT providing some insight.

In Table 1 we summarise an overview of selected empirical studies' results regarding the determinants of interest for this study, together with the expected relationship between degree of financial leverage and firm-specific characteristics according to the theoretical predictions.

**Table 1:** Review of theoretical predictions and empirical evidence from selected studies

Theory		Profitability	Size	Assets tangibility	Non-debt tax shield	Liquidity	Operating leverage <sup>1</sup>
Trade-off theory		<i>positive</i>	<i>positive</i>	<i>positive</i>	<i>negative</i>	<i>positive</i>	<i>negative</i>
Pecking order theory		<i>negative</i>	<i>negative</i>	<i>positive</i>		<i>negative</i>	
Study	Sample	Profitability	Size	Assets tangibility	Non-debt tax shield	Liquidity	Operating leverage
Arsov & Naumoski (2016)	Croatia, Macedonia, Slovenia, Serbia	-	+	-			insignificant
Moradi & Paulet (2019)	Austria, Belgium, France, Germany, Luxembourg, the Netherlands	-	+	+	+		+
Gaud, Hoesli, & Bender (2005)	European firms	-	+	+	insignificant		
Kühnhausen & Stieber (2014)	Europe (Germany, UK, France, Italy, Spain, Poland), Japan, the USA	-	+	inconsistent		-	
Jõeveer (2013)	Bulgaria, the Czech Republic, Estonia,	-	+ for listed and – for	-			

<sup>1</sup> Operating leverage can be considered as an approximation of business risk, i.e. higher the operating leverage higher is the risk of the company. Therefore, we present results for determinant *risk*, even if another measure is used.

Theory		Profitability	Size	Assets tangibility	Non-debt tax shield	Liquidity	Operating leverage <sup>1</sup>
Trade-off theory		<i>positive</i>	<i>positive</i>	<i>positive</i>	<i>negative</i>	<i>positive</i>	<i>negative</i>
Pecking order theory		<i>negative</i>	<i>negative</i>	<i>positive</i>		<i>negative</i>	
Study	Sample	Profitability	Size	Assets tangibility	Non-debt tax shield	Liquidity	Operating leverage
	Hungary, Latvia, Lithuania, Poland, Romania, Slovakia		unlisted firms				
Czerwonka & Jaworski (2021)	Poland, Czechia, Slovakia, Hungary, Bulgaria, Romania	-	+	-	-	-	
Mugoša (2015)	Western Europe countries (UK, Germany, France, Italy, Spain)	-	+	-			
Feidakis & Rovolis (2007)	France, Sweden, Germany, Spain, Netherlands, UK, Greece, Austria, Italy, Portugal, Belgium, Denmark, Finland	- (TD, STD)	+	+ (LTD) - (TD, STD)		+ (LTD), - (STD)	- (TD, LTD)

Some of the studies analyse more determinants than presented in the table. Review of results is made only for determinants used in this study.

Source: Authors

### 3. Data and methodology

The analysis in this paper is performed on the Amadeus database data from 2009 to 2017 of three top performing EU countries (Luxembourg, Ireland and Denmark) and three lowest performing EU countries (Latvia, Romania and Bulgaria). The countries in the sample were selected based on their average real GDP per capita from Eurostat for the observed period, which also corresponds to their ranking in 2019, a year before the pandemic. The variables in this dataset are presented in Table 2, including their symbols and methods of calculation.

**Table 2:** Variables used in the analysis

Variable	Symbol	Calculation Method
<b>Dependent variable</b>		
Total leverage	lnTL	ln(Total liabilities/total assets)
Short-term leverage	lnSTL	ln(Current liabilities/total assets)

Variable	Symbol	Calculation Method
Long-term leverage	lnLTL	ln(Long-term liabilities/total assets)
<b>Independent variables</b>		
Size	lnTA	ln(Natural logarithm of total assets)
Assets tangibility	Intang	ln(Fixed assets/total assets)
Profitability	lnROA	ln(EBIT/total assets)
Liquidity	lnLIQ	ln(Current assets/current liabilities)
Non-debt tax shield	lnDEP	ln(Depreciation/total assets)
Operating leverage	lnBL	ln((EBIT(t)-EBIT(t-1))/(sales(t)-sales(t-1)))

Source: Authors

A test of multicollinearity based on the correlation matrix was performed prior to the regression estimation and explanatory variables from Table 2 are not highly correlated. These results are available from the authors upon request.

In order to select the appropriate empirical methodology several diagnostic tests were performed. The Wooldridge (2002) test for serial correlation in panel data with the null hypothesis of no first-order autocorrelation was performed using the Drukker (2003) command. The modified Wald statistic for groupwise heteroscedasticity in fixed effect models based on Greene (2000) was employed to test the null hypothesis of homoscedasticity, using a code developed by Baum (2001). Finally, Pesaran (2015) test for weak cross-sectional dependence was performed to test the null hypothesis of weakly cross-sectionally dependent errors. The results for the main models performed on the full sample (see Table A1 in the Appendix) are presented in Table 3.

Since there is evidence of autocorrelation, heteroscedasticity and cross-sectional dependence, the choice between the fixed effects model and random effects model was based on the modified Hausman test proposed by Hoechle (2007), instead of the standard Hausman (1978) test. The results suggest that the fixed effects model is more appropriate (Table 3). The diagnostics tests for different subsamples yielded the same conclusions and are available from authors upon request.

**Table 3:** Diagnostic tests for the basic models

Diagnostics tests	Sample: total		
	Model 1TL_Total	Model 1STL_Total	Model 1LTL_Total
Wooldridge (2002) test for serial correlation	F( 1, 7043) = 259.798	F( 1, 4733) = 115.710	F( 1, 4786) = 480.345
	Prob > F = 0.0000	Prob > F = 0.0000	Prob > F = 0.0000
Modified Wald test for groupwise heteroskedasticity	chi2 (16625) = 3.8e+37	chi2 (14005) = 1.8e+37	chi2 (13054) = 2.2e+37
	Prob>chi2 = 0.0000	Prob>chi2 = 0.0000	Prob>chi2 = 0.0000
Pesaran (2015) test for weak cross-sectional dependence	CD = 0.000	CD = 0.000	CD = 0.000
	p-value = 1.000	p-value = 1.000	p-value = 1.000
Modified Hausman test (Hoechle, 2007)	F( 15, 16624) = 8.5e+14	F( 15, 14004) = 2.2e+16	F( 15, 13053) = 2.0e+14
	Prob > F = 0.0000	Prob > F = 0.0000	Prob > F = 0.0000

Source: Authors

The analysis of the relationship between one of the three capital structure variables and the vector of potential firm-level determinants is performed using a static panel fixed effects model, generally expressed as

$$y_{i,t} = \mathbf{x}'_{i,t}\beta + \alpha_i + \delta_t + u_{i,t}$$

where  $\mathbf{x}'_{i,t}$  is the vector of the time-varying, company-specific variables,  $\alpha_i$  is the fixed effect,  $\delta_t$  is the time-specific intercept, and  $u_{i,t}$  is the error term. Following the results provided in Table 3, the Driscoll and Kraay (1998) nonparametric covariance matrix estimator, adjusted for unbalanced panels by Daniel Hoechle (2007), is used in the analysis. This estimator produces heteroscedasticity- and autocorrelation- consistent standard errors that are robust for general forms of spatial and temporal dependence.

#### 4. Results

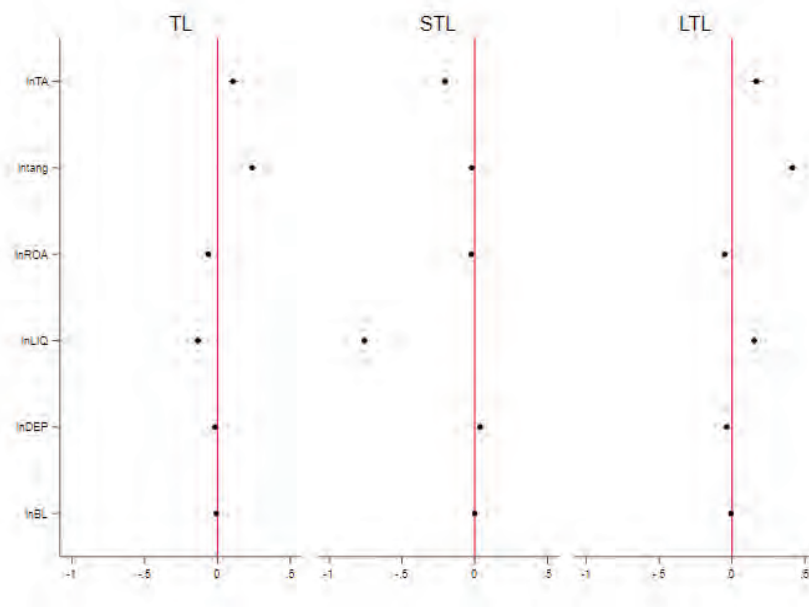
Full results for total and different country and firm samples can be found in Table A1 and Table A2 in the Appendix. Following Jann (2014), in order to facilitate comparison, the results of the study are presented in the form of graphs. Graph markers depict a certain coefficient, while lines represent confidence intervals. Coefficients are statistically significant at 90% significance level if the line does not cross the vertical axis at  $x=0$ .

##### 4.1. The results of the entire sample

Graph 1 presents the results of the models estimated on the entire sample (Table A1 in the Appendix). As can be noticed, all the analysed determinants show statistically significant impact on the total and long-term leverage. *Size* and *asset tangibility* have positive, while *profitability*, *non-debt tax shield* and *operating leverage* have negative impact on the debt levels. In other words, large firms with high shares of tangible assets have higher levels of total and long-term debt in their capital structure, while profitable firms with high levels of depreciation and operating risk use less total and long-term debt in their financing. *Liquidity* shows inconsistent impact on these debt measures: negative on total and positive impact on long-term leverage.

For short-term leverage, statistical significance is achieved by the following variables: *size*, *profitability* and *liquidity* with negative and *non-debt tax shield* with positive impact on debt. As these results indicate, large, profitable, liquid firms with less depreciation use less short-term debt.

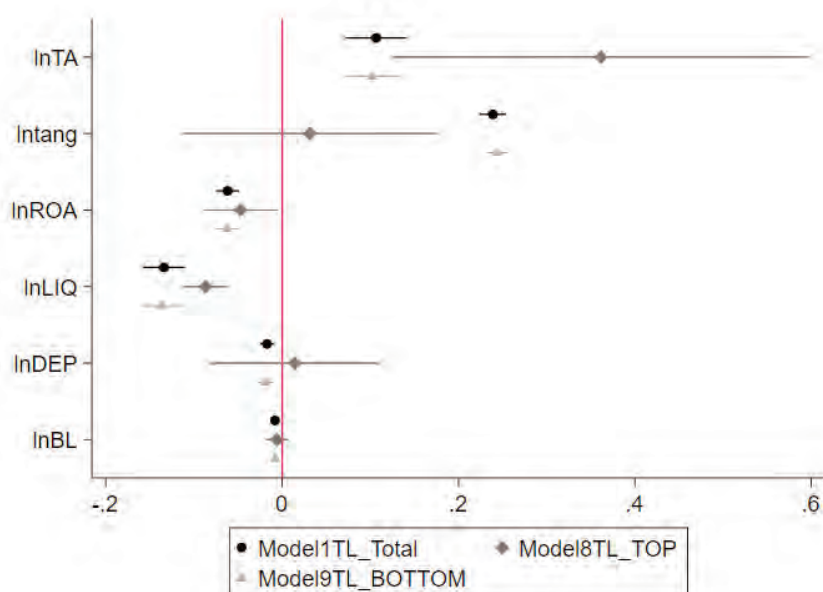
Compared to the expected relationship between leverage and selected company-specific determinants (Table 1), these results provide inconclusive answers as to whether analysed companies follow a trade-off or pecking order theory. These results are not surprising but on the contrary, they confirm the findings of numerous earlier empirical studies (see Table 1).

**Graph 1:** The results of the total sample (models 1TL\_Total, 1STL\_Total, 1LTL\_Total)

Source: Authors, Table A1

#### 4.2. Differences in capital structure determinants between the firms of the top and lowest performing EU countries

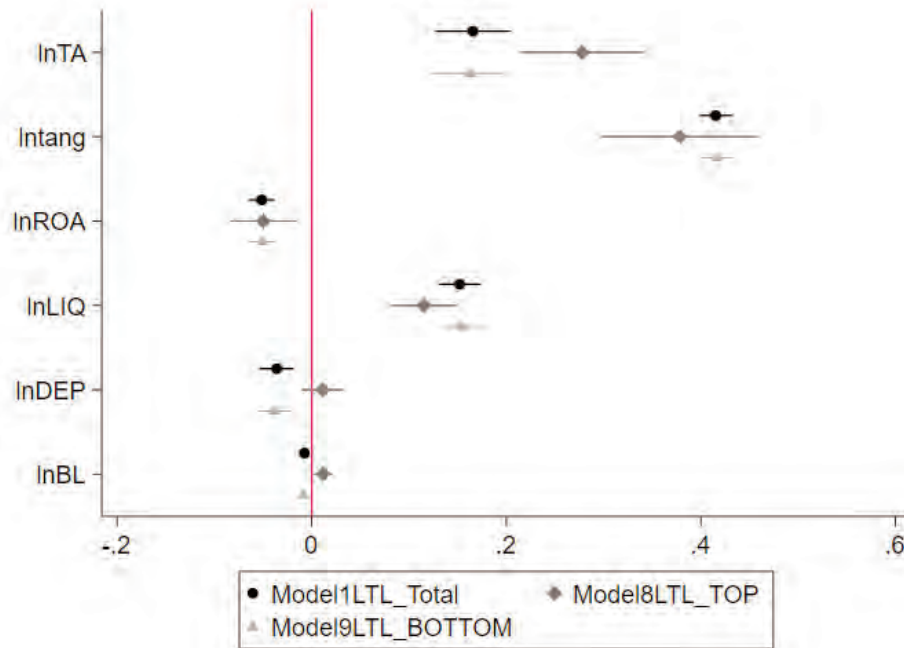
When the total sample is divided to subsamples of three top performing and three lowest performing EU countries, according to the average real GDP per capita for the observed period, we can notice substantial differences in the impact of selected determinants on firms' leverage. The model results from Table A1 are presented in Graphs 2 - 4, where Total stands for total sample, TOP for firms of the top three performing EU countries and BOTTOM for firms of the three lowest performing EU countries.

**Graph 2:** Differences between the TOP and BOTTOM sample in the model of total leverage

Source: Authors, Table A1

For firms of top three performing EU countries (hereinafter referred to as "TOP sample"), there are only two variables with statistically significant impact on total leverage (Graph 2): *size* with positive and *liquidity* with negative influence on total debt levels. These variables are also significant for the firms of the lowest performing countries (hereinafter referred to as "BOTTOM sample") with the same direction of impact. However, for this sample, next to the *size* and *liquidity*, other analysed determinants also show statistically significant impact on their financial behaviour. Their impact is the same as previously shown for the total sample.

**Graph 3:** Differences between the TOP and BOTTOM sample in the model of long-term leverage

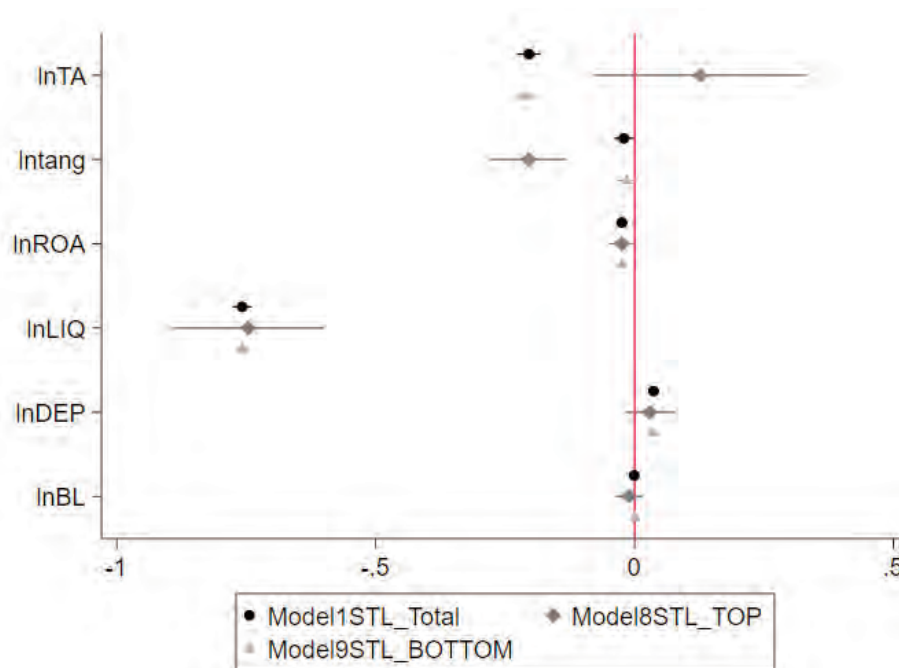


Source: Authors, Table A1

In case of long-term leverage (Graph 3), for both TOP and BOTTOM sample, most of the analysed determinants show similar impact on their long-term financial behaviour. *Large, liquid, less profitable firms with more tangible assets* use higher levels of long-term debt in their financing than the firms with the opposite characteristics, regardless the country subsamples. The difference between these groups is observed only in the impact of *depreciation* and *operating leverage*: for BOTTOM sample both of these variables have negative impact, while for TOP only *operating leverage* is significant and shows positive impact on long-term leverage.



**Graph 4:** Differences between the TOP and BOTTOM sample in the model of short-term leverage



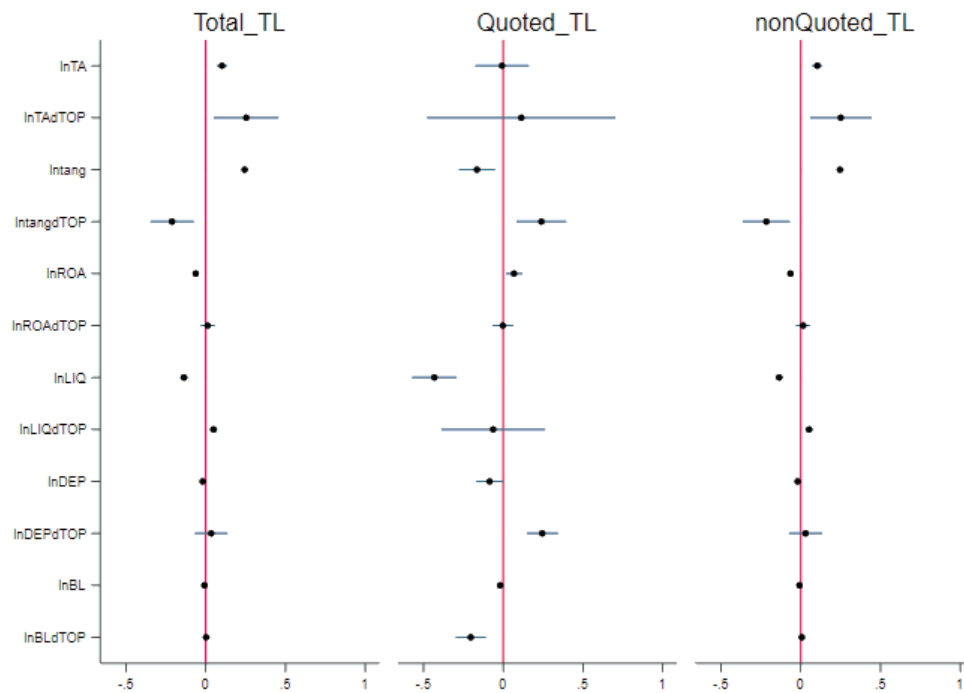
Source: Authors, Table A1

In case of short-term leverage (Graph 4), *asset tangibility and liquidity* show significant (negative) impact for TOP sample, implying that liquid firms with more tangible assets use less short-term leverage. For BOTTOM sample, more factors show significant impact on short-term debt: *size, profitability and liquidity* with negative, and *depreciation* with positive impact. Namely, the only common determinant of short-term leverage for both samples is *liquidity*, with negative influence implying more liquid firms will use less short-term debt in financing and vice versa (that is reasonable from the point of view where liquidity problems are usually solved by short-term borrowing).

#### 4.3. Differences between quoted and non-quoted firms of the top and bottom EU countries

As we noticed some differences in capital structure determinants of firms operating in the top and lowest performance EU countries, we conducted additional analysis in which we tested whether there are statistically significant differences in their financial behaviour. We tested these differences for the total sample and subsamples of quoted and non-quoted firms. The model results for total, long-term and short-term leverage determinants from Table A2 are presented in Graphs 5 - 7, respectively.

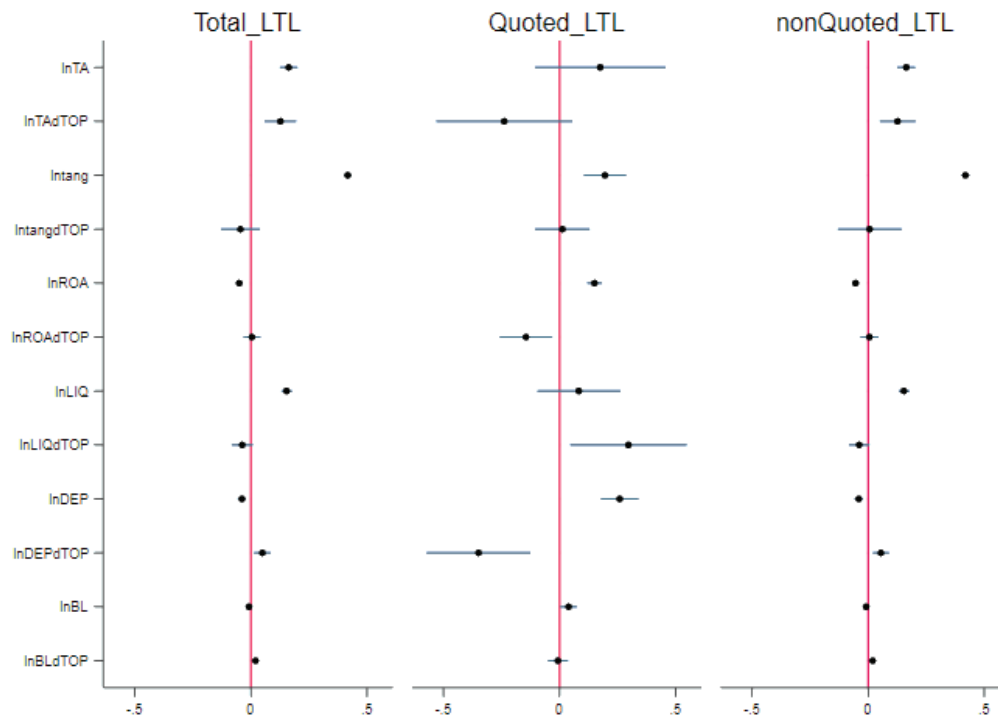
**Graph 5:** Statistical significance testing of the differences between firms of the top and lowest performing EU countries in the model of total leverage, three different samples



Source: Authors, Table A2

As can be noticed from Graph 5, the analysis of the total sample shows that there are statistically significant differences between TOP and BOTTOM sample in the following total leverage determinants: *size*, *asset tangibility* and *liquidity*. For both TOP and BOTTOM samples *size* and *asset tangibility* positively impact total debt levels, while *liquidity* has negative impact. But there is significant difference in the strength of their impact between these samples. Namely, large, liquid firms with less tangible assets of the top performing EU countries use more total debt than similar firms of the lowest performing countries. Moreover, these differences are also valid for the subsample of non-quoted firms. For the sample of quoted firms, the results are noticeably different. *Asset tangibility* has negative impact on total debt of BOTTOM sample, while for TOP sample the effect of asset tangibility is positive. Additionally, TOP sample quoted firms with higher *depreciation* use more total debt, while these same firms with higher *operating leverage* use less debt in financing than quoted firms of BOTTOM sample.

**Graph 6:** Statistical significance testing of the differences between firms of the top and lowest performing EU countries in the model of long-term leverage, three different samples

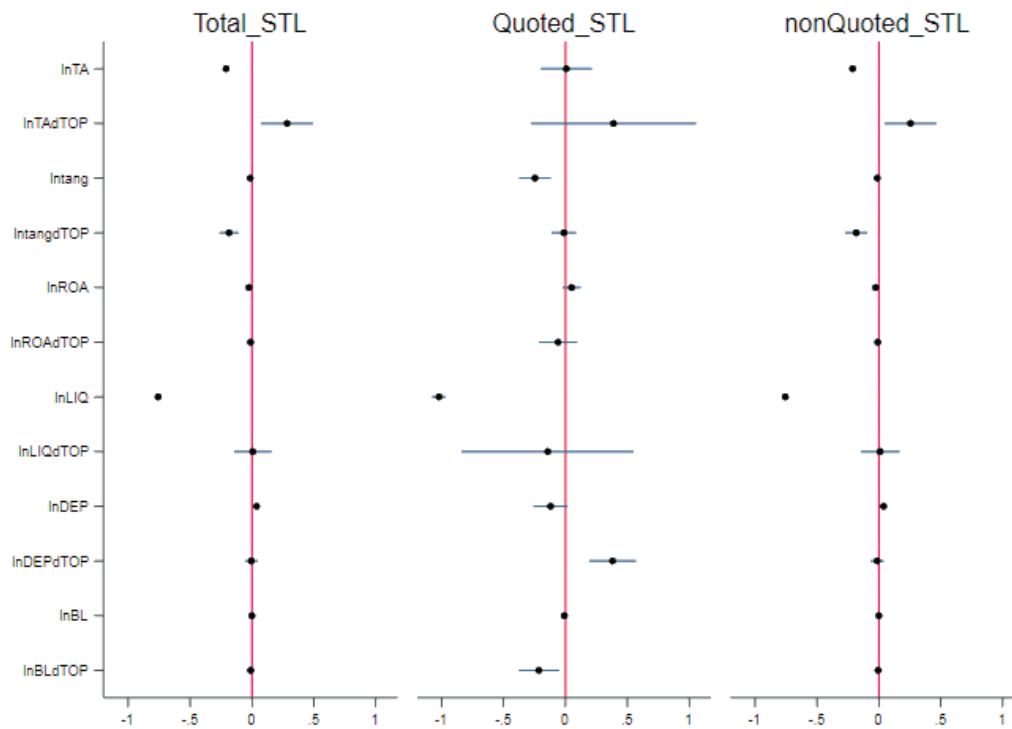


Source: Authors, Table A2

There is also statistically significant difference in determinants of long-term leverage between firms of TOP and BOTTOM samples, as shown on Graph 6. For the total sample, *size* has positive impact on long-term debt levels for both TOP and BOTTOM samples, but the strength of that impact is different: namely, large firms of TOP sample use more long-term debt than large firms of the BOTTOM sample. The impact of *depreciation* and *operating leverage* is different for these samples: these determinants have positive impact for the TOP and negative impact for the BOTTOM sample. These same differences are also recognised for the subsample of non-quoted firms.

For quoted firms, statistically significant differences can be observed in the impact of *profitability* and *depreciation* on the long-term debt. Although profitability has positive impact on long-term debt for both TOP and BOTTOM sample, the impact is much larger for the BOTTOM sample, meaning these profitable firms use more debt than firms of the TOP sample. On the other side, *depreciation* has positive impact on long-term debt of quoted firms for the BOTTOM sample and negative impact for quoted firms of the TOP sample.

**Graph 7:** Statistical significance testing of the differences between firms of the top and lowest performing EU countries in the model of short-term leverage, three different samples



Source: Authors, Table A2

Finally, there are significant differences in the impact of *size* and *asset tangibility* on the short-term leverage between the TOP and BOTTOM samples (Graph 7). Based on the total sample, size has negative impact for the BOTTOM and positive impact for the TOP sample, while firms with more tangible assets in TOP sample use significantly less short-term debt than firms of the BOTTOM sample. Again, same applies for non-quoted firms, regardless of the country performances.

However, for quoted firms, there are statistically significant differences in the influence of *depreciation* and *operating leverage* between the TOP and BOTTOM sample, where TOP sample firms with higher depreciation and lower operating leverage use significantly more short-term debt in financing than similar firms of the BOTTOM sample.

It should be noted that similarities in the results of the total sample and non-quoted companies for all three measures of debt are not surprising, due to significant differences in sizes of quoted and non-quoted companies' samples, with non-quoted sample being much larger (see Table A2 in the Appendix).

### 5. Conclusion

Capital structure decisions are highly relevant for firm's performance and sustainable development, that is further reflected on the competitiveness and prosperity of the country. But there is also a reverse relation: environmental conditions (i.e. level of country's development, macroeconomic, cultural and institutional specifics etc.) influence firms' access to financial funds and shape their financial behaviour. Relevant literature asserted the main firm-specific determinants that influence debt-equity choice, but these studies are predominantly related to

the large listed firms of mature market countries such as the United States and the United Kingdom.

The aim of this paper is to test whether there are any differences in the capital structure determinants between firms operating in different macroeconomic environment, approximated by the level of country's economic development. Based on the sample of more than 30 000 firms of the three top (TOP) and three lowest (BOTTOM) performing EU countries, where the countries in sample were selected based on their average real GDP per capita, results indicate that all of the analysed determinants (i.e. size, profitability, asset tangibility, non-debt tax shield, liquidity and operating leverage) have statistically significant impact on total and long-term debt, while size, profitability, liquidity and non-debt tax shield are significant also for short-term debt. Moreover, for both samples (TOP and BOTTOM) similar determinants show significant influence on long-term debt, while for the other two models of financial leverage (short-term and total debt) the differences are more pronounced: more of analysed determinants influence financial behaviour of BOTTOM sample firms than TOP. This could be due to the fact that in developing countries, due to higher capital costs and greater financial and economic uncertainty, firms use more short term financing and therefore more firm-specific determinants are recognised as important in case of short-term borrowing of firms in lowest performing countries.

However, there are noticeable differences in the impact of these determinants depending on country subsamples, not only in strength but also in the direction of impact. In general, large firms of the TOP sample use more total and long-term debt than large firms of the BOTTOM sample, but in both samples size increases the use of total and long-term debt. On the other hand, in case of short-term debt, size increases the usage of short-term financing for TOP and decreases it for the BOTTOM sample. Moreover, liquid firms with less tangible assets of the TOP sample use more total debt than similar firms of the BOTTOM sample. Similar applies for short-term debt where TOP sample firms with less tangible assets use more short-term borrowing than similar BOTTOM sample firms. Finally, the impact of depreciation and operating leverage is different for these samples: in case of long-term debt these determinants have positive impact for the TOP and negative impact for the BOTTOM sample.

These results raise the question of whether environmental factors are important parameters that could induce significant changes in the capital structure choices of firms, and consequently suggest the need for further study of macroeconomic and other variables that potentially cause different financial behaviour of analysed companies.

## REFERENCES

- Aggarwal, R., & Kyaw, N. (2009). *International variations in transparency and capital structure: evidence from European firms*. Journal of International Financial Management and Accounting, Vol. 20, No. 1, pp. 1-34. <https://doi.org/10.1111/j.1467-646X.2009.01025.x>
- Alves, P., & Ferreira, M. (2011). *Capital structure and law around the world*. Journal of Multinational Finance Management, Vol. 21, pp. 119-150. <https://doi.org/10.1016/j.mulfin.2011.02.001>

- Antoniou, A., Guney, Y., & Paudyal, K. (2008). *The determinants of capital structure: Capital market-oriented versus bank-oriented institutions*. Journal of Financial and Quantitative Analysis, Vol. 43, pp. 59-92. <https://doi.org/10.1017/S0022109000002751>
- Arsov, S., & Naumoski, A. (2016). *Determinants of capital structure: An empirical study of companies from selected post-transition economies*. Zbornik radova Ekonomskog fakulteta Rijeka, Vol. 34, No. 1, pp. 119-146. <https://doi.org/10.18045/zbefri.2016.1.119>
- Bancel, F., & Mittoo, U. (2004). *Cross-country determinants of capital structure choice: A survey of European Firms*. Financial Management, pp. 103-132. <http://dx.doi.org/10.2139/ssrn.299172>
- Bartoloni, E. (2013). *Capital Structure and Innovation: Causality and Determinants*. Empirica, Vol. 40, No. 1, pp. 111-151. <https://doi.org/10.1007/s10663-011-9179-y>
- Bats, J., & Houben, A. (2020). *Bank-based versus market-based financing: Implications for systemic risk*. Journal of Banking & Finance, Vol. 114, <https://doi.org/10.1016/j.jbankfin.2020.105776>
- Baum, C. F. (2001). *Residual diagnostics for cross-section time series regression models*. The Stata Journal, 1(1), pp. 101-104. <https://doi.org/10.1177/1536867X0100100108>
- Bokpin, G. A. (2009). *Macroeconomic development and capital structure decisions of firms: Evidence from emerging market economies*. Studies in Economics and Finance, Vol. 26, No. 2, str. 129-142. <https://doi.org/10.1108/10867370910963055>
- Booth, L., Aivazian, V., Demirgüç-Kunt, V., & Maksimovic, V. (2001). *Capital structures in developing countries*. The Journal of Finance, Vol. 56, No. 1, pp. 87-130. <https://doi.org/10.1111/0022-1082.00320>
- Bradley, M., Jarrell, G. A., & Kim, E. H. (1984). *On the existence of an optimal capital structure: theory and evidence*. The Journal of Finance, Vol. 39, No. 3, str. 857-878. <https://doi.org/10.1111/j.1540-6261.1984.tb03680.x>
- Cook, D. O., & Tang, T. (2010). *Macroeconomic conditions and capital structure adjustment speed*. Journal of Corporate Finance, Vol. 16, No. 1, pp. 73-87. <https://doi.org/10.1016/j.jcorpfin.2009.02.003>
- Czerwonka, L., & Jaworski, J. (2021). *Capital structure determinants of small and medium-sized enterprises: evidence from Central and Eastern Europe*. Journal of Small Business and Enterprise Development, Vol. 28, No. 2, pp. 277-297. <https://doi.org/10.1108/JSBED-09-2020-0326>

de Jong, A., Kabir, R., & Nguyen, T. (2008). *Capital structure around the world: The roles of firm- and country-specific determinants*. Journal of Banking and Finance, Vol. 32, pp. 1954-1969. <https://doi.org/10.1016/j.jbankfin.2007.12.034>

DeAngelo, H., & Masulis, R. W. (1980). *Optimal Capital Structure Under Corporate and Personal Taxation*. Journal of Financial Economics, Vol. 8, No. 1, pp. 3-27. [https://doi.org/10.1016/0304-405X\(80\)90019-7](https://doi.org/10.1016/0304-405X(80)90019-7)

Delcoure, N. (2007). *The determinants of capital structure in transitional economies*. International Review of Economics & Finance, Vol. 16, No. 3, pp. 400-415. <https://doi.org/10.1016/j.iref.2005.03.005>

Demirgüç-Kunt, A., & Maksimovic, V. (1996). *Stock market development and financing choices of firms*. The World Bank Economic Review, Vol. 10, No. 2, str. 341-369. <https://doi.org/10.1093/wber/10.2.341>

Demirgüç-Kunt, A., & Maksimovic, V. (1999). *Institutions, financial markets, and firm debt maturity*. Journal of Financial Economics, Vol- 54, str. 295-336. [https://doi.org/10.1016/S0304-405X\(99\)00039-2](https://doi.org/10.1016/S0304-405X(99)00039-2)

Demirgüç-Kunt, A., & Maksimovic, V. (2002). *Funding growth in bank-based and market-based financial systems: evidence from firm-level data*. Journal of Financial Economics, Vol. 63, No. 3, pp. 337-363. [https://doi.org/10.1016/S0304-405X\(02\)00145-9](https://doi.org/10.1016/S0304-405X(02)00145-9)

Donaldson, G. (1961). *Corporate debt capacity: a study of corporate debt policy and the determination of corporate debt capacity*. Boston: Harvard University.

Driscoll, J. C., & Kraay, A. C. (1998). *Consistent covariance matrix estimation with spatially dependent panel data*. The Review of Economics and Statistics, Vol. 80, No. 4, pp. 549-560. <https://doi.org/10.1162/003465398557825>

Drukker, D. M. (2003). *Testing for serial correlation in linear panel-data models*. The Stata journal, Vol. 3, No. 2, pp. 168-177. <https://doi.org/10.1177/1536867X0300300206>

Fan, J., Titman, S., & Twite, G. (2012). *An international comparison of capital structure and debt maturity choices*. Journal of Financial and Quantitative Analysis, Vol. 47, No. 1, pp. 23-56. <https://doi.org/10.1017/S0022109011000597>

Feidakis, A., & Rovolis, A. (2007). *Capital structure choice in European Union: Evidence from the construction industry*. Applied Financial Economics, Vol. 17, No. 12, pp. 989-1002. <https://doi.org/10.1080/09603100600749311>

- Frank, M. Z., & Goyal, V. K. (2009). *Capital Structure Decisions: Which Factors Are Reliably Important?* Financial Management, Vol. 38, No. 1, pp. 1-37. <https://doi.org/10.1111/j.1755-053X.2009.01026.x>
- Gaud, P., Hoesli, M., & Bender, A. (2005). *Debt-Equity Choice in Europe*. FAME Research Paper No. 152, pp. 1-41. <http://dx.doi.org/10.2139/ssrn.771884>
- Greene, W. (2000). *Econometric Analysis*. New York: Prentice-Hall.
- Hall, G., Hutchinson, P., & Michaelas, N. (2004). *Determinants of the capital structures of European SMEs*. Journal of Business Finance & Accounting, Vol. 31, No. 5-6, pp. 711-728. <https://doi.org/10.1111/j.0306-686X.2004.00554.x>
- Harris, M., & Raviv, A. (1991). The theory of capital structure. The Journal of Finance, Vol. 46, No. 1, pp. 297-356. <https://doi.org/10.1111/j.1540-6261.1991.tb03753.x>
- Hausman, J. A. (1978). *Specification tests in econometrics*. Econometrica: Journal of the econometric society, pp. 1251-1271.
- Hernádi, P., & Ormos, M. (2012). *What managers think of capital structure and how they act: Evidence from Central and Eastern Europe*. Baltic Journal of Economics, Vol. 12, No. 2, str. 47-71. <https://doi.org/10.1080/1406099X.2012.10840517>
- Hoechle, D. (2007). *Robust standard errors for panel regressions with cross-sectional dependence*. The Stata journal, Vol. 7, No. 3, 281-312. <https://doi.org/10.1177/1536867X0700700301>
- Jann, B. (2014). *Plotting regression coefficients and other estimates*. The Stata Journal, Vol. 14, No. 4, pp. 708-737. <https://doi.org/10.1177/1536867X1401400402>
- Jõeveer, K. (2013). *Firm, country and macroeconomic determinants of capital structure: Evidence from transition economies*. Journal of Comparative Economics, Vol. 41, pp. 294–308. <http://dx.doi.org/10.1016/j.jce.2012.05.001>
- Kayo, E. K., & Kimura, H. (2011). *Hierarchical determinants of capital structure*. Journal of Banking & Finance, Vol. 35, pp. 358-371. <https://doi.org/10.1016/j.jbankfin.2010.08.015>
- Klapper, L. F., Sarria-Allende, V., & Sulla, V. (2002). *Small- and Medium-Size Enterprise Financing in Eastern Europe*. Policy Research Working Paper 2933, The World Bank. <https://doi.org/10.1596/1813-9450-2933>
- Kühnhausen, F., & Stieber, H. W. (2014). *Determinants of Capital Structure in Non-Financial Companies*. Munich Discussion Paper, No. 2014-38, pp. 1-60. <http://dx.doi.org/10.5282/ubm/epub.21167>



Marsh, P. (1982). *The choice between equity and debt: an empirical study*. The Journal of Finance, Vol. 37, No. 1, str. 121-144. <https://doi.org/10.1111/j.1540-6261.1982.tb01099.x>

Mateev, M., Poutziouris, P., & Ivanov, K. (2013). *On the Determinants of SME Capital Structure in Central and Eastern Europe: A Dynamic Panel Analysis*. Research in International Business and Finance, Vol. 17, No. 1, str. 28-51. <https://doi.org/10.1016/j.ribaf.2012.05.002>

Mertzanis, C. (2019). *Financialisation, institutions and financing constraints in developing counties*. Cambridge Journal of Economics, 43, pp. 825-866. <https://doi.org/10.1093/cje/bez015>

Miller, M. H. (1977). *Debt and taxes*. The Journal of Finance, Vol. 32, str. 261–275. <https://doi.org/10.1111/j.1540-6261.1977.tb03267.x>

Mitton, T. (2007). *Why Have Debt Ratios Increased for Firms in Emerging Markets*. European Financial Management, Vol 14, No. 1, str. 127-151. <https://doi.org/10.1111/j.1468-036X.2007.00430.x>

Modigliani, F., & Miller, M. H. (1963). *Corporate Income Taxes and the Cost of Capital: A Correction*. The American Economic Review, Vol. 53 (3), str. 433-443.

Modigliani, F., & Miller, M. H. (1958). *The cost of capital, corporation finance and the theory of investment*. The American Economic Review, Vol. 48, No. 3, pp. 261-297.

Moradi, A., & Paulet, E. (2019). *The firm-specific determinants of capital structure – An empirical analysis of firms before and during the Euro Crisis*. Research in International Business and Finance, Vol. 47, pp. 150-161. <https://doi.org/10.1016/j.ribaf.2018.07.007>

Mostarac, E., & Petrović, S. (2013). *Determinants of capital structure of Croatian enterprises before and during the financial crisis*. UTMS Journal of Economics, Vol. 4, No. 2, pp. 153-162.

Myers, S. C., & Majluf, N. S. (1984). *Corporate financing and investment decisions when firms have information that investors do not have*. Journal of Financial Economics, Vol. 13, Issue 2, str. 187-221. [https://doi.org/10.1016/0304-405X\(84\)90023-0](https://doi.org/10.1016/0304-405X(84)90023-0)

Myers, T. C. (1984). *The Capital Structure Puzzle*. The Journal of Finance, Vol. 39, No. 3, str. 575-592. <https://doi.org/10.1111/j.1540-6261.1984.tb03646.x>

Mugoša, A. (2015). *The determinants of capital structure choice: Evidence from Western Europe*. BEH - Business and Economic Horizons, Vol. 11, No. 2, pp. 76-95. <http://dx.doi.org/10.15208/beh.2015.07>

- Pesaran, M. H. 2015. *Testing Weak Cross-Sectional Dependence in Large Panels*. *Econometric Reviews*, Vol. 34, No. 6-10, pp. 1089-1117. <https://doi.org/10.1080/07474938.2014.956623>
- Rajan, R. G., & Zingales, L. (1995). *What Do We Know about Capital Structure? Some Evidence from International Data*. *The Journal of Finance*, Vol. 50, No. 5, pp. 1421-1460. <https://doi.org/10.1111/j.1540-6261.1995.tb05184.x>
- Titman, S., & Wessels, R. (1988). *The determinants of capital structure choice*. *Journal of Finance*, Vol. 43, No. 1, pp. 1-19. <https://doi.org/10.1111/j.1540-6261.1988.tb02585.x>
- Wald, J. K. (1999). *How firm characteristics affect capital structure: an international comparison*. *Journal of Financial research*, Vol. 22, No. 2, pp. 161-187. <https://doi.org/10.1111/j.1475-6803.1999.tb00721.x>
- Wooldridge, J. M. (2002). *Econometric Analysis of Cross Section and Panel Data*. Cambridge, MA:MIT Press.

## Appendix 1

Table A1: The analysis of capital structure determinants for total sample, firms in the top and lowest performing EU countries

SAMPLE	Total leverage			Short-term leverage			Long-term leverage		
	Total	Top	Bottom	Total	Top	Bottom	Total	Top	Bottom
MODEL	1TL_Total	8TL_TOP	9TL_BOTTOM	1STL_Total	8STL_TOP	9STL_BOTTOM	1LTL_Total	8LTL_TOP	9LTL_BOTTOM
VARIABLES	lnTL	lnTL	lnTL	lnSTL	lnSTL	lnSTL	lnLTL	lnLTL	lnLTL
lnTA	0.107*** (0.0224)	0.362** (0.152)	0.102*** (0.0209)	-0.204*** (0.0147)	0.127 (0.133)	-0.210*** (0.0147)	0.166*** (0.0249)	0.278*** (0.0410)	0.163*** (0.0253)
Intang	0.239*** (0.00969)	0.0315 (0.0930)	0.244*** (0.00846)	-0.0207 (0.0121)	-0.204*** (0.0468)	-0.0148 (0.0131)	0.415*** (0.0108)	0.378*** (0.0518)	0.417*** (0.0112)
lnROA	-0.0618*** (0.00848)	-0.0473 (0.0271)	-0.0625*** (0.00881)	-0.0246** (0.00756)	-0.0246 (0.0169)	-0.0246*** (0.00702)	-0.0513*** (0.00835)	-0.0494* (0.0225)	-0.0506*** (0.00891)
lnLIQ	-0.134*** (0.0154)	-0.0870*** (0.0163)	-0.137*** (0.0160)	-0.758*** (0.0112)	-0.746*** (0.0945)	-0.758*** (0.0103)	0.152*** (0.0140)	0.115*** (0.0217)	0.154*** (0.0152)
lnDEP	-0.0172*** (0.00504)	0.0143 (0.0624)	-0.0190** (0.00585)	0.0364*** (0.00687)	0.0293 (0.0317)	0.0360*** (0.00644)	-0.0360** (0.0114)	0.0113 (0.0142)	-0.0384** (0.0117)
lnBL	-0.00812*** (0.00233)	-0.00601 (0.00833)	-0.00800*** (0.00236)	-0.000806 (0.00237)	-0.0112 (0.0171)	6.72e-05 (0.00225)	-0.00745*** (0.00214)	0.0119* (0.00608)	-0.00846*** (0.00239)
Observations	59,083	3,835	55,248	43,243	3,567	39,676	41,663	2,947	38,716
Number of groups	16,625	1,658	14,967	14,005	1,582	12,423	13,054	1,291	11,763
r <sup>2</sup> _w	0.0547	0.0181	0.0574	0.133	0.115	0.137	0.0884	0.116	0.0882

Standard errors in parentheses; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Note: constant terms were omitted in all models.

Source: Authors

**Table A2:** The analysis of significant differences in capital structure determinants between firms of the top and lowest performing EU countries for different subsamples

SAMPLE	Total		Quoted		Non-quoted	
	Total_TL lnTL	Total_LTL lnLTL	Quoted_TL lnTL	Quoted_LTL lnLTL	NonQuoted_TL lnTL	nonQuoted_LTL lnLTL
lnTA	0.102*** (0.0210)	0.163*** (0.0252)	-0.00737 (0.110)	0.175 (0.184)	0.00787 (0.135)	0.164*** (0.0253)
lnTAdTOP	0.254* (0.132)	0.127** (0.0441)	0.283* (0.136)	-0.238 (0.192)	0.389 (0.435)	0.127** (0.0501)
Intang	0.244*** (0.00847)	0.417*** (0.112)	-0.0144 (0.0742)	0.196** (0.0602)	-0.246** (0.0835)	0.419*** (0.0112)
IntangdTOP	-0.211** (0.0883)	-0.0451 (0.0546)	0.239** (0.103)	0.0123 (0.0774)	-0.0126 (0.0651)	0.00645 (0.0890)
lnROA	-0.0624*** (0.00878)	-0.0506*** (0.00892)	0.0679* (0.0342)	0.151*** (0.0210)	0.0496 (0.0487)	-0.0543*** (0.00924)
lnROAdTOP	0.0122 (0.0291)	0.00426 (0.0241)	-0.00227 (0.0429)	-0.145* (0.0746)	-0.0593 (0.101)	0.00555 (0.0259)
lnLIQ	-0.137*** (0.0159)	0.154*** (0.0152)	-0.431*** (0.0920)	0.0831 (0.117)	-1.022*** (0.0374)	0.154*** (0.0150)
lnLIQdTOP	0.0491** (0.0159)	-0.0378 (0.0299)	-0.0630 (0.213)	0.297 (0.164)	-0.143 (0.454)	-0.0387 (0.0293)
lnDEP	-0.0189** (0.00574)	-0.0389** (0.0116)	-0.0856 (0.0552)	0.259*** (0.0534)	-0.120 (0.0908)	-0.0406*** (0.0119)
lnDEPdTOP	0.0347 (0.0668)	0.0491* (0.0230)	0.245*** (0.0644)	-0.349** (0.146)	0.380** (0.125)	0.0550** (0.0226)
lnBL	-0.00798*** (0.00236)	-0.00846*** (0.00238)	0.000100 (0.00223)	0.0389 (0.0233)	-0.00888 (0.0133)	-0.00863*** (0.00242)
lnBLdTOP	0.00240 (0.00808)	0.0195** (0.00743)	-0.0101 (0.0168)	-0.00691 (0.0288)	-0.214* (0.107)	0.0192** (0.00715)
Observations	59,083	41,663	766	565	712	41,098
Number of groups	16,625	13,054	243	198	234	12,856
r <sup>2</sup> <sub>w</sub>	0.0552	0.0887	0.126	0.0877	0.245	0.0901
						0.133

Standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Note: constant terms were omitted in all models.

Source: Authors

*A scientific paper*

**Hrvoje Perčević, Ph. D.**

University of Zagreb, Faculty of Economics and Business

E-mail address: hpercevic@net.efzg.hr

**Marina Ercegović, Ph. D.**

University of Zagreb, Faculty of Economics and Business

E-mail address: mmicin@net.efzg.hr

## **HAVE BANKS RECOGNIZED AN INCREASE IN EXPECTED CREDIT LOSSES ON FINANCIAL INSTRUMENTS IN THE PANDEMIC YEAR? – EVIDENCE FROM CROATIAN BANKS**

### ***ABSTRACT***

*The COVID-19 disease, which emerged in late 2019 and spread to the world in 2020, has affected all aspects of social and economic life around the world. Measures taken by governments to combat the COVID-19 pandemic have led to a significant reduction in economic activity, which has led many businesses to face significant financial difficulties. As clients of many banks faced financial difficulties, banks were exposed to a significant increase in credit risk. To manage the increase in credit risk, banks modified the parameters for estimating expected credit losses, which affected the recognition of impairment losses and loss allowances in banks' financial statements. The main objective of this paper is to investigate whether banks in Croatia have recognized an increase in impairment losses on expected credit losses on financial instruments in the year of the pandemic. Furthermore, the objectives of this paper are: (a) to establish a correlation between impairment losses on financial instruments and the financial position in the Croatian banking sector; (b) determine the correlation between impairment losses on financial instruments and the financial performance of the Croatian banking sector; and (c) determine whether these correlations have changed in the pandemic 2020 compared to 2019. The survey covered all banks in Croatia. The data required to conduct the survey were collected from publicly available annual reports of banks for 2019 and 2020. Descriptive statistical methods and correlation analysis were used to meet the objectives of the paper. The results of the research suggest that most banks in Croatia in the pandemic 2020 compared to 2019 recognized an increase in impairment losses due to increased credit risk of debt financial instruments caused by the COVID-19 pandemic. The results also indicated a strong negative correlation between impairment losses and the financial position of Croatian banks in the pandemic 2020 and a moderately negative correlation in pre-pandemic 2019. In both years there was a strong negative correlation between impairment losses and financial performance. According to the results of the research, the increase in impairment losses in the pandemic 2020 did not have a serious impact on the financial position, but it had a strong negative impact on the financial performance of Croatian banks.*

**Key words:** *impairment loss, credit risk, loss allowance, banks, Croatia.*

## 1. Introduction

The outbreak of the COVID-19 pandemic, declared by the World Health Organization on March 11, 2020, has had huge consequences for almost all aspects of social and economic systems around the world. COVID-19 spread worldwide in 2020, causing huge human casualties. To prevent the spread of coronavirus and consequent COVID-19 disease, many governments have taken measures such as lockdown that have significantly reduced both economic and social activity. In such circumstances, many companies in various industries face serious financial difficulties due to significant reductions or even closures. Disruptions in economic systems have also affected financial systems. The inability of individuals and companies to meet their financial obligations has jeopardized the stability of the financial system and exposed banks and other financial institutions to a significant increase in credit risk. To mitigate the negative aspect of social distance measures, governments have implemented certain interventions in their national economies such as support for individuals in the form of social benefits, income and unemployment benefits, grants to companies in the form of grants and support to the financial system. in the form of monetary policy instruments such as interest rate cuts and the purchase of government bonds (Barnoussi, Howieson and Beest, 2020, 178).

Banks and other financial institutions have also provided some relief to their clients who have faced financial difficulties mainly in the form of a moratorium or deferral of payment (EBA, 2020, 1; Barnoussi, Howieson and Beest, 2020, 184). As the crisis caused by COVID-19 affected the financial position and performance of many businesses, banks and other financial institutions had to reassess the credit quality of their clients to calculate appropriate expected credit losses for certain debt financial instruments and off-balance sheet items (EBA, 2020, 1; Barnoussi, Howieson and Beest, 2020, 184). The calculation of expected credit losses is defined within International Financial Reporting Standard 9 – Financial Instruments (IFRS 9). In the context of the COVID-19 crisis, banks and other financial institutions needed to assess whether there has been an increase in credit risk with a particular debt financial instrument. For those debt financial instruments for which a significant increase in credit risk has been identified, banks and other financial institutions must recognize an increase in impairment losses in their financial statements in accordance to IFRS 9 (IFRS 9, 2020, A381). The European Banking Authority (EBA) and the European Securities and Markets Authority (ESMA) have provided guidance to banks and other financial institutions in the European Union on the application of expected credit losses and a significant increase in credit risk requirements under IFRS 9 in the context of the COVID 19 crisis. The Croatian National Bank (CNB) communicated those guidelines to all banks that operate in Croatia. EBA and ESMA call for flexibility in assessing impairment losses and loss allowances on debt financial instruments classified as financial assets at amortised cost and fair value through other comprehensive income “to help maintain soundness through the crises and provide critical functions to the economy” (EBA, 2020, 1; Barnoussi, Howieson and Beest, 2020, 184). ESMA especially noted “that the measures taken in the context of the COVID-19 outbreak which permit, require or encourage suspension or delays in payments, should not be regarded as automatically having a one-to-one impact on the assessment of whether loans have suffered a significant increase in credit risk” (ESMA, 2020, 3). Moreover, in assessing a credit risk for particular loan, banks should “give a greater weight to long-term stable outlook as evidenced by past experience and take into account the relief measures granted by public authorities – such as payment moratoria” (ESMA, 2020, 4). All these attitudes are also accepted by CNB. The application of the above-mentioned EBA and ESMA guidelines should have prevented banks from recognizing excessive amounts of impairment losses in their financial statements.

The main purpose of this paper is to investigate whether banks in Croatia in the pandemic year compared to the year before the pandemic recognized an increase in impairment losses and loss allowances for expected credit losses on debt financial instruments. This paper also aims to determine the correlation between impairment losses on financial instruments and financial position and the correlation between impairment losses on financial instrument and financial performance of the Croatian banking sector as well as to identify were there a change in the abovementioned correlations in pandemic 2020 in comparison to pre-pandemic 2019. The survey included all banks that operated in Croatia in 2019 and 2020. The data required to conduct the survey were collected from publicly available annual reports of banks for 2019 and 2020. Descriptive statistical methods and correlation analysis were used to process the data and draw conclusions from the research.

## **2. Literature review**

### **2.1. The calculation of expected credit losses and recognition impairment losses and loss allowances in accordance with IFRS 9**

IFRS 9 provides the framework for the recognition and measurement of financial instruments (IFRS 9, 2020, A380). Under IFRS 9, impairment losses and loss allowances for expected credit losses are recognized immediately after the initial recognition of debt financial instruments that are subsequently measured at amortized cost or fair value through other comprehensive income. (IFRS 9, 2020, A380). The expected credit loss model is also applied to off-balance sheet commitments and financial guarantees, lease receivables and contract assets under IFRS 15 Revenue from contracts with customers (IFRS 9, 2020, A380; Barnoussi, Howieson and Beest, 2020, 181). For all these debt financial instruments, entities are required, after initial recognition, to reassess at the reporting date whether there has been a significant increase in credit risk considering all reasonable and supportable information, especially forward-looking information (IFRS 9, 2020, A380, Barnoussi, Howieson and Beest, 2020, 181). The reassessment can be carried out either on individual or collective basis. Under IFRS 9, entity recognize loss allowance and impairment loss at an amount of 12-month expected credit losses if there has not been a significant increase in credit risk of a debt financial instrument since its initial recognition (IFRS 9, 2020, A413). If there has been a significant increase in credit risk of a debt financial instrument since its initial recognition, then an entity recognizes loss allowance and impairment loss at an amount of life-time expected credit losses (IFRS 9, 2020, A380). Since the COVID-19 crises is an event that caused economic and financial difficulties to many business entities, banks and other financial institutions needed to reassess whether there was a significant increase in credit risk of debt financial instruments of their clients. The assessment of a significant increase in credit risk had to be made from the perspective of the overall expected life of the debt financial instrument based on a long-term stable outlook and should have included relief measures granted by public authorities (Barnoussi, Howieson and Beest, 2020, 185).

### **2.2. The impact of governments' measures on recognition of financial instruments and financial reporting of banks**

To address the economic consequences of the COVID-19 crises on individuals, households and business entities, many governments have introduced economic support and relief measures (ESMA, 2020, 1). Relief measures included moratoria on repayment of loans, overdraft facilities and mortgages, loan guarantees as well as other forms of business support to business entities or specific industries (ESMA, 2020, 1). In addition to government relief

measures, banks and other financial institutions could also provide measures on a voluntary basis to their clients who have faced financial difficulties due to the COVID-19 crisis. Banks' relief measures consisted in the form of negotiations, rollovers or rescheduling of cash flows that contracted in the debt financial instruments (ESMA, 2020, 1).

Croatian banks introduced the following measures for business entities in order to help them overcome the financial difficulties caused by the COVID-19 crises: (a) possibility to defer payment of loan obligations; (b) loans to preserve financial liquidity and (c) loan rescheduling (Croatian Banking Association, 2022, 1). Also, Croatian banks have offered models of defer payment of loan obligations to individuals and households who faced with financial difficulties due to the COVID-19 crises for up to six months (Croatian Banking Association, 2022, 1).

Since economic support and relief measures can take various forms, banks should carefully consider their impact on financial reporting, especially from the perspective of the requirements of IFRS 9. When assessing the impact of relief measures on banks' financial reporting, banks should assess the specific conditions and circumstances that enable them to distinguish between those measures that have an impact on the credit risk over the expected life of debt financial instrument and those which refer to temporary liquidity problems of their clients (ESMA, 2020, 2). From the perspective of IFRS 9, banks should carefully assess whether the economic support and relief measures affect the recognized debt financial instruments and their conditions. In particular, this means that the bank should assess whether these measures affect the modification of financial assets and lead to the derecognition of financial assets (ESMA, 2020, 2).

In order to avoid divergence in practice ESMA, in coordination with the EBA, issued a public statement on the application of IFRS 9 in the European Union in the specific context of the COVID-19 crises. In this statement ESMA stated that "if the support measures provide temporary relief to debtors affected by the COVID-19 outbreak and the net economic value of the loan is not significantly affected the modification would be unlikely to be considered as substantial" (ESMA, 2020, 2). ESMA also stated that banks need to disclose "their accounting policy for determining when a modification is substantial if relevant to an understanding of their financial statements as well as "judgements made that have the most significant effect on the amounts recognized in their financial statements" (ESMA, 2020, 2).

### **2.3. Assessment of a significant increase in credit risk in the circumstances of COVID-19 crises**

Economic support and relief measures are designed to reduce the adverse economic consequences of the COVID-19 pandemic. When these measures affect the lifetime risk of default on a financial instrument, they must be considered in assessing the significant increase in the credit risk of that financial instrument as defined in IFRS 9 (ESMA, 2020, 3). ESMA in its public statement especially noted that "the measures taken in the context of the COVID-19 outbreak which permit, require or encourage suspension or delays in payments, should not be regarded as automatically having a one-to-one impact on the assessment of whether loans have suffered a significant increase in credit risk" (ESMA, 2020, 3; EBA, 2020, 4). This position is also represented by Basel Committee for Banking Supervision (BCBS), Bank of England (BoE), European Central Bank (ECB) and CNB (Barnoussi, Howieson and Beest, 2020, 184-185).



In assessing whether there has been a significant increase in the credit risk of a financial instrument in the context of the COVID-19 crisis, banks should give more weight to long-term stable outlook and consider relief measures granted by public authorities. (ESMA, 2020, 4; EBA, 2020, 4). International Accounting Standards Board (IASB) stated that the assessment of a significant increase in credit risk “had to be made from the perspective of the overall expected life of a financial instrument” (Barnoussi, Howieson and Beest, 2020, 185). But, IASB also stressed that the application of the expected credit loss model is based on professional judgement and assumptions which “need to be reassessed on an ongoing basis as new information came to hand over the period of the pandemic” (Barnoussi, Howieson and Beest, 2020, 185).

#### **2.4. Results of previous studies**

The economic and financial consequences of the COVID-19 pandemic became the most prevailing matter of recent studies in the field of financial accounting and reporting. There are also studies that have examined the reaction of regulators to the application of accounting standards (especially IFRS 9) in the context of the COVID-19 crises. Barnoussi, Howieson and Beest (2020) performed an analysis of prudential application of IFRS 9 and its impact on banks’ financial reporting in the COVID-19 crises. The results of their analysis suggested “that prudential banking regulators have encouraged banks to downplay the effects of the pandemic by overemphasising the suggestion that expected credit losses provisions should be based on expectations about the long term” (Barnoussi, Howieson and Beest, 2020, 189). They also concluded that the prudential banking regulators endeavoured to circumvent the impact of IFRS 9 in the COVID-19 crises by changing their rules for measuring bank capital and using the flexibility of judgements based on expectations in the long run in assessing a significant increase in credit risk of a financial instrument rather than seeking to have the financial reporting (accounting) standards changed like in the circumstances of global financial crises in 2008 (Barnoussi, Howieson and Beest, 2020, 189). Handayani et al. (2020) concluded in their study that government policies aimed at helping the general public and also the banking sector “has not been able to shift the pessimism of the capital market, which has moved negatively along with the pandemic in Indonesia” (Handayani et al., 2020, 113).

There are studies that investigated the impact of COVID-19 on the banking sector. Flöger and Gärtner (2020) argued whether the retail regional banks in Germany “can support business clients to overcome the social shutdown and hence cushion the economic impacts of the COVID-19 pandemic” (Flöger and Gärtner, 2020, 416). They concluded that banks are better prepared to resist the COVID-19 crises than global financial crises in 2008 although “the (looming) turmoil of the real economy at large tends to stress all banks and regional banks in particular, owing, among other reasons, to their leading position in business lending” (Flöger and Gärtner, 2020, 416). Katusiime (2021) investigated “the impact of the COVID-19 pandemic on banking sector profitability in Uganda for the period spanning Q1 2000 to Q1 2021”. She found out that “the COVID-19 pandemic has a significant negative effect on bank profitability only in the long run”. She also found out that “inflation does not significantly affect bank profitability over both the short- and long-term” (Katusiime, 2021, 1). Kozak (2021) examined the impact of COVID-19 crises on bank equity and performance on the case of Central Eastern South European Countries (CESE). The results of the study indicated “that the banks in CESE were well capitalized and had the ability to maintain capital requirements with a 12% increase in nonperforming loans”. The study also revealed that “smaller and non-public banks show a greater ability to preserve the appropriate level of equity, although there is a risk that they may postpone the time of provisioning credit risk and additionally increase

lending to lower the nonperforming loans ratio” while “larger banks are more profitable in times of crisis” (Kozak, 2021, 1). Korzeb and Niedziółka (2020) assessed “the resilience of commercial banks operating in the Polish banking sector to the potential effects caused by the COVID-19 pandemic.” They concluded “that the largest banks conducting their operations in Poland are the most resistant ones to the consequences of the pandemic” (Korzeb and Niedziółka, 2020, 205). Kulinska-Sadłocha, Marcinkowska and Szambelańczyk (2020) also analysed the consequences of the COVID-19 pandemic for the Polish banking sector. They found out that anti-crisis measures in the first month caused “a rise in write-offs for provision for receivables, an increase in other operating costs or a significant decrease in receivables from debt instruments” (Kulinska-Sadłocha, Marcinkowska and Szambelańczyk, 2020, 31). Barua and Barua (2021) examined the possible impacts of the COVID-19 pandemic on the banking sector of in Bangladesh as an emerging economy. They concluded “that all banks are likely to see a fall in risk-weighted asset values, capital adequacy ratios, and interest income at the individual bank and sectoral levels” and “that larger banks are relatively more vulnerable” (Barua and Barua, 2021, 1). Ghost and Nur Saima (2021) found out “that commercial banks in Bangladesh with low capital adequacy, low liquidity ratio, low performance and higher non-performing loans are more vulnerable to the shocks caused by the COVID-19 pandemic” (Ghost and Nur Saima, 2021, 281). Marcu (2021) stated that, in relation to previous financial crises, in the COVID-19 crises banks are not the problem but the solution (Marcu, 2021, 205). Baicu et. al. (2020) agree with Marcu and they investigated “the responsible practices adopted by banks to alleviate the negative effects of the pandemic both on their clients and employees, but also on community” in the Romanian banking system (Baicu et. al., 2020, 146).

Some studies investigated the impact of COVID-19 on stock market prices and stock market risk. Sankar Rout, Moni Das and Merajuddin Inamdar (2020) studied the impact of COVID-19 crises on downside stock market risk in the G-20 nations using Value-at-Risk models. They pointed out “that all the G-20 nations have experienced very high level of risk during Global Financial Crisis and COVID-19 as all the countries’ stock markets are critical during these two periods, but the magnitude of risk is found to be highest during COVID-19 period compared to other regimes in most of the countries” (Sankar Rout, Moni Das and Merajuddin Inamdar, 2020, 1). The results of their study also revealed that “China is found to be on safe zone having very less market risk, whereas all other countries are found to be critical” (Sankar Rout, Moni Das and Merajuddin Inamdar, 2020, 1). Bora and Basistha (2021) revealed that “the stock market in India has experienced volatility during the pandemic period”. Moreover, the study provided “the comparison of stock price return in pre-COVID-19 and during COVID-19 situation” and revealed “that the return on the indices is higher in the pre-COVID-19 period than during COVID-19” (Bora and Basistha, 2021, 1).

Hung, Ching and Lin (2021) investigated the impact of COVID-19 on the robustness of the probability of default (PD) estimation model used in accordance with IFRS 9 and Basel III framework. They “explored the robustness of a PD model with a GDP determinant (the test model) in comparison with that of a PD model with a credit default swap index (CDX) determinant (the alternative model)”. Their study indicated that “the test model exhibited a serious robustness issue in outlier scenarios, such as the COVID-19 pandemic, whereas the alternative model was more robust” and this finding opened “the prospect for the CDX to potentially serve as an alternative to GDP in PD estimation models” (Hung, Ching and Lin, 2021, 1).

The results of abovementioned previous studies indicate that the COVID-19 crises had serious economic and financial effects on banking sector, stock markets and the stability of the financial system as well as on banks' financial reporting.

### 3. Materials and methods

This paper examines whether Croatian banks have recognized an increase in impairment losses in the pandemic 2020 and establishes correlations between: (a) impairment losses and financial position and (b) impairment losses and financial position of Croatian banks. The purpose of identifying these correlations is to determine the extent to which the impairment losses and loss allowances affect the financial position and performance of banks in Croatia. Based on the defined objectives of the research, this paper gives an answer to the following research questions:

1. Have banks in Croatia recognized an increase in impairment losses and loss allowances in the pandemic 2020 compared to the pre-pandemic 2019?
2. Have impairment losses seriously affected the financial position and performance of Croatian banks in the pandemic 2020?
3. Is there a strong negative correlation between impairment losses and the financial position and performance of Croatian banks?
4. Has there been a change in correlations between impairment losses and the financial position and performance of Croatian banks?

In order to achieve the objectives of this paper and to give answers on research questions, the following hypotheses are set up:

*H1: There is an increase in impairment losses and loss allowances for expected credit losses in the Croatian banking sector in the pandemic 2020 year compared to the pre-pandemic 2019 year.*

*H2: The negative correlation between impairment losses and the financial position of Croatian banks is stronger in the pandemic 2020 compared to the pre-pandemic 2019.*

*H3: The negative correlation between impairment losses and the financial performance of Croatian banks is stronger in the pandemic 2020 compared to the pre-pandemic 2019.*

The research included all banks that operated in Croatia in the pre-pandemic 2019 and the pandemic 2020. In 2019 and 2020 there were 19 banks that operated in Croatia (Croatian National Bank, 2019, 7; Croatian National Bank, 2022, 1). This research covers the entire research population. The data required to conduct the research were collected from publicly available annual reports of banks disclosed at their official web sites. The variables taken from the banks' annual reports were impairment losses, total assets (the variable that represents the financial position) and net profit or loss (the variable that represents the financial performance). These variables are collected for the entire research population (for all banks that operated in 2019 and 2020). In order to determine whether banks in Croatia in the pandemic 2020 compared to pre-pandemic 2019 recognized an increase in impairment losses and tested the first hypothesis, a thorough desktop analysis of banks' annual reports was conducted. The results of the desktop analysis are presented by descriptive statistical methods (Barrow, 2006, 23; Šošić, 2004, 32). The first hypothesis was tested by comparing impairment losses recognized in the Croatian banking sector in the pre-pandemic 2019 with those recognized in the pandemic 2020. The correlation between impairment losses and financial position as well as the correlation between impairment losses and financial performance of banks in Croatia is determined by a correlation analysis based on the Pearson correlation coefficient (Barrow, 2006, 223; Šošić, 2004, 414). Therefore, the second and third

hypotheses are tested by comparing the values of Pearson correlation coefficients for 2019 and 2019 (Barrow, 2006, 223; Šošić, 2004, 414).

#### 4. Results and discussion

Croatian banks introduced the relief measures for their debtors to help them to overcome the financial difficulties caused by the COVID-19 outbreak. Relief measures introduced by Croatian banks refer to different kinds of moratorium or payment delays and rescheduling the loan obligations of debtors who faced with financial difficulties during the COVID-19 crises. Although these measures were not an accurate indicator of a significant increase in credit risk, Croatian banks, in the circumstances of the COVID-19 crisis, had to reassess whether there was a significant increase in the credit risk of debt financial instruments. For all debt financial instruments for which a significant increase in credit risk was identified, banks had to recognize an increase in impairment losses and impairment losses.

The results of the analysis of annual reports of Croatian banks in 2019 and 2020 showed that the total assets of Croatian banks in 2020 increased slightly compared to 2019, while total profits decreased significantly in 2020 compared to 2019. The total assets and net profit or loss of Croatian banks in 2019 and 2020 are presented in table 1.

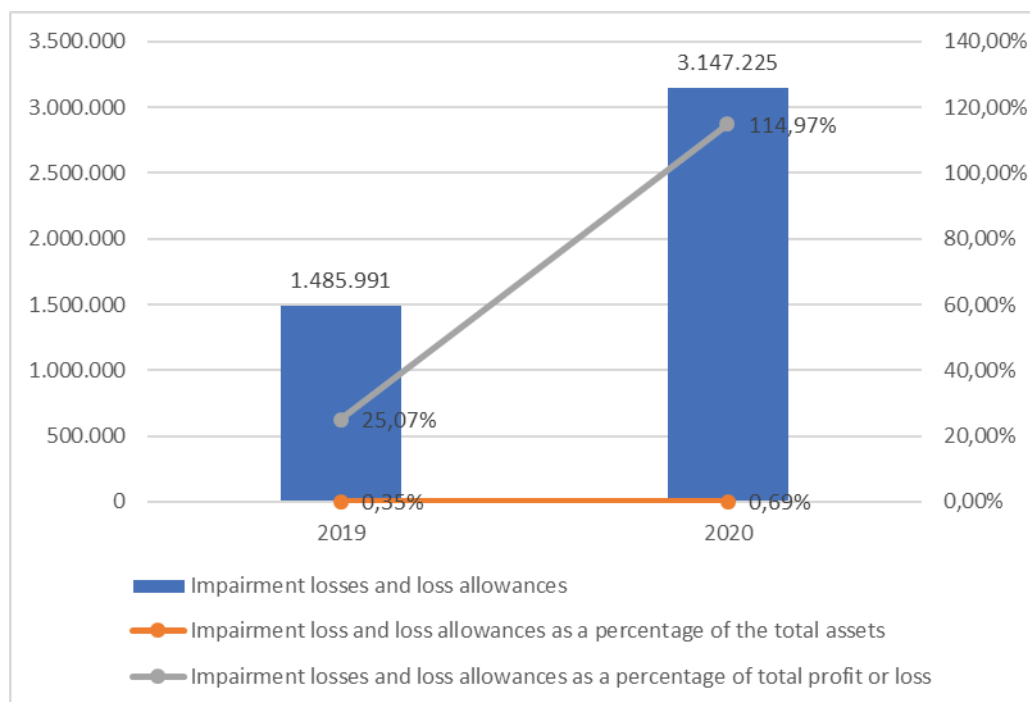
**Table 1:** The total assets and net profit or loss of Croatian banks in 2019 and 2020 (in 000 kn)

Items/Years	2019	2020	Absolute change	Relative change
Total assets	425.075.950	455.370.029	30.294.079	7,13%
Net profit or loss	5.928.279	2.737.527	-3.190.752	-53,82%

*Source: Authors' calculation*

As can be seen in Table 1, the total assets of Croatian banks in the pandemic 2020 increased by 7.13% compared to pre-pandemic 2019, while net profit or loss decreased by 53.82%. A thorough analysis of the financial statements of Croatian banks (especially the notes to the financial statements) showed that this significant decrease in net profit can be attributed to the circumstances of the COVID-19 pandemic. In 2020 15 out of 19 Croatian banks recorded a decrease in net profit, while 4 banks recorded an increase in net profit. An analysis of the financial statements of Croatian banks showed that this decrease in net profit was largely due to an increase in impairment losses on debt financial instruments that were subsequently measured at amortized cost and fair value through other comprehensive income and off-balance sheet items. Specifically, in the pandemic 2020, Croatian banks recognized an increase in impairment losses in the amount of HRK 1,661.23 million compared to the pre-pandemic 2019, ie impairment losses in the pandemic 2020 increased by 111.79% compared to to the pre-pandemic 2019 (as shown in Figure 1).

**Figure 1:** Impairment losses and loss allowances in Croatian banking sector in 2019 and 2020 (in 000 kn)



Source: Authors' calculation

In the pre-pandemic 2019, impairment losses and loss allowances amounted to 0.35% of the total assets of the banking sector, while in the pandemic 2020 they amounted to 0.69%. Although the share of impairment losses in total assets in the pandemic 2020 has doubled compared to 2019, the share of impairment losses in total assets of the banking sector is still not significant. Therefore, the increase in impairment losses and loss allowances did not seriously affect the financial position of the banks in Croatia. Impairment losses and loss allowances in the pre-pandemic 2019 amounted to 25.07% of the total net profit of the banking sector, and in the pandemic 2020 amounted to 114.97% of the net profit of the banking sector (as shown in Figure 1.). Given that the share of impairment losses and loss allowances in the net profit or loss of the banking sector in Croatia in the pandemic 2020 increased 4.5 times compared to the pre-pandemic 2019, impairment losses have a potentially large impact on the financial performance of banks in Croatia.

An analysis of Croatian banks' annual reports showed that 11 out of 19 banks in Croatia in 2020 recognized an increase in impairment losses compared to 2019, while 8 out of 19 banks recognized a decrease in impairment losses. A detailed analysis revealed that the total assets of banks in Croatia that in 2020 recognized an increase in impairment losses compared to 2019 account for 90.60% of total assets of the Croatian banking sector in 2020, while the total assets of banks have recognized a decrease of 9.40%. Furthermore, the net profit or loss of Croatian banks that recognized an increase in impairment losses in 2020 compared to 2019 accounts for 89.75% of the total net profit or loss of the Croatian banking sector, while the share of net profit or loss of Croatian banks have recognized a decrease of 10.25%. Table 2. presents the number of banks that recognized an increase and a decrease in impairment losses in the pandemic 2020 compared to the pre-pandemic 2019 and their shares in the total assets and net profit or loss of the Croatian banking sector.

**Table 2:** The number of banks that recognized an increase and a decrease in impairment losses in the pandemic 2020 compared to the pre-pandemic 2019 and their shares in the total assets and net profit or loss of the Croatian banking sector

Items	Number of banks	Total assets (in 000 kn)	Share in the total assets of the Croatian banking sector	Net profit or loss (in 000 kn)	Percentage of the net profit or loss of the Croatian banking sector
Banks that recognized an increase in impairment losses	11	412.567.907	90,60%	2.456.975	89,75%
Banks that recognized a decrease in impairment losses	8	42.802.122	9,40%	280.552	10,25%
<b>Total</b>	<b>19</b>	<b>455.370.029</b>	<b>100,00%</b>	<b>2.737.527</b>	<b>100,00%</b>

*Source: Authors' calculation*

Based on the results shown in Table 2, it can be concluded that all large banks in Croatia in the pandemic 2020 recognized an increase in impairment losses compared to pre-pandemic 2019, while mostly small and medium-sized banks recognized a decrease in impairment losses.

All banks in Croatia, large ones under the supervision of the European Central Bank (ECB) as well as those under the supervision of the CNB, have recognized impairment losses under the guidelines of the ECB, EBA and ESMA. This is because the CNB communicated these guidelines to all banks in Croatia and demanded their implementation. A thorough analysis of the notes to the financial statements of banks in Croatia showed that the increase in impairment losses in Croatian banks can be mainly attributed to increased credit risk of debt financial instruments subsequently measured at amortized cost and fair value through other comprehensive income due to the COVID-19 pandemic. On the basis of these research results, the first hypothesis (H1) is confirmed.

Given that impairment losses may affect the financial position and performance of banks, this paper determines a correlation between impairment losses and financial position (i.e. total assets) as well as a correlation between impairment losses and financial performance (i.e. net profit) of banks in Croatia in the pre-pandemic 2019 and in the pandemic 2020. The results of a correlation analysis based on the Pearson correlation coefficient are given in Table 3.

**Table 3:** Correlation between impairment losses and total assets and between impairment losses and net profit or loss of Croatian banks in 2019 and 2020

Years	Correlation between impairment losses and total assets	Correlation between impairment losses and net profit or loss
2019	-0,744280536	-0,809848309
2020	-0,882061481	-0,955023712
2019-2020	-0,623280196	-0,877807538

*Source: Authors' calculations*

The values of the Pearson correlation coefficient indicate a medium strong negative correlation between impairment losses and total assets of Croatian banks in 2019 and a strong negative correlation in 2020. Therefore, the correlation between impairment losses and total assets of Croatian banks is negative and stronger in the pandemic 2020 compared to the pre-pandemic 2019. For both years together, the value of the Pearson correlation coefficient indicates a medium strong negative correlation. The values of the Pearson correlation coefficient suggest that the increase in impairment losses resulted in a decrease in the total assets of Croatian banks, but the effect was stronger in the pandemic 2020 than in the pre-pandemic 2019. Given the fact that the share of impairment losses in total assets of Croatian banks was 0.35% in pre-pandemic 2019 and 0.69% in pandemic 2020, despite the established correlation, impairment losses did not have a serious impact on the financial position of Croatian banks in 2019 and 2020.

The values of the Pearson correlation coefficient in table 3. also indicate a strong negative correlation between impairment losses and net profit or loss of Croatian banks in both, the pre-pandemic 2019 and the pandemic 2020 as well as in both years together. According to the values of the Pearson correlation coefficient, the correlation is the strongest in the pandemic 2020. The values of the Pearson correlation coefficient suggest that the increase in impairment losses resulted in a decrease of the net profit or loss of Croatian banks in 2019 and 2020. Given the fact that impairment losses and loss allowances amounted to 25.07% of the total net profit of Croatian banks in the pre-pandemic 2019 and 114.97% in the pandemic 2020 and taking into account the results of correlation analysis, it can be concluded that impairment losses and loss allowances had a strong negative effect on the financial performance of Croatian banks in 2019 and 2020. This effect was much stronger in pandemic 2020 compared to pre-pandemic 2019.

The values of Pearson's correlation coefficient indicate a negative correlation between impairment losses and financial position and between impairment losses and financial performance of Croatian banks, but these correlations are stronger in pandemic 2020 compared to pre-pandemic 2019. Based on these results, research confirms both the second and third hypotheses (H2 and H3).

The results of this research show that Croatian banks in the pandemic 2020 compared to pre-pandemic 2019 recognized an increase in impairment losses due to increased credit risk of debt financial instruments caused by the COVID-19 pandemic. The increase in impairment losses did not seriously affect the financial position, but it had a strong negative impact on the financial performance of Croatian banks. The results of this research are based on the results of previous research which suggested that the initial effects of the introduction of the expected credit loss model negatively affected the financial position and operations of the banking sector in Croatia, but later had a positive effect (Perčević, 2020, 1222). Furthermore, the results of this research correspond to the results of previous studies on the impact of the COVID-19 pandemic on banking sector profitability in Uganda (Katusiime, 2021, 1) and the impact of COVID-19 crises on bank equity and performance on the case of Central Eastern South European Countries (Kozak, 2021, 1). The results are also in consistent with the results of previous studies on the effects of the COVID-19 pandemic on the Polish banking sector (Kulinska-Sadłocha, Marcinkowska and Szambelańczyk, 2020, 31)

The research has certain limitations. This research refers exclusively to the recognition of impairment losses in the financial statements of Croatian banks caused by the COVID-19 pandemic. In order to assess the overall impact of the COVID-19 pandemic on the financial

position and performance of Croatian banks, the analysis should include other important parameters such as, for example, interest income and expense, gains and losses from subsequent measurement of financial instruments, market volatility price of financial instruments, assessment of the existence of a significant increase in credit risk, etc. Besides, this research included only the pre-pandemic and the pandemic year. A detailed analysis of the impact of the COVID-19 pandemic on financial position and performance should include a longer period. Thus, further research on this topic will expand the research with other related parameters and will include a longer period. Furthermore, future research will address the impact of the COVID-19 pandemic on market prices of Croatian banks.

## 5. Conclusion

The outbreak of the COVID-19 pandemic has had a tremendous impact on almost every aspect of social and economic systems around the world. To prevent the spread of the virus, many governments have introduced measures such as social distance and lockdown that have had a significant negative impact on economic activity and faced many individuals, households and businesses with financial difficulties. These government measures also jeopardized the stability of the financial system as banks and financial institutions faced significant increases in credit risk. In addition, many of the bank's clients have entered default status due to the COVID-19 crisis. In order to mitigate the negative impact of government measures, many governments, together with banks and other financial institutions, have introduced measures of economic support and relief, mainly in the form of deferred payments, moratorium, loans rescheduling and grants. As economic support and assistance measures can take many forms, banks have had to carefully assess the impact of these measures on financial reporting, especially in the context of IFRS 9.

In order to avoid divergence in practice, ESMA in coordination with EBA issued a public statement on the application of IFRS 9 in the European Union in the specific context of COVID-19 crises. In this statement ESMA called for the flexibility given in IFRS 9 regarding the calculation of expected credit losses. This flexibility allows banks to focus on estimating expected credit losses from the perspective of the entire life of the debt financial instrument. In addition, ESMA and EBA stated that economic support and relief measures granted to a client are not an immediate indicator of a significant increase in credit risk, but these measures should be considered when assessing a significant increase in credit risk with a long-term stable outlook. The CNB conveyed ESMA and EBA guidelines to all banks operating in Croatia and demanded their implementation.

The results of this research showed that Croatian banks in the pandemic 2020 compared to pre-pandemic 2019 recognized an increase in impairment losses due to increased credit risk of debt financial instruments caused by the COVID-19 pandemic. Furthermore, this research indicated that there is a medium strong negative correlation between impairment losses and total assets in the Croatian banking sector and a strong negative correlation between impairment losses and net profit or loss. The results of a correlation analysis pointed out that the correlations are stronger in the pandemic 2020 compared to the pre-pandemic 2019. Based on these results, it can be concluded that the increase in impairment losses in the 2020 pandemic did not seriously affect the financial position, but had a strong negative impact on the financial performance of Croatian banks. The results of this research make a certain contribution to accounting theory and practice. The results showed that most Croatian banks (mostly large banks) in the 2020 pandemic due to the crisis caused by COVID-19 recognized an increase in impairment losses on debt financial instruments. The results of the research



contributed to accounting theory, confirming that the recognition of impairment losses affected the financial performance of the Croatian banking sector, but not the financial position. The survey results also contributed to accounting practice by recommending estimating expected credit losses based on reasonable and supported forward-looking information that is available without undue expense and effort, and not just based on past information.

## REFERENCES

Claudia Gabriela Baicu, C. G., Gardan, J. P., Gardan, D. A. & Daniel Constantin Jiroveanu, D. C. (2020): *Responsible banking practices during the covid-19 pandemic: Findings from Romania*, Annales Universitatis Apulensis Series Oeconomica, Vol. 22, No. 2, pp. 146-157.

Barnoussi, A. E., Howieson, B., & van Beest, F. (2020): *Prudential Application of IFRS 9:(Un) Fair Reporting in COVID-19 Crisis for Banks Worldwide?!*, Australian Accounting Review, Vol. 30, No. 3, 178-192.

Barrow, M. (2006): *Statistics for Economics, Accounting and Business Studies*, Pearson Education Limited, Harlow

Barua, B. & Barua, S. (2021): *COVID-19 implications for banks: evidence from an emerging economy*, SN Bus Econ Vol.19, No.1, 1-28

Bora, D., & Basistha, D. (2021): *The outbreak of COVID-19 pandemic and its impact on stock market volatility: Evidence from a worst-affected economy*, Journal of Public Affairs, Vol. 21, No. 4, e2623, pp. 1-10.

Croatian Banking Association (2022): *COVID 19 - Aktualne informacije, savjeti i uloga banaka*, pp. 1, <https://www.hub.hr/hr/covid-19-aktualne-informacije-savjeti-i-uloga-banaka> (accessed 15 January 2022)

Croatian National Bank (2019): *Bilten o bankama*, Vo. 19, No 13, pp. 1-103, <https://www.hnb.hr/documents/20182/2868711/hbilten-o-bankama-32.pdf/c1d882fe-aeb2-38e6-6484-5212bb9dca93> (accessed 3. February 2022)

Croatian National Bank (2022): *Popis kreditnih institucija*, pp. 1, <https://www.hnb.hr/temeljne-funkcije/supervizija/popis-kreditnih-institucija> (accessed: 3. February 2022)

Handayani, E., Rahmawati, A., Haryanto, E., & Wahyuni, S. (2020): *Abnormal return of Indonesian banking shares in the time of COVID 19: An event study on the announcement of government regulation, POJK 11 of 2020*, International Journal of Research in Business and Social Science, Vol. 9, No. 7, 108–114.

Katusiime, L. (2021): *COVID 19 and Bank Profitability in Low Income Countries: The Case of Uganda*, Journal of Risk and Financial Management, Vol. 14: 588, No. 12, pp. 1-19.

Korzeb, Z. & Niedziółka, P. (2020): *Resistance of commercial banks to the crisis caused by the COVID-19 pandemic: the case of Poland*, Equilibrium. Quarterly Journal of Economics and Economic Policy, Vol. 15, No. 2, 205-234.

Kozak, S. (2021): *The Impact of COVID-19 on Bank Equity and Performance: The Case of Central Eastern South European Countries*, Sustainability, Vol. 13, No. 19: 11036, pp. 1-15.

EBA - European Banking Authority (2020): *Statement on the application of the prudential framework regarding Default, Forbearance and IFRS9 in light of COVID-19 measures*, pp.1-4,

[https://www.eba.europa.eu/sites/default/documents/files/document\\_library/News%20and%20Press/Press%20Room/Press%20Releases/2020/EBA%20provides%20clarity%20to%20banks%20and%20consumers%20on%20the%20application%20of%20the%20prudential%20framework%20in%20light%20of%20COVID-19%20measures/Statement%20on%20the%20application%20of%20the%20prudential%20framework%20regarding%20Default%2C%20Forbearance%20and%20IFRS9%20in%20light%20of%20COVID-19%20measures.pdf](https://www.eba.europa.eu/sites/default/documents/files/document_library/News%20and%20Press/Press%20Room/Press%20Releases/2020/EBA%20provides%20clarity%20to%20banks%20and%20consumers%20on%20the%20application%20of%20the%20prudential%20framework%20in%20light%20of%20COVID-19%20measures/Statement%20on%20the%20application%20of%20the%20prudential%20framework%20regarding%20Default%2C%20Forbearance%20and%20IFRS9%20in%20light%20of%20COVID-19%20measures.pdf) (accessed: 3. February 2022)

ESMA – European Securities and Markets Authority (2020): *Accounting implications of the COVID-19 outbreak on the calculation of expected credit losses in accordance with IFRS 9*, pp. 1-5, [https://www.esma.europa.eu/sites/default/files/library/esma32-63-951\\_statement\\_on\\_ifrs\\_9\\_implications\\_of\\_covid-19\\_related\\_support\\_measures.pdf](https://www.esma.europa.eu/sites/default/files/library/esma32-63-951_statement_on_ifrs_9_implications_of_covid-19_related_support_measures.pdf) (accessed 3 February 2022)

Flögel, F., & Gärtner, S. (2020): *The COVID-19 pandemic and relationship banking in Germany: will regional banks cushion an economic decline or is a banking crisis looming?*, Tijdschrift voor economische en sociale geografie, Vol. 111, No. 3, 416-433.

Ghost, R. & Nur Saima, F. (2021): *Resilience of commercial banks of Bangladesh to the shocks caused by COVID-19 pandemic: an application of MCDM-based approaches*, Asian Journal of Accounting Research, Vol. 6, No. 3, pp. 281-295.

Hung, M.-C., Ching, Y.-K., and Lin, S.-K. (2021): *Impact of COVID-19 on the Robustness of the Probability of Default Estimation Model" Mathematics*, Vol. 9, No. 23: 3087, pp. 1-13.

IFRS 9 – International financial Reporting Standard 9 Financial instruments (2020), pp. A357–A535, IFRS Foundation (2020), <https://www.ifrs.org/issued-standards/list-of-standards/ifrs-9-financial-instruments/> (accessed 1 December 2020)

Kulinska-Sadłocha, E., Marcinkowska, M. & Szambelańczyk, J. (2020): *The impact of pandemic risk on the activity of banks based on the Polish banking sector in the face of COVID-19*, Bezpieczny Bank, Vol. 2, No. 79, pp. 31-59.

Marcu, m. R. (2021): *The Impact of the COVID-19 Pandemic on the Banking Sector*, Facultatea de Management – Scoala Nationala de Studii Politice si Administrative (SNSPA), Vol. 9, No. 2, 205-223.

Perčević, H. (2020): *Has the implementation of expected credit loss model affected on financial position and performance of banking sector in Croatia?*, in 9th International

scientific symposium: Region, entrepreneurship, development, Proceedings, Josip Juraj Strossmayer University of Osijek, Faculty of Economics in Osijek, Croatia, June 2020, pp. 1222-1236

Rout, B. S., Das, N. M., & Inamdar, M. M. (2021): ***COVID-19 and market risk: An assessment of the G-20 nations***, Journal of Public Affairs, Vol. 21, No. 4 e2590, pp. 1-19.

Šošić, H. (2004): ***Primijenjena statistika***, Školska knjiga, Zagreb

*A scientific paper*

**Ivana Perica, Ph. D., Senior lecturer**

Faculty of Economics, Business and Tourism, University of Split, Split, Croatia

E-mail address: [iperica@efst.hr](mailto:iperica@efst.hr)

**Branka Ramljak, Ph. D., Full professor tenure**

Faculty of Economics, Business and Tourism, University of Split, Split, Croatia

E-mail address: [branka.ramljak@efst.hr](mailto:branka.ramljak@efst.hr)

**Ivana Dropulić, Ph. D., Associate Professor**

Faculty of Economics, Business and Tourism, University of Split, Split, Croatia

E-mail address: [ivana.dropulic@efst.hr](mailto:ivana.dropulic@efst.hr)

## **THE ROLE OF MANAGERIAL ACCOUNTING TECHNIQUES IN NON-PROFIT ORGANIZATIONS: THE IMPACT ON EU FUNDING**

### **ABSTRACT**

*Non-profit organizations (NGOs) are important social actors in many countries and contribute significantly to social well-being. They work in various areas, from humanitarian action to actions for human rights, development, environment, social policies, education, culture, etc. Non-profit organizations in the EU member states work at both the national and EU levels. They are financed mainly by donors, membership, and public financing. Current funding availability for non-profit organizations at the national level is not enough. Difficulties in mobilizing funding threaten the non-profit organization's survival and force them to advocate finding solutions for financing their projects. One of those is EU funds. NGOs that receive EU funding are submitted to strict reporting rules with detailed reports about their expenses. Detailed information about the operations of each organization is provided by managerial accounting. Therefore, it is crucial in non-profit accounting to understand how managerial accounting techniques play a role in gathering resources from EU funds. In general, managerial accounting research in the non-profit sector is scarce, so this paper emphasizes the role of managerial accounting in non-profits. The contributions of this study include clarifying the role of managerial accounting in non-profits in securing EU funds for their activities. The study aims to determine whether there is a difference in the application levels of managerial accounting techniques according to the source of non-profit organizations' funding. Data from an online survey of non-profits in Croatia are used for empirical analysis. Empirical evidence will be provided on a sample of 359 non-profit organizations. The empirical results confirm the difference in applying management accounting techniques among those non-profit organizations that receive funding from EU funds and non-profit organizations that do not receive them from EU funds.*

**Key words:** *Managerial accounting techniques, Non-profit organizations, EU funding.*

## 1. Introduction

Non-profit organizations play an essential role in many countries, and they have great importance (Salamon and Anheier, 1992; Badelt, 1997). They provide a wide range of services with limited financial resources (Mikeladze, 2021). Their financing often implies various financial and non-financial support forms from public sources. The extent to which this funding source is realized depends mainly on non-profit organizations' accountability demands. Due to the limited funds allocated to non-profit organizations by institutional donors, the accounting for non-profit organizations is primarily dominated by responsibility for external reporting (Clerkin and Quinn, 2018), regulated through mandatory accounting. However, all the progress made in accounting regulation is not enough to increase confidence in the actions of non-profit organizations (Waniak-Michalak, Perica, and Leitoniene, 2020). Non-profits organizations have specific processes and therefore need more detailed information. Therefore, to managers of non-profit organizations, mandatory reporting alone is not enough because it is less informative about vital matters and less truly reflects business results (Clancy and Collins, 1979). Managers in non-profit organizations often face limited resources. They need a wide range of analyses, including identifying the number of resources for individual programs, budget forecasting, program monitoring, resource consumption monitoring, and outcome assessment (Sorensen and Grove, 1997). They need quantitative and qualitative data (Moxham and Boaden, 2007; Trussel and Parsons, 2007; Patel et al., 2015; Yang, Northcott, and Sinclair, 2017) provided by managerial accounting. The goal of managerial accounting is to provide information that can be used to influence actions taken to achieve effective results for the organization (Abernethy and Vagnoni, 2004). Internal accounting systems offer (1) information needed for planning and decision-making and (2) information to help, motivate and control employees in organizations (Zimmerman, 2010). In summary, the fundamental purpose of management accounting is to assist organizations in ensuring the efficient and effective use of scarce resources (Sprinkle, 2003).

Current funding availability for non-profit organizations at the national level is insufficient (Potluka, Spacek, and Von Schnurbein, 2017). Difficulties in mobilizing funding threaten the non-profit organizations' survival and force them to advocate finding solutions for financing their projects. One of those solutions is financing from EU funds. EU funds represent grants to organizations working on a variety of issues. Non-profit organizations that receive EU funding are submitted to strict reporting rules with detailed reports about their expenses. Therefore, it is crucial in the non-profit sector to understand how managerial accounting techniques play a role in achieving success and gathering resources. This paper aims to point out the importance of applying managerial accounting in this sector, the non-profit sector. Precisely, the study aims to determine whether there is a difference in the application levels of managerial accounting techniques according to the source of non-profit organizations' funding. This research contributes to the debates on management accounting in the non-profit sector by examining whether any significant differences exist between organizations that receive funding from EU funds and non-profit organizations that do not receive it from EU funds. For empirical analysis, we used an online survey of non-profits in Croatia. Associations that apply double-entry bookkeeping and have over ten employees/volunteers have been selected to conduct the empirical analysis. The analysis was conducted on a sample of 359 non-profit organizations organized as associations.

Managerial accounting within the non-profit accounting literature is still an undeveloped area, so this study contributes to the accounting literature by investigating the effects of managerial accounting in the non-profit sector. This study provides empirical evidence that managerial

accounting is a mechanism that supports the financial performances of non-profit organizations. Our findings are important since they represent one of the few empirical studies of this nature in the non-profit sector. Our study suggests that non-profit managerial accounting is a mechanism that supports the financing of non-profit organizations and indicates possible improvements in mobilizing funding in non-profit organizations through the implementation of managerial accounting techniques. Our findings are important because of their applicability to other EU member states, especially countries with similar institutional settings. The remainder of the study is organized as follows. In the second section, the literature review and hypothesis development are presented. The third section explains the research methodology and data, followed by the research results. The paper concludes with a discussion and the concluding remarks.

## **2. Literature review and hypothesis development**

Due to the specifics of the operations of organizations belonging to the non-profit sector, non-profit organizations' accounting has a unique recording and reporting system. Non-profit organizations have no ownership interests, the purpose for which they operate is not profit, and they are mainly funded by donors who do not expect any return. Sources of funding and revenue structure for non-profit organizations mainly include donations and grants, which largely determine how an organization can spend money. The legal and tax treatment of non-profit organizations differs from other organizations. Non-profit organizations are usually exempt from income tax and are not in the value-added tax system. Some non-profit organizations do not pay property taxes, some do not pay customs duties, etc. Non-profit organizations are subject to special laws and special accounting regulations. Accounting for non-profit organizations and financial reporting in the non-profit sector is an essential accountability aspect. It allows non-profit organizations to communicate with different stakeholders about their activities. All stakeholders of non-profit organizations want information on the effective use of the organization's resources entrusted to the non-profit organization to achieve its goals. As a result of globalization and the fact that the financing of non-profit organizations is mainly based on donations coming from state funds and international organizations, non-profit organizations are subject to different requirements for financial reporting. Recently, key donors have had a growing need for various financial and nonfinancial information about a non-profit's business (Yang, Northcott, & Sinclair, 2017). For financial statements of non-profit organizations is particularly interested donors who want to be convinced that their funds have been spent according to their wishes and requirements or how the organization that they donate operates. To meet the need for accountability, the accounting regulations of the non-profit sector have recently increasingly sought to establish transparency and control over the operations of non-profit organizations. However, all the information needed by stakeholders in non-profit organizations, especially donors, cannot be provided by mandatory accounting alone. Financial accounting in the non-profit sector does not provide detailed insight into all segments of activities. Detailed insight into all parts of non-profit organizations' activities require information from an internal perspective, i.e., the information provided by the managerial accounting system. Therefore, every non-profit organization needs additional accounting information from the internal perspective provided by management accounting.

Research in managerial accounting in the non-profit sector is still scarce (Greiling, 2010; Wadongo and Abdel-Kader, 2011; Järvinen, 2016; Egorova and Khalturin, 2017; Perica, 2021). Hopper and Bui (2016) emphasize the neglect of research in this area in the non-profit sector and point to the need for non-profits to adopt conventional managerial accounting techniques effectively. So far, research in this area of accounting has indicated primarily the usefulness of

the information provided by managerial accounting in non-profits. Thus, Abernethy and Stoelwinder (1991) examined 203 non-profit executives in Australia and concluded that budgeting positively influences the performance of non-profit organizations. Noreen and Soderstrom (1994) noted that overheads are disproportionate to the activities of non-profits. To make costs relevant to decision-making, they suggest modifying standard cost accounting methods. Tinkelman (1998) examined the effect of cost allocation on large donor donations and concluded that large donors are sensitive to program-related cost information.

Contrary to these findings, Khumawala, Parsons, and Gordon (2003) found that donors do not use accounting effectively information, namely that the allocation of joint costs does not affect their decision. According to them, donors focus on the program ratio when considering accounting information, taking reported numbers at face value, which can mislead them about misallocation costs. Pizzini (2006) pointed out that accounting information is not used successfully to manage costs in non-profit organizations and found that detailed cost information was positively associated with financial performance measures. Campos et al. (2011) surveyed 62 associations and found that most non-profits in Brazil use internal evaluation and conduct project- and program-focused evaluations to make project decisions. They also supported the idea that internal evaluations are a tool for promoting projects and presenting results to donors. Cordery, Proctor-Thomson, and Smith (2011) emphasized the importance of including the evaluation of volunteers even though there are difficulties in measuring the impact of volunteers. Ryan and Irvine (2012) focused on the potential contribution performance measurement can make through information to internal decision-makers. They developed a package of key financial ratios for internal use that help organizations and executives understand the financial dynamics of their organizations and make financial health decisions. In the context of internal performance indicators, Carlsson-Wall, Kraus, and Messner (2016) analyzed the way managers in a football organization use a set of performance measures to manage the coexistence of two institutional logics, sports and business logic. They supported the idea that measurement systems can play an essential role in managerial decisions. Järvinen (2016) conducted an interview with two non-profits in Finland, explored the adoption of managerial accounting in the non-profit sector, and concluded that managerial accounting serves as a medium through which organizations negotiate between multiple and opposite goals and budgeting and costing systems play an important role. Perica (2021) found that managerial accounting techniques enhance the performance of non-profit organizations, approximated by the success of non-profit organizations in community engagement. The study also confirmed that managerial accounting techniques mediated the relationship between analytical and proactive leadership styles and successful community engagement of non-profit organizations.

The performance of non-profit organizations still has different meanings depending on how an individual organization defines success (Winand et al., 2014). This study focuses only on one particular dimension of the non-profit's organizational performance, i.e., success in mobilizing funding. Current funding availability for non-profit organizations at the national level is not enough. Difficulties in mobilizing funding threaten the non-profit organization's survival and force them to advocate finding solutions for financing their projects, such as EU funds. The EU funds are an essential source of finance and financial support to non-profit organizations, especially during economic uncertainty. They allow non-profit organizations to bridge the financial gap. EU funds are designed to support funding for many projects and programs covering various areas of activities of non-profit organizations, from humanitarian action to actions for human rights, development, environment, social policies, education, culture, and many others. To access EU grants, non-profit organizations participate like any other public

and profit organizations to open calls for tenders. They receive EU funding if they successfully meet the requirements of the calls for tenders. Requirements from European Commission are rigorous, and non-profit organizations that receive EU funding are submitted to strict reporting rules. European Commission asks for detailed narrative and financial reports with a detailed breakdown of expenses.

Based on previous studies in the public and profit sector, which have proven the positive impact of managerial accounting techniques on the overall business and activities of organizations, and consistent with studies in the non-profit sector, which indicated the usefulness of the information provided by managerial accounting, we test the following hypothesis:

*H1. There are significant differences in applying management accounting techniques among non-profit organizations that receive funding from EU funds and non-profit organizations that do not receive them from EU funds.*

### 3. Research methodology and sample

A cross-sectional research design was used for this empirical research, and the quantitative measurement tool, a mail questionnaire survey, was used to collect the data. The target population for this study was defined as larger non-profit organizations in the form of associations. We adopted two main criteria in selecting the associations. First, non-profit organizations should apply double-entry bookkeeping. Second, non-profit organizations should have over ten employees/volunteers. One thousand non-profit organizations that met the above criteria were selected from the Register of non-profit organizations in Croatia. These selected associations also represented a survey population. Having a survey population similar to the target population is a particularly suitable approach for investigating differences in management accounting practices (Kennedy and Fiss, 2009; Burkert and Lueg, 2013). The questionnaire consisted of several parts. The first part covered information on management accounting practices. We measured the usage level of managerial accounting techniques using a slightly modified approach by King, Clarkson, and Wallace (2006), and we applied Perica's (2021) instrument adapted to non-profit organizations for managerial accounting techniques. We also included managerial accounting techniques such as cash flows plans and internally monitoring the added value of volunteers. The first part questionnaire asked respondents to specify their level of agreement on a Likert scale ranging the usage level of managerial accounting techniques from 1 - not at all to 5 - per week following the question: How systematically does the organization use the following management accounting techniques? The eight managerial accounting techniques were listed together with a Likert-type scale ranging. Table 1 contains the questionnaire items for variables of management accounting techniques.

**Table 1:** Managerial accounting techniques

Managerial accounting techniques
The non-profit organization monitors internal performance indicators.
The non-profit organization plans cash flows.
The non-profit organization monitors overhead costs by assigning them to activities.
The non-profit organization monitors cost by functional classification.
The non-profit organization monitors direct and indirect project costs.
The non-profit organization controls the budgeting of costs.
The non-profit organization monitors cost by the source of funding.
The non-profit organization internally monitors the added value of volunteers.

*Source: Authors*



The further part of the questionnaire asked whether the non-profit organization uses EU funds.

The final part of the questionnaire was about the general information of the respondents and their organizations. The mailed survey was sent to leaders of non-profit organizations because they were expected to have sufficient information about the application of managerial accounting in their organizations. The mailing resulted in 359 responses, giving a response rate of approximately 36 percent.

Table 2 provides some general information about the revenues of non-profit organizations from the sample. Out of the total surveyed non-profit organizations, 50.2 % generated over HRK 1,000,000 in total revenue in the previous year. Surveyed non-profit organizations receive the most revenues from EU funds, ministries, and local and regional self-government units.

**Table 2:** Descriptive statistics

	number of non-profit	%	% (cumulative)
Amount of annual revenues (HRK)			
up to 500.000	103	28.7	28.7
from 500,000 to 1,000,000	76	21.2	49.9
from 1,000,000 to 3,000,000	113	31.5	81.3
from 3,000,000 to 10,000,000	42	11.7	93.0
over 10,000,000	25	7.0	100
In total	359	100	
The largest source of revenues			
Donations	39	10.9	10.9
Membership fees	16	4.5	15.4
From local and regional self-government units	52	14.5	29.9
From the ministries	81	22.6	52.5
EU funds	127	35.4	87.9
Foundation	11	3.1	91.0
By selling our own products and services	16	4.5	95.5
Other	17	4.5	100
In total	359	100	

*Source: Authors' calculations*

Table 3 provides some general information about the respondents. Over 54 percent of the respondents are below 45, and 28.1% are between 46 - 55 years of age. 53.2 percent of respondents in non-profit organizations have experience of more than ten years in the non-profit sector. The majority of the respondents (56.6 percent) have worked in managerial positions with more than six years of experience in the non-profit sector. Results of the descriptive analysis show that responders are mainly of a younger age and have experience in managing non-profit organizations.

**Table 3:** Descriptive statistics

	number of respondents	%	% (cumulative)
Age			
Under 25 years	6	1.7	1.7
From 25 to 35	90	25.1	26.7
From 36 to 45	100	27.9	54.6
From 46 to 55	101	28.1	82.7
Over 55 years	62	17.3	100
In total	359	100	
Experience			
The last year	17	4.7	4.7

The last 2 to 5 years	60	16.7	21.4
The last 6 to 10 years	91	25.3	46.8
Over 10 years	191	53.2	100
In total	359	100	
Experience in a managerial position			
The last year	42	11.7	11.7
The last 2 to 5 years	114	31.8	43.5
The last 6 to 10 years	90	25.1	68.5
Over 10 years	113	31.5	100
In total	359	100	

*Source: Authors' calculations*

After descriptive statistics, a Mann-Whitney U test was conducted to test for significant differences between the two groups (non-profit organizations that use EU funds and non-profit organizations that do not use EU funds). This nonparametric test has been used because dependent variables were ordinal and have followed non-normal distribution.

The data satisfied the four assumptions underlying the Mann-Whitney U test that (1) dependent variables are measured at the ordinal level, (2) the independent variable consists of two categorical, independent groups, (3) the two samples are mutually independent, and (4) variables are not normally distributed.

#### 4. Research results

In our study, eight variables measured management accounting techniques in non-profit organizations. Before the Mann Whitney Test was conducted, we analysed the application level of managerial accounting techniques in associations from the sample. The analysis shown in Table 4 describes the application level of managerial accounting techniques in surveyed non-profit organizations.

**Table 4:** Descriptive statistics

Managerial accounting techniques	Mean	SD
The non-profit organization monitors internal performance indicators.	3.46	1.043
The non-profit organization plans cash flows.	3.08	1.085
The non-profit organization monitors overhead costs by assigning them to activities.	4.02	0.883
The non-profit organization monitors cost by functional classification.	3.77	0.940
The non-profit organization monitors direct and indirect project costs.	3.94	0.864
The non-profit organization controls the budgeting of costs.	3.67	1.005
The non-profit organization monitors cost by the source of funding.	3.68	0.977
The non-profit organization internally monitors the added value of volunteers.	2.66	1.089

*Source: Authors' calculations*

Table 4 shows which technique of managerial accounting non-profit organizations most systematically use. Non-profit organizations from the sample mostly systematically use the technique of managerial accounting, which implies monitoring overhead costs by assigning them to activities, followed by a technique that consists in monitoring direct and indirect project costs. Furthermore, non-profit organizations often use the method of monitoring cost by functional classification, monitoring cost by the source of funding, and controlling the budgeting of costs. The non-profit organizations least systematically use a management accounting technique that involves internally monitoring the added value of volunteers.

In further analysis, the Mann-Whitney test was used to test the differences in applying management accounting techniques among those non-profit organizations that receive funding from EU funds and non-profit organizations that do not receive them from EU funds.

Table 5 provides the Mann-Whitney test results.

**Table 5:** Mann-Whitney test results

		N	Mean Rank	Sum of Ranks
The non-profit organization monitors internal performance indicators.	NGO receive funding from EU funds	227	187.84	42640.50
	NGO do not receive funding from EU funds	132	166.51	21979.50
	Total	359		
Mann-Whitney U		13201.500		
Wilcoxon W		21979.500		
Z		-2.016		
Asymp. Sig. (2-tailed)		0.044		
		N	Mean Rank	Sum of Ranks
The non-profit organization plans cash flows.	NGO receive funding from EU funds	227	191.90	43562.00
	NGO do not receive funding from EU funds	132	159.53	21058.00
	Total	359		
Mann-Whitney U		12280.000		
Wilcoxon W		21058.000		
Z				
Asymp. Sig. (2-tailed)				
		N	Mean Rank	Sum of Ranks
The non-profit organization monitors overhead costs by assigning them to activities.	NGO receive funding from EU funds	227	187.99	42674.50
	NGO do not receive funding from EU funds	132	166.25	21945.50
	Total	359		
Mann-Whitney U		13167.500		
Wilcoxon W		21945.500		
Z		-2.087		
Asymp. Sig. (2-tailed)		0.037		
		N	Mean Rank	Sum of Ranks
The non-profit organization monitors cost by functional classification.	NGO receive funding from EU funds	227	189.87	43100.00
	NGO do not receive funding from EU funds	132	163.03	21520.00
	Total	359		
Mann-Whitney U		12742.000		
Wilcoxon W		21520.000		
Z		-2.609		
Asymp. Sig. (2-tailed)		0.009		
		N	Mean Rank	Sum of Ranks
	NGO receive funding from EU funds	227	192.56	43711.50

The non-profit organization monitors direct and indirect project costs.	NGO do not receive funding from EU funds	132	158.40	20908.50
	Total	359		
Mann-Whitney U		12130.500		
Wilcoxon W		20908.500		
Z		-3.311		
Asymp. Sig. (2-tailed)		0.001		
		N	Mean Rank	Sum of Ranks
The non-profit organization controls the budgeting of costs.	NGO receive funding from EU funds	227	189.54	43026.50
	NGO do not receive funding from EU funds	132	163.59	21593.50
	Total	359		
Mann-Whitney U		12815.500		
Wilcoxon W		21593.500		
Z		-2.433		
Asymp. Sig. (2-tailed)		0.015		
		N	Mean Rank	Sum of Ranks
The non-profit organization monitors cost by the source of funding.	NGO receive funding from EU funds	227	191.51	43473.00
	NGO do not receive funding from EU funds	132	160.20	21147.00
	Total	359		
Mann-Whitney U		12369.000		
Wilcoxon W		21147.000		
Z		-2.926		
Asymp. Sig. (2-tailed)		0.003		
		N	Mean Rank	Sum of Ranks
The non-profit organization internally monitors the added value of volunteers.	NGO receive funding from EU funds	227	190.87	43328.00
	NGO do not receive funding from EU funds	132	161.30	21292.00
	Total	359		
Mann-Whitney U		12514.000		
Wilcoxon W		21292.000		
Z		-2.700		
Asymp. Sig. (2-tailed)		0.007		

Source: Authors' calculations

As shown in Table 5, based on the Mann-Whitney test, it can be concluded that 227 non-profit organizations from the sample receive funding from EU funds, and 132 surveyed non-profit organizations do not receive funding from EU funds. The category of non-profit organizations that receive funding from EU funds has a higher mean rank than the category of non-profit organizations that do not receive funding from EU funds and therefore tends to take higher values. Thus, it can be concluded that non-profit organizations that receive funding from EU funds have a higher level of application of managerial accounting techniques.

The Mann-Whitney test shows that the difference in mean rank is statistically significant in all applying managerial accounting techniques between those two groups of associations. These results support our hypothesis that there are significant differences in applying management accounting techniques among non-profit organizations that receive funding from EU funds and non-profit organizations that do not receive them from EU funds. Significant differences

between the two groups of non-profit organizations could be explained by the fact that those non-profit organizations that receive funding from EU funds are likely adopting managerial accounting practices due to the European Commission's strict reporting requirements. To meet the stringent reporting rules required by the European Commission, non-profit organizations must implement a system of management accounting techniques that provide all the detailed information they need.

## 5. Discussion and conclusion

The purpose of this study was to determine whether there is a difference in the levels of application of managerial accounting techniques according to the source of non-profit organizations' funding. Based on the analysis presented above, we found support for the hypothesis we developed earlier in the paper. The analysis results showed that significant differences exist between those non-profit organizations that receive funding from EU funds and non-profit organizations that do not receive them from EU funds in terms of the levels of application of managerial accounting techniques. The results also showed that non-profit organizations most systematically use the technique of managerial accounting, which involves monitoring overhead costs by assigning them to activities, and a method, which consists in monitoring direct and indirect project costs. Our results could be explained that non-profit organizations that receive funding from EU funds are likely to adopt managerial accounting techniques to meet the European Commission's stringent reporting rules. The results are generally consistent with prior studies, which emphasize the importance of using managerial accounting techniques. This study supports the use of managerial accounting in non-profit organizations and indicates possible improvements in mobilizing funding in non-profit organizations through managerial accounting techniques. This study also suggests some practical recommendations for non-profit organizations. Non-profit organizations, besides designing projects to mobilize funding from EU funds, should also be professional in financial management and must meet all European Commission's reporting rules. Non-profit organizations can fulfil these requirements precisely by implementing managerial accounting techniques, which support success in raising EU funds and help in providing funds for the organization. Managerial accounting can play an essential role in non-profit organizations because reports provided by managerial accounting may represent a tool for promoting projects and presenting their results to all stakeholders, particularly donors.

Our study suffers from the usual limitations associated with the survey questionnaire method. Due to the chosen methodology of the survey questionnaire, the subjectivity of the respondents cannot be completely controlled, and bias can occur. Future studies could perform different methodology. Furthermore, case studies can be conducted for a more in-depth analysis of managerial accounting practices in non-profit organizations. Second, this study examined a particular dimension of the non-profit's sources of funding, i.e., EU funds. Future studies could investigate the impact of the application of managerial accounting techniques on other sources of financing of non-profit organizations and different dimensions of performance of non-profit organizations. Regardless, the mentioned limitations do not reduce the contribution of this research. Finally, this research contributes to the knowledge of managerial accounting in non-profit organizations by enriching the literature dedicated to this issue. The study directly responds to the gap in previous research and calls for research needs in managerial accounting.

The study significantly contributes to the current level of knowledge about the impact of managerial accounting on the activities of non-profit organizations. First, it highlights the importance of managerial accounting in non-profit organizations according to the funding

source of non-profit organizations. Second, prior studies were mainly conducted in the profit sector, unlike the non-profit sector, where such research is rare. In the non-profit sector, despite unique sectoral characteristics and functions, not enough attention has been given to managerial accounting research. To fill this research gap and to inspire future researchers, this study introduced possible research topics that combine managerial accounting with fundraising activities and financial management in non-profit organizations.

## REFERENCES

- Abernethy, M. A., & Stoelwinder, J. U. (1991): *Budget use, task uncertainty, system goal orientation and subunit performance: A test of the 'fit' hypothesis in not-for-profit hospitals*, Accounting, organizations and society, 16(2), pp. 105-120.
- Abernethy, M. A., & Vagnoni, E. (2004): *Power, organization design and managerial behaviour*, Accounting, Organizations and Society, 29(3-4), pp. 207-225.
- Badelt, C. (1997): *Entrepreneurship theories of the non-profit sector*, Voluntas: International Journal of Voluntary and Nonprofit Organizations, 8(2), pp. 162-178.
- Burkert, M., & Lueg, R. (2013): *Differences in the sophistication of Value-based Management—The role of top executives*, Management accounting research, 24(1), pp. 3-22.
- Campos, L., Andion, C., Serva, M., Rossetto, A., & Assumpção, J. (2011): *Performance evaluation in non-governmental organizations (NGOs): An analysis of evaluation models and their applications in Brazil*, VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations, 22(2), pp. 238-258.
- Carlsson-Wall, M., Kraus, K., & Messner, M. (2016): *Performance measurement systems and the enactment of different institutional logics: insights from a football organization*, Management Accounting Research, 32, pp. 45-61.
- Clancy, D. K., & Collins, F. (1979): *Informal accounting information systems: Some tentative findings*, Accounting, Organizations and Society, 4(1-2), pp. 21-30.
- Clerkin, B., & Quinn, M. (2019): *Restricted Funding: Restricting Development?* Voluntas: International Journal of Voluntary and Nonprofit Organizations, 30(6), pp. 1348-1364.
- Cordery, C. J., Proctor-Thomson, S., & Smith, K. A. (2011): *Valuing volunteer contributions to charities*, Public Money & Management, 31(3), pp. 193-200.
- Egorova, L.V., Khalturin, R.A. (2017): *Problems of Implementing Strategic Managerial Accounting in Nonprofit Organizations*. In: Popkova, E. (eds) Overcoming Uncertainty of Institutional Environment as a Tool of Global Crisis Management. Contributions to Economics. Springer, Cham., pp. 371-379.
- Greiling, D. (2010): *Balanced scorecard implementation in German non-profit organisations*, International Journal of Productivity and Performance Management, 59(6), pp. 534-554.
- Hopper, T., & Bui, B. (2016): *Has management accounting research been critical?* Management Accounting Research, 31, pp. 10-30.

- Järvinen, J. T. (2016): *Role of management accounting in applying new institutional logics: A comparative case study in the non-profit sector*, Accounting, Auditing & Accountability Journal, 29(5), pp. 861-886.
- Kennedy, M. T., & Fiss, P. C. (2009): *Institutionalization, framing, and diffusion: The logic of TQM adoption and implementation decisions among US hospitals*, Academy of Management Journal, 52(5), pp. 897-918.
- Khumawala, S. B., Parsons, L. M., & Gordon, T. P. (2005): *Tracks: Assessing the quality of not-for-profit efficiency ratios: Do donors use joint cost allocation disclosures?* Journal of Accounting, Auditing & Finance, 20(3), pp. 287-309.
- King, R., Clarkson, P. M., & Wallace, S. (2010): *Budgeting practices and performance in small healthcare businesses*, Management Accounting Research, 21(1), pp. 40-55.
- Mikeladze, A. (2021): *Financial Management Role for NGOs*. European Journal of Economics and Business Studies, 7 (1), pp. 144-165
- Moxham, C., & Boaden, R. (2007): *The impact of performance measurement in the voluntary sector: Identification of contextual and processual factors*, International journal of operations & production management, 27(8), pp. 826-845.
- Noreen, E., & Soderstrom, N. (1994): *Are overhead costs strictly proportional to activity? Evidence from hospital departments*, Journal of accounting and economics, 17(1-2), pp. 255-278.
- Patel, B. S., Booker, L. D., Ramos, H. M., & Bart, C. (2015): *Mission statements and performance in non-profit organisations*, Corporate Governance, 15(5), pp. 759-774.
- Perica, I. (2021): *The mediating role of managerial accounting in non-profit organizations: a structural equation modelling approach*, Croatian Operational Research Review, 12(2), pp. 139-149.
- Pizzini, M. J. (2006): *The relation between cost-system design, managers' evaluations of the relevance and usefulness of cost data, and financial performance: an empirical study of US hospitals*, Accounting, organizations and society, 31(2), pp. 179-210.
- Potluka, O., Spacek, M., & Von Schnurbein, G. (2017): *Impact of the EU Structural Funds on financial capacities of non-profit organizations*, Voluntas: International Journal of Voluntary and Nonprofit Organizations, 28(5), pp. 2200-2223.
- Ryan, C., & Irvine, H. (2012): *Not-for-profit ratios for financial resilience and internal accountability: A study of Australian international aid organisations*, Australian Accounting Review, 22(2), pp. 177-194.
- Salamon, L. M., & Anheier, H. K. (1992): *In search of the non-profit sector. I: The question of definitions*, Voluntas: International Journal of Voluntary and Nonprofit Organizations, 3(2), pp. 125-151.
- Sorensen, J. E., & Grove, H. D. (1977): *Cost-outcome and cost-effectiveness analysis: Emerging nonprofit performance evaluation techniques*, Accounting Review, pp. 658-675.

- Sprinkle, G. B. (2003): *Perspectives on experimental research in managerial accounting*, Accounting, Organizations and Society, 28(2-3), pp. 287-318.
- Tinkelman, D. (1998): *Differences in sensitivity of financial statement users to joint cost allocations: The case of nonprofit organizations*, Journal of Accounting, Auditing & Finance, 13(4), pp. 377-393.
- Trussel, J. M., & Parsons, L. M. (2007): *Financial reporting factors affecting donations to charitable organizations. Advances in Accounting*, 23, pp. 263-285.
- Wadongo, B., & Abdel-Kader, M. (2011): **Performance management in non-profit organizations**, In Review of Management Accounting Research (pp. 450-478). Palgrave Macmillan, London.
- Waniak-Michalak, H., Perica, I., & Leitoniene, S. (2020): *From NGOs' accountability to social trust. The evidence from CEE countries*, Zeszyty Teoretyczne Rachunkowości, 109(165), pp. 173-192.
- Winand, M., Vos, S., Claessens, M., Thibaut, E., Scheerder, J. (2014): *A unified model of non-profit sport organizations performance: perspectives from the literature*, Managing leisure, 19(2), pp. 121-150.
- Yang, C., Northcott, D. & Sinclair, R. (2017): *The accountability information needs of key charity funders*, Public Money and Management, 37(3), pp. 173-180.
- Zimmerman, J. (2010): *Accounting for decision making and control*, Irwin/McGraw Hill, Boston.



*A scientific paper*

**Renata Perić, Ph. D., Full Professor**

Faculty of Law, Josip Juraj Strossmayer University in Osijek

E-mail address: rperic@pravos.hr

**Emina Jerković, Ph. D., Assistant Professor**

Faculty of Law, Josip Juraj Strossmayer University in Osijek

E-mail address: ekonjic@pravos.hr

## **FINANCIAL AND LEGAL ASPECTS OF THE ORGANIZATION OF LOCAL AND REGIONAL SELF-GOVERNMENT UNITS<sup>1</sup>**

### ***ABSTRACT***

*Local self-government is an autonomous system of governing local communities in narrower parts of the state territory. The development of local self-government is also one of the conditions for democracy and the rule of law. Self-government of local and regional units is usually prescribed by the constitution and laws of each state. Fiscal decentralization over the years has emerged as one of several possible ways to cope with the turbulent economic situation in the world, which involves the vertical transfer of power from higher to lower levels of government in the country to provide more efficient public services and local and regional government. ultimately resulting in the progress of the country's overall economy. The number of local and regional self-government units in the EU varies. There is no optimal number that could be applied to all EU members as each country is an organism that functions in a unique way. Great influence on the financial and legal position of local self-government units consists of population, demographic structure of the population, territorial position of the state, internal structure, economic development, political climate. The aim of this paper is to present the financial and legal position of local and regional self-government units both in the Republic of Croatia and in certain European countries. The existing system of fiscal policy in relation to local and regional self-government units is analyzed, primarily from the aspect of their financing with regard to the origin of sources of income. The paper also looks at the historical framework and attempts and even efforts to harmonize self-government units in Europe and provides insight into the similarities and differences between local governments by country, which are the basis for further study.*

**Key words:** *local self-government units, regional self-government units, sources of income, harmonization, fiscal decentralization.*

---

<sup>1</sup> This paper is a product of work that has been fully supported by the Faculty of Law Osijek Josip Juraj Strossmayer University of Osijek under the project nr. IP-PRAVOS-21 „Fiscal policy and development of the public finance system“.

## 1. The concept, role and development of local self-government

Local self-government is an autonomous system of governing local communities in narrower parts of the state territory. The development of local self-government is also one of the conditions for democracy and the rule of law. Self-government of local and regional units is usually prescribed by the constitution and laws of each state.

The idea of local self-government dates back to a tradition of centuries in Europe. Local self-determination and exercise of power, although to different extends, appeared both in the concept of the Scandinavian 'tingsted' (i.e., locality, the materialized expression of local autonomy in the early Middle Ages<sup>1</sup>) and the British 'devolution' (i.e., decentralization of central authority). Marked differences and delimiting characteristics can be observed in both the horizontal and vertical structures of existing local self-governments of individual European countries, which developed with different characteristics. The systems having unique traits, despite the small and large differences, however, can be categorized according to the local government development path: they can be classified as per their formation, history, and related traits. Accordingly, European development path of local authorities draws up three main self-government models: the northern, the Napoleonic (Latin), as well as the intermediate model.

The models can be separated according to the level of autonomy. In the north, the Nordic model is the type of public administration based on stronger local self-governments, which fulfills traditionally a higher number and more significant public tasks, exercises wider powers providing considerable autonomy and allows greater flexibility (including, inter alia, Sweden, Denmark, Finland, Norway, Belgium, the Netherlands, Great Britain and Ireland).<sup>3</sup> The Napoleonic (or Latin) model compared to this grants a limited degree of autonomy to local governments (e.g., France, Spain, Italy, Greece and Portugal). The intermediate model is between these two types, by achieving local governments of medium level of power (such as Germany, Austria, Switzerland and Belgium). (Perić et al., 2013, 222)

Croatian model follows the European trends, since the types move toward each other, and, as a result of European unification, the elements, which could be separated earlier, converge due to the unifying principles. Croatian self-government systems belong to the intermediate model of the three basic types of self-governments according to economic autonomy and funding aspects.

The local government models show a number of differences, however, certain similarities, some traditional values occur in all countries. Certain values are specified by the legal regulation of every EU Member State, and are also declared by the European Charter of Local Self-government<sup>2</sup> (hereinafter Charter) accepted by the Council of Europe.

Article 9 – which includes eight sections – (Financial resources of local authorities), the longest part of the Charter, regulates the finances of local governments. It provides detailed guidelines on local self-governments, and contains the following financial and economic management principles:

- principle of income: the local authorities are entitled to their own financial resources, of which they may dispose freely within the framework of their powers;

---

<sup>2</sup> European Charter of Local Self-Government, Strasbourg, 15.X.1985

- local authorities' financial resources shall be commensurate with the responsibilities provided for by the constitution and the corresponding law (the principle of entitlement to the financial resources adequate to the responsibilities);
- the principle of local taxation powers (local taxation rights, and the right to introduce other local payment obligations; part at least of the financial resources of local authorities shall derive from local taxes and charges of which, within the limits of statute, they have the power to determine the rate);
- reduction of financial disparities between the local self-government units (so-called equalization principle);
- the use of funds as per the statutory limits (the principle of expenditure); - as far as possible, grants to local authorities shall not be earmarked for the financing of specific projects (the limitation of earmarked funds);
- the autonomy of management decisions within their own jurisdiction (principle of discretionary powers);
- participation in the central decision-making concerning local self-government finances (principle of participation).

The theory of fiscal decentralization assumes that developed economies will have higher levels of decentralization. Developed economies in the north and west of the EU perform best on selected indicators of fiscal decentralization, while less developed economies in the south and east of the EU perform worse. The economies with the highest degree of fiscal decentralization among EU Member States are also known for their high living standards and successful social policies. The most successful are the Scandinavian countries - Denmark, Sweden and Finland. By providing greater powers with appropriate fiscal independence of local self-government, these countries have created systems that set an example for others in the areas of health care, education and social welfare - public services that are mostly the responsibility of local self-government. Other EU Member States that have successful models include the Netherlands, Germany and Belgium, which also have systems that deliver these public services with a high degree of efficiency. On the other hand, countries in the east and south of the European Union are struggling to provide public services not only at the local level, but also at the national level. (Žgomba, 2018, 114-115)

## **2. Fiscal federalism**

The goal of state decentralization is to recognize and please the public needs, furthermore to encourage local and regional development. Only by achieving those goals of decentralization can the state motivate and satisfy its citizens for contributing to the accomplishment of public needs. (Perić et al., 2013, 221)

The autonomy of self-governments, from the conceptual point of view and particularly from the practical approach is the assessment of the economic opportunities, the amount and structure of resources, and the freedom of use of the resource. The actual operating conditions of each system depend not on the legal regulation, but instead on the the local economic circumstances of the self-government and their involvement of local economic development, furthermore on the economic and fiscal policy of the state. (Perić, et al., 2011, 182)

The theoretical basis for financing local government units lies in the theory of fiscal federalism, which not only explores ways of financing particular levels of government in federal and unitary states, but also attempts to answer the question of which fiscal instruments are best suited for financing local government units, given their characteristics, both from the

point of view of generating revenue for the local government unit itself and from the point of view of the state budget.

Fiscal federalism is a fiscal system of federated states. However, it can also exist in unitary states when there is more than one fiscal authority. Fiscal federalism includes the relations between higher and lower political-territorial units in connection with the power to create and introduce certain public revenue sources that finance their expenditures, i.e. meet public needs. Consequently, the satisfaction of public needs has a great impact on the economic development of individual local and regional self-government units.

Fiscal federalism is an important part of the theory of public finance, which deals with the problems of decision-making, tax assessment and the use of funds collected in the public sector with two or more levels of fiscal authority. The application of fiscal federalism in the theory and practice of individual countries varies widely. Fiscal federalism itself depends on the system of government, territorial organization, economic climate and social development, and historical and political circumstances that ultimately determine the overall public finance structure. What sources of fiscal revenues exist, to what extent, and how they should be distributed are fundamental problems that all federally regulated states constantly face. However, similar problems are also faced by countries that are not federal states, but have a developed system of regional and local self-government due to a high degree of decentralization of public functions.

The more decentralized the distribution of public functions, the greater the discrepancy between the costs of their fulfillment (production of public goods) and the public revenues available to a political-territorial unit, which requires additional resources. In this way, the match between the need for resources (expenditures) and the financial capacities (revenues) is ensured at all levels of government. (Alijagić, 2015)

Fiscal disbalance occurs when there is discrepancy between public expenditure and derivative public revenue. It usually occurs when we talk about lower political-territorial units and we firstly think about horizontal fiscal disbalance. Horizontal fiscal disbalance means existence of differences in fiscal capacities and fiscal needs of political-territorial units of the same level. Thereupon occur certain migrations of citizens from poorer and economic underdeveloped political-territorial units to wealthier and economic developed political-territorial units where they can enjoy that amount of public goods that will satisfy their needs which brings to big disproportion when we talk about economic development of the certain regional and local self-government unit that must recognised and dealt with in time. The aim is to show the benefits of fiscal federalism and to draw attention to the problems concernig revenue collection or the lack o fit when the local and regional self-government unita are in question. (Jerković, 2017, 497)

The fundamental problem of central, regional, and local taxation, which is also a tendency all around the world, that despite the continually expanding scope of central and local activities, new types of public revenue cannot be found neither in the central, nor within local taxation, which could improve the increasing revenue that covers the government services, therefore there is no other option, but to tune these systems carefully, and to harmonize their operational reserves, furthermore to improve tax compliance. (Perić et al., 2013, 250-251) Finally, a very positive consequence of decentralization is the increase in the quality of services, as well as a wider range of functions and greater responsibility of local and regional self-government units. In order to satisfy the needs of citizens at the closest, i.e. local, level to

the greatest extent and quality, immediate access and quick response to current needs, i.e. their execution with minimum delay, is crucial.

### **3. Local self-government and experiences of reforms in Europe**

The number of local and regional self-government units in the EU varies. There is no optimal number that could be applied to all EU Member States as each country is an organism that functions in a unique way. Population, demographic structure of the population, territorial location of the state, internal structure, economic development, and political climate are all of great influence. Certain similarities may exist among states in terms of their internal organization (federal or unitary), in terms of whether they are capitalist or socialist, whether they belong to an interest or economic grouping such as the European Union, which was part of a community such as the SFRY, where the succession actually takes over the structure of the former state until the conditions for its own structure are met, or if they are former mother states and their colonies, etc.

#### **3.1. Attempts to harmonize regional self-government in Europe**

The adoption of the European Charter of Local Self-Government in 1985 laid the foundation for the harmonization of the local level of territorial self-government. Unlike the lowest, i.e. local, level of territorial self-government, which is primarily related to the immediate place of residence of the population and the provision of utilities and local public services, regional self-government is more dependent on the constitutional architecture of a country. (Đulabić, 2018, 44-448) This also leads to great difficulties when trying to harmonize the regional level at the European level. Regional harmonization has not received a strong institutional basis for balanced development, unlike the European Charter of Local Self-Government.

Regionalism has been around in Europe for some time. There are countries that have a developed regional level of government - regional self-government units with a high degree of autonomy. There are countries that have a regional level of government with archaic characteristics, such as Croatia. There are countries whose legislation provides for a regional level of government that has never been brought to life in practice, such as Slovenia. On the other hand, there are countries where the idea and practice of regionalism have not found a significant place.

The first wave of regionalism swept Europe in the late 1970s and early 1980s and led to the establishment of a regional level of government in many European countries. The second wave of reforms is related to the EU's cohesion policy in the late 1980s and early 1990s, culminating in the idea of a "Europe of the Regions" and the economic rationale for further strengthening the regional level of government. (Đulabić, 2018, 450)

Steps towards harmonization of regional self-government in Europe are reflected in several pieces of legislation. In 1988, the European Parliament adopted a non-binding Community Charter on Regionalization. Subsequently, in 1996, the Assembly of European Regions adopted the Declaration on Regionalism in Europe. Under the auspices of the Council of Europe, a draft European Charter of Regional Self-Government was prepared in 1996 and eventually adopted as Recommendation 240(2008). A significant step towards harmonization of regulation at the regional level is the document known as the Reference Framework for Regional Democracy. (Đulabić, 2018, 453)

The Reference Framework contains a total of 56 articles, which are divided into four parts.

The first part refers to the institutional structure, which regulates the definition of regional self-government, responsibilities, relations with other levels of government, and relations with the central level of government. The second part deals with regional authorities and the

internal organization of regions, and regulates in particular issues of self-organization, regional authorities, and conditions for exercising political functions, regional administration and principles of good governance. The third part regulates the financing of regional self-government, in particular the sources of financing, fiscal equalization and transfers, and the borrowing of regional self-government units. The fourth part is devoted to internal and international relations and regulates association and interregional cooperation of regional units, participation in the activities of the European Union and international cooperation of regional units.

A number of other informal legal acts have been adopted, none of which has seriously contributed to the harmonization of regional self-government at the European level.

### **3.2. Reforms of local self-government units and the current situation in Europe**

In the last 80 years, territorial reforms in terms of decentralization have become a key feature of public administration in Europe. The first wave of change in the 1970s initially affected the Western European countries and spread to the rest of Europe by the end of the century as a result of political unrest in the Eastern and Central European countries.

The reasons for these changes were very different: the first wave was characterized by the pursuit of modernization and rationalization, but the main reason was economies of scale.<sup>3</sup> In the post-communist countries, the goal was to give local self-government units a high degree of autonomy, even at the expense of territorial fragmentation in response to the previous highly centralized system.

Reform is still underway in response to the 2008 global financial crisis, and it is aimed at reducing costs, improving service delivery, and streamlining the executive decision-making process, at the expense of loosening the link between citizens and local self-government decision-making authorities, and even divesting local governments of some of their functions to return them to regional self-government or states as the highest level of government.

All of these reforms affected different levels of government in most European countries. As a rule, the changes were aimed at reducing the number of local self-government units.

The first wave of reforms, which resulted in the merging of local self-government units, took place between 1960 and 1970 and mainly affected Belgium, Denmark, Finland, Norway, Sweden, the Netherlands, Germany and the United Kingdom. It also had an impact on countries such as Czechoslovakia, Hungary, Poland, Romania, and Yugoslavia.

The second wave of reforms had the opposite effect. Its beginning was marked by a politically turbulent 1989 in Eastern Europe. Bottom-up territorial fragmentation occurred in response to frequent forced mergers in the previous period. After 1990, decentralization and local self-government were understood almost as synonyms in some Eastern European countries, i.e. as the right of each (even the smallest) inhabited unit (municipality) to its own, separate local self-government. Attempts to merge them into larger units were seen almost as a coup against local autonomy. The best examples of this type of reform are Croatia and North Macedonia, where the number of local self-government units has increased fourfold.<sup>4</sup>

At the same time, in the late 1990s, the so-called silent reform took place in some countries. The United Kingdom, Estonia, Finland, the Netherlands, Iceland, and Germany gradually merged local self-government units over several years.<sup>5</sup>

The full momentum of the third wave of territorial consolidation reforms occurred after the great financial and economic crisis of 2008, covering a number of countries such as Latvia

---

<sup>3</sup> Economies of scale refer to unit costs or average total costs that decrease as the scale of production increases.

<sup>4</sup> Territorial reforms in Europe: Does size matter? Tools for Local and Central Authorities, European Union, Centre of Expertise for Local Government Reform Council of Europe, 2017, p. 8.

<sup>5</sup> Ibid.

(2009), Greece (2011), Luxembourg (2001), Ireland (2014), Turkey (2014) and Albania (2015).<sup>6</sup>

Reforms in the form of reducing the number of local self-government units are underway in Armenia, Estonia, Italy, Norway, and Ukraine. For example, the number of local self-government units in Norway is to be reduced from over 400 to about 100. In 2017, the number of local self-government units was gradually reduced from 428 to 354 by merging 121 so-called “old” units into 47 “new” ones.<sup>7</sup> The vast majority of the mergers were on a voluntary basis, but in about a dozen cases, the decision to merge was made by the central government despite opposition from local authorities.

**Table 1:** Change in the number of local self-government units in Europe from 1990 to 2014

Country	1990	1994	1998	2002	2006	2010	2014
Albania	374	374	374	373	373	373	61
Austria	2,333	2,353	2,358	2,358	2,356	2,356	2,353
Belgium	589	589	589	589	589	589	589
Bulgaria	279	255	262	264	264	264	264
Cyprus	380	380	380	380	379	379	380
Montenegro	21	21	21	21	21	21	23
Czech Republic	4,100	6,230	6,242	6,254	6,248	6,250	6,253
Denmark	275	275	275	275	270	98	98
Estonia	255	254	247	241	227	226	213
Finland	460	455	452	448	431	342	320
France	36,693	36,688	36,682	36,682	36,688	36,685	36,684
Greece	5,923	5,921	1,033	1,033	1,034	1,034	325
Georgia	1,004	1,004	1,004	1,004	69	69	71
Croatia	172	499	545	550	556	556	556
Iceland	213	195	161	112	89	77	74
Ireland	113	114	114	114	114	114	31
Italy	8,094	8,102	8,099	8,101	8,101	8,094	8,071
Latvia	573	568	566	548	527	118	119
Liechtenstein	11	11	11	11	11	11	11
Lithuania	58	58	58	60	60	60	60
Luxembourg	118	118	118	118	116	116	116
Hungary	1,381	3,137	3,154	3,158	3,168	3,175	3,177
North Macedonia	34	34	123	123	80	80	80
Malta	67	67	68	68	68	68	68
Moldova	959	959	959	649	898	898	898
Netherlands	672	636	548	496	458	431	403
Norway	448	435	435	435	433	430	428
Germany	15,978	15,915	14,194	13,299	12,224	11,882	11,040
Poland	2,383	2,475	2,489	2,491	2,478	2,479	2,479
Portugal	305	305	308	308	308	308	308
Romania	2,948	2,948	2,948	2,966	3,174	3,181	3,181
Slovakia	2,826	2,858	2,878	2,891	2,891	2,890	2,890
Slovenia	62	158	203	204	221	221	223
Serbia	145	145	145	145	145	145	145

<sup>6</sup> Ibid.

<sup>7</sup> Ibid.

Country	1990	1994	1998	2002	2006	2010	2014
Spain	8,108	8,108	8,108	8,114	8,114	8,815	8,118
Sweden	284	286	288	289	290	290	290
Switzerland	2,761	2,761	2,761	2,726	2,726	2,584	2,352
Turkey	2,061	2,754	3,230	3,243	3,241	2,966	1,411
Ukraine	10,572	11,338	11,566	11,615	11,623	11,622	11,624
United Kingdom	540	540	467	468	468	434	433

*Source: Territorial reforms in Europe: Does size matter? Tools for Local and Central Authorities, European Union, Centre of Expertise for Local Government Reform Council of Europe, 2017.*

Looking at reforms in Europe in all three waves, one can conclude that there is no single approach to merging and consolidating local governments. The reforms were influenced by a number of factors as well as by the goals to be achieved, the most common of which was the need to reduce public spending in the local government sector. This points to possible shortcomings in the implementation of the reforms. Indeed, the financial structure seems to take precedence over the goal of meeting public needs through the timely delivery of public services, which should be a more purposeful goal.

At the same time, there is a desire to maintain a high degree of autonomy of local self-government units and to reconcile this with the idea of merging local self-government units and reducing their number.

Eleven of the 27 EU Member States have only one level of subnational government, nine have two (municipalities and regions), with the exception of Austria with nine federal states, while the remaining seven Member States, including some of the largest countries, have three levels of subnational government: municipalities, regions, and intermediate entities, such as provinces, departments, counties, and 16 federal states, Germany.<sup>8</sup>

Almost 70% of the total number of basic units, i.e. 89,077 units - municipalities, are located in the following five countries: 41% in France, 13% in Germany, 9% in Italy, and 7% in the Czech Republic. It should be emphasized that countries with a large number of basic units, with the exception of the Czech Republic, are the largest countries in the European Union with 60 to over 80 million inhabitants. (Jambrač, 2016, 988)

The problem of territorially fragmented fiscal federalism emerged in 2008, which is especially noticeable in countries with budget deficits and high public debt. Almost twenty years after the fragmentation of local units, Central and Eastern European countries, including Croatia, are confronted with the questionable sustainability of the existing fiscal decentralization. During this period, reforms of the territorial structure were implemented by reducing the number of local units (Denmark, Finland, the United Kingdom and Ireland, consolidation processes in the Netherlands, France, Germany, and Italy), which indicates that the consolidation of local and regional units should become a central theme of the reform processes.

In some countries, such as Denmark, the consolidation process has been rapid, while in others, such as the Netherlands and Finland, it has been gradual. However, regardless of the different results in studies and practice, proponents and opponents of local government consolidation, reforms are underway in Europe to reduce the number of local units, i.e. it is believed that larger units are more efficient and can provide better services to their citizens. (Callanan et al., 2014, 384)

The Scandinavian countries (Denmark, Sweden and Finland - Greater Scandinavia) participate in the economy of the country with the highest share of public expenditure in GDP

<sup>8</sup> Dexia and CEMR, Subnational public finance in the European Union – 2011, Bruxelles, 2012, p. 6.



of the 28 EU Member States, which is over 50%. At the same time, their local governments account for a quarter or a third of total public expenditure. Thus, local units in the Scandinavian countries have a significant impact on their economies and contribute to the overall success of society. (Jambrač, 2016, 992)

### 3.3. Denmark

Denmark is a country comparable in size and population to Croatia. In the period from 2002 to 2007, a radical reform of local and regional self-government was carried out in Denmark. This is quite a long period of time for thorough preparation, which also involved the strongest parties reaching a consensus on this issue. In Denmark, local self-government units were first asked to merge into larger units. Today, Denmark has five regions and less than one hundred municipalities. The cities and municipalities have an average of 55,000 inhabitants, while the average in Croatia is 7,000. In addition, the Danish regions have a population of about one million, which is on par with the European statistical recommendations of 800,000.

Denmark carried out a major reform of local self-government in 2007. Until then, the form established by the 1970 reform of the Local Government Reform Act was maintained. In the first major local government reform, implemented in April 1970, the total number of local self-government units was reduced from 1,098 to 277. The number of districts was reduced from 25 to 14. (Kovačić, 2009, 991)

A district represents a higher level of local self-government. Municipalities and districts function on a similar principle, and from the perspective of self-government, they are functionally complementary. During the great reform of 1970, both the responsibilities and the autonomy of municipalities and districts were gradually expanded. At the same time, the material and organizational conditions were created for the transfer of powers from the central government to the local level, while respecting the principles of fiscal decentralization. In this way, the tasks that can be done at the local level are assigned to the municipality, and the districts are responsible for tasks that affect the wider area. There were two types of tasks, i.e. mandatory and optional. The following tasks are mandatory:

- social welfare,
- education,
- primary education,
- dental care for children,
- home health care,
- environmental health.

The districts also perform tasks in all these areas, but they also administer all hospitals. Road construction is divided between municipalities and districts, depending on the importance of the roads. In addition, municipalities and districts are responsible for waste collection, a sewage network and drinking water sources, unemployment alleviation, etc.

The following tasks are optional:

- sports and cultural programs,
- public transport,
- public works,
- local economic development.

On 1 January 2007, after five years of preparation, a comprehensive reform of local government began. The reform had three main objectives:

1. to ensure an efficient public sector capable of providing optimal services without increasing the tax burden;

2. to strengthen local democracy, the ultimate goal of which is the delivery of social services by the level of government closest to the citizens;
3. to establish clear responsibilities for each level of public administration and to avoid overlapping.

Therefore, each individual level of public administration is assigned tasks that are specific to it.<sup>9</sup>

There are several reasons for the wide acceptance of this reform, although it has reduced the number of local and regional self-government units. The new local self-government units have been given new powers - the entire social sector, including employment policy. These powers were previously the responsibility of the districts, which have now been replaced by 5 regions. In addition, the method of financing has changed and the local self-government units are financed with an additional 15% of the funds from the former districts.

The reform resulted in a completely new territorial division, so that Denmark was divided into 5 regions that were created by merging the then 13 districts, which were abolished, and 98 municipalities were created by merging the previous 270 municipalities.

The new municipalities were given a more significant role after the responsibilities of the abolished districts were transferred to the central government, but the municipalities and regions were given some of the tasks that were the responsibility of the central state administration. Thus, some of the responsibilities of the municipality are as follows:

- outpatient rehabilitation,
- health promotion and disease prevention,
- health promotion in educational institutions,
- employment in local offices,
- social care,
- preschool education,
- educational assistance for children,
- environmental protection.

The reform envisages that the municipalities will set up one-stop-shops where citizens can access all the services offered by the municipalities, but also a range of services that are the responsibility of the regions or the central government authorities delegated to the municipalities. (Kovačić, 2009, 996)

The revenues of local self-government units come mainly from taxes, particularly the following taxes:

- income tax;
- land tax;
- corporate income tax;
- other taxes and fees.

Income tax and land tax are local taxes. A local income tax is collected by the state at the same time as the national income tax, while a land tax is collected directly by local authorities.<sup>10</sup>

---

<sup>9</sup> Local and regional democracy in Denmark, Recommendation 350, The Congress of Local and Regional Authorities, Council of Europe, 2013, p. 8.

<sup>10</sup> Local and regional democracy in Denmark, Recommendation 350, The Congress of Local and Regional Authorities, Council of Europe, 2013, p. 20.

The regional economy is divided into three different sectors: health, social services and specialized education, and regional development. The regions perform functions in the following areas:

- health care,
- health insurance,
- general and specialized health care,
- care for facilities for vulnerable groups and people with special needs,
- interregional bus transport.

The responsibilities of the regions are limited by law, i.e. they cannot independently assume and execute tasks other than those explicitly enumerated in the law (Kovačić, 2009, 997). The regions do not have their own financial resources. In Denmark, only the state and municipalities can collect taxes, so the revenues of the regions come mostly from the state and, to a lesser extent, from local authorities, because the regions have no right to collect taxes or borrow on the national capital market. The regions are financed by state aid and contributions from local authorities.<sup>11</sup>

The Danish financial system is well structured and has a fiscal equalization system for economically less developed local self-government units. As for the regions, the Council of Europe is convinced that they do not have a high degree of autonomy to meet the challenges, given their limited powers, and sees major shortcomings in the financing system, as it is not possible to independently raise revenue through taxes or funding, except through contributions.<sup>12</sup>

### 3.4. Slovenia

According to the internationally established indicators of decentralization, Slovenia belongs to the group of centralized states. The system of local self-government in Slovenia was introduced in 1994 with the establishment of 212 municipalities and urban municipalities,<sup>13</sup> which constitute the first stage of administrative-territorial division, and at the same time indicate a great fragmentation and irrationality of local self-government.<sup>14</sup> Provinces as second-level local self-government units were not established, but exist exclusively in the historical sense.<sup>15</sup> As a result, no strategy for the development of local self-government and decentralization has been adopted at the national level, which presupposes functional and financial decentralization of the state and measures to implement the principle of subsidiarity in accordance with the provisions of the European Charter of Local Self-Government, which has been in force in Slovenia since 31 March 1997. So far, only minor normative amendments have been adopted, aimed at consolidating municipalities and strengthening their financial autonomy. (Rakar, 2019, 86)

According to the Charter, changes to the limitations on local authority autonomy may not be made without prior consultation with local self-government units, possibly through a referendum if permitted by the laws of a state. According to Article 139 of the Slovenian

---

<sup>11</sup> Local and regional democracy in Denmark, Recommendation 350, The Congress of Local and Regional Authorities, Council of Europe, 2013, p. 19.

<sup>12</sup> Local and regional democracy in Denmark, Recommendation 350, The Congress of Local and Regional Authorities, Council of Europe, 2013, p. 25.

<sup>13</sup> In the paper, the term municipality also refers to an urban municipality, and the terms province and region are used as synonyms when referring to Slovenia.

<sup>14</sup> Before 1994, Slovenia had 62 municipalities, while by 2017 that number increased to 212 municipalities.

<sup>15</sup> Primorska (Slovenska Istra), Kranjska (Gorenjska, Notranjska, Dolenjska and Bela krajina), Koroška, Štajerska and Prekmurje.

Constitution, a municipality cannot be established without a referendum. Although a referendum is obligatory, its outcome is not legally binding.

When it comes to inter-municipal cooperation, joint municipal authorities are the most common, especially since 2007. The number of joint municipal authorities has increased rapidly since then, as has the share of municipalities participating in one or more of these authorities. Currently, more than 90% of Slovenian municipalities belong to such a joint municipal authority. Key factors in the establishment of such authorities are government co-financing and government incentives. (Rakar, 2019, 89)

In Slovenia, the main focus is on implementing the principle of subsidiarity and strengthening the financial autonomy of local self-government units as the two main objectives of the ratification of the European Charter of Local Self-Government.

In the field of local self-government, important changes had already taken place several years before the ratification of the European Charter of Local Self-Government.

The functional part of the reform of local self-government includes the delimitation of competences between the central government and the municipalities and urban municipalities. Until 1 January 1995, the municipalities also performed all state functions, which were then taken over by the state. Municipalities and urban municipalities perform three groups of functions:

- their own local public affairs, which differ from municipality to municipality - these are tasks determined by the municipality itself through its general law (the optional self-governing scope),
- local affairs that the central government places under the jurisdiction of the municipalities by law (the obligatory self-governing scope),
- tasks assigned by the state to the municipalities (the delegated scope). (Ploštajner, 2002, 45)

Within their exclusive jurisdiction, the municipalities shall perform the following functions within individual areas of activity:

- in education: pre-school education,
- in social care: nurseries, kindergartens, social services for families,
- in health care: preventive health care,
- in the field of environment and public health: waste collection and disposal, maintenance of cemeteries and crematoria,
- in urban and economic development: urban planning, local economic development,
- in the municipal sector: construction and maintenance of water supply and heating systems,
- in general administration: fire and civil protection (Setnikar-Cankar et al., 2000, 418-421),
- other: management of municipal property, enactment of municipal bylaws and other general laws, organization of municipal government, determination of misdemeanors and penalties for violations of local laws.

In practice, municipalities mainly perform service functions, i.e. they provide public services, while the central government mainly performs legislative functions (legislation). Public services are rarely provided by state or municipal authorities; in most cases, either specialized legal entities (e.g. a public enterprise, a public institution, a public fund or a public agency) are established or concessions are granted.

In order to conduct certain public affairs, the municipalities and the central government share powers, responsibilities and financial resources, cooperate in the elaboration and

implementation of programs, and co-finance, according to their capabilities, the development of a wide range of services and activities (education, health, social, cultural, sports, transport).

The tasks that fall under the joint responsibility of the municipalities and the state are the following:

- in education: primary schools and adult education,
- in the social sphere: creation of conditions for social housing construction, social security services (care for the elderly, disabled, infirm and poor),
- in health care: basic medical services,
- in urban and economic development: housing construction, spatial planning, regional planning, promotion of economic development, trade, industry, and tourism,
- in the municipal sector: gas supply,
- in culture, sports and leisure: theaters, museums and libraries, preservation of cultural heritage, parks and public facilities, organization of sports and leisure activities,
- in the field of environment and public health: drainage, environmental protection (soil, water and air pollution control, protection against noise), consumer protection,
- in the field of transport and traffic: construction and establishment of local roads, transportation, urban road traffic and ports. (Dubajić, 2013, 308)

The 2010 reform concluded that municipalities and cities satisfactorily perform the tasks that fall within their jurisdiction. Although the reform has opened the possibility for a more harmonious and faster development of local affairs within the competence of municipalities, the affairs of the state and municipalities are still vaguely delineated in the legislative procedures.

As far as the delegated scope of duties is concerned, if the state allocates sufficient funds for this purpose, it may transfer by law individual duties that fall within its jurisdiction to municipalities or urban municipalities, if this is more rational and efficient. A special law transferring certain tasks specifies whether they are transferred to all municipalities, only to urban municipalities, to municipalities in a specific area, or only to a specific municipality. In addition, a city municipality performs certain tasks that are the responsibility of the state as its own tasks (i.e., as tasks within the self-governing scope), and these are tasks related to the development of the city. An urban municipality that is affiliated with the province may also, if the municipalities make such a decision, perform the administrative tasks of the province. (Dubajić, 2013, 309)

So far, only minor normative amendments have been adopted, aimed at consolidating municipalities and strengthening their financial autonomy. From a territorial and functional point of view, Slovenian local self-government is characterized by a large number of municipalities that are too small and the absence of a second level of local self-government that could play a coordinating role between the state and municipalities. (Senčur, 2012, 378)

A number of acts regulate the financing of local self-government units: the Local Self-Government Act, the Financing of Municipalities Act (2006), and the Public Finance Act. The system of financing local self-government in Slovenia is based on:

1. own revenues,
2. additional state funds - fiscal equalization for economically weaker municipalities that cannot adequately finance their expenditures from their own resources,
3. borrowing.

Own revenues include tax revenues (transfer or shared taxes) as well as revenues from real estate, fees and charges. It should be noted, however, that despite the high share of tax revenues, the distribution of taxes collected is determined by the state and not by local authorities.

The share of the municipality from the income tax is 54%, but 70% of this amount is the so-called compulsory portion, while 30% is the so-called solidarity portion, which is paid to economically weaker municipalities.

Other taxes include land use fees, property tax, real estate transfer tax, movable property tax, inheritance and gift taxes, gambling tax and the like.<sup>16</sup>

It is interesting to note that revenues from income tax and other taxes are first allocated to the state budget and only then to local self-government units, so they cannot be considered as self-financing of municipalities.

In summary, the definition and distribution of own tax revenues in Slovenia does not follow the principles prescribed in Article 9 of the Charter or other international criteria for the classification of own taxes.

Nevertheless, the autonomy of municipalities is much better on the expenditure side than on the revenue side. Municipalities are free to decide how to spend their revenues, with the exception of earmarked government grants.

According to Rakar, the biggest problem is the implementation of the principle of subsidiarity and the principle of fiscal autonomy.

The report suggests that it would be advisable for the central government, in consultation with local authorities, to streamline existing legislation on certain tasks and responsibilities at the local level. This would also help reduce the financial burden and increase the financial efficiency of local authorities in the implementation of local policies at their own risk. However, in practice, municipalities should be consulted more effectively, in a timely manner, and appropriately at each stage of the planning and decision-making process so that municipalities can influence decisions that directly affect them.<sup>17</sup>

Although the concept of region is enshrined in the Constitution, it has been noted that the creation of regions is not a political or public policy priority. Recognizing the complexity of factors influencing regionalization, the Council of Europe's report calls on the Slovenian authorities to continue the debate to reach a compromise on the number, role and functions of regions in order to create an intermediate level of governance.

#### **4. Local and regional self-government in Croatia**

The right to local and regional self-government is guaranteed in the Constitution of the Republic of Croatia<sup>18</sup> and is reflected primarily in the right to independently carry out activities of local importance, independent internal organization and organization of local units, independent regulation of the scope of functions of local units, direct election of members of representative and executive bodies of local units, own revenues and independent disposal of own revenues, which is certainly in line with the European Charter of Local Self-Government. The Croatian system of local self-government is based on the principle of autonomy which gives a local unit the exclusive right to manage itself on the basis of independently issued regulations, and the principle of subsidiarity according to which decision-making is left to the level closest to the citizens and therefore public affairs should be handled by the authorities closest to the citizens.

The self-governing scope of the municipality, the city and the county is determined by the general clause. This means that the municipality and the city perform tasks of local

---

<sup>16</sup> Local democracy in Slovenia, Recommendation 421, The Congress of Local and Regional Authorities, Council of Europe, 2018, pp. 92-93.

<sup>17</sup> Cf. *ibid.*, p. 234.

<sup>18</sup> Constitution of the Republic of Croatia, Official Gazette 56/1990, 135/1997, 8/1998, 113/2000, 124/2000, 28/2001, 41/2001, 55/2001, 76/2010, 85/2010, 5/2014

importance, and the county performs tasks of regional importance, which are not assigned to state bodies by the Constitution of the Republic of Croatia and the law.

Croatia experienced its first territorial reform in the period from 1952 to 1957, when the number of units (municipalities) was reduced from 737 to 299. Ten years later, in the 1970s, the number of units was radically reduced to 114 (in 1974). The average number of inhabitants in the units increased during that period from a modest 5,000 to almost 40,000 inhabitants per unit. Thus, the average size of a basic unit (municipality) in Croatia in the 1990s was slightly smaller than the average size of a unit in Denmark after the 2007 public administration reform. (Manojlović, 2010, 961-996)

From 1992 to 2013, the number of municipalities in Croatia grew. In a period of 15 years, local self-government at the basic level reached 428 municipalities with an average size of less than 3,000 inhabitants. By 2001, there were 28 municipalities with less than 1,000 inhabitants, representing 7% of the total number of municipalities. By 2011, this number increased by nine municipalities, i.e. to 37, and a share of 9%. However, after 1992 and the creation of a new territorial structure, in addition to municipalities, cities were formed at the basic level, bringing the total number of first-level units to 556 units. The average size of all first-level units and municipalities decreased from 2001 to 2011 to 7,700 and 2,957 inhabitants, respectively. There is a difference between municipalities and cities in terms of the number of units (428 vs. 128) and the average number of inhabitants (2,957 vs. 23,749). The basic level units (municipalities and cities) are responsible for the same tasks. Since 2001, twenty counties have been formed, which have almost the same list of tasks as a regional self-government unit.

The result of the Parliamentary Commission on the state of local self-government in Denmark in 2003, which formed the basis for the implementation of the territorial reform, fully coincides with the subnational level in Croatia in 2015. (Jambrač, 2016, 993-994)

The Croatian system of financing local and regional self-government units can be divided into two periods. The first period lasted from 1994 to 2001, while the second period began in 2001 and is still ongoing. This period was characterized by the adoption of legal solutions that centralized the financing of local and regional self-government units, and local and regional self-government units have less autonomy in collecting revenues and allocating their own expenditures (Bajo et al., 2004, 44). Since 2001, all local and regional self-government units have more clearly defined powers and scope of work, and there is a greater degree of decentralization and fiscal federalism.

Local self-government in independent Croatia developed in three basic phases:

1. Phase 1 covered the period 1990-1993,
2. Phase 2 covered the period 1993-2001, and
3. Phase 3 covered the period 2001-2010. (Koprić, 2013, 3)

#### **Phase 1 (1990-1993)**

In the first three years, from spring 1990 until 1993, local self-government retained the institutional form that originated from the previous socialist period of the SFRY. This means that units of the same name and with the same territorial organization were maintained. There were about 100 municipalities and the City of Zagreb as a single municipality (since 1 January 1991).

#### **Phase 2 (1993-2001)**

In December 1992, several laws were passed that made a new territorial division and regulated the system of local self-government and administration introduced at that time. 418 municipalities, 69 cities and 20 counties were formed. Two autonomous districts were established, Knin and Glina, but they never became operational due to the war and the subsequent institutional changes.

At the same time, local communities, which were self-governing units with citizen participation below the local level, were abolished, and their property, often acquired through the work of citizens, became the property of municipalities and cities. (Koprić, 2010, 666)

The minimum set of provisions of the European Charter of Local Self-Government (ECLSG) was ratified in 1997, and the Charter became binding on Croatia on 1 February 1998 (Official Gazette - International Agreements 14/97). Numerous shortcomings of the system, especially the establishment of county prefects modelled on earlier French prefects, drew criticism not only from Croatian experts but also from the Council of Europe. The reason for this was the centralization and state control of local self-government despite the ratified Charter.

### **Phase 3 (2001-2010)**

The constitutional amendments of 2000 created a new basis for the development of local self-government. The Constitution defines counties as regional self-government units, guarantees a wide scope of self-government not only to them but also to local self-government units (cities and municipalities), introduces a general clause for regulating local affairs, and accepts the principles of subsidiarity and solidarity. After these constitutional amendments, it took another eight years to fully ratify the European Charter of Local Self-Government.<sup>19</sup> The new legal regulation of the system of local and regional self-government was implemented by the Local and Regional Self-Government Act of 2001<sup>20</sup> and a series of accompanying laws. The Act was already much stricter in regulating local affairs, although it retained the general clause. Thereafter, many special laws significantly limited the broad list of activities within the self-governing scope, and now the situation in this regard is hardly comparable to the breadth of a constitutional guarantee of the scope of local affairs. (Koprić, 2010, 667)

Today, the Croatian system of local self-government is monotypical: all local units, regardless of their size or other characteristics, have basically the same scope of duties. In total, there are 555 local self-government units in Croatia, namely 428 municipalities and 127 cities, as well as 20 regional self-government units, i.e. counties. The largest local unit is the City of Zagreb with almost 800,000 inhabitants, while the smallest is the municipality of Civljane with 239 inhabitants. The City of Zagreb, as the capital of the Republic of Croatia, has the special status of a city and a county, so there are a total of 576 local and regional self-government units in the Republic of Croatia. Each county (with the exception of the City of Zagreb) consists of cities and municipalities. Within the group of cities, there is a category of so-called big cities, local units with more than 35,000 inhabitants.

The major problems of Croatian local and regional self-government are the complex and fragmented territorial structure, the insufficient stability of the territorial structure, the unbalanced structure of local units, and the insufficient efficiency of local self-government units, which is reflected in the distribution of revenues from the only shared tax - income tax - which includes a part for the decentralized functions of local and regional self-government units and a part for equalization activities.

#### **4.1. Powers and responsibilities of local and regional self-government units**

Local self-government is the local level of public finance, which performs certain public duties based on its revenue. Act on Local and Regional Self-Government<sup>21</sup> regulates the scope of functions of municipality and city separated from the scope of functions of county. Pursuant to the provision of Article 19 of the Law, local and regional self-government units in their self-governing scope perform the tasks of local importance, and especially see to jobs

---

<sup>19</sup> Official Gazette – International Agreements 4/08.

<sup>20</sup> Local and Regional Self-Government Act; Official Gazette 33/01, 60/01 – authentic interpretation, 129/05, 109/07, 125/08, 36/09.

<sup>21</sup> Local and Regional Self-Government Act, Official Gazette 144/20



that are not constitutionally or legally assigned to government bodies, relating to the planning of settlements and housing, spatial and urban planning, social welfare, primary health care, education, etc.

#### **4.1.1. The powers and responsibilities of counties**

According to the Croatian provisions, the county conducts services of regional importance, not assigned to the national authorities by the Constitution and laws. Thus, the scope of functions of a county can be original (self-governing, for instance the traditional self-governing tasks) and delegated (services of state administration). County in its self-management scope performs services relating to

- education,
- health care system,
- spatial and urban planning,
- economic development,
- transport and transport infrastructure,
- maintenance of public roads,
- planning and development of a network of educational, health, social and cultural institutions,
- issuing construction and location permits and other documents related to construction and implementation of spatial planning documents for the county outside the big city,
- other activities in accordance with special laws

#### **4.1.2. The powers and responsibilities of cities and municipalities**

Local and Regional Self-Government Act stipulates that municipalities and cities in their self-governing domain (scope) perform the services of local importance which directly actualize the needs of the citizens, which are not assigned by the Constitution and laws to the national authorities and in particular services related to:

- planning of settlements and housing,
- spatial and urban planning,
- utility services,
- childcare,
- social care,
- primary health care,
- education and primary education,
- culture, physical culture and sport,
- consumer protection,
- protection and enhancement of natural environment,
- fire and civil protection,
- traffic in their area,
- other activities in accordance with special laws.

In order to meet its duties, counties, cities and municipalities have to find means of finance—mostly deriving from public revenue. When we talk about financing local and regional self-government units most often we talk about fiscal capacity and its strength. Fiscal strength of these units varies a lot, especially when it comes to municipalities and cities.

## 5. The revenue of local and regional self-government units

Financing of local and regional self-government units in decentralized countries is of great importance, both for the development of the overall economy, as well as for the development of local and regional self-government units which carry out the logic of polycentric development. To satisfy this postulate it is necessary to find the optimal method of financing. Local and regional self-government units, in order to have the tasks performed, have to ensure revenues in their budgets which are proportional to expenditures, from their own sources, of shared (assigned) taxes and grants from state and, in the Republic of Croatia, county budgets.

Revenue of local and regional self-government units:

- income from movable and immovable objects in their possession;
- income from companies and other legal entities in their ownership and revenue from concessions granted by local self-government units;
- revenue from the sale of movable and immovable objects in their possession;
- gifts, inheritances and legacies;
- municipal, town and county taxes and fees and duties, whose rates, within the limits specified by law, are determined independently;
- government assistance and grants provided by the state budget or a special law;
- compensation from the state budget for performing services of the state administration, which were conveyed to them;
- other revenue determined by law

Local taxes provide local governments with the greatest degree of autonomy in deciding on the use of revenues to finance public goods and services in their area. However, local governments cannot independently influence the level of the local tax rate because decisions on the types, basis and rates of taxes are made by the central government.

The link between taxes paid and the financing of public needs is of great importance. Taxpayers should clearly see the correlation between taxes paid and the benefits of public goods and services available to them in the local environment. The local tax base should not be mobile, otherwise taxpayers will move from high to low (or tax-free) areas, which may limit the freedom of tax authorities to change tax rates.

### 5.1. County revenue<sup>22</sup>

County revenue consists of the following:

1. Revenue from own property:
  - income from movable and immovable objects in the possession of the county,
  - income from companies and other entities owned by the county,
  - revenue from the sale of movable and immovable objects in the possession of the county,
  - gifts, inheritances and legacies.
2. County taxes:
  - inheritance tax,
  - tax on motor vehicles,
  - tax on boats,
  - tax on gaming machines.
3. Fines and confiscated assets for the offenses that are prescribed by the county itself.

---

<sup>22</sup> Local Taxes Act, Official Gazette 115/16, 101/17.

4. Other revenue determined by special law.

### **5.2. Municipal and city revenue<sup>23</sup>**

Municipal and city revenue consist of the following:

1. Revenue from own property:

- income from movable and immovable objects in the possession of the municipality or town,
- income from companies and other entities owned by the municipality or town,
- revenue from concessions granted by local self-government units,
- revenue from the sale of movable and immovable objects in the possession of the municipality or town,
- gifts, inheritances and legacies.

2. Municipal and city taxes:

- surtax to income tax,
- tax on consumption,
- tax on holiday homes,
- tax on real estate transaction,
- tax on public land use.

3. Fines and confiscated assets for the offenses that are prescribed by the municipality or town themselves.

4. Administrative fees in accordance with a special law.

5. Residence fees in accordance with a special law.

6. Utility charges for the use of municipal or city facilities and institutions.

7. Utility charges for the use of public or municipal urban areas,

8. Other revenue determined by special law.

### **5.3. Shared taxes as a source of financing for local and regional self-government units**

Shared taxes are taxes in which the collected revenues are distributed between two or more levels of fiscal authority. In the Republic of Croatia, there were three shared taxes, namely income tax, corporate income tax and real estate transfer tax. Since 2007, the corporate income tax is exclusively a state revenue, while the real estate transfer tax is exclusively a local or municipal/city revenue, although at that time only 20% of the money collected through this tax benefited the state budget. (Perić et al., 2017, 324)

The financing of decentralized functions is de facto decided by the state. In particular, the Act on the Financing of the Units of Local and Regional Self-Government of 2001 (OG 59/2001) introduces the concept of decentralized functions. Since then, the financing of decentralized functions has changed annually. Originally, the decentralized functions were related to the income tax revenues. The state decides, de facto and de jure, the percentage of income tax revenues used to finance these functions.

The Act on the Financing of the Units of Local and Regional Self-Government (OG 138/20) defines the decentralized functions of primary and secondary education, social welfare, health care and firefighting, and their financing through the distribution of income tax as the only shared tax in the Croatian tax system as described below.

---

<sup>23</sup> Ibid.

The income tax revenue is divided into:

1. a share for the municipality or city: 74%,
2. a share for the county: 20%, and
3. a share for decentralized functions: 6%.

The share for decentralized functions refers to the allocation of overhead costs (e.g. infrastructure costs, equipment, etc.), while the salaries of employees in decentralized functions are paid from the state budget.

At the same time, it is important not to forget the income tax surcharge, where in practice the tax burden varies depending on the taxpayer's place of residence. For example, the cities of Osijek and Zagreb impose an income tax surcharge rate of 13% and 18%, respectively. This means that taxpayers with the same income pay different amounts of tax. (Jerković, 2019, 1021)

## 6. The future of functional local self-government

Under the Recovery and Resilience Facility, the Council of the EU has approved the Croatian National Recovery and Resilience Plan 2021-2026 (hereinafter: the Plan) in the amount of EUR 6.3 billion, with an expected advance payment of approximately HRK 6.1 billion by the end of 2021, i.e. 13% of the grant value allocated under the Plan. The payment will be based primarily on the performance indicators set out in the Plan.

The Plan notes that increasing the efficiency of the state in implementing EU-funded reforms and projects is a prerequisite for the implementation and use of the earmarked funds and envisages, *inter alia*, further decentralization of the state, with a focus on promoting the functional merger of local units with the investments planned for this purpose.

It is planned to establish a system for financing the joint performance of individual tasks in order to more easily overcome the problems of insufficient capacity through the cooperation of local units and to improve services and the efficiency of the use of funds. An inter-ministerial working group of experts from state administration bodies will be established to support interested local units, the legislative framework will be amended and a financial support mechanism will be established to promote functional and real mergers. Functional and even real mergers are more than necessary in a country with such a large number of local units, with 50 municipalities with less than 1,000 inhabitants, between which there are drastic differences, not only in terms of population (the smallest municipality has only 137 inhabitants, the largest even 16,500), but also in terms of per capita income (the lowest is HRK 1,700, the highest HRK 27,000). (Ott, 2021, 7)

The Ministry of Justice and Administration and the Ministry of Finance, in cooperation with state administration bodies, are responsible for implementing the Plan. The target group are local units, i.e. their end users - citizens and businesses. The estimated amount is HRK 21.6 million, and the implementation period started in December 2021 and will end in June 2025. Compared to many other items of the Plan, this is not a huge amount, but it is not negligible, so everything should be done to make better use thereof. (Ott, 2021, 2-3)

## 7. Conclusion

There is no consensus on the optimal number of local units. The debate over the optimal number has always provoked controversy in the public. However, there is even greater interest in the method of financing and revenue structure of local self-government units that meet the interests and common needs of citizens.

Citizen dissatisfaction with the functioning and services of local units, as well as dissatisfaction of local units with their financial and administrative capabilities, could be channeled through timely action toward their more active engagement in solving problems that bother them, and which even the largest, let alone the smallest, units, can hardly solve on their own: waste collection and disposal, local and regional public transportation, care for the elderly and infirm, upbringing and primary education, etc. In this way, funds from other European sources could be better used, which is one of the main conclusions of the Plan.

Transparent local budgets promote greater accountability of local authorities in the procurement of public funds and the provision of public goods and services, and facilitate citizen participation in local budget processes. Timely publication of budget documents online provides citizens with a quick view of into key budget information, which should be accurate, understandable and complete. This reduces information asymmetry between local government and its citizens, which can increase citizens' trust in local government. Transparent local budgets allow citizens to see the revenues collected and the purpose of expenditures, both of which are important to them as end users. High revenues - both total and per capita - do not necessarily mean that the local entity is doing well, because sometimes a large part of its revenues consists of various types of support, loans, and the like. In such cases, it is necessary to examine these revenues more closely (purpose, source, conditions under which they were granted). The reason for an increase or decrease in revenues may also be a consequence within the fiscal equalization system when it comes to the distribution of income tax revenues. Over the years, there have been a number of changes in redistribution that have had a significant impact on the revenues of cities, towns, and counties, especially when the share of equalization aid for decentralized tasks is taken into account. We should also mention certain local taxes that have been abolished from the tax system of the Republic of Croatia over the years, but also the redistribution of former shared taxes, which sometimes benefits local and regional self-government units (a real estate transfer tax, which has been exclusively a local tax since 2017) and sometimes harms them (a corporate income tax which has been exclusively a state tax since 2007).

Due to the unsatisfactory level of service quality, weak administrative and fiscal capacity, and insufficient transparency, the goal is to provide efficient, high-quality, and transparent services by creating functional links between local units so that citizens have the same opportunities to meet their needs and interests regardless of where they live.

## REFERENCES

- Alijagić, M. (2015): *Financiranje javne uprave*, Veleučilište Nikola Tesla Gospić, Otočac
- Antić, T. (2002): *Komparativni prikaz sustava lokalne samouprave u nekim europskim državama*, Polit. misao, Vol XXXIX, No. 4., Zagreb
- Bajo, A. and Bronić, M. (2004): *Fiskalna decentralizacija u Hrvatskoj: problemi fiskalnog izravnjanja*, Financijska teorija i praksa 28 (4), IJF, Zagreb

- Callanan, M., Murphy R. and Quinlivan, A. (2004): *The Risks of Intuition: Size, Costs and Economies of Scale in Local Government*, Dublin, The Economic and Social Review, Vol. 45, 3/2014.
- Dexia and CEMR (2012): *Subnational public finance in the European Union – 2011*, Bruxelles
- Dubajić, D. (2013): *Reforma lokalne samouprave i decentralizacija u Sloveniji, Reforma lokalne i regionalne samouprave*, Institut za javne financije, Pravni fakultet Sveučilišta u Zagrebu, Zagreb
- Đulabić, V. (2018): *Harmonizacija regionalne samouprave u Europi i regionalno pitanje u Hrvatskoj*, Europeizacija hrvatske lokalne samouprave, Dva desetljeća primjene standarda Europske povelje o lokalnoj samoupravi, Institut za javnu upravu, Zagreb
- Jambrač, J. (2016): *Lokalna samouprava u Hrvatskoj: veličina i ekonomska skala*, Zb. Prav. fak. Sveuč. Rij., No. 2.
- Jerković, E. (2017): *FISCAL FEDERALISM IN FUNCTION OF ECONOMIC DEVELOPMENT*, 6th International Scientific Symposium Economy of Eastern Croatia- vision and growth, Ekonomski fakultet u Osijeku, HAZU, Univerza v Mariboru, Univerzitet u Tuzli, Osijek
- Jerković, E. (2019): *LEGAL CHALLENGES OF REDUCTION OF THE TAX BURDEN ON LABOUR IN THE REPUBLIC OF CROATIA*, International Scientific Conference "EU and Member States – Legal and Economic Issues" in Osijek, 6-7 June 2019 ECLIC, Faculty of Law, Josip Juraj Strossmayer University of Osijek, Osijek
- Croatian National Recovery and Resilience Plan 2021-2026*, 2021. Available at: <https://vlada.gov.hr/UserDocsImages/Vijesti/2021/srpanj/29%20srpnja/Plan%20oporavka%20i%20otpornosti%2C%20srpanj%202021..pdf>
- Koprić, I. (2010): *Stanje lokalne samouprave u Hrvatskoj*, Hrvatska javna uprava, Vol. 10, 2010, No. 3., Institut za javnu upravu: Organizator, Zagreb
- Koprić, I. (2013): *Dvadeset godina lokalne i područne (regionalne) samouprave u Hrvatskoj: razvoj, stanje i perspektive*, Lokalna samouprava i lokalni izbori, Institut za javnu upravu, Zagreb
- Kovačić, M.(2009): *Reforma lokalne samouprave u Danskoj 2007. godine*, Hrvatska javna uprava, 9 (4), Lokalna samouprava i lokalni izbori, Institut za javnu upravu, Zagreb
- Manojlović, R. (2010): *Danski model novog javnog menadžmenta-može li poslužiti kao uzor Hrvatskoj*, Hrvatska javna uprava, Vol. 10, 4/2010., Lokalna samouprava i lokalni izbori, Institut za javnu upravu, Zagreb
- Ott, K. (2021): *Funkcionalna i održiva lokalna samouprava u Nacionalnom planu oporavka i otpornosti 2021.-2026.*, Osvrti Instituta za javne financije, Institut za javne financije, Zagreb, No. 121.
- Perić, R., Konjić, E., Ercsey, Zs., Szilovics, Cz. (2011): *System of financing and budget of local and regional self-government units*, Pravni aspekti međugranične suradnje i EU integracija: Mađarska- Hrvatska, EUNICOP, IPA Cross-border Cooperation Programme Hungary-Croatia, Osijek, Pečuh
- Perić, R., Jerković, E., Ercsey, Zs., Szilovics, Cz. (2013): *The finances of local and regional self-government units*, Pravo-regije-razvoj, DUNICOP, IPA Cross-border Cooperation Programme Hungary-Croatia, Pravni fakultet Osijek, Pravni fakultet Pečuh,
- Perić, R., Jerković, E. (2013): *Prihodi proračuna jedinica lokalne i regionalne samouprave*, III. Međunarodna konferencija Razvoj javne uprave, Veleučilište Lavoslav Ružička u Vukovaru
- Perić, R., Jerković, E. (2017): *SIGNIFICANCE OF SHARED TAXES IN THE TAX SYSTEM OF THE REPUBLIC OF CROATIA*, 26th International Scientific Conference on Economic and Social Development – "Building Resilient Society", Zagreb, Varazdin

Development and Entrepreneurship Agency in cooperation with the Faculty of Management University of Warsaw, Poland, University North, Croatia

Ploštajner, Z. (2002): *Decentralizacija uprave, Decentralizacija i sudjelovanje građana na lokalnoj razini*, Zagreb: Friedrich-Ebert Stiftung

Rakar, I. (2019): *Twenty Years of the European Charter of Local Self-Government in Slovenia: A Success Story?*, HKJU-CCPA, 19(1)

Senčur, M. (2012): *Lokalna samouprava u Sloveniji, Croatian and comparative public administration*, HKJU – CCPA, Vol. 12, 2012, No. 3.

Setnikar-Cankar, S., Vlaj, S., Klun, M.(2000): *Local government in Slovenia*, Tamás M. Horváth (ed.): Decentralization: Experiments and Reforms. Budapest: Local Government and Public Reform Initiative

Recommendation 350 (2013): *Local and regional democracy in Denmark*, The Congress of Local and Regional Authorities, Council of Europe

Recommendation 421 (2018): *Local democracy in Slovenia*, The Congress of Local and Regional Authorities, Council of Europe

Recommendation 446 (2020): *Monitoring of the European Charter of Local Self-Government in Austria*, The Congress of Local and Regional Authorities, Council of Europe 2020.

*Territorial reforms in Europe: Does size matter?* (2017) Tools for Local and Central Authorities, European Union, Centre of Expertise for Local Government Reform Council of Europe

Trnka, K. (2006): *Ustavno pravo*, Fakultet za javnu upravu, Sarajevo

Žgomba, T. (2018): *Usporedba zemalja članica Europske unije prema odabranim pokazateljima fiskalne decentralizacije*, Sveučilište Jurja Dobrila u Puli, Fakultet ekonomije i turizma Dr. Mijo Mirković Pula, 2018

Legal texts:

European Charter of Local Self-Government, Strasbourg, 15.X.1985

Constitution of the Republic of Croatia, Official Gazette 56/1990, 135/1997, 8/1998, 113/2000, 124/2000, 28/2001, 41/2001, 55/2001, 76/2010, 85/2010, 5/2014

Constitution of the Republic of Slovenia, Official Gazette of the Republic of Slovenia 33/91-I, 42/97 – UZS68, 66/00 – UZ80, 24/03 – UZ3a, 47, 68, 69/04 – UZ14, 69/04 – UZ43, 69/04 – UZ50, 68/06 – UZ121, 140, 143, 47/13 – UZ148, 47/13 – UZ90, 97, 99 and 75/16 – UZ70a

Act on the Financing of the Units of Local and Regional Self-Government, Official Gazette 59/2001

Act on the Financing of the Units of Local and Regional Self-Government, Official Gazette 138/20

Local and Regional Self-Government Act, Official Gazette 144/20

Local Taxes Act, Official Gazette 115/16, 101/17

*A scientific paper*

**Anita Peša, Ph. D., Associate Professor**

University of Zadar

E-mail address: apesa@unizd.hr

**Berislav Bolfek, Ph. D., Associate Professor**

University of Zadar

E-mail address: bbolfek@unizd.hr

**Martina Maté, M. Sc.**

University of Zadar

E-mail address: mmate@unizd.hr

## **BEHAVIOUR MODEL 'NUDGEU' IN THE LIGHT OF CROATIAN ENTRY TO EUROZONE<sup>1</sup>**

### **ABSTRACT**

*Incentive-based behavioural models are today important topic in developed countries and applied in many economic policies. Recent economic theory is fully aware that classical economics is no longer sufficient in explaining and coordinating of recent economic phenomena. In the focus of this paper is the behavioural concept of 'Nudge' that is presented through the conceptual innovative model named 'NudgEU' in the light of Croatian entry into the Eurozone (hopefully in 2023). Prescribed regulation for Croatia's entry into the Eurozone has been met. Croatia together with Bulgaria entered the ERM II system. Formal conditions are fulfilled but authors point the question whether public is aware of the momentum. There is a lack of a quality information campaign or public polemic with clear message regarding economic benefits of the entry to Eurozone. The advantages of a country's entry into the Eurozone are mainly reflected in the reduction of risk premiums, reduction of transaction costs, development of capital markets, increased trade in the European market, attracting foreign investment etc. Therefore, authors propose the new model for policy makers to provide an incentive for the introduction of the Euro that could be applied especially for businesses, institutions and small and medium-sized enterprises. The model involves the establishment of a Centre on Behavioural Insights that could produce targeted different behavioural insights and nudges. Such centres are already established in the EU and some individual countries outside or within the EU. The main aim of this paper is to contribute to existing behavioural models used in public policy and in financial and monetary integration particular that could be applied in Croatia and in some other EU countries on their way to Eurozone through the model 'NudgEU' as author's original scientific contribution.*

**Key words:** Eurozone, behavioral economy Nudge, NudgEU.

---

<sup>1</sup>This work has been fully supported by the University of Zadar under the project number IP.01.2021.14



## 1. Introduction

Behaviour models are increasingly used in public policies around the world. Many developed western countries have already established BI centers where initiatives based on behavioural models are implemented. The European Commission established BI in 2019, and the topics it deals with are consumer protection, energy, environmental policy employment, finance, health (covid19) and others. Among the leading BI centers in the world, the Behavioural Insight Team (BIT) stands out, which in 2010 began to use behavioural models for public policy purposes. It is followed by the US under President Obama, who, under the influence of leading American behavioural economists, initiated the use of behavioural methods at the governing state level. It is followed by France, which has been conducting experiments in the field of behavioural economics since 2013. Similar centers and initiatives around the world continue to be organized. The subject of this paper includes an analysis of behavioural models used for public policy purposes. Based on the analysis, it is proposed to establish a BI center in the Republic of Croatia. The BI Center in the Republic of Croatia should deal with topics that can be designed or directed with the help of behavioural methods. Furthermore, the authors suggest that in addition to the topics dealt with by other BI centers such as public health, energy saving, environmental policy, the Croatian BI Center should also address Croatia's entry into the Eurozone. The Croatian public's entry into the Eurozone, i.e. the introduction of the Euro, has not been recognized enough as an important step in the further financial integration of the Republic of Croatia with the rest of the EU. There are no known concrete benefits that will result from the single European currency in our territory, and there are serious and rather irrational fears ranging from fear of rising retail prices, through the sale of Croatian property, land and real estate to fear of losing monetary sovereignty. Following the above, the authors propose a behavioural model of NudgeEU which, with the help of behavioural methods, would encourage Croatian citizens to positive repercussions of Croatia's entry into the Eurozone, and educate them and raise awareness of benefits of Croatia's entry into the Eurozone. The model represents an original scientific contribution that could be applied in the future to other EU candidate countries for joining the Eurozone. Paper is the 1.st phase of the project called "NudgeEU - Macroeconomic expectations and adjustments of the Croatian system towards the banking union and the Eurozone" by University of Zadar (<https://ekonomija.unizd.hr/projekti>, 2021). The paper consists of a theoretical overview that includes the accession of the Republic of Croatia to the Eurozone and presents basic behavioural models in public policies. The chapter with the elaboration of the NudgeEU model follows, followed by the conclusion.

## 2. Theory overview

We divided the theoretical overview into two parts. The first subchapter deals with Croatia's entry into the Eurozone, followed by a subchapter that presents behavioural models used in public policies.

### 2.1. Croatian entry to Eurozone

With the start of negotiations on joining the EU in 2004, the Republic of Croatia became a candidate country, followed by numerous and arduous years of opening and closing chapters of the prescribed procedure for candidate countries, which were passed by other candidate countries. The only thing is that the Republic of Croatia has stalled due to the unreasonable request of the EC that negotiations will not continue until the arrest and arrest of Croatian General Gotovina, who was later acquitted by The Hague Tribunal. So, the negotiations

started in 2005, and ended in 2011 when finally become obvious that the Republic of Croatia would become an EU member state, and that this would be the last country to complete the accession negotiations. Candidate countries that have not moved from the starting positions are Turkey (negotiations started in 1999, and the EC has promised to accept them if they accepted refugees), Northern Macedonia (negotiations started in 2005, and the EC has promised to accept them if they changes the name of the country Macedonia to Northern Macedonia), Montenegro (negotiations started in 2010, specific in that it adopted the euro in 2002 to replace the Deutsch mark, without objections from the European Central Bank) Serbia (negotiations started in 2012, and chapters do not close) and Albania (negotiations started in 2014, and this country is important to the EU due to its geostrategic position).

The signing of the Accession Treaty and the referendum on Croatian EU accession took place in December 2011, with the full accession in July 2013.

Every EU member state that joined the EU in previous years experienced an increase in foreign investment a few years before joining, and this, unfortunately, did not happen to a large extent in the Republic of Croatia, given the momentum of the 2008 global crisis that stopped or slowed down the whole world and thus Croatian economic development. Apart from external repercussions of the global financial crisis (stock exchange decline, increased unemployment, declining unemployment, rising interest rates, declining interest rates, declining household consumption, declining net income, etc.) Croatia has also suffered from domestic structural difficulties, declining production and of obsolete state apparatus (Bilas, 2008, Benolić, 2012). Thus, poor results of the Croatian economy in the period from 2008 to 2013 generated an increase in unemployment and government debt (Alpeza et al., 2015).

With Croatia's full accession to the EU in 2013, the Republic of Croatia became an equal member of the EU, and its accession to the EU was expected to mean attracting FDI, economic development, increased imports and exports, lower interest rates, reduced unemployment and other positive effects of integration (but this transition period lasted much longer than expected. However, after 2011, when negotiations on Croatia's accession to the EU began, stock market in Croatia raised due to foreign direct investment mainly through the equity, financial industry (establishing of foreign banks in Croatia mostly from Austria, Italy and Hungary).

Generally, Croatia is a small open transition economy which has been largely connected to other foreign markets (Šimović, 2013). The period after Croatian accession in the EU showed that the country was successful in the harmonisation of legislation and policies and institution building in some areas, but much weaker in respect of economic and structural reforms which remained unfinished (Butković i Samardžija, 2014). In last few years, Croatia has taken significant steps towards the adoption of the Euro, same as Bulgaria and Romania.

From July 2020 Croatian kuna and the Bulgarian lev are included in the European Exchange Rate Mechanism (ERM II) and Croatia will adopt euro in 2023. The positive decision of the European authorities in Croatia's accession to ERM II confirms the positively assessed efforts of Croatia in the previous period in the field of public sector management, strengthening legislation of prevention of money laundering, collection, processing and dissemination of statistics, and financial and administrative relief sector (more in Peša et al. 2021.) As a part of the European Union, Croatia shares the common challenges and future prospects. Macroeconomic data in 2022 finally show stabile growth of Croatian economy. The World Bank lowered its forecast for Croatia's gross domestic product (GDP) growth to 5.4% in 2022 and 4.4% in 2023 due to global economic slowdown. It is expected that the entry of the Republic of Croatia into the Eurozone will follow at the beginning of 2023, a competition for

coin design was held (known for the kuna plagiarism scandal), and all prices from 1 September 2022 must be expressed in euros.

## 2.2. Behavioural models in public policies

As we noted in the introduction, behavioural economics assumes that people are ‘predictably irrational’ (Ariely, 2010) and that they can be encouraged in public policies to make positive changes in behaviour for the common good. Behavioural economics uses psychological, social and emotional factors in creating behaviour models. Main behavioural economists, Tversky and Kahneman 1982, Camerer and Lewenstein 2004 i Sunstein and Thaler 2008 contributed greatly to behavioural economics. We single out Thaler and Sunstein who coined the term ‘nudge’. Nudging assumes that human are not exclusively rational beings and do not always act based on their knowledge and intentions (Thaler and Sunstein 2008). Their decision making is often not fully rational and can be influenced by heuristic and biases. A heuristic is a mental shortcut that allows people to solve problems and make judgments quickly and efficiently (Simon, 1950). A cognitive bias is a systematic error in thinking that occurs when people are processing and interpreting information in the world around them and affects the decisions and judgments that they make (Tversky and Kahneman, 1982). Simon (1959) also promote the concept of bounded rationality by positing that people face limitations in how much information they can process and how much time they have to proves it. Therefore, policy makers should do gentle push toward wishful citizens behaviour (nudge as positive push). According to Thaler and Sunstein (2008), libertarian paternalism (Paternalism is the permissibility of state influence in individual human decisions for the benefit of those same individuals) which relies on pushing, is a mild variant of paternalism, since alternative choices are not blocked or do not carry significant burdens for the individual (Ivanković, 2015). However, in reality pushing (nudge) can turn into aggressive paternalism, and as a remedy Thaler and Sunstein (2008) suggest the so-called self-nudge or snudge as a form of self-control. Snudging is essentially a form of pre-obligation. Pre-commitment strategies consist of voluntarily imposing restrictions on oneself in order to promote one’s own goals and prevent distractions and sensitivity to external stimuli (Benartzi et al. 2017). Thaler and Sunstein (2008) suggest that a nudge policy should not significantly change the economic incentives surrounding a given decision; legislation and regulation are also included. Many countries have already established Behaviour Insights centres to apply behaviour models in policymaking. One of the leaders is Halpern who established Behavioural Insights Team in 2010 for British public policy. They proposed EAST approach to apply behavioural insights: Easy, Attractive, Social and Timely. Now days, they advising foreign governments, local authorities and companies.

France, US, Australia, Pakistan are some of the countries that encourage behavioural experiments and applies behaviour models in their public policies. European Commission (EC) also established Competence center for behavioural insights in 2019. Their field of interests are mostly tax policy, public healthcare (Covid-19), European Green Deal, sustainability and transport. On the European level TEN (The European Nudging Network) was established with the mission to ensure a scientifically and ethically responsible dissemination of applied behavioural insights throughout Europe (see more in: <http://tenudge.eu/>, 2021). For example, the most known behavioural models in public policies is organ donation in UK. The Behavioural Insights Team conducted one of the largest Randomised Controlled Trials (RCTs) ever run in the UK, in partnership with NHS Blood and Transplant (NHSBT), the Government Digital Service (GDS) the Department for Health (DH), and the Driving & Vehicle Licensing Agency (DVLA). RCTs enable policymakers to distinguee the effectiveness of new interventions in increasing of organ donators.

Another example is behavioural experiment with farmers assessed the effect of two policy features of the new green architecture of the EU common agricultural policy on the adoption of environmentally friendly practices: increasing mandatory adoption and shifting budget to voluntary schemes. Results shed light on behavioural patterns, highlighting potential trade-offs between mandatory and voluntary schemes to increase agriculture's environmental and climate performance (Dessart et al 2001). The latest current example of the use of behavioural models in public policies is encouraging citizens to decide on vaccination against COVID-19 both in the EU and beyond.

### 3. NudgEU

The formal conditions for Croatia's entry into the Eurozone have been met. However, the question is whether Croatian citizens, entrepreneurs, craftsmen and companies are ready for Croatia's entry into the Eurozone? This paper is the 1st phase of the project called "NudgEU - Macroeconomic expectations and adjustments of the Croatian system towards the banking union and the Eurozone" by University of Zadar (<https://ekonomija.unizd.hr/projekti>, 2021) who deals with this topic with an emphasis on the behavioural approach to this issue. In the II. Phase of the project, we will analyse the expectations of institutions and companies toward new currency Euro in the Republic of Croatia on the basis of which a behavioural model - Nudge EU - will be created. Citizens and institutions of the Republic of Croatia are not fully aware of what they can expect from the entry of the Republic of Croatia into the Eurozone, and despite some efforts by Croatian ministers and Prime Minister Plenković, there is no quality public debate or attention to the expectations of the general public. There are certain political parties that openly oppose Croatia's entry into the Eurozone and advocate calling a referendum on this topic (political party Most and others). We believe that with the help of nudging, the citizens of the Republic of Croatia could be led to conclude for themselves what life and work will look like with the currency Euro (in the beginning of 2023). Today the citizens are left to their often, irrational fears, supported by the memory of the world crisis in 2008, information about the rise in prices 'overnight' in countries that have already adopted the Euro currency (especially in the neighbourhood country Slovenia). There is also an all-out fear as well as uncertainty due to the Covid-19 pandemic so that any change is viewed with underling. T

he authors suggest that the Croatian government should establish a behavioural center for the purpose of better management of the public sector, especially in light of Croatia's entry into the Eurozone. Let's help the citizens of the Republic of Croatia see for themselves why the introduction of the euro is good news because it will reduce transaction costs, attract foreign investment, simplify business, etc. NudgEU can help Croatian citizens reduce irrational fears of the unknown and strong feelings for the Croatian currency Kuna. For the Croatian citizens Kuna represent the independency of The Republic of Croatia because Croatia is the young independent country for only three last decades and the huge price were paid (war) for that.

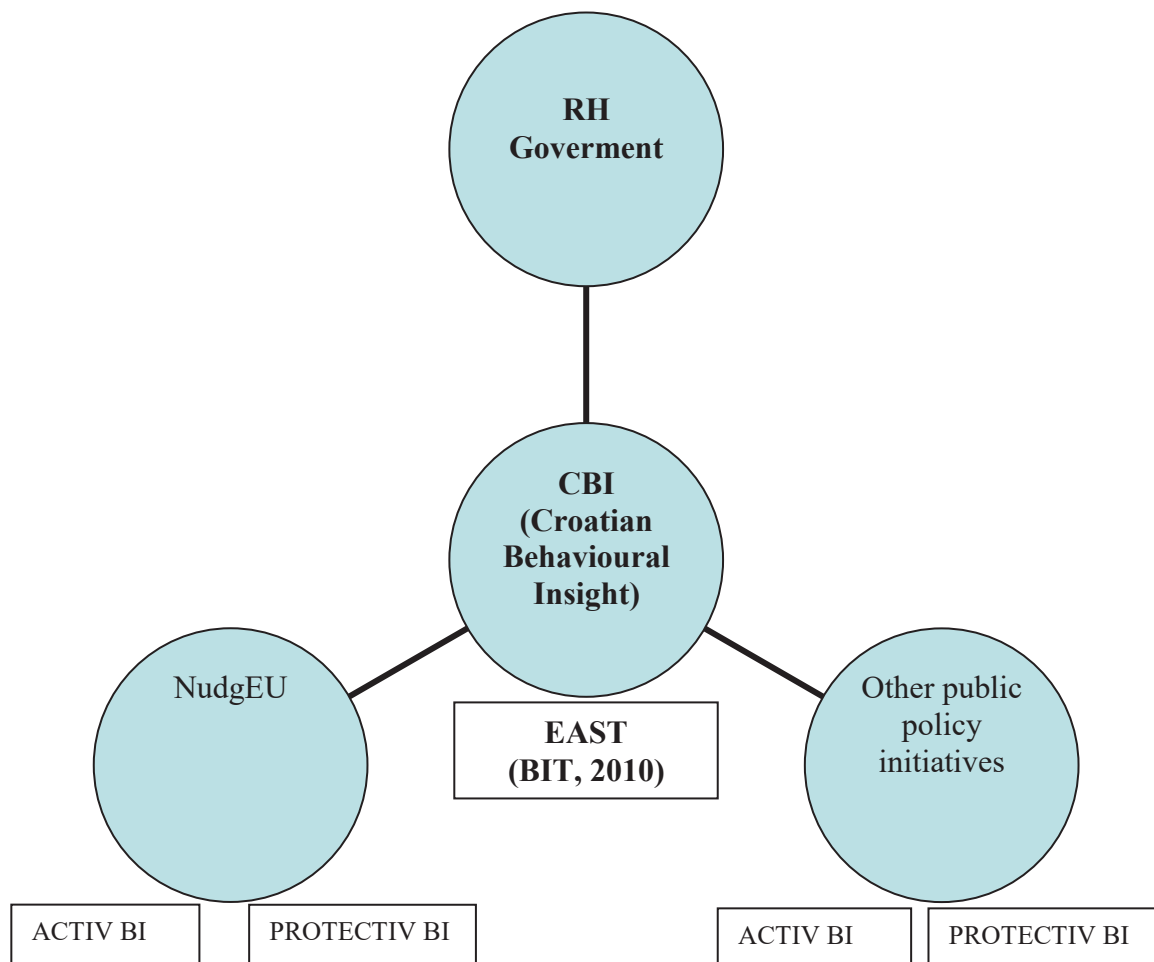
The authors propose the new model for policy makers to provide an incentive for the introduction of the Euro that could be applied especially for businesses, institutions and small and medium-sized enterprises. The model involves the establishment of a Centre on Behavioural Insights that could produce targeted different behavioural insights and nudges. The model named 'NudgEU' is a part of the project "NudgEU - Macroeconomic expectations and adjustments of the Croatian system toward the banking union and the Eurozone" by University of Zadar (<https://ekonomija.unizd.hr/projekti>, 2021) to support the process of Croatian entry to Eurozone. The authors participating in the project noted that the information campaign on the introduction of the euro is not sufficient.

Croatia has not established a BI unit yet, and nudge has not been used as far as we know. Therefore, we propose the establishment of a BI center that will deal with protective and active nudge techniques with the first task of encouraging the adjustment of the introduction of the euro for both citizens and small and medium enterprises.

The whole project assumes that there is no quality information campaign on the benefits of the introduction of the euro in the Republic of Croatia (early 2023) and that via public initiatives could use nudging within the EAST platform (Nudge unit, 2010). It is also obvious that there is a lot of misinformation of general public opinion about the damage that the introduction of the euro in the Republic of Croatia will cause. The most mentioned are the increases in the retail prices of goods and services, but also the sale of land to foreign citizens and even the loss of monetary independence. The CNB scandal over the withdrawal of the tender for the design of the euro coin did not help either, so we are actually working on an anti-campaign.

Therefore, we propose the NudgeEU model as follow:

**Graph 1: Model NudgeEU**



*Source: Authors*

The NudgeEU model presupposes the establishment of the CBI (Croatian Behavioral Insights) center by the Government of the Republic of Croatia in order to catch up with developed countries that have been implementing behavioural models in public initiatives for the last ten years. CBI activities are divided into two basic elements: NudgeEU and other public policy initiatives. EAST is the frame of all CBI activities as proposed BIT 2010. East means that all behavioural insights should be easy, Easy, Attractive, Social and Timely which means easy to apply, attractive to the audience, socially acceptable and in the right time. A foundation principle of behavioural economics is that we all look for “easy” when making hard decisions, which is the entire premise for heuristics or shortcuts. Attractive in BI Terms means nudging people by drawing their attention on words or things in order to influence their choices. Social involves the influence of norms, peer pressure, and the human desire to fit in as powerful means of influencing their behaviour and choices. Timing means the right message at the right time. From when we make offers to when and in what context we share information, to creating forms that place critical information (in order to affect the sequence in which a person read it) we can dramatically influence decisions (Schweyer, 2022).

The first part concerns NudgeEU which is divided into active and protective BI. Active BI implies nudge to positive aspects of Croatian Entry to Eurozone towards citizens, SME and public in general such as further financial integration, export and import, reducing of transaction costs etc. Nudge should be based on other countries and their experiences that already joined Eurozone such as Latvia (2014) and Lithuania (2015). Protective BI in the segment of NudgeEU means protection of bias and prejudices, irrational fears and emotions of some part of the Croatian society regarding Croatian Entry to Eurozone. Part of the Croatian society are afraid of raise of expenses of goods and services, of losing lands and houses and losing of monetary independency. It is not surprising that people feel insecure given the 2008 crisis and the difficulties facing Greece (country in Eurozone from 2001), but also given the hard-won independence and relatively young state, and the covid-19 crisis followed by the current war in Ukraine. All these international events affect the attitudes (and emotions of fears) of the population of Europe, including Croats. Behavioural Insight could be used to nudge public opinion in the rational direction to avoid overemotional and irrational behaviour that could affect expectation.

The second part of CBI activities should address other public policy initiatives in the protection and active segment. The protection segment includes educating the public about dark nudge or dark patterns techniques used on network use. The term dark pattern was first coined by Harry Brignull in 2010, used to describe tricks that websites and apps use to make users do things they don't intend to. In his website, [www.darkpatterns.org](http://www.darkpatterns.org), Brignull has a “Hall of Shame” where he displays examples of UX designs that abuse dark patterns. Intrusion can compromise the protection of privacy and personal data and then is called dark nudge (Goodwin, 2012, Lin et al, 2017, Schmidt and Engelen, 2020) and can pose a serious threat to human rights. (More in: Jorgensen 2019). The active segment includes all those activities carried out by other BI centers in the world, and include public healthcare, reducing electric energy, waste management, plastics, food, environmentally conscious behaviour, circular economy, product durability and more (Ölander i Thøgersen, 2014, Kallbekken ai Sælen, 2013, Rivers et al., 2017, Ebeling and Lotz, 2015, Parajuly et al. 2019, Cerulli-Harms et al., 2018, Stefansdotter et al., 2016). The Behaviour Insight Team as a BI world leader divided area of BI activities as follow: government & society, economy, environment, health, education and international development. Government & society area work on society where the bond between citizens and their government is built on mutual trust and understanding. The goal is clearer understanding of human behaviour at the heart of policymaking while helping people make better decisions for themselves to strengthen this social bond including

behavioural insights. The final goal is to improve how citizens interact with government and public services and to reduce violence, improve gender equality, increase charitable giving, build more connected communities and support people struggling with loneliness. Economy nudges that supported job seekers, helped borrowers avoid debt arrears and guided businesses towards government growth-support schemes. BI should use the full power of applied behavioural science to shape competition, tax and monetary policy, to help people thrive as technology and automation transform work, to drive innovations and help consumers to make the right choices and finally to build more sustainable economies and resilient to future financial shocks. Environment activities are based on shifting consumers towards greener energy, transport or food choices. Healthcare activities include Working closely with governments, public health bodies and charities to improve policy and systems. People need to be encouraged to make healthier choices for themselves, and make the healthcare they rely on more accessible and affordable. BIT current priorities include antimicrobial resistance, vaccination, obesity and mental health. Education activities should be strengthening by behavioural insights to offer extra support to teachers, learners that includes motivating learners and teachers with especially emphasis on digital learning, and tackling inequalities in education. Finally, international development is focused on urgent policy challenges in low- and middle-income countries, including revenue generation, financial inclusion and public health. Croatian Behavioural insights centre should follow Competence center for behavioural insights established by European Commission in 2019. A European competence center cover topics such as sustainability (sustainable transport and product sustainability labelling) climate and environment (European Behavioural Green Day), communication, consumer protection, employment, energy, finance (finance education of consumers, mortgage markets), public health (vaccination issue, Covid-19), inclusion, equality (equal gender pay levels) and tax policy (increasing tax compliance). Method such as online behavioural experiments, an experimental survey, field experiments, lab experiments, 'public good' games, a laboratory experiments are used by EC. Applying behavioural sciences to policy-making is more of an inductive than deductive process. Some insights will be transferable from one context to another, but others will not. Ultimately, observations of behaviour will always be required, either to come up with new insights or to confirm that existing ones are transferable to other contexts. This emphasis on the empirical is characteristic of behavioural sciences and is perhaps one of its greatest contributions to the policy-making process (Troussard and Bavel, 2018). As we can see from the methods of behavioural insights that are used by European Commission in public policy, they rely mostly on different kind of experiments that are specific of behavioural psychology and/or behavioural economy such as online and offline behavioural experiments in laboratories. Because they observe behaviour in a controlled environment where only the relevant variables are kept while all the noise is eliminated, experiments can isolate and test the underlying psychological mechanisms of a decision or behaviour (Lunn and Choidealbha, 2018). Some authors warn that it is not enough to conduct only controlled experiments in an isolated environment because life is too complex to be simulated. Therefore, it is necessary to conduct experiments based on the behaviour of citizens who have only studied empirically. Troussard and Bavel, in 2018, warn that such experiments should be very transparent, and their results should be publicly available and openly discussed.

Behavioural sciences certainly enrich the variety of insights that inform our understanding of the problems. In this sense, they only complement – but do not replace – more traditional tools (e.g. incentives, regulation or information disclosure) available to policy-makers for addressing them (Troussard and Bavel, 2018).

As a policy program, nudging is not meant to replace other policies and institutional reform programs. Moreover, proponents of nudging do not, or at least should not, advertise nudging

as a panacea and we should not expect it to be the antidote to all structural and institutional problems. (Schmidt and Engelen, 2020). Some neoclassical economists do not believe that behavioural economics offers anything particularly insightful about human behaviour that cannot be similarly captured by appropriate modifications to traditional economic models of behaviour (Levine, 2009 in Luoto and Carman (2014)). Author of this model strongly believe that behavioural insights should be incorporated in public initiatives together with classical economic approaches tools such as regulation and different appropriate ISO standards. Those initiatives should also take care of ethical problems of public surveillance and avoid hard push (nudge), manipulations, surveillance and dark nudge or patterns techniques (Mathur et al. 2021) Some of authors are concern regarding behavioural interventions based on manipulation and unethical practice (Goodwin, 2012, Lin et al. 2017, Schmidt and Engleeln, 2020.) Behavioural centres should promote positive public goals in the cooperation and in transparent communication with the citizens. BI professionals should test and use the tools and practices to nudge people toward rewards and incentives that might generate more emotional impact and produce better results for them and their organizations (Schweyer, 2022).

#### 4. Conclusion

We assume that over the next decade, each country will have a BI center for public policy interventions. Each country will need to use choice architecture and nudge techniques for active and protective BI. With the development of technology and consequent supervision, BI professionals will use experiments, tools and techniques to encourage people to accept acceptable behaviour for which they will be rewarded and punished for unacceptable behaviour that is not in the public interest. One should be very careful here considering the ethical side of the problem of supervision and encouragement especially when it comes to dark nudge that monitors, collects data, surveillance and encourages individuals in the desired direction without their knowledge and consent or with their half-knowledge consent. Here BI centers can play a role in educating the public about the problem and protection through state laws and regulations. The Republic of Croatia must cope with rapid changes in public policies and establish a BI center that will have its own protective and active function. The protective function of BI should protect all abuses of behavioural techniques of citizens, companies and consumers in the Republic of Croatia, and the active function covers all those areas where the state wants to encourage its citizens to socially acceptable behaviour such as health care, waste management, tax payment, circular economy, sustainability and more. The crisis of 2008, which caused a decline in economic activity in Croatia, left its mark on the perception of Croatian citizens. Covid-19 also contributed to a sense of insecurity as did the current war in Ukraine. That is why the BI Center should encourage public confidence in the work of institutions and with the help of the NudgeEU project promote the benefits that are evident after the accession of the Republic of Croatia to the EU. Various EU funds available to the Republic of Croatia, and Croatia's entry into the Eurozone will enable further financial integration, economically stable development, encouragement of foreign investment, reduction of transaction costs and growth of trade within the European market.

#### REFERENCES

Ariely, D. (2010): *Predictably Irrational: The Hidden Forces That Shape Our Decisions*. New York: Harper Perennial.



Alpeza, M. et al. (2015): *Business Transfer Barometar Hrvatska*. Zagreb: CEPOR - Centar za politiku razvoja malih i srednjih poduzeća i poduzetništva.

Bilas, V. (2008): *Trendovi integriranja i položaj Hrvatske*, Ekonomska istraživanja, Vol. 21, No. 2, pp. 127-138.

Benartzi S, Beshears J, Milkman KL, Sunstein CR, Thaler RH, Shankar M, Tucker-Ray W, Congdon WJ, Galing S. (2017): *Should Governments Invest More in Nudging?* Psychol Sci. 2017 Aug;28(8): pp. 1041-1055. doi: 10.1177/0956797617702501.

Benolić, M. (2012): *Svjetska ekonomska kriza: razvoj, utjecaj na Republiku Hrvatsku i subjektivni stavovi studenata/* www.unizg.hr/rektorova/upload\_2012/ekonomska\_kriza\_benolic.docx, (accessed 02 February 2022) Dynamic effects of fiscal policy and fiscal multipliers in Croatia

Butković, H. i Samardžija, V. (2014): *Challenges of continued EU enlargement to the Western Balkans: Croatia's experiences* // Poznan University of Economics Review, 14 (2014), pp.4; 91-108

Camerer, C. F. and Loewenstein, G. (2004): *Behavioral economics: Past, present and future*. U C. F. Camerer, G. Loewenstein i M. Rabin (Ur.). Advances in behavioral economics pp. 3–53. Princeton: Princeton University Press.

Cerulli-Harms, A., Suter, J., Landzaat, W., Duke, C., Diaz, A.R., Porsch, L., Peroz, T., Kettner, S., Thorun, C., Svatikova, K., Vermeulen, J., Smit, T., Dekeulenaer, F., Lucica, E., (2018): *Behavioural Study on Consumers 'Engagement in the Circular Economy*. European Commission. [https://ec.europa.eu/info/sites/info/files/ec\\_circular\\_economy\\_final\\_report\\_0.pdf](https://ec.europa.eu/info/sites/info/files/ec_circular_economy_final_report_0.pdf)

Dessart, F.J., Rommel, J., Barreiro Hurlé, J., Thomas, F., Rodríguez-Entrena, M., Espinosa-Goded, M., Zagórska, K., Czajkowski, M. and Van Bavel, R. (2021): *Farmers and the new green architecture of the EU common agricultural policy: a behavioural experiment*, EUR 30706 EN, Publications Office of the European Union, Luxembourg.

Ebeling, F., Lotz, S. (2015): *Domestic uptake of green energy promoted by opt-out tariffs*. Nature Clim Change 5, pp 868–871. <https://doi.org/10.1038/nclimate2681> (accessed 01 February 2022)

Goodwin, T. (2012): *Why we should reject “nudge*. Politics, 32(2), pp. 85–92.

Kahneman, D. and Tversky, A. (1982): *The Psychology of Preferences*. Scientific American, 246, pp.160-173. <http://dx.doi.org/10.1038/scientificamerican0182-160> (accessed 20 January 2022)

Kallbekken, S. and Sælen, H. (2013): *‘Nudging’ hotel guests to reduce food waste as a win–win environmental measure*, Economics Letters, Volume 119, Issue 3, pp 325-327

Ivanković, V. (2015) *“Ima li nade za nudge? Libertarijanski, prisilni i anti- paternalizam.”* U N. Cerovac, (Ur.), Đ. Degać, (Ur.), K. Jurak, (Ur.), A. Šikljan, (Ur.), Zbornik radova

'Kontrola? Sloboda? Subjekt?', (pp 77-95). Zagreb: Udruženje studenata filozofije USF. <https://urn.nsk.hr/urn:nbn:hr:261:755445>

Levine, D.K. (2009): *Is Behavioral Economics Doomed?* Max Weber Lecture, June 8

Lin, Y., Osman, M. and Ashcroft, R. (2017): *Nudge: Concept, Effectiveness, and Ethics, Basic and Applied Social Psychology*, 39:6, pp. 293-306, DOI: 10.1080/01973533.2017.1356304

Lunn, PD. Á. NiChoisdealbha (2018): *The case for laboratory experiments in behavioural public policy*, in: Behavioural Public Policy.

Luoto, J., & Carman, K. G. (2014): *Behavioral economics guide*, Washington DC: Inter-American Development Bank.

Mathur, A, et al. 2021. *What Makes a Dark Pattern... Dark? Design Attributes, Normative Considerations, and Measurement Methods*. In Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI '21). Association for Computing Machinery, New York, NY, USA, Article 360, 1–18. DOI:<https://doi.org/10.1145/3411764.3445610>lines with applications for health interventions.

Nudge unit (2010): <https://www.bi.team/> (accessed 25 January 2022)

Ölander, F, and Thøgersen, J. (2014): *Informing versus nudging in environmental policy*. J. Consum. Policy, 37, pp. 341-356

Parajuly, K., Fitzpatrick, C., Muldoon, O. and Kuehr, R., (2019): *Behavioral change for the circular economy: A review with focus on electronic waste management in the EU*, Resources, Conservation & Recycling, Volume 6, 2020, 100035, ISSN 2590-289X, <https://doi.org/10.1016/j.rcrx.2020.100035>.

Peša, A.; Brlečić Valčić, S.; Maté, M. (2021): *Overview of Nudging on EU on The Light of Croatian Entry to Eurozone // Innovation Management and Sustainable Economic Development in the Era of Global Pandemic / Soliman, Khalid (ur.)*. Norristown: International Business Information Management Association, 2021. Pp. 5521-5527

Rivers, N., Shenstone-Harris, S. and Young, N. (2017): *'Using nudges to reduce waste? The case of Toronto's plastic bag levy'*, Journal of Environmental Management, Volume 188, pp 153-162

Schmidt, AT, Engelen, B. (2020), *The ethics of nudging: An overview*. Philosophy Compass. 15: e12658. <https://doi.org/10.1111/phc3.12658> (accessed 3. March 2022)

Schweyer, A. (2022). *Incentive Research Foundation*. behavioral-economics-nudge-guide.pdf (theirf.org) (accessed 3 March 2022)

Simon, H.A. (1955): *A Behavioral Model of Rational Choice*, Quarterly Journal of Economics, 69(1): pp. 99–118. doi:10.2307/1884852

Stefansdotter, A., Steen-Knudsen, J., Flack, M. and Guldborg Hansen, P. (2016): *Nudging for sustainable consumption of electronics*: Summary report.

Šimović, H. i Deskar-Škrbić, M. (2013): **Dynamic effects of fiscal policy and fiscal multipliers in Croatia**. Zbornik radova Ekonomskog fakulteta u Rijeci, 31 (1), pp. 55-78.

[Thttp://tenudge.eu/](http://tenudge.eu/) (2021)

Thaler, R.H. and Sunstein, C.R., (2008) Nudge: *Improving Decisions About Health, Wealth, and Happiness*, Yale University Press.

Troussard, X., van Bavel, R. (2018): *How Can Behavioural Insights Be Used to Improve EU Policy?* Intereconomics 53, 8–12 (2018). ((accessed 15 February 2022)

Eurostat (2029): [https://ec.europa.eu/commission/presscorner/detail/en/IP\\_20\\_1321](https://ec.europa.eu/commission/presscorner/detail/en/IP_20_1321)) (accessed 13 February 2022)

University of Zadar (2022): <https://ekonomija.unizd.hr/projekti>, 2021 (accessed 20 February 2022)

*A scientific paper*

**Sunčana Piri Rajh, Ph. D., Full Professor**

University of Zagreb, Faculty of Economics & Business

E-mail address: spiri@net.efzg.hr

**Edo Rajh, Ph. D., Senior Research Fellow**

The Institute of Economics, Zagreb

E-mail address: erajh@eizg.hr

**Sandra Horvat, Ph. D., Associate Professor**

University of Zagreb, Faculty of Economics & Business

E-mail address: shorvat1@net.efzg.hr

## **EXTENDED MODEL OF INTENTION TO VISIT CULTURAL HERITAGE SITE**

### ***ABSTRACT***

*The aim of this paper is to develop and empirically test an extended model of intention to visit cultural heritage site. The extended model is based on the theory of planned behavior (TPB). The basic TPB model, comprising of attitudes, subjective norm, and perceived behavioral control, has been extended with additional variables based on the literature review. Empirical research has been conducted in order to test the proposed extended model. A highly-structured questionnaire was developed for this study, comprising of measurement scales adopted from the literature and adapted for the context of cultural heritage. Data were collected by means of an online survey method. Empirical data were analyzed using exploratory factor analysis, Cronbach's alpha coefficients, multiple regression analysis, and methods of descriptive statistics. The results indicate the relative importance of variables within the extended model in predicting the respondents' intention to visit a cultural heritage site. Also, the extended model is compared to the basic model of the theory of planned behavior both in terms of model fit statistics and in terms of potential for theoretical explanation of observed differences in behavioral intention to visit cultural heritage site. The paper's contribution to the literature is twofold. First, the paper contributes to the TPB literature by developing and testing an extended TPB model. Second, the paper contributes to the cultural heritage literature by identifying variables that affect the intention to visit cultural heritage site within a framework of the extended TPB model. The paper concludes with theoretical and practical implications as well as suggestions for future research.*

**Key words:** *cultural heritage, theory of planned behavior, consumer behavior, behavioral Intention.*

### **1. Introduction**

As consumers, people tend to choose various products, services, and behaviors, hoping all of these will result in their need fulfillment, satisfaction, and positive experiences. One of those experiences is related to consumer behavior in tourism. Motives for visiting a particular destination differ among tourists who are inclined to seek various experiences (Nyaupane &

Andereck, 2016; Bujdosó et al., 2015). For example, tourists might be interested to visit a particular destination due to its potential for visitors to gain a recreational type of experience, such as sun-and-sea vacation, or, as stated by Stebbins (1996), deep-sea diving, alpine skiing, etc. However, numerous tourists primarily search for another type of experience; the one that is related to other cultures (Pearce & Lee, 2005), or they are primarily drawn to various destinations due to their culture and heritage components (Lacher et al., 2013). In other words, those visitors are intentionally engaging themselves in cultural tourism (Platania, Woosnam, & Ribeiro, 2021), which leads to the conclusion that cultural heritage has an essential role in this particular type of tourism. While the intangible part of cultural heritage refers to traditions, customs, beliefs, practices, ceremonies, etc. (Baker, 2013; Willis, 2014), the physical, tangible part of cultural heritage refers to various types of artifacts, objects, and places, such as works of art, historic places and historic artifacts, archaeological artifacts, buildings, and monuments (Willis, 2014). Since cultural heritage regards the products that can be consumed throughout the year, it is recognized as a potential for providing significant economic benefits (Zadel & Bogdan, 2013), not just to the particular destination, but also to a geographic region (Lacher et al., 2013). Therefore, understanding tourists' behavior, their intention to visit cultural heritage sites, and factors that affect their decision, also deserves attention from both, scholars and practitioners.

In general, tourism has been considered as one of the largest industries in the world (Hrubcova Loster, & Obergruber, 2016), and a significant driver of economic and social development (Martínez-Pérez et al., 2019; Sharpley, 2000). Much of this contribution is based upon cultural heritage (Zandieh & Seifpour, 2020), and therefore both, cultural and heritage tourism gain significant attention from scholars. As previously stated, cultural tourism might contribute to a local economy, as well as to the development of a region (Lacher et al., 2013). In addition, heritage tourism has been considered as one of the most important forms of cultural tourism (Csapó, 2012). According to Csapó (2012, 211), heritage tourism is “based on experiencing the places and activities that authentically represent historic, cultural and natural resources of a given area of region”. Furthermore, heritage tourism can be analyzed from two perspectives: from a demand-side and a supply-side (Lacher et al., 2013). While the supply-side perspective of heritage tourism is related to culturally important features of heritage sites, a demand-side perspective is linked to consumer (tourist) behavior, its antecedents (e.g. motives), and outcomes (e.g. experiences) (Lacher et al., 2013). The starting point of our research is a demand-side aspect of heritage tourism. More specifically, the aim of our study is to examine several antecedents that might affect one's intention to visit cultural heritage sites. To do so, we applied Ajzen's (1991) theory of planned behavior (TPB), and based on the literature review, we extended it by additional variables, such as personal norms, self-identity, and past behavior.

The paper has the following structure. After the introductory part, the theoretical background provides a description of both, the TPB variables, and additional determinants of consumer behavioral intention. The methodology of research is described in the next section of the paper followed by the data analysis and results. Discussion, conclusion, managerial implications, and research limitations are presented at the end of the paper.

## 2. Theoretical background

### 2.1. Theory of planned behavior

Theory of planned behavior (TPB) is one of the most used models for predicting human behavior (Ajzen, 2011) that has been tested in different social contexts with a strong predictive utility (Lam & Hsu, 2006) and increasingly applied in the tourism research (Woosnam et al., 2021). Doll and Ajzen (1992, 755) state that “behavioural performance can be predicted from people’s intention to perform the behaviour in question and from the perception of control over the behaviour”. Simplified, the theory is based on the premise that people are more likely to engage in a certain behavior if they have necessary resources, expect a valued outcome, or if they think that other people will approve that behavior (Lam & Hsu, 2006).

The theory of planned behavior states that the people’s intention to perform a certain behavior is based on three determinants of intention: (1) attitude towards the behavior, (2) subjective norm, and (3) perceived behavioral control (Alonso, Sakellarios, & Pritchard, 2015).

Attitudes reflect a person's overall positive or negative evaluation of performing a behavior (Park & Ha, 2014) and are “formed by the subjective identification and emotional resonance consumers feel towards specific products and the ideas behind them” (Xue et al., 2022, 2). Attitude toward a behavior is one of the main antecedents of behavioral intention within the TPB (Ajzen, 1985). In our study, this theoretical construct refers to one’s attitude toward cultural heritage sites visiting.

Subjective norm can be defined as “the perceived social pressure to perform or not to perform the behavior” (Ajzen, 1991, 188). It reflects the person’s perception of the behavior that is rooted in the expected judgments of other relevant people like parents, friends, etc. (Ruangkanjanases et al., 2020). As it can be seen, attitude and subjective norm are similar theoretical constructs regarding their definitions; they both refer to beliefs about the outcomes of performing the behavior, however, and as stated by Gärling, Gillholm, and Gärling (1998, 130), attitudes refer to the degree to which the outcomes are evaluated as positive or negative, while the subjective norms refer to the degree to which significant others will (dis)approve the particular behavior. In our study, subjective norms variable has been operationalized as a consumer’s perception of social approval and support given from his reference group members when cultural heritage site visiting is in question.

Perceived behavioral control is the third determinant that constitutes the TPB. It can be described as a consumer’s perception of his skills and ability to engage in and perform certain behavior (Ajzen, 2015). According to Ajzen (2015), certain obstacles might interfere with the consumer’s performance of behavior in question, and those are, for example, time constraints, insufficient financial resources, and cooperation by others. In the context of our research, this variable was operationalized by one’s perception of the facility and control over his cultural heritage site visiting behavior.

Within the TPB, the three previously described variables are identified as antecedents of behavioral intention. This theoretical construct is extensively researched in the field of consumer behavior and accepted as a valid predictor of actual future behavior. According to Davis and Warshaw (1992), behavioral intention reflects an individual’s plan to (not) perform

a certain behavior. In our study, this variable refers to consumer willingness to visit a cultural heritage site in the near future.

In order to understand the influence of attitudes toward behavior, subjective norm, and perceived behavioral control on an individual's intention to visit a cultural heritage site, we applied the theory of planned behavior in our research. However, we also extended the original TPB model, as noted in the literature (e.g. Halepenny, Kono, & Moghimehfar, 2018; Smith et al., 2008), by including three additional, behavior-specific variables, such as personal norms, self-identity, and past behavior. A decision to include these variables was based on the previous research studies' recommendations (e.g. Conner & Armitage, 1998). The additional variables of the extended TPB model are described in the following section.

## **2.2. Extended TPB model variables description**

According to Schwartz and Howard (1981, as cited in de Groot, Bondy, & Schuitema, 2021, 2), personal norms are feelings of moral obligations to do "the right thing". In other words, this theoretical construct refers to individuals' moral values or rules representing their own beliefs about what is right and what is wrong (Parker, Manstead & Stradling, 1995). Previous research studies have shown that personal norms can be considered as a valid predictor of a behavioral intention, as well as an actual behavior (see for example Conner & Armitage, 1998 for detailed information on specific research studies related to this issue; de Groot, Bondy, & Schuitema, 2021). Therefore, we have extended the TPB model by including the personal norms variable to explore its role in predicting consumers' intention to visit cultural heritage sites.

Personal norms can also be explained as a set of an individual's inner values, meaning that this variable may be also considered closely related to one's self-identity (Conner & Armitage, 1998). Therefore, we have additionally extended the TPB model by including this variable, described in the following section.

As a theoretical construct, a self-identity refers to an individual's perception of himself and how he evaluates and describes himself in relation to other people (Hibbert et al., 2013, as cited in Wang, Wu, & Lee, 2018). Self-identity can be seen as a two-dimensional concept consisting of an individual's personal identity and social identity (Wang, Wu, & Lee, 2018), and both, psychologists and sociologists state that one's self-identity is a salient determinant of an individual's behavior (Smith et al., 2008). In addition, numerous research studies (cited in Hagger & Chatzisarantis, 2006), have shown that self-identity can be seen as a significant determinant of a behavioral intention, as well.

Wang, Wu and Lee (2018) elaborate on the difference between identity theorists and planned behavior theorists regarding their point of view on the significance of behavioral intention antecedents, i.e., self-identity and attitudes. According to Wang, Wu, and Lee (2018), identity theorists consider an individual's self-identity perception as a determinant of his behavioral intention; its influence is direct and can be independent of the attitude variable. On the other hand, planned behavior theorists argue that behavioral intentions are directly affected by an individual's attitude toward behavior.

The aforementioned leads to a conclusion that there is a justified need to include self-identity as a behavior intention predictor within the TPB research studies, as suggested by Sparks and Shepherd (1992). Therefore, we extended the TPB model by including and examining the role

of the self-identity construct in an explanation of behavioral intention. More specifically, we explored how a consumer’s self-identity affects his intention to visit a cultural heritage site, and whether a self-identity is a significantly stronger predictor of an individual’s behavioral intention than other TPB variables.

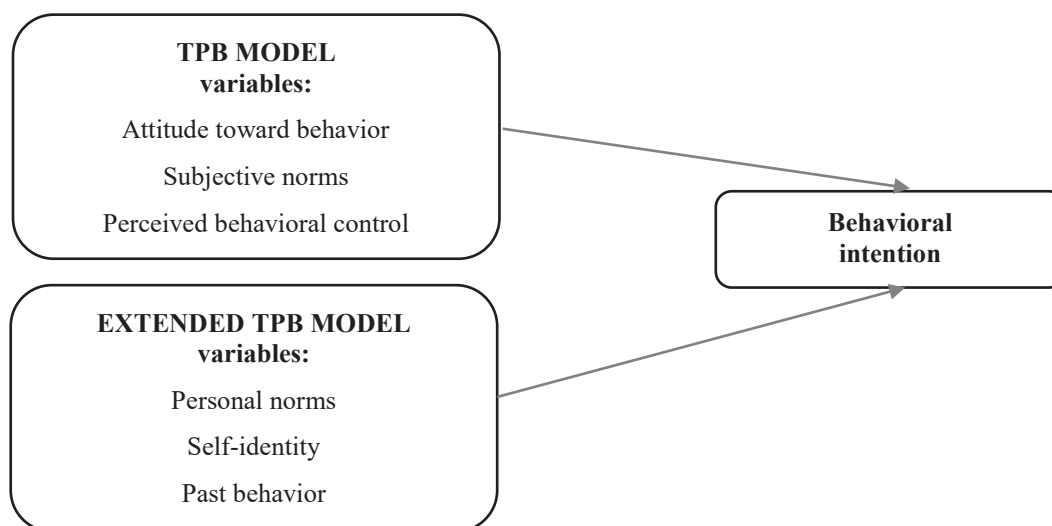
According to Sparks and Shepherd (1992), previous research studies have shown that behavioral intentions are affected by past behavior. Smith et al. (2008) refer to the studies that have revealed a self-reported past behavior as a useful additional variable of the extended TPB models, indicating a past behavior often as the strongest predictor of behavioral intentions.

Therefore, we also extended the TPB model by including this variable as one of the behavioral intention antecedents, in order to examine its role in an explanation of future behavior related to cultural heritage sites visiting. The additional reason to include this variable in the TPB model is the argument given by Sutton (1994, as cited in Conner & Armitage, 1998) who argued that past behavior has a greater potential to determine behavior than variable related to cognitions within the TPB.

Although mostly conceptualized as a habit, the past behavior variable was also conceptualized in terms of prior behavior frequency (Conner & Armitage, 1998), and even though there is a difference between these two theoretical concepts, the “measures of past behavior and habit have typically been worded in exactly the same way” (Conner & Armitage, 1998, 1436). Taking the aforementioned into account, for the purpose of our study, we decided to measure the past behavior variable in terms of a past behavior frequency.

Finally, we propose the following extended model of the theory of planned behavior (Figure 1).

**Figure 1:** Conceptual model - an extension of the TPB in predicting consumer’s behavioral intention to visit cultural heritage site



Source: authors, based on literature review (Ajzen, 1991, Conner and Armitage, 1998)

This conceptual model was tested by empirical quantitative research described in the following section.



### 3. Research methodology

In order to explore the applicability of TPB in cultural heritage sites context and to determine how additional variables (personal norms, self-identity, and past behavior) affect consumers' intention to visit cultural heritage sites, we conducted quantitative research in a form of an online survey. By using a non-probability sampling method, a convenient sample of university students, consisting of 332 respondents who voluntarily agreed to participate in our study, was employed. Anonymity was completely guaranteed, meaning that no identifiable information of any kind was asked to be revealed by the respondents. Table 1. provides sample structure details.

**Table 1:** Sample structure (n = 332)

SAMPLE CHARACTERISTICS	VALUE
<b>Gender (%)</b>	
Male	26.8
Female	73.2
<b>Age (average)</b>	21.6
<b>Year of study (%)</b>	
First year	6.3
Second year	66.0
Third year	10.2
Fourth year	16.3
Fifth year	1.2
<b>Level of study (%)</b>	
Specialist graduate professional study program	14.2
Integrated undergraduate and graduate university study program	85.8
<b>Monthly household income (%)</b>	
5,000 HRK or less	4.8
5,001 to 10,000 HRK	21.7
10,001 to 15,000 HRK	17.8
More than 15,000 HRK	25.0
Don't know / No answer	30.7

*Source: Authors' research*

We collected primary data by using a highly structured questionnaire. It has consisted of 12 items measuring the TPB variables (attitudes toward behavior - ATT, subjective norm - SNO, perceived behavioral control - PBC, and behavioral intention - INT). Those items were borrowed and adapted from Yoon (2011). The additional two variables, that were included in our study according to the literature review findings and following the previous research studies' recommendations, were: personal norms - PNO (three items borrowed and adapted from Woosnam et al., 2021), and self-identity - SELF (three items in total, two of them borrowed and adapted from Terry, Hogg, and White (1999), and one of them borrowed and adapted from Sparks and Shepherd (1992)). All items were translated into Croatian and adapted to the context of the research (cultural heritage sites visiting). Each item was measured by using a five-point Likert scale (ranging from 1 = strongly disagree to 5 = strongly agree). Also, we wanted to determine the past behavior of respondents – PAST. This variable was measured by using a question “How many cultural heritage sites have you visited in the last 12 months”, measured on a five-point scale (from 1 meaning “no visit”, and 5 meaning “10 and more visits”). At the end of the questionnaire, five questions related to

respondents' demographics were posted. Table 2 provides the descriptive statistics of latent variables.

**Table 2:** Descriptive statistics (n = 332)

VARIABLE	MEAN	MINIMUM	MAXIMUM	STD. DEV.
ATT	4.40	1.00	5.00	0.62
SNO	4.35	2.00	5.00	0.70
PBC	3.88	2.00	5.00	0.70
PNO	3.41	1.00	5.00	0.94
SELF	3.01	1.00	5.00	0.93
PAST	2.56	1.00	5.00	1.26
INT	4.21	1.00	5.00	0.81

*Source: Authors' research*

By utilizing an exploratory factor analysis (EFA), interdependencies among observed variables and their underlying structure (Jung & Lee, 2011), were determined. In addition, to test the reliability of applied measurement scales, Cronbach alpha coefficients were calculated. Finally, a multiple regression analysis was employed to test the conceptual model. Also, multicollinearity in data was checked by using the variance inflation factor (VIF). In the following section of the paper, applied data analyses and research results are explained in more detail.

#### 4. Data analysis and research results

##### 4.1. Exploratory factor analysis and Cronbach alpha coefficients

The exploratory factor analysis was performed on 18 initial items. Factors were extracted by using the principal component method with varimax rotation. The 6-factor solution explained 71.0% of the variance. 11 items were loaded on four of the TPB factors: ATT, SNO, PBC, INT; 3 items were loaded on factor SELF, and 2 items were loaded on factor PNO. One item related to behavioral intention (INT1) and one item related to personal norms (PNO3) were removed from further analysis. Those items had low factor loadings on their respective factor, or high cross-loadings on several factors.

By utilizing Cronbach alpha coefficients, we were able to assess the internal consistency of the items representing each construct. The range of Cronbach alpha coefficients was between 0.760 and 0.886. This range of Cronbach alpha coefficients indicates the acceptable reliability level of the data collected, as suggested by Hair et al. (2006). Factor loadings and Cronbach alpha coefficients are presented in Table 3.

**Table 3:** Factor loadings and Cronbach alpha coefficients (n =332)

LATENT VARIABLE	ITEM	FACTOR LOADING	CRONBACH ALPHA
Attitude toward behavior	ATT1	0.823	0.876
	ATT2	0.839	
	ATT3	0.768	
Subjective norm	SNO1	0.839	0.785
	SNO2	0.790	
	SNO3	0.749	

LATENT VARIABLE	ITEM	FACTOR LOADING	CRONBACH ALPHA
Perceived behavioral control	PBC1	0.858	0.801
	PBC2	0.872	
	PBC3	0.735	
Personal norms	PNO1	0.599	0.760
	PNO2	0.584	
Self-identity	SELF1	0.849	0.824
	SELF2	0.875	
	SELF3	0.657	
Behavioral intention	INT2	0.786	0.886
	INT3	0.728	

Note: items PNO3 and INT1 had low factor loadings on their respective factor or high cross-loadings on several factors; therefore, those two items were removed from further analysis.

Source: Authors' research

## 4.2. Regression analysis

To examine the determinants of respondents' behavioral intention to visit cultural heritage sites, we employed the multiple regression analysis. The behavioral intention (i.e., intention to visit cultural heritage site - INT), was a dependent variable. In total, we conducted three regression analyses. The first regression analysis included three independent variables from the standard TPB model (ATT, SNO, PBC). The second regression analysis was conducted with three additional independent variables (PNO, SELF, PAST) included in the extended TPB model. Finally, the third regression analysis was performed with independent variables that were significant in the previous two models. Variance inflation factor (VIF) values were calculated to check for multicollinearity in data. The calculated VIF values range between 1.20 and 2.17, indicating no multicollinearity. Regression analysis data are given in Table 4.

**Table 4:** Regression analysis (n = 332)

INDEPENDENT VARIABLES	MODEL 1	MODEL 2	MODEL 3
ATT	0.656**	0.529**	0.549**
SNO	0.111*	0.118**	0.128**
PBC	0.057	0.028	
PNO		0.036	
SELF		0.239**	0.264**
PAST		0.022	
MODEL FIT	R <sup>2</sup> = 0.547; F-value = 131.76; p = 0.00	R <sup>2</sup> = 0.601; F-value = 81.71; p = 0.00	R <sup>2</sup> = 0.599; F-value = 163.62; p = 0.00

Notes: \*\* significant at p<0.01 level; \* significant at p<0.05 level

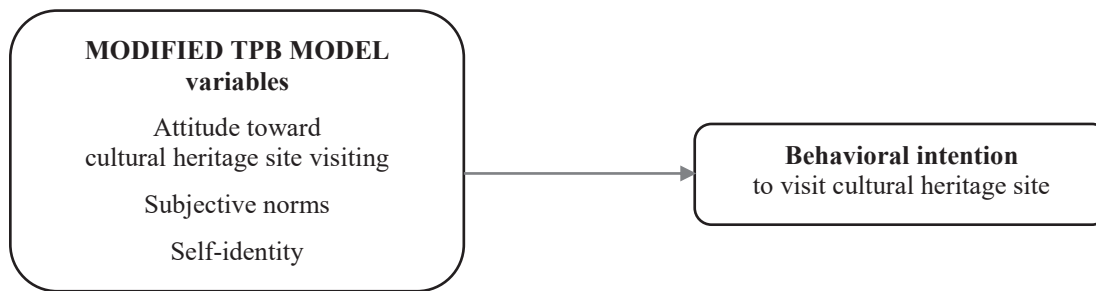
Source: authors' research

Regression analysis results indicate that two variables of the standard TPB model and one variable of the extended TPB model are significant predictors of behavioral intention. Those variables are attitudes toward behavior, social norms, and self-identity. In addition, regression coefficients indicate that behavioral intention is significantly and positively affected by these variables.

Regression analysis also indicates that standard TPB model has a lower fit than extended TPB model. In other words, behavioral intention is significantly affected by two original TPB variables (attitude toward behavior and subjective norm), and one additional variable of the extended TPB model (self-identity).

Based on our research results, the following model can be proposed in explaining consumer behavioral intention to visit cultural heritage sites (Figure 2).

**Figure 2:** Modified TPB model of predicting consumer's behavioral intention to visit cultural heritage site, based on the empirical research



*Source: Authors' research*

Empirical research findings are discussed in more detail, in the following section of the paper.

## 5. Discussion

Our research shows that the first and strongest predictor of one's intention to visit a cultural heritage site is his attitude toward the behavior in question. This finding is in line with those of previous studies conducted in a tourism research context that confirmed the significant and positive relationship between attitudes and visiting intentions (see Abbasi et al., 2021, for relevant sources). Also, our finding highlights the role of an attitude as a determinant of behavioral intentions, and its importance in understanding and predicting consumer behavior, as argued by Ajzen (2008).

The second predictor of an individual's intention to visit cultural heritage sites, according to our empirical research results, is one's self-identity. Terry, Hogg, and White (1999) argue that if consumers perceive a particular behavior as an important part of their perceived identity, they will more likely exhibit that specific behavioral intention since it will help them to evaluate themselves positively. It can therefore be assumed that the intention to visit cultural heritage sites was perceived by respondents as an extension of their self-identity.

Our study also reveals the significant impact of subjective norms on behavioral intention. This finding is also consistent with the findings of most previous studies that have confirmed a positive role of subjective norms in predicting heritage sites visit intentions (see Halpenny, Kono & Moghimehfar, 2018 for cited works). Therefore, this research result was expected and suggests that in forming behavioral intention to visit cultural heritage sites, opinions of important others have a significant role.

Contrary to expectations, this study did not confirm a significant impact of perceived behavioral control, personal norms, and past behavior on behavioral intention.

In our research, perceived behavioral control was not found to be a significant predictor of one's behavioral intention to visit cultural heritage sites. In other words, an individual's willingness to visit a cultural heritage site is not affected by his perception of the ability to perform this type of behavior. A possible explanation for this might be that consumers perceive themselves as capable to organize a visit to a particular heritage site since they can easily gather all necessary information. Therefore, they feel confident, not perceiving this variable as a barrier when choosing what cultural heritage site to visit. Our research finding regarding the perceived behavioral control also accords to some extent with previous empirical findings. For example, a study conducted by Halpenny, Kono, and Moghimehfar (2018) shows that this variable is a significant behavioral intention predictor; however, its impact is limited and has less meaningful power than other TPB variables in explaining and predicting cultural heritage visiting intentions.

According to our research, personal norms have no significant influence on an individual's behavioral intention to visit cultural heritage sites. It is somewhat surprising since personal norms and one's self-identity are closely related theoretical constructs (Conner & Armitage, 1998). Although consumers' intention to visit cultural heritage sites is rooted in their perception of self, their intention to perform this behavior is not related to their personal norms. In other words, consumers' personal feeling of obligation to visit cultural heritage sites does not predict their behavioral intention.

Finally, the results of our study do not indicate a significant impact of one's past behavior (frequency of visiting cultural heritage sites) on his future visiting intention. A possible explanation for this might be that visiting cultural heritage sites is not frequent and repetitive behavior. Namely, the literature indicates that past behavior will be a stronger predictor of behavioral intention when frequently performed behaviors are in question, and vice versa (Smith et al., 2008). However, this variable should not be excluded from further research studies since it might help in better understanding of behavior and intentions of a possible frequent visitor segment.

Our research results provide support for the premise that additional application, extension, and verification of the TPB should be undertaken in the cultural heritage site visiting context, in order to further explore the applicability of TPB standard and extended models; or, as stated by Smith et al. (2008, 316), "(...) it is still important to test the predictive power of the standard model and to investigate how the explanatory power of the model can be increased."

## **6. Conclusion, managerial implications, and research limitations**

The aim of our study was to understand the effects of attitudes toward visiting cultural heritage sites, subjective norms, perceived behavioral control, personal norms, self-identity, and past behavior, on one's intention to visit cultural heritage sites. Following the recommendation and suggestions from past research, we (1) developed and tested an extended TPB model in the cultural heritage site visiting context, and (2) identified variables that affect the intention to visit cultural heritage sites. In total, three variables were found to explain observed behavioral intention – two of them are the original TPB model variables, and one of them is an additional variable included in the research, forming an extended TPB model. These are the main contributions of our paper to the existing body of knowledge related to TPB.

From the practical point of view, several recommendations can be given from the findings of our study. Since attitude is the strongest predictor of one's behavioral intention in the observed context, marketing professionals could implement marketing activities that will create and reinforce a positive attitude toward visiting cultural heritage sites. In addition, marketing communication activities could emphasize the self-actualization benefits that will be gained from visiting these types of tourist locations. This recommendation is based on the findings related to self-identity as a significant predictor of future behavior. Namely, the self-actualization need fulfillment can encourage tourists to visit cultural heritage sites, and by doing so, to intensify and improve their perception of self. Finally, since traveling is often perceived as a social activity, and due to the fact that the subjective norm is also a significant predictor of one's behavioral intention, marketing professionals could promote cultural heritage site visiting as a highly social approved behavior, by including in the message the consumer reference group members who represent important others within the variable of subjective norms.

When interpreting the findings of our study, several research limitations should be taken into account. First, the generalizability of our research results is subject to certain limitations since the student sample was employed. However, the applied non-probabilistic sample type can be considered appropriate for several reasons. Although the data gathered by using a convenience sample are not necessarily truly representative of the general population (Baxter, Courage, & Caine, 2015), according to Galloway (2005), this sample type is helpful for researchers who firstly tend to explore e.g. attitudes, and then to define further hypotheses. Secondly, our respondents were university students. Student samples are considered relatively homogeneous and therefore, valuable for testing a theory (e.g. Irvine & Carroll, 1980, as cited in Lysonski, Durvasula, & Zotos, 1996). Since our research is also a theory application study (for example, we examined how attitudes toward behavior affect behavioral intention), the use of a student convenience sample can be considered appropriate and justified (e.g. Bagozzi, 1992, as cited in Ashraf & Merunka, 2017). Nevertheless, future research could be conducted by using the probability sampling method, and by employing a sample type that will be representative of the general tourists' market interested in cultural heritage site visiting.

Limitation to our study is also the fact that it has been conducted in one specific cultural and economic setting, i.e., in Croatia. In order to provide a higher level of generalizability, further research studies should be conducted in other socioeconomic contexts.

Finally, our research was performed as a cross-sectional survey. In other words, data were collected at a single point in time, providing a "snapshot" of relationships between observed variables (Lavrakas, 2008). However, consumer behavior is a dynamic process and possible changes in consumers' preferences, intentions, and behaviors might occur over time. Therefore, future studies should take into account a longitudinal research approach, when examining cultural heritage sites visiting, as well as any other aspect of consumer behavior in tourism.

## REFERENCES

Abbasi, G. A., Kumaravelu, J., Goh, Y.-N., Singh, K. S. D. (2021): *Understanding the intention to revisit a destination by expanding the theory of planned behaviour (TPB)*, Spanish Journal of Marketing – ESIC, Vol. 25, No. 2, pp. 280-307

- Ajzen, I. (2015): *Consumer attitudes and behavior: the theory of planned behavior applied to food consumption decisions*, Rivista di Economia Agraria, Vol. 70, No. 2, pp. 121-138
- Ajzen, I. (2011): *The theory of planned behaviour: Reactions and reflections*, Psychology & Health, Vol. 26, No. 9, pp. 1113-1127
- Ajzen, I. (2008): *Consumer Attitudes and Behavior*, in: Haugtvedt, C. P., Herr, P. M., Cardes, F. R., eds., Handbook of Consumer Psychology, New York, NY: Lawrence Erlbaum Associates, pp. 525-548
- Ajzen, I. (1991): *The theory of planned behavior*, Organizational Behavior and Human Decision Processes, Vol. 50, No. 2, pp. 179-211
- Ajzen, I. (1985). *From Intentions to Actions: A Theory of Planned Behavior*, in Kuhl J., Beckmann J., eds.: Action Control: From Cognition to Behavior, SSSP Springer Series in Social Psychology, Berlin, Heidelberg: Springer, pp. 11-39
- Alonso, A. D., Sakellarios, N., Pritchard, M. (2015): *The theory of planned behaviour in the context of cultural heritage tourism*, Journal of Heritage Tourism, Vol. 10, No. 4, pp. 399-416
- Ashraf, R., Merunka, D. (2017): *The use and misuse of student samples: An empirical investigation of European marketing research*, Journal of Consumer Behaviour, Vol. 16, pp. 295-308
- Baker, K. (2013): Information literacy and cultural heritage: a proposed generic model for lifelong learning, in *Information Literacy and Cultural Heritage Developing a Model for Lifelong Learning*, Chandos Publishing, pp. 117-133 (<https://www.sciencedirect.com/topics/social-sciences/cultural-heritage>, accessed 4 March 2022)
- Bujdosó, Z., Dávid, L., Tózsér, A., Kovács, G., Major-Kathie, V., Uakhitova, G., Katona, P., Vasvári, M. (2015): *Basis of heritagization and cultural tourism development*, Procedia - Social and Behavioral Sciences, Vol. 188, pp. 307-315
- Csapó, J. (2012): *The Role and Importance of Cultural Tourism in Modern Tourism Industry*, in Kasimoglu, M. and Aydin, H., ed.: Strategies for Tourism Industry - Micro and Macro Perspectives, IntechOpen, pp. 201-232, <https://www.intechopen.com/chapters/35715> (accessed 4 March 2022)
- Conner, M., Armitage, C. J. (1998): *Extending the Theory of Planned behavior: A Review and Avenues for Further Research*, Journal of Applied Social Psychology, Vol. 28, No. 15, pp. 1429-1464
- Davis, F. D., Warshaw, P. R. (1992): *What Do Intention Scales Measure?* The Journal of General Psychology, Vol. 119, No. 4, pp. 391-407
- de Groot, J. I. M., Bondy, K., Schuitema, G. (2021): *Listen to others or yourself? The role of personal norms on the effectiveness of social norm interventions to change pro-environmental behavior*, Journal of Environmental Psychology, Vol. 78, 101688, pp. 1-11
- Doll, J., Ajzen, I. (1992): *Accessibility and Stability of Predictors in the Theory of Planned Behavior*, Journal of Personality and Social Psychology, Vol. 63, No. 5, pp. 754-765
- Galloway, A. (2005): *Non-Probability Sampling*, in Kempf-Leonard, K., ed.: Encyclopedia of Social Measurement, Vol. 2, pp. 859-864

- Gärling, T., Gillholm, R., Gärling, A. (1998): *Reintroducing attitude theory in travel behavior research: The validity of an interactive interview procedure to predict car use*, Transportation, Vol. 25, pp. 129-146
- Hagger, M. S., Chatzisarantis, N. L. D. (2006): *Self-identity and the theory of planned behaviour: Between- and within-participants analyses*, British Journal of Social Psychology Vol. 45, pp. 731-757
- Hair, J. F., Black, B., Babin, B., Anderson, R. E., Tatham, R. L. (2006): *Multivariate data analysis*, Prentice Hall, New Jersey, NJ
- Halepenny, E., Kono, S., Moghimehfar, F. (2018): *Predicting World Heritage site visitation intentions of North American park visitors*, Journal of Hospitality and Tourism Technology, Vol. 9, No. 3, pp. 417-437
- Hrubcova, G., Loster, T., Obergruber, P. (2016): *The Economic Effects of Tourism in the Group of the Least Developed Countries*, Procedia Economics and Finance, Vol. 39, pp. 476-481
- Jung, S., Lee, S. (2011): *Exploratory factor analysis for small samples*, Behavior Research Methods, Vol. 43, pp. 701-709
- Lacher, R. G., Oh, C.-O., Jodice, L. W., Norman, W. C. (2013): *The Role of Heritage and Cultural Elements in Coastal Tourism Destination Preferences: A Choice Modeling-Based Analysis*, Journal of Travel Research, Vol. 52, No. 4, pp. 534-546
- Lam, T., Hsu, C. H. C. (2006): *Predicting behavioral intention of choosing a travel destination*, Tourism Management, Vol. 27, pp. 589-599
- Lavrakas, P. J., ed. (2008): *Cross-Sectional Survey Design*, in: Encyclopedia of Survey Research Methods, <https://methods.sagepub.com/reference/encyclopedia-of-survey-research-methods/n120.xml> (accessed 19 March 2022)
- Lysonski, S., Durvasula, S., Zotos, Y. (1996): *Consumer decision-making styles: a multi-country investigation*, European Journal of Marketing, Vol. 30, No. 12, pp. 10-21
- Martínez-Pérez, Á., Elche, D., García-Villaverde, P. M., Parra-Requena, G. (2019): *Cultural Tourism Clusters: Social Capital, Relations with Institutions, and Radical Innovation*, Journal of Travel Research, Vol. 58, No. 5, pp. 793-807
- Nyaupane, G. P., Andereck, K. L. (2016): *An Expansion of Typology of Cultural Heritage Visitors*, Travel and Tourism Research Association: Advancing Tourism Research Globally, 63, pp. 213-220
- Park, J., Ha, S. (2014): *Understanding Consumer Recycling Behavior: Combining the Theory of Planned Behavior and the Norm Activation Model*, Family and Consumer Sciences Research Journal, Vol. 42, No. 3, pp. 278-291
- Parker, D., Manstead, A. S. R., Stradling, S. G. (1995): *Extending the theory of planned behaviour: The role of personal norm*, British Journal of Social Psychology, Vol. 34, No. 2, pp. 127-138
- Pearce, P. L., Lee, U.-I. (2005): *Developing the Travel Career Approach to Tourist Motivation*, Journal of Travel Research, Vol. 43, pp. 226-237
- Platania, S., Woosnam, K. M., Ribeiro, M. A. (2021): *Factors Predicting Individuals' Behavioural Intentions for Choosing Cultural Tourism: A Structural Model*, Sustainability, Vol. 13, 10347



- Ruangkanjanases, A., You, J.-J., Chien, S.-W., Ma, Y., Chen, S.-C., Chao, L.-C. (2020): *Elucidating the Effect of Antecedents on Consumers' Green Purchase Intention: An Extension of the Theory of Planned Behavior*, *Frontiers in Psychology*, Vol. 11, 1433
- Sharpley, R. (2000): *Tourism and Sustainable Development: Exploring the Theoretical Divide*, *Journal of Sustainable Tourism*, Vol. 8, No. 1, pp. 1-19
- Smith, J. R., Terry, D. J., Manstead, A. S. R., Louis, W. R., Kotterman, D., Wolfs, J. (2008): *The Attitude–Behavior Relationship in Consumer Conduct: The Role of Norms, Past Behavior, and Self-Identity*, *The Journal of Social Psychology*, Vol. 148, No. 3, pp. 311-334
- Sparks, P., Shepherd, R. (1992): *Self-Identity and the Theory of Planned Behavior: Assessing the Role of Identification with "Green Consumerism"*, *Social Psychology Quarterly*, Vol. 55, No. 4, pp. 388-399
- Stebbins, R. A. (1996): *Cultural Tourism as Serious Leisure*, *Annals of Tourism Research*, Vol. 23, pp. 948-950
- Terry, D. J., Hogg, M. A., White, K. M. (1999): *The theory of planned behaviour: Self-identity, social identity and group norms*, *British Journal of Social Psychology*, Vol. 38, pp. 225-244
- Wang, S., Wu, L., Lee, S. (2018): *Role of dispositional aspects of self-identity in the process of planned behavior of outbound travel*, *Journal of Vacation Marketing*, Vol. 24, No. 2, pp. 187-199
- Willis, K. G. (2014): *The Use of Stated Preference Methods to Value Cultural Heritage*, in Ginsburgh, V. A., Throsby, D., eds.: *Handbook of the Economics of Art and Culture*, Vol. 2, pp. 145-181
- Woosnam, K. M., Ribeiro, M. A., Denley, T. J., Hehir, C., Boley, B. B. (2021): *Psychological Antecedents of Intentions to Participate in Last Chance Tourism: Considering Complementary Theories*, *Journal of Travel Research*, pp. 1-16 (doi:10.1177/004728752111025097)
- Xue, X., Caiguo, X., Yi, L., Chenxia, M. (2022): *Consumption of traditional handicraft fashion: Motivations, intentions and behaviours of Chinese consumers*, *Cleaner and Responsible Consumption*, Vol. 4, 100046
- Yoon, C. (2011): *Theory of Planned Behavior and Ethics Theory in Digital Piracy: An Integrated Model*, *Journal of Business Ethics*, Vol. 100, pp. 405–417
- Zadel, Z., Bogdan, S. (2013): *Economic impact of cultural tourism*, *UTMS Journal of Economics*, Vol. 4, No. 3, pp. 355-366
- Zandieh, M., Seifpour, Z. (2020): *Preserving traditional marketplaces as places of intangible heritage for tourism*, *Journal of Heritage Tourism*, Vol. 15, No. 1, pp. 111-121

*A scientific paper*

**Marko Primorac, Ph. D., Associate Professor**

University of Zagreb, Faculty of Economics & Business

CESifo Research Network

E-mail address: mprimorac@efzg.hr

**Jakša Puljiz, Ph. D.**

The Institute for Development and International Relations

E-mail address: jpuljiz@irmo.hr

**Vladimir Arčabić, Ph. D., Assistant Professor**

University of Zagreb, Faculty of Economics & Business

E-mail address: varcabic@efzg.hr

## **APPLICATION OF ALTERNATIVE INDICATORS IN THE CALCULATION OF THE DEVELOPMENT INDEX IN CROATIA**

### **ABSTRACT**

*This paper develops and tests new (alternative) models for assessing the development of subnational government units in Croatia. The aim is to assess the possibilities for improving the existing official model for calculating the development index of subnational units. Given its high policy impact, especially in terms of central-level support for the local development projects, there is a strong policy interest for continuous monitoring and evaluation of model's validity. In essence, the paper considers different variants of the existing model, since all tested variants retain some of its key elements. In particular, all variants still use the balanced z-score method to calculate standardized values. Also, each development indicator included has equal weight in the final assessment of development. However, we alter the choice of development indicators and consider some other aspects of the calculation and categorization of units by development groups. Testing of new variants was performed in two steps: in the first step, we examine the suitability of new potential indicators, and in the second step, we test different models by retaining some existing and adding new indicators. A total of seven new model variants were developed, which differ from each other based on the indicators included. To this end, the scenario analysis was performed to assess the effectiveness of various models in identifying less developed local government units. Despite our efforts to identify new indicators that would be more effective in categorizing local and regional government units based on their level of development, we recommend retaining the existing set of indicators. However, the Government might consider excluding the own-source revenue per capita as an indicator for calculating the development index because the indicator of fiscal capacity is already used for redistributive purposes within the fiscal equalization policy.*

**Key words:** *development index, local and regional development, intergovernmental fiscal relations, subnational government, composite indicators.*

## 1. Introduction

This paper proposes and tests new (alternative) models of subnational units' development indices based on the example of local government units (LGUs)<sup>1</sup> in Croatia. The goal is to improve the existing development index used by the Croatian Ministry of Regional Development and EU Funds. The Ministry uses such an index to classify local and regional government units (LRGUs)<sup>2</sup> according to their development level with the goal of fostering an equal and inclusive development at the national level.

Before moving to the methodological issues about the index, several important features of Croatia's regional development are worth mentioning. Most of the regional disparities in Croatia have the same cause as in other countries, mainly differences between urban and rural areas, center and periphery. Still, in Croatia, there is also a pronounced difference between coastal and continental areas (Puljiz, 2009). However, there are certain peculiarities not present in other countries. Croatian independence starting in 1990 coincided with the Homeland war, which was parallel with the transition from the planned to the market economy. The war and the transition left scars on some parts of the country, which required assistance from the central government. Furthermore, after 2000, the Croatian economy was growing fast, but the economic growth was mainly fueled by private and public debt as well as public investment. The Global financial crisis that hit Croatia in 2009 lasted for almost six years, during which unemployment increased substantially, especially in rural areas, central Croatia, and the eastern part of the country. Coastal areas suffered less during the crisis because of tourist activities. The high share of tourism in GDP, estimated from 15% to almost 20%, is also a source of regional differences (Družić and Andabaka, 2016). Right after the Global financial crisis, the emigration process started, where the working age individuals started careers in other European countries, mostly Germany. The emigration process was not uniform, but it hit the most eastern and central parts of Croatia (Draženović et al., 2018).

There are three types of development in Croatia, according to Marčelić (2015). The first type is the underdevelopment of all development dimensions, including income, employment, and education. The regional development index detects such a type of underdevelopment, especially in eastern Croatia. The second type of development is detected in coastal regions, where income, employment, and migration are high, but education and human capital are low. Due to high income and employment scores, the regional development index typically ranks such regions very high, in some cases too high. Low human capital could result from a tourism-oriented economy, as shown in Kožić (2019). Eventually, low human capital leads to lower GDP growth. Finally, the third type of development is related to large urban areas and northern Croatia, characterized by high income, employment, and human capital. Regional development disparities are especially evident in economic indicators such as employment, unemployment, income, and others, as noted by Botrić (2004) and Puljiz and Maleković (2007). Such peculiarities affected the economic policy as well. Most notably, fiscal adjustments were necessary at the local level to achieve fiscal equalization (Bajo and Primorac, 2013, 2018). There is also a trend of growing application of the development index in various policy areas as a way of recognizing and addressing the issue of regional disparities. Labour market schemes, agricultural development programs, communal infrastructure programs, and tourism development programs are just some of the examples of policy areas where the development index has found its application in Croatia. Also, very important, the development index is commonly used as a criterion when selecting projects co-funded by Cohesion policy funds. In

---

<sup>1</sup> Local government units in Croatia are 128 cities and 428 municipalities.

<sup>2</sup> Regional government units in Croatia consist of 20 counties and the City of Zagreb, which has a county status.

such circumstances, a better understanding of the advantages and disadvantages of the composition and calculation method of the index has its particular policy importance. This has made the evaluation of the development index a very appealing topic for the researchers.

Economic development is a multidimensional process, and composite indices are a natural way to capture all the development dimensions in a single indicator. A transparent and easy to interpret indicator is essential for regional policy decisions. Composite indices come with advantages and disadvantages, and one has to be aware of them from the beginning (Saisana and Tarantola, 2002). The main advantage of measuring regional economic development with a composite index is that it captures the multidimensional concept of economic development. It can also help to compare the regions and measure the development over time. Furthermore, the composite index is flexible and allows easy adjustments, such as adding additional variables, it is focused on regions' performance, easy to interpret for policymakers, citizens, and media and it can be a very informative tool in public discussions.

On the other hand, a poorly constructed or misinterpreted index can be misleading and result with significant negative consequences. To avoid that, a composite index is supposed to be transparent, replicable, and based on sound statistical principles. Policymakers are supposed to study different sub-indices to avoid overly simplistic conclusions. In the composite index, a failure of some development aspects can be hidden by the success of other components. Certain development dimensions could also be ignored in case of data unavailability (see also Saisana and Tarantola, 2002).

Thorough statistical evaluation of the development index in Croatia was performed by Perišić and Wagner (2015), who assessed the version of the development index from 2013 and suggested a way to treat outliers in the data, addressing a multicollinearity problem, and pick the optimal weights for the composite index. In addition, they proposed that the regional development index should consider marginal cases by looking at estimated confidence intervals instead of simple point estimates. The specific contribution of the paper lies in testing the additional variables on the basis of the current official version of the index that was inaugurated in 2017. This makes the results and discussion rather important for policy purposes, while at the same time authors shed more light on the methodological process of designing development level indexes.

The main findings of our paper could be summarized as follows. We find pressing issues with the development classification of subnational units, which heavily rely on tourism. Results of various simulations have shown that standard socio-economic indicators in many instances omit to recognize the favorable impact of tourism on their development. Such units tend to be more developed than recognized by the development indices. A potential solution might be to include real estate prices in the development index. The real estate value is higher in these units, which would better capture the development level. However, the data on real estate is not available at the level of LGUs, and we were unable to include it in the index. The recommendation is to upgrade the availability of real estate data at the local level.

We find that multivariate indices with more indicators tend to perform better than ones with fewer indicators, clearly showing the multidimensional aspects of economic development. We kept the original development indicators except for the own-source revenue per capita. The main reason is that own-source revenue is an indicator of fiscal capacity, which overlaps with the fiscal equalization policy. Using the same indicator for two policies might lead to confusion

regarding each policy's aims and instruments, as well as result with unwanted effects in each area.

Classification of LRGUs based on the development index should be performed every five years, instead of every three years, which is the current practice. Keeping the same classification for a longer period allows LRGUs to implement economic policies and observe their results. In addition, some of the indicators included in the development index are based on census and are updated every ten years. We suggest more timely updates of the data to better capture the development trends.

The paper is structured as follows. In the next section, we provide a brief overview of the evolution of development index. Section three discusses the potentials of new indicators for the calculation of the development index. Section 4 describes alternative models tested for LRGUs' development categorization and their specifications. Section 5 discusses results, while section 6 concludes and provides recommendations for improvement of the development index.

## **2. Short overview of the evolution of development index**

For a long period, Croatian policymakers have designated LRGUs entitled to receive special support from the central government either based on the consequences of the Homeland War in the 1990s (Areas of Special State Concern - ASSC) or due to their specific geographical handicap (islands and Hilly and Mountainous Areas - HMA). A major change took place after the first Law on Regional Development in 2009 (OG 153/09) was passed, which introduced the obligation to regularly categorize all LRGUs based on the value of their development index. Importantly, for the very first time, the regional units were subject to development-level assessment and categorization.

The methodology for the calculation of the index was set by the Government's ordinance accompanying the Law. The index was calculated as the weighted average of the standardized values of five basic indicators: personal income per capita, unemployment rate, own-source revenue (without grants from the central level and receipts from selling non-financial assets and some other, specific types of revenues), change in total population and share of the educated population (persons with a minimum high-school level of education). Standardization was performed based on the so-called min-max normalization. However, the application of the index for policy purposes has started only after the new Law on Regional Development was passed in 2014 (OG 147/14). The Law clearly connected various incentives and other measures with the categorization of the units. Since then, the use of index as a policy tool has been widespread, covering many various areas from public infrastructure programs to business development support, labor market, housing policy, etc.

In 2017 (OG 123/17), an important revision of the index took place based on the evaluation of the index done by Denona Bogović et al. (2017). Most important was a change in the method of standardization, replacing min-max method with the balanced z-score method in accordance with the approach set by Mazziota, Peretta (2016)<sup>3</sup>. Also, the additional demographic indicator has been added (age index), and the calculation of the population educational rate was changed so as to measure only the share of the highly educated population. Furthermore, the categorization of the local units was changed in a way that the number of groups has been increased from five to eight while the number of groups for the regional units has remained the

---

<sup>3</sup> This new approach to the calculation of the development index is explained in detail in Denona Bogović et al. (2017).

same. Finally, the length of the categorization of units was reduced from five to three years. The new calculation and categorization method has put more emphasis on the demographic dimension of development, thereby helping a range of smaller units with the negative demographic picture to achieve the status of the assisted areas (which ensures the highest level of policy benefits.).

Given its substantial policy relevance, ensuring the high quality of the development index in terms of its ability to capture the development picture at the regional and local level remains a continuous challenge and a policy need. In the next section, we discuss several possibilities for its improvement.

### **3. The potential of applying new indicators in the calculation of the development index**

In our analyses, seven indicators were used to test the performance of new development assessment models, five of which were existing and two were new. Among the existing indicators, only the own-source revenue per capita is excluded. The reason for not using this indicator is that a very similar indicator is already used in calculating the fiscal capacity of LRGUs on the basis of which the Ministry of Finance determines the rights to fiscal equalization, all in accordance with the Law on the financing of Local and Regional Self-Government Units (OG 127/17). Therefore, the use of indicators for assessing the fiscal capacity of LRGUs is intended to be "left" for the fiscal equalization system, thus avoiding the overlap of fiscal equalization and regional development policies.

It should be emphasized at the outset that our initial goal was to include a wider range of indicators in the testing. However, due to various difficulties with the data, this was not possible, so some of the indicators were abandoned. For example, one of the indicators considered for testing was the average price of real estate per m<sup>2</sup>. Such an indicator would provide additional insight into the level of attractiveness of living in a particular LRGU. It is to be expected that a higher level of real estate prices is closely correlated with the level of attractiveness, whereas the attractiveness of an area should reflect a combination of most relevant aspects of development (social, economic, but also infrastructural and other). However, relevant data on real estate prices by individual LGUs in Croatia do not exist. For the purposes of the research, a database of median real estate prices per m<sup>2</sup> of LGUs from 2012 to 2019 (EIZG, 2020) was used. However, data on real estate price movements are volatile, and their credibility is questionable. In addition, data are not available for a large number of LGUs because due to the small number of transactions, it is not possible to publish even the median price due to the obligation to comply with the rules on personal data protection. Namely, the data are not presented for all those LGUs where less than ten transactions were realized in a given year. Since the calculation of the development index requires relevant data on the values of indicators for all LGUs, in its current form, this indicator is not suitable for use in assessing development and is not included in the simulations.

Keeping in mind all the advantages and disadvantages of the considered indicators, Table 1 shows the additionally tested indicators, the rationale for their inclusion in the simulations, the comment on the test results, and the final decision on their use. Comments on test results are primarily intended to identify pronounced inconsistencies in the results of LGUs rankings. Thus, for example, the indicator of LGUs' assets per capita showed that some of the "standard" underdeveloped units such as Civljane, Kijevo, Lokvičići and others were ranked among the 10% of the best-rated units, which is a very large deviation from the ranking results according to all other indicators. At the same time, there are several other units with significantly lower ranking according to this indicator compared to all other indicators. Given that this is not an

individual case of illogical ranking results, the conclusion is that it would be appropriate to abandon the use of this indicator. However, since this indicator should, in principle, still reflect the development of LRGU, an additional derivative of this indicator was considered where the value of the property is not "normalized" by population but by area per km<sup>2</sup> because a larger area of LRGU implies a larger quantity, and thus the value of buildings, roads, railways and other facilities. This indicator proved to be much more suitable for use in the calculation of the development index and was used in simulations the results of which are presented in the following subsections.

**Table 1:** Evaluation of potential new indicators

No.	Indicator	Explanation	Test results and decisions on the use
1.	Assets of LGU/LRGU per capita	The indicator measures the relative wealth of a LRGU using the value of its assets shown in the balance sheet. The indicator makes it possible to measure aspects of development that cannot be measured through other indicators. In particular, it should help identify tourism-developed units that are not sufficiently valorized by standard indicators such as per capita income (mainly due to the presence of the grey economy).	Decision: NO The test results indicated certain types of anomalies, in the sense that some extremely underdeveloped units, due to the very small number of inhabitants, recorded extremely high values.
2.	Assets of LGU/LRGU per km <sup>2</sup>	The indicator measures the relative wealth of a LRGU using the value of its assets shown in the balance sheet. Unlike the previous indicator, the calculation is based on the ratio of the value of the property and the area of the unit, which reduces the likelihood of extreme positive values due to the small number of residents.	Decision: YES The test results did not show any particularly pronounced illogicalities, i.e., illogicalities observed in the indicators of assets per capita have now been avoided.
3.	Minimum Guaranteed Fee per 1,000 inhabitants	Minimum Guaranteed Fee (MGF) is the most important benefit paid to socially disadvantaged citizens. The indicator measures the level of social exclusion in a particular LRGU and, as such, should be a quality supplement to the unemployment rate indicator, which is gradually reducing its relevance due to the general decrease in the unemployment rate.	Decision: YES No particularly pronounced illogicalities were observed in the test results.
4.	Number of tourist nights per capita	The indicator measures the level of tourism development of a LRGU. The indicator can serve as a supplement to the income per capita indicator, as it has a less pronounced problem of the	Decision: NO The test results indicated very large differences between LRGUs, which significantly affects the final assessment (in some

No.	Indicator	Explanation	Test results and decisions on the use
		grey economy (similar to the property per capita/km <sup>2</sup> ).	cases, touristically underdeveloped units are classified as least developed although successful in other sectors).
5.	The average price of real estate per m <sup>2</sup>	The indicator measures the level of attractiveness of living in a particular LRGU. It is to be expected that a higher level of the market price of real estate is closely correlated with the level of attractiveness.	Decision: NO Data on real estate prices are not available for all LRGUs (due to the small number of transactions, there is a problem of the obligation to comply with personal data protection rules).

*Source: Authors*

We also planned to include an indicator of the number of tourist nights per capita, which would measure the level of tourist attractiveness. Data on the number of overnight stays are available at the county and local level, and the indicator is closely related to the issue of economic development and, as such, can serve as a supplement to income data. An additional advantage of the indicator is that it has a less pronounced problem of measurement reliability due to the grey economy than with personal income. The indicator would therefore serve as a supplement to per capita income, as touristically developed areas are expected to have an above-average share of the grey economy, which makes the application of personal income per capita deficient. However, the indicator is not included in the final testing because extremely large differences were found among LGUs, which consequently significantly affects the final assessment of development (touristically underdeveloped units are classified as least developed due to the low value of this indicator, although they do not appear to be that underdeveloped in other segments). The problem of an extremely large range of values of this indicator was also noticed in the study of the Institute of Tourism (Institut za turizam, 2020). Therefore, we ultimately decided to omit this indicator from the simulations.

Furthermore, although, given the availability of data, it was possible to test several indicators of the infrastructural equipment of local self-government units, such as the share of households connected to the wastewater drainage system, this was not done. The reasons for abandoning the use of infrastructure indicators for measuring development is that the phenomenon of development within this study, but also the calculation of the development index in general is primarily considered through the socio-economic position of the average individual in the area or his standard of living while data on infrastructure and certain social services at the local level can deviate significantly from such a notion of development in order to be reliable indicators of the level of development. This is partly the result of differences in the structural characteristics of LGUs (e.g. in terms of size, demographic situation, geographical location, economic structure), and partly the inadequacy of the data itself.

Thus, for example, the use of indicators such as the number of children enrolled in kindergartens shows that it is very difficult to draw a firm conclusion about the relationship between the overall development of the local unit and the coverage of children with preschool education in



the area which still has problems with very low-paid jobs, i.e., lack of jobs. The situation is similar with indicators such as the coverage of the population with drainage systems, which can lead to a significantly lower assessment of the development of some units (including cities), which are ranked very high according to common socio-economic indicators. Insufficiently detailed data on the number of users who have the possibility of connecting to the Internet at high speeds (100 Gb/s and more) are still a problem with the indicators of broadband infrastructure availability. Due to such numerous shortcomings of indicators of infrastructural equipment, modern approaches to measuring development at the local level very rarely include indicators of this type.<sup>4</sup> However, this does not mean that the data on the infrastructural equipment of LRGUs do not have their value for the needs of regional development policymakers. On the contrary, these are very useful indicators for specific activities, such as the implementation of various programs aimed to improve the subnational infrastructure. Given that a significant part of the activities of the Ministry of Regional Development and EU funds, as well as other state bodies, relate to such activities, it is advisable to consider designing specific indicators/index of infrastructural equipment that will be used for the implementation of relevant state investment programs.

#### 4. Description of alternative development assessment models

Based on the previously explained starting points, several new models of development assessment were tested. For the development of new models based on different mix of indicators, the so-called stepwise approach is applied. It starts from the basic model with a minimum number of initial indicators, which is then gradually expanded by additional indicators (Table 2). The following were selected as initial indicators: average income per capita, average unemployment rate and aging index.

The reason for this choice of the initial indicators lies in the assessment that these indicators give the most credible picture of economic, social and demographic development as three key aspects of the overall assessment of the LRGUs' development. The basic model that includes these three indicators is called Model 0, while with a combination of additional indicators we developed and tested also six other models (Model 1, Model 2, Model 3, Model 4, Model 5 and Model 6). Table 2 shows the mix of indicators in each model. In addition to the already mentioned reason for omitting the own-source revenues per capita, the relevance of indicators of education and general population movements (currently used for the calculation of the development index) is also questionable, as data from the last census are used, which are *de facto* constant in the inter-census period.

**Table 2:** Mix of indicators used in proposed models (2017-2019)

	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Average income per capita	X	X	X	X	X	X	X
Average unemployment rate	X	X	X	X	X	X	X
Aging index	X	X	X	X	X	X	X
Average assets per km <sup>2</sup>		X		X		X	X

<sup>4</sup> For example, Slovenia applies the NUTS 3 level of the development risk index, which consists of 14 indicators, none of which uses infrastructure equipment indicators.

	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Average number of MGF users per 1,000 inhabitants			X	X		X	X
Education level					X	X	
General population movement					X		X

Source: Authors

In order to further verify the validity of proposed models, correlation testing was performed to determine the extent to which individual indicators are interrelated. The aim is to avoid a situation in which two indicators would record extremely high values of the correlation coefficient. This would mean that the indicators "measure the same aspect", i.e. that they lack a sufficient level of individual value added in measuring the development.<sup>5</sup>

**Table 3:** Correlation matrix of values of testing indicators

	AIpc	AUR	EL	GPM	AGI	MGF	A
AIpc	1.00						
AUR	-0.58	1.00					
EL	0.63	-0.33	1.00				
GPM	0.42	-0.61	0.54	1.00			
AGI	0.06	0.09	0.14	-0.21	1.00		
MGF	-0.43	0.68	-0.32	-0.55	0.32	1.00	
A	0.27	-0.12	0.42	0.18	-0.02	-0.10	1.00

Note: AIpc – average income per capita, AUR – average unemployment rate, EL – education level, GPM – general population movement, AGI – aging index, MGF – number of users of the minimum guaranteed fee per 1,000 inhabitants, A – assets per km<sup>2</sup>

Source: Authors

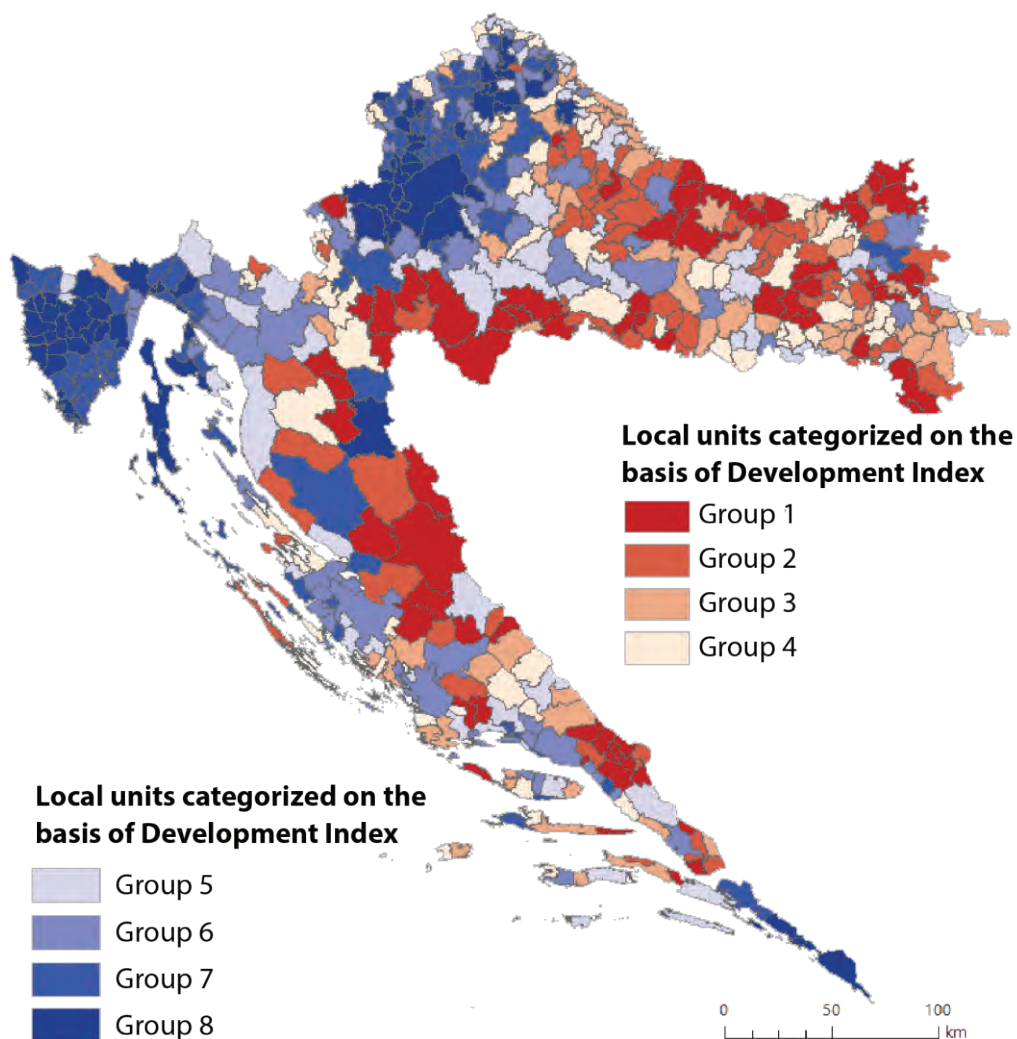
As it can be seen from Table 3, the highest correlation coefficient is recorded between the indicators of the number of MGF beneficiaries per 1,000 inhabitants and the unemployment rate (0.68), which was expected. The number of MGF beneficiaries per 1,000 inhabitants, as it has already been pointed out, is a supplementary indicator of the unemployment rate, so it is to be expected that there is a certain level of correlation. However, it should not take on extremely high values. Also, high values are recorded by per capita income and level of education (0.63), as well as by unemployment rate and general population movement (-0.61). However, none of the above values are so high to call into question the justification for including any of the observed indicators in the calculation of the development index.

<sup>5</sup> The values of the correlation coefficients of indicator pairs range between 0 and 1. If the value is close to 1, both indicators most likely measure a very similar dimension of development (or even the same one if the coefficient is 1). Although there is no strict consensus on the value of the correlation coefficient above which the inclusion of one or another indicator in the model would be questionable, it can be considered that the values less than 0.75 are sufficiently low to include both indicators in the model.

## 5. Evaluation of alternative development assessment models

For each of the development assessment models, the test results (simulations) and the applicability assessment are presented below. Data on the number of LGUs that acquire and lose the status of assisted area show a difference in the outcome compared to the application of the existing model on the data for the period 2017-2019. The basic model (Model 0) uses the average income per capita, the average unemployment rate and the aging index as indicators of development. The model underestimates the development of touristically strong LGUs. Furthermore, using only the aging index is not enough to prevent the loss of status for some units with poor demographics because poorer results in terms of the aging index are compensated by good results in terms of average income per capita and unemployment rate. It seems necessary to extend the model with additional indicators. The geographical presentation of LGUs by groups of development index in 2021 according to the basic model (Model 0) is shown in Figure 1. The model does not have clear advantages and despite its simplicity (fewer indicators and easier calculation) it is not recommended for use.

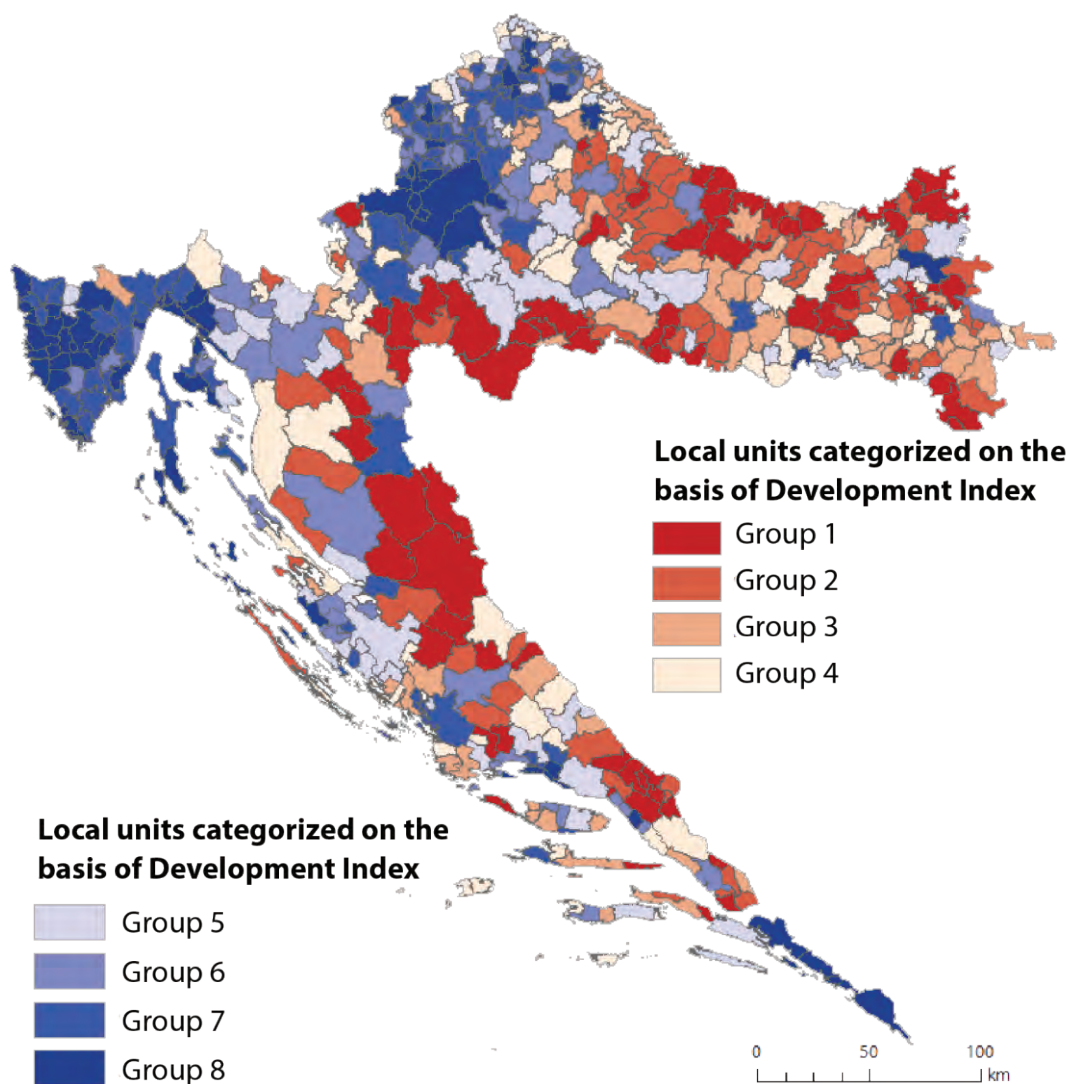
**Figure 1:** Geographical presentation of LGUs by groups of development indices in 2021 according to the basic model (Model 0)



Source: Authors

Model 1, in addition to the average income per capita, the average unemployment rate and the aging index, also takes the assets of LGU/LRGU per km<sup>2</sup> as an indicator of development. According to this model, as many as 20.4% of LGUs lose the status of the assisted area in relation to the new categorization with the existing model. The new indicator - assets per km<sup>2</sup> - has too little impact to "correct" all the shortcomings of the first model, so many touristically developed units are still included in the scope of assisted areas. The geographical presentation of LGUs by groups of development indices in 2021 according to Model 1 is shown in Figure 2. From all the above, it can be concluded that Model 1 has no significant advantages and is not recommended for use.

**Figure 2:** Geographical presentation of LGUs by groups of development indices in 2021 according to Model 1

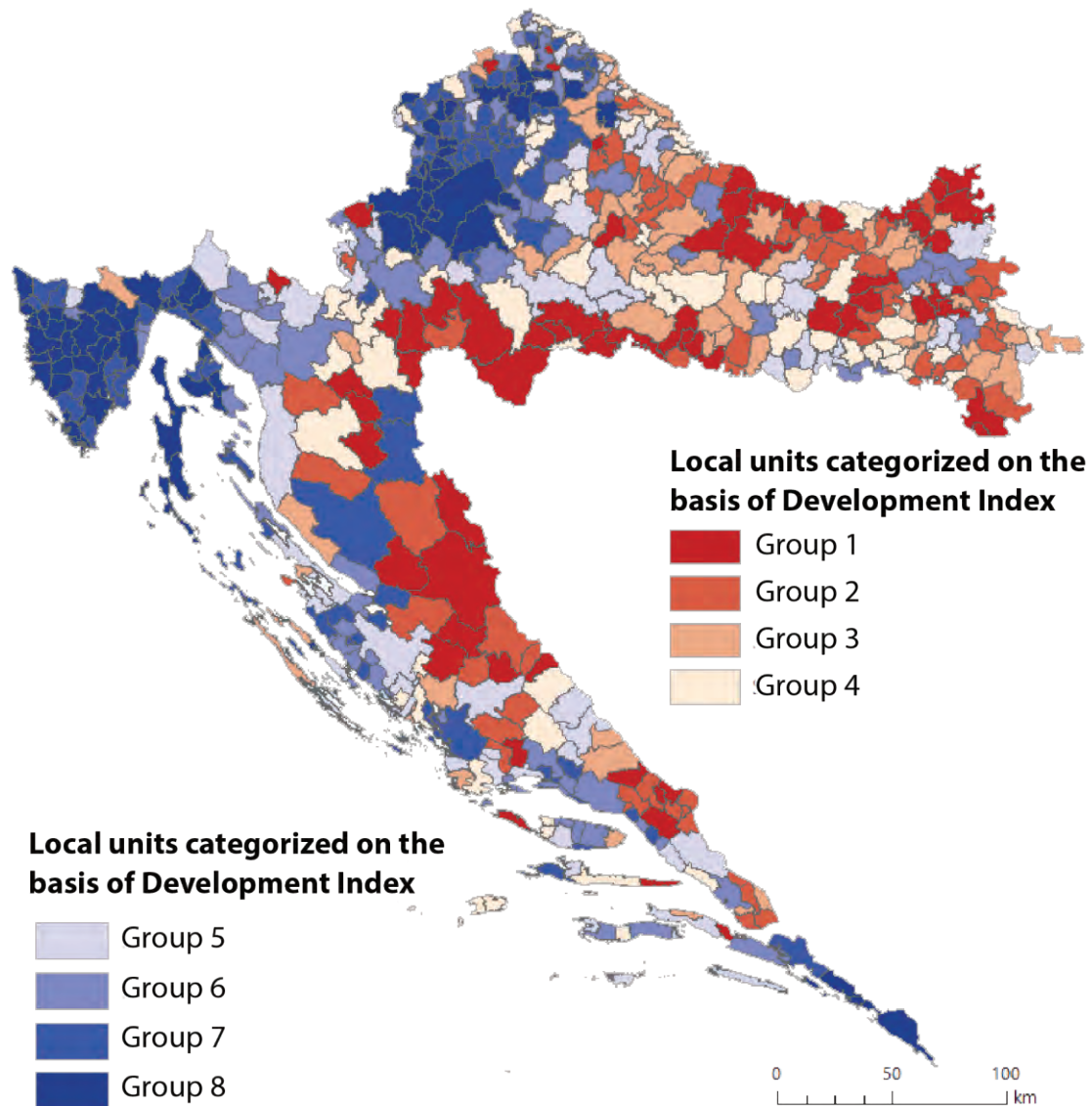


Source: Authors

Model 2 is also a variation of Model 0 (as well as Model 1), but instead of assets per km<sup>2</sup> takes the average number of minimum guaranteed fee per 1,000 inhabitants as an additional variable. According to the test results, as many as 26% of LGUs lose their status compared to the new categorization with the existing model. The index still fails to "recognize" touristically developed LGUs that acquire the status of an assisted area mainly at the expense of the aging

index and low (reported) per capita income. However, the number of disputed units that acquire the status of the assisted area is smaller than in Model 1. The geographical presentation of LGUs by groups of development indices in 2021 according to Model 2 is given in Figure 3. Model 2 has no significant advantages over the existing model and is not recommended for use.

**Figure 3:** Geographical presentation of LGUs by groups of development indices in 2021 according to Model 2

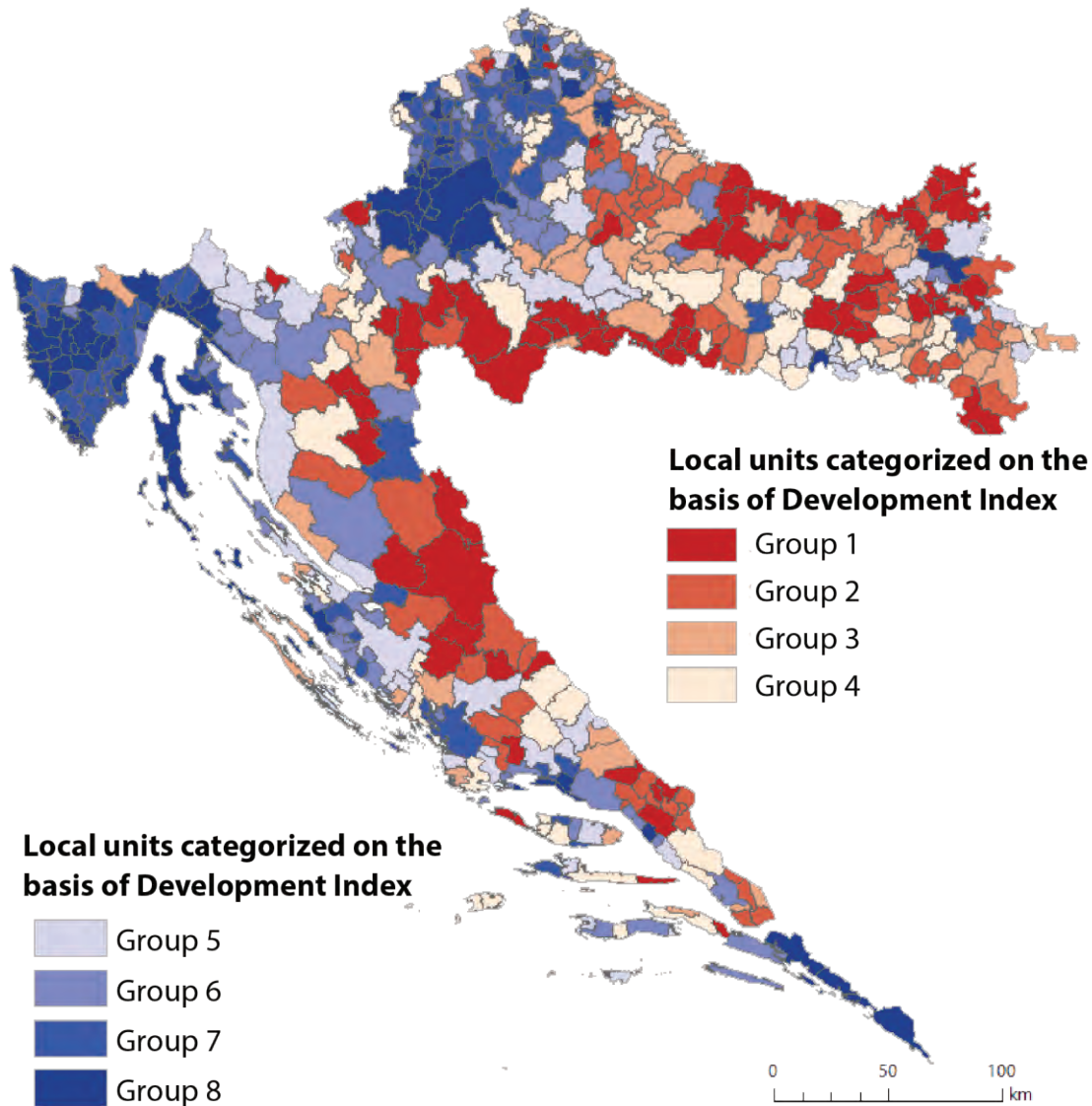


*Source: Authors*

In Model 3, in addition to the basic indicators from Model 0, assets per km<sup>2</sup> and the minimum guaranteed fee per 1,000 inhabitants are taken as additional variables. Due to a large number of LGUs and their specifics in terms of indicators used, the effects of individual indicators are difficult to predict and for each new variable it is necessary to perform a separate simulation and a new calculation of the development index and classify LGUs according to the simulated calculation. By simulating the ranking of LGUs based on Model 3, as many as 22.7% of LGUs lose their status in relation to the new categorization with the existing model. The index still fails to "recognize" touristically developed LGUs that acquire the status of an assisted area

mainly at the expense of the aging index and low (reported) income per capita. The absence of population movements, as in previous cases, seems to have weakened the dimension of demographic development as an important aspect of overall development. The geographical presentation of LGUs by groups of development indices in 2021 according to Model 3 is shown in Figure 4. Model 3 also has no significant advantages and is not recommended for use.

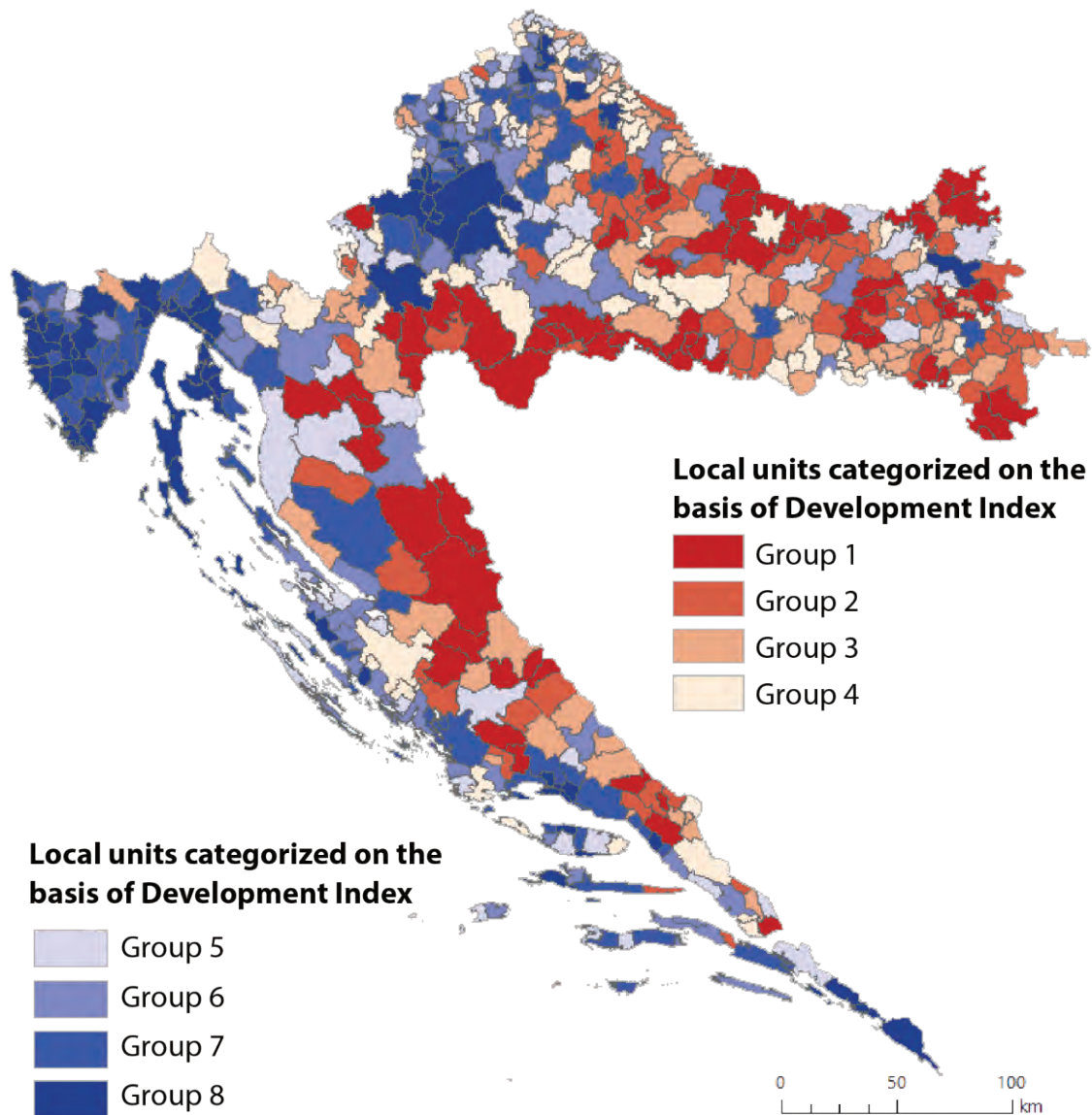
**Figure 4:** Geographical presentation of LGUs by groups of development indices in 2021 according to Model 3



Source: Authors

Model 4, in addition to the standard indicators from the basic model, also includes general population movements and the level of education. This is a *de facto* variant of the existing model of calculating the development index, from which only the indicator of own-source revenues per capita is excluded. This is the first model tested without convincing shortcomings. The biggest disadvantage of the model is that a number of LGUs lose their status, many of those from the area of Slavonia and Baranja. The geographical presentation of LGUs by groups of development indices in 2021 according to Model 4 is given in Figure 5.

**Figure 5:** Geographical presentation of LGUs by groups of development indices in 2021 according to Model 4



*Source: Authors*

The results of simulations based on Model 4 indicate smaller changes compared to previously tested models. Model 4 recognizes larger urban centers that no longer justify the status of the assisted area as well as the successful development of smaller LGUs in north-western Croatia that are also losing status. In addition, the model implies significantly less changes in terms of input variables - it is only the exclusion of own-source revenues per capita as an indicator used in fiscal equalization policy to enable the provision of a comparable level of services in LRGUs with a comparable level of tax burden.

Indicators related to fiscal capacity (such as own-source revenues per capita) and fiscal needs are used to allocate current non-earmarked fiscal equalization grants. The policy of horizontal fiscal equalization is short-term, while regional development policy measures are still long-term and are based mainly on the allocation of specific earmarked (often capital) grants. That is the reason why it is advisable to base them on indicators that indicate somewhat longer-term trends. Given that fiscal equalization and regional development policies in Croatia have often

not been clearly separated but, on contrary, relied on the same or similar criteria (ASSC, HMA, islands, etc.), it is necessary to finally draw a demarcation line between these policies and the fiscal instruments they use, as well as the indicators on which they rest.

Considering all the above characteristics and the results of tests and simulations, Model 4 is recommended for further consideration and use with minor adjustments. The basic issue related to the application of this model is the period that will be considered in the calculation of indicators of general population movement and level of education. These data have so far been used according to the last population census (2011) and have not changed in the inter-census period, which reduces the relevance of these indicators, but it also undermines the credibility of the model and the expediency of performing assessments and classifying LRGUs every three years, with the values for 2 out of 6 (i.e. one third) indicators not changing.

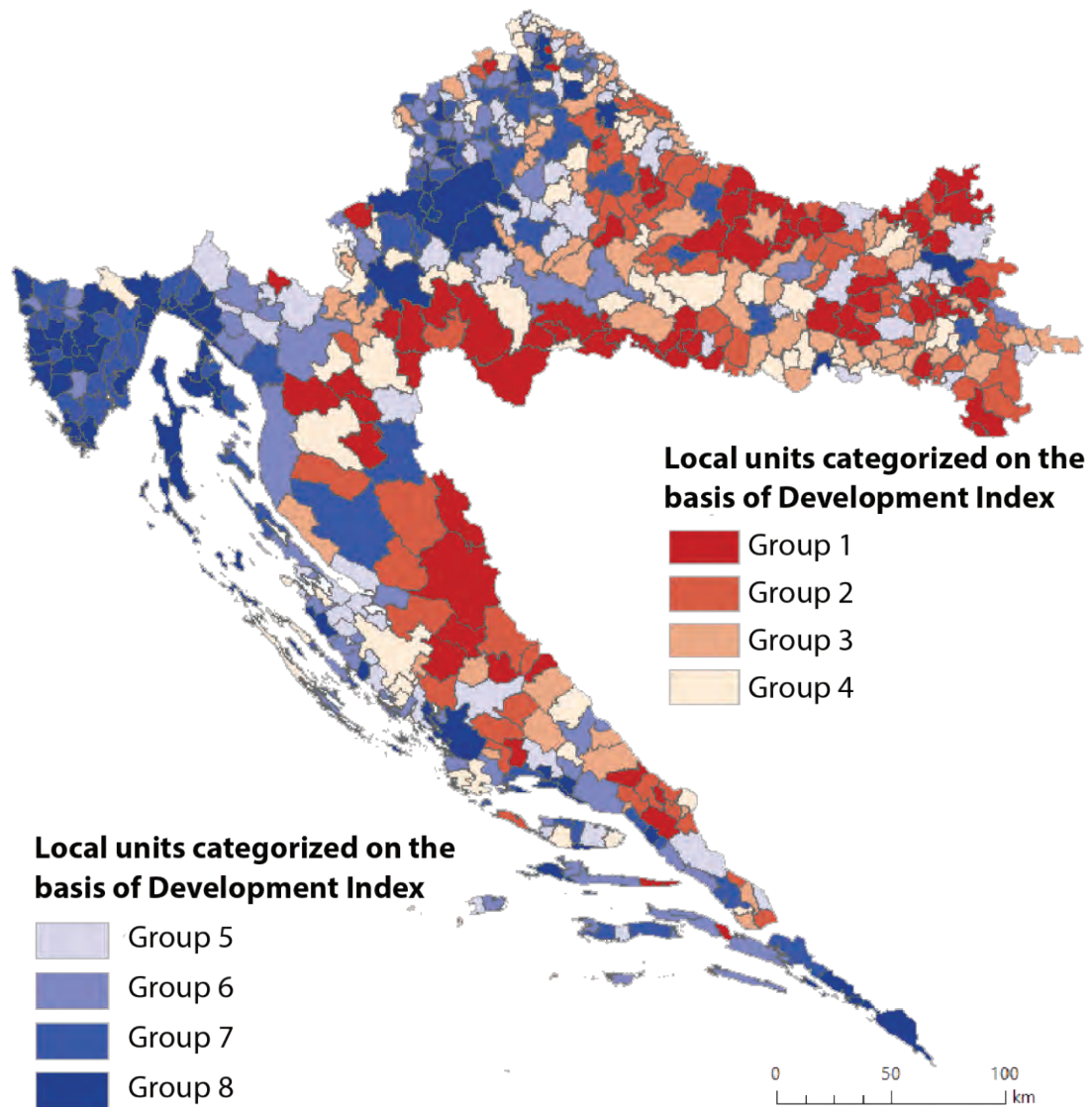
Model 5 was created as an upgrade of the Model 3, which in addition to the variables from the basic model, includes both new variables (minimum guaranteed fee per 1,000 inhabitants and property of LGU per km<sup>2</sup>) and also the level of education.

The biggest disadvantage of the model is that a significant number of coastal and LGUs on islands acquire the status of assisted areas, which is very difficult to justify given their touristical development. One of the reasons why a number of these units are gaining a beneficial status are low values of property indicators per km<sup>2</sup>, which indicates a potential problem with the objectivity of measuring development using this indicator. The problem may be related to the unrealistically stated value of assets in the balance sheet. Such analyses indicate the need for reliable and accurate presentation of values in the LRGUs' financial statements. Namely, although the data can be presented in accordance with legal provisions, the question is to what extent they correspond to reality. For example, financial assets related to shares in companies founded or owned by LRGUs are not recorded according to the market value but according to the accounting value of capital (equity). Similar problems appear in recording of non-financial assets. If the application of this indicator is going to be considered, it is first necessary to arrange the records and databases in order to correspond to the real situation.

The geographical presentation of LGUs by groups of development indices in 2021 according to Model 5 is shown in Figure 6. The results of the simulations indicate significant limitations in the application of this model. Model 5 is not recommended for use primarily due to the large number of Adriatic LGUs that acquire the status of the assisted area, although they are highly developed touristical centers. Model 6 was created on the basis of Model 5, only the general movement of the population is taken as an indicator of development (among other variables) instead of the level of education.



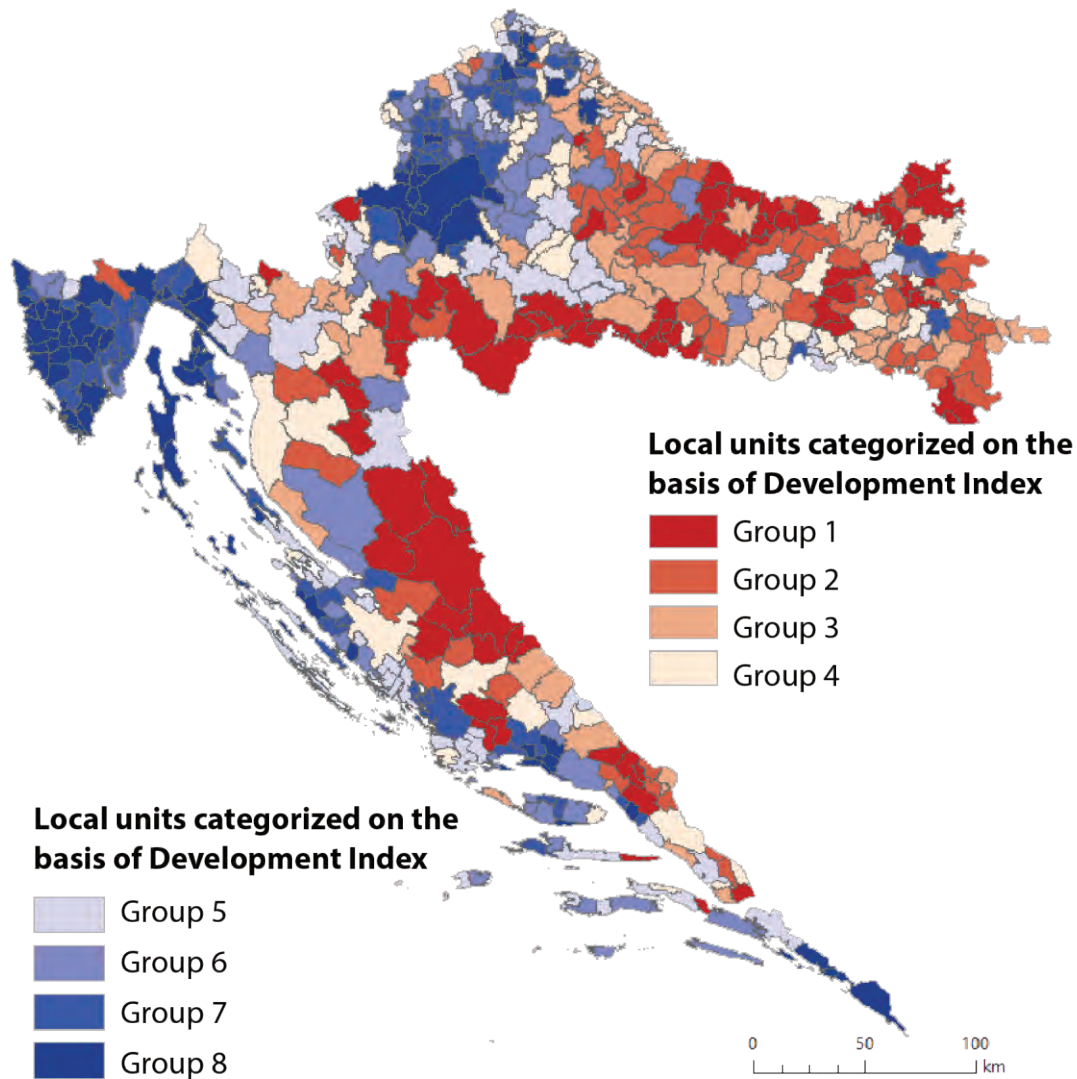
**Figure 6:** Geographical presentation of LGUs by groups of development indices in 2021 according to Model 5



*Source: Authors*

The results of testing and simulations indicate that a significant number of coastal and LGUs on islands acquire the status of assisted areas, which is very difficult to justify given their touristical development. In addition to the already mentioned reasons for such results, which relate to the low values of property indicators per km<sup>2</sup> for coastal and LGUs on islands, the problem may also be related to the unrealistically stated value of assets in the balance sheet, but also a relatively unfavorable aging index for some LGUs, which consequently reduce the value of the development index. The geographical presentation of LGUs by groups of development indices in 2021 according to Model 6 is shown in Figure 7 below.

**Figure 7:** Geographical presentation of LGUs by groups of development indices in 2021 according to Model 6



*Source: Authors*

Similar to the previous model, it can be assessed that the model is not recommended for use primarily due to a large number of touristically developed LGUs that acquire the status of the assisted area, while at the same time they are highly developed touristic centers.

The results obtained through analyses, simulations and testing performed in this paper suggest that of all the considered variables and models, the potential for further application has only Model 4, which is based on the following indicators: average income per capita, average unemployment rate, aging index, general population trends and level of education.

## 6. Conclusions and policy recommendations

Testing and evaluation of the local development index is a very interesting research challenge as it seeks to find the right mix of indicators for building a reliable index capturing economic development at the subnational level. Furthermore, in case of Croatia it has a very important

policy purpose due to its widespread use, making evaluation of the index highly relevant from the policy perspective as well. Our testing of the possible improvements of the existing index has led to several important conclusions about the indicators, time period of data used and units' categorization system.

Indicators. The test results indicated several important findings. First, it turned out that almost none of the tested models led to results that would have more advantages than disadvantages in relation to the categorization of local government units according to the existing model. It also turned out that almost all tested models have difficulties in recognizing the level of development of coastal and LGUs on islands (attractive tourist destinations). None of the tested indicators managed to adequately filter touristically developed areas, but it would certainly be advisable to continue working on this path and improve the available indicators. Real estate price is, without a doubt, an indicator that has great potential in this regard, so work should be accelerated to establish a relevant database of real estate prices in LRGUs and consider introducing this indicator in the calculation of future development indices. Relevant and credible real estate value databases are needed not only for the calculation of the development index, but also for other policies (including tax).

Models 4, 5 and 6 recognize well the relatively favorable social conditions in some units in north-western and northern Croatia as well as their favorable demographic indicators, which would cause a large number of LGUs in these areas to lose their beneficial status if one of these models is applied. However, all three models still have the problem of including a number of touristically developed LGUs in the assisted areas. Also, models with fewer indicators (Models 0, 1, 2, and 3) appear to have more shortcomings than models with more indicators (Models 4, 5, and 6). This is not unexpected given that more indicators can have a positive effect on reducing the shortcomings of individual indicators and generally enable better measurement of a complex phenomenon such as the level of development. However, it should be borne in mind that with a larger number of indicators, the risk of overlapping increases, i.e. a situation where several indicators "measure the same aspect".

Based on the above considerations and previous analyses we recommended maintaining the existing set of indicators excluding the own-source revenue per capita, which is an indicator of fiscal capacity and used in fiscal equalization policy. The fiscal equalization and regional development policies in Croatia have often used similar instruments. This created confusion and sometimes even resulted with a situation where the effects of these policies cancelled each other out. Therefore, it is necessary to make a clear distinction between these two policies as well as their goals and instruments. With this in mind, we propose a model based on the following indicators of development: average income per capita, average unemployment rate, aging index, general population trends and level of education.

The period for calculating certain variables. Currently, data from the last census of 2011 are used for two out of the six variables (indicators of development) - general population movement and level of education. These data do not change in the inter-census period, which calls into question the reliability of the calculation, but also the relevance and appropriateness of the assessment and classification performed every three years, whereby one third of variables does not change. The application of updated data or estimates should be considered in the future. If this is not possible, consideration should be given to replacing the existing indicators with other (related) indicators for which the Central Bureau of Statistics prepares (or can prepare) relevant estimates.

Classification system. The existing model classifies LGUs into eight groups, where the number of units in each group is the same (or almost the same), regardless of the value of the development index itself. The reason for this is that the ranking of the development index is used for grouping, and not the value of the development index itself. For the purpose of more objective categorization of units, it would be advisable to consider the classification of units according to the ranges of the development index. For example, if the values of the development index for above-average developed local units (i.e. those with index values greater than 100) range from 100 to 116, then group boundaries can be determined using the same range for four groups (the number of groups remains unchanged). For example, groups can be determined according to the range of the development index value of 100-104, 104-108, 108-112 and 112-116. In this way, a more objective categorization of above-average developed units would be obtained than now, when in the 8th development group, there is an LGU with a development index of 107.71 (Kaštelir-Labinci) and 117.84 (Kostrena). On the other hand, in the 5th group, the index values range from 100.13 (Rakovica) to 102.2 (Nedelišće). It is obvious that the maximum ranges of the index differ significantly by groups, which is not in line with the goal that the groups reflect the most objective picture of the development of LRGUs.

Duration of categorization. The current duration of the categorization of only three years seems to be too short for the needs of long-term development policy. It is enough to compare this deadline with the length of 7 years (plus three additional ones) for the categorization of NUTS 2 regions for the needs of the Cohesion Policy of the European Union. Such a short duration of categorization is particularly unfavorable for units with development index value close to the limit that separates assisted areas from others, which are therefore exposed to the risk of uncertainty. It would therefore be advisable to consider extending the categorization period to at least 5 years.

Proposal for the introduction of a new infrastructure development index. The analysis indicated several problems with the use of indicators of infrastructure equipment/development of LRGUs for the purposes of calculating the development index. However, this does not mean that these types of indicators are not useful for regional policymakers. Moreover, the calculation of the new index, which would focus on the quality of LRGUs' infrastructure equipment, could be of great use in formulating programs that finance the development of infrastructure at the subnational level. Such an index could consist of a series of sub-indices that would measure individual areas such as education infrastructure, communal infrastructure, transport infrastructure and other areas of infrastructure equipment.

## REFERENCES

- Bajo, A., and Primorac, M. (2013): *Package of legislative amendments for a better Croatian regional policy*. Press release, 6(61), 1-2.
- Bajo, A., and Primorac, M. (2018): *Croatia: Instruments of Fiscal Equalisation*. In *Fiscal Decentralisation, Local Government and Policy Reversals in Southeastern Europe* (pp. 53-80). Palgrave Macmillan, Cham.
- Botrić, V. (2004): *Regional aspects of unemployment in Croatia*. *Croatian Economic Survey*, (6), 77-95.
- Denona Bogović N., Drezgić S., Čegar S. (2017): *Evaluacija postojećeg i prijedlog novog modela za izračun indeksa te izračun novog indeksa razvijenosti jedinica lokalne i područne samouprave u Republici Hrvatskoj*. Available at

[https://razvoj.gov.hr/UserDocsImages//O%20ministarstvu/Regionalni%20razvoj/indeks%20razvijenosti//Studija\\_novi%20model%20indeksa%20razvijenosti\\_CLER.pdf](https://razvoj.gov.hr/UserDocsImages//O%20ministarstvu/Regionalni%20razvoj/indeks%20razvijenosti//Studija_novi%20model%20indeksa%20razvijenosti_CLER.pdf)

Draženić, I., Kunovac, M., and Pripuzić, D. (2018): *Dynamics and determinants of emigration: the case of Croatia and the experience of new EU member states*. Public Sector Economics, 42(4), 415-447.

Družić, I. and Andabaka, A. (2016): *Gospodarsko značenje turizma*. In: Gospodarstvo Hrvatske, Obadić, A. and Tica, J. (eds.). University of Zagreb, Faculty of Economics and Business, pp. 401-432.

EIZG (2020): *Pregled tržišta nekretnina Republike Hrvatske 2019*. Ekonomski institut, Zagreb. Available at: <https://www.eizg.hr/publikacije/serijske-publikacije/pregled-trzista-nekretnina-republike-hrvatske/4273>

Institut za turizam (2020): *Uspostava modela za izračun indeksa turističke razvijenosti jedinica lokalne samouprave*. Institut za turizam, Zagreb.

Kozić, I. (2019): *Can tourism development induce deterioration of human capital?* Annals of Tourism Research, 77, 168-170.

Law on Regional Development, OG 153/09, 147/14, 123/17

Law on Financing of Local and Regional Self-Government Units (OG 127/17)

Marcelić, S. (2015): *Kritička analiza hrvatskog indeksa razvijenosti: tri tipa razvoja i njihov regionalni položaj*. Revija za socijalnu politiku, 22(3), 309-333.

Mazziotta, M. and Pareto, A. (2016): *On a Generalized Non-compensatory Composite Index for Measuring Socio-economic Phenomena*, *Social Indicators Research: An International and Interdisciplinary Journal for Quality-of-Life Measurement*, 127, issue 3, p. 983-1003.

Perišić, A., and Wagner, V. (2015): *Development index: analysis of the basic instrument of Croatian regional policy*. Financial Theory & Practice, 39(2).

Puljiz, J. (2009): *Čimbenici regionalnog razvoja i regionalnih nejednakosti u Republici Hrvatskoj*. Doktorska disertacija. Sveučilište u Splitu, Ekonomski fakultet.

Puljiz, J. and Maleković, S. (2007): *Regional income and unemployment disparities in Croatia*. In: Reić, Z. - Fredotović, M. (eds): *Seventh International Conference on Enterprise in Transition: Enterprise in Transition Proceedings*. CD ROM. Faculty of Economics, University of Split.

Saisana, M., & Tarantola, S. (2002). State-of-the-art report on current methodologies and practices for composite indicator development, EUR Report 20408 EN. *European Commission, JRC-IPSC, Italy*.

*A scientific paper***Mirjana Radman-Funarić, Ph. D.**

Polytechnic in Pozega

E-mail address: radmanfunaric@vup.hr

**Barbara Pisker, Ph. D.**

Polytechnic in Pozega

E-mail address: bpisker@vup.hr

## DIGITAL GENDER GAP IN THE EUROPEAN UNION ICT EMPLOYMENT

### ABSTRACT

*This paper aims to explore the correlation between ICT educated employed women and selected socio-economic and educational indicators in EU-27 leading towards a deeper understanding of the digital gender gap throughout wide national varieties.*

*The interconnection between the share of ICT educated women employment ratio and selected socio-economic and educational indicators for overall, former socialist and all other EU-27 countries has been observed to determine the cross-cultural varieties in EU-27, reveal positive practices, and enable their wider adoption working towards better gender-balanced ICT initiatives throughout the whole EU-27.*

*The research conducted found both positive and negative correlation varieties in grouped countries suggesting explanatory solutions for strengthening gender-balanced policies of EU-27 need to address and respect cross-cultural differences and carefully plan joint activities in making progress towards overall gender equality.*

**Key words:** *Digital Gender Gap, ICT Educated Women, Employment, European Union.*

### 1. Introduction

Although women employment rate in EU-27 is reaching its historical peaks, persisting gender segregation and employment imbalance across sectors is a well-documented fact deeply rooted into civilization and cross-cultural societal development pathways. Report on Gender Gaps and Employment structure in European Union (Eurofound and European Commission Joint Research Centre, 2021) reveal how women in EU-27 account for the majority of employment in education, human health and social work (over 70 %) service, sales and clerical support workers (over 60 %). In contrast, women are severely under-represented in certain jobs in science, technology, engineering and mathematics (STEM), while they account for less than one in five of EU-27 ICT sector employment.

The legacy of the case of traditional women-men roles in labour division, often taught to be prevailed in our contemporary societies therefore seem to be so very well hidden under the society's surface. Their overall gender imbalance presence and persistence also reflects social and hierarchical gender status differences expecting men are to have higher work-related competences, effectiveness and performance than women, resulting further in gender pay gap

and marking ICT education and consequently employment in EU-27 predominantly a male domain.

As striving to the union of equality EU-27 is to implement a set of policies and practices in its effort to tackle the barriers grounded traditionally in gender roles defined by social norms, etiquettes and stereotypes socialization transmitted. Gender equality upward is currently under EU-27 loupe since it does not account only for the sake of European core values uplift but also indirectly tackles further key EU-27 transformative challenges on digital and green transition, demographic, productivity and global lead issues.

In presenting the topic frame, this paper comprises five main parts: introduction, literature review on relevant recent research and introspective on factors influencing ICT educated woman employment in EU-27, the data and methodology used in research, results and discussion and final remarks summed up in a conclusive part.

## 2. Literature Review

In terms of technological determinism understanding technological process as a societal developmental driver (Reisman, 2012), digitalization is the inevitable social development phenomenon, especially in regard to a global socio-economic competitiveness in a new information society (Castells, 1996; 2002). Digital society's necessity (Lupton, 2015) is interwoven through all aspects of our digitalized lives exposing and underlying all our global village differences (McLuhan, 1989) while simultaneously it deepens our existing old divides between north-south, east-west, rich-poor and nowadays connected-disconnected. Digital became a total social fact of our contemporary society (Mauss, 2002).

Strong gender bias in ICT education, training and employment of ICT specialists is present throughout the EU-27, facing two major issues: an overall shortage of ICT specialists and a vast under-representation of women among them (Gender, 2018). ICT education is defined by the International Standard Classification of Education Fields (ISCED) comprising the Information and Communication Technologies: Computer Use, Computer Science, Database and network design and administration, Software and applications development and analysis (Eurostat, 2021).

Berger and Luckmann, in a theory of social constructionism, explained the essence of the existing gender gap in a contemporary digitalised society considering social systems as based on interaction. Eventually, interactions develop into accustomed norms and roles while they become institutionalised and embedded in society as standardised terms of cultural expectations. Therefore, the social construction perspective could contribute to understanding cross-cultural variation in socially constructed gender roles and expectations, including the digital gender gap (Berger, 1966).

Additionally, Crenshaw (1989) interprets gender norms in societies through intersectional theory, in which she discusses the multidimensional experience and identities as fluid and susceptible to changes through micro cultural frames present. Cultural differences, as explained by Hofstede (2001) who has provided a powerful tool for cultural comparisons in defining culture as the “collective programming of the mind which distinguishes the members of one group from the other and helps understanding the difference between national cultures” can be a starting point in explaining the digital gender gap in EU-27 ICT employment.

The digital gender gap is identified whereby women access and use ICTs less than men, which can further exacerbate gender inequalities (Davaki, 2018). Therefore, the digital gender gap is seen as an element of a broader frame of gender inequality. The gender-based digital gap has numerous causes. Hurdles to access, affordability, (lack of) education, skills and technological literacy, inherent gender biases and socio-cultural norms are at the firm root of gender-based digital exclusion (Huyer & Sikoska, 2003).

Cross-cultural analysis though do not show male dominance in the ICT sector all around the globe (Galpin, 2002). Studies conducted in Malaysia, similar to China, India and Saudi Arabia, (Lagesen 2008; Mellström, 2009) have proven how different gender perspective poles (than western civilization) are a result of differences in cultural understanding of gender spatial mapping of working spaces where indoors are prescribed as female and outdoors as male working space (Frieze & Quesenberry, 2019).

The importance of reshaping the existing practices in the digital gender divide has been further emphasized regarding socio-economic elements of ICT as ensuring women can efficiently adapt, upskill and fully practice new digital technologies would benefit productivity and social development (Mariscal Avilés, 2018), taking into account the fact that women represent more than half of the total population our generation venture is to overcome men vs women stereotypes in terms of careers, professions, job segregations, social or family context if we strive for the future societies to be more sustainable, inclusive, democratic and holistic. Additionally, ICTs are seen as a cornerstone of further socio-economic and environmental transformation toward sustainable development goals (Kerras, 2020; Kostoska & Kocarev, 2019), although it may not be seen as a magic wand but need careful planning, implementation, monitoring and cross-cultural adaptation (Saidu, 2014; Hilty & Hercheui, 2010). In making positive circles of inclusion for women into different aspects of ICT presence, gender balance makes culture more inclusive for everyone (Lagesen, 2008; 2021).

### **3. Overall characteristics of ICT educated persons in EU labour statistics**

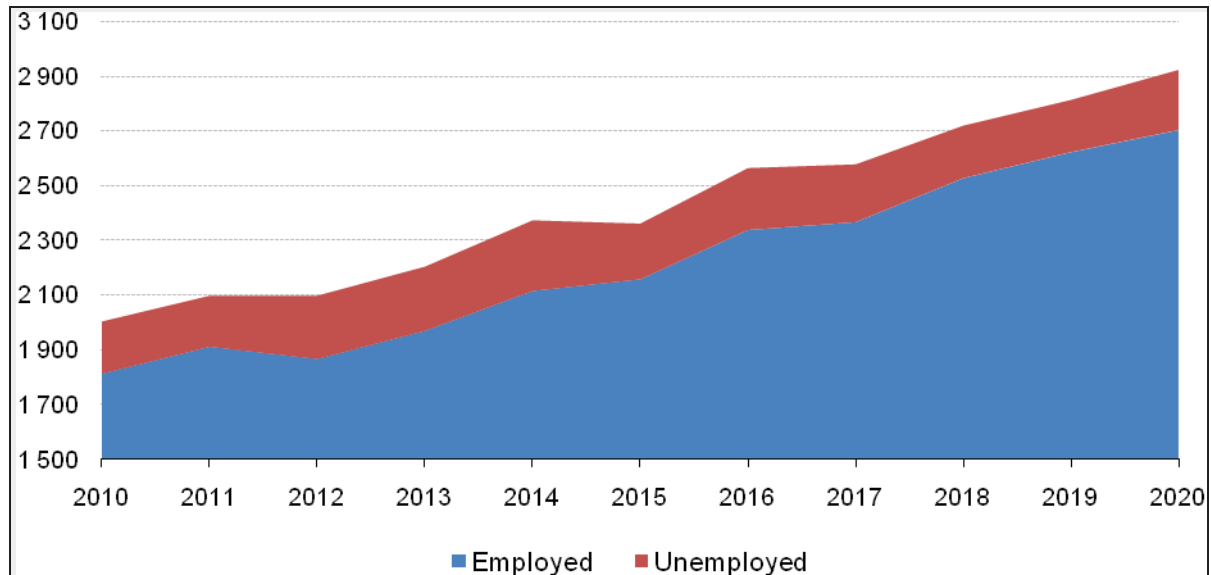
Most recent EU policy development shows a strong focus on the digital economy and society leaning on smart, green and inclusive Europe idea derived from EU 2020 strategy (European Commission, 2010) development built upon Digital economy and society index (DESI) data composed 2014 onwards (European Commission, 2020) and with the newest upgrade through 2030 Digital Compass. All these documents, especially the 2030 Digital Compass targets four cardinal digital developmental points: 1. Digitally skilled population and highly skilled digital professionals, 2. Secure and performant sustainable digital infrastructure 3. Digital transformation of business, and 4. The digitalization of public services (European Commission, 2021), aiming towards the importance of the topic in EU current developmental aspirations and trends.

Focusing on women ICT employment gap is relevant due to the point in which ICT sector specialists are at the top of the EU's skills-shortage list, thus attracting and keeping women into computing and ICT is often made in developmental socio-economic terms related to industry shortages. It is also a matter of fundamental developmental pathways as conserving the current perspectives consequently deprives the process of digital society transformation of a whole different, female perspective.



In accordance to the EU policy mentioned, Eurostat data (2021a) shows a continuous growth trend of ICT educated persons' overall employment in EU-27 in a period from 2010 to 2020 (Figure 1).

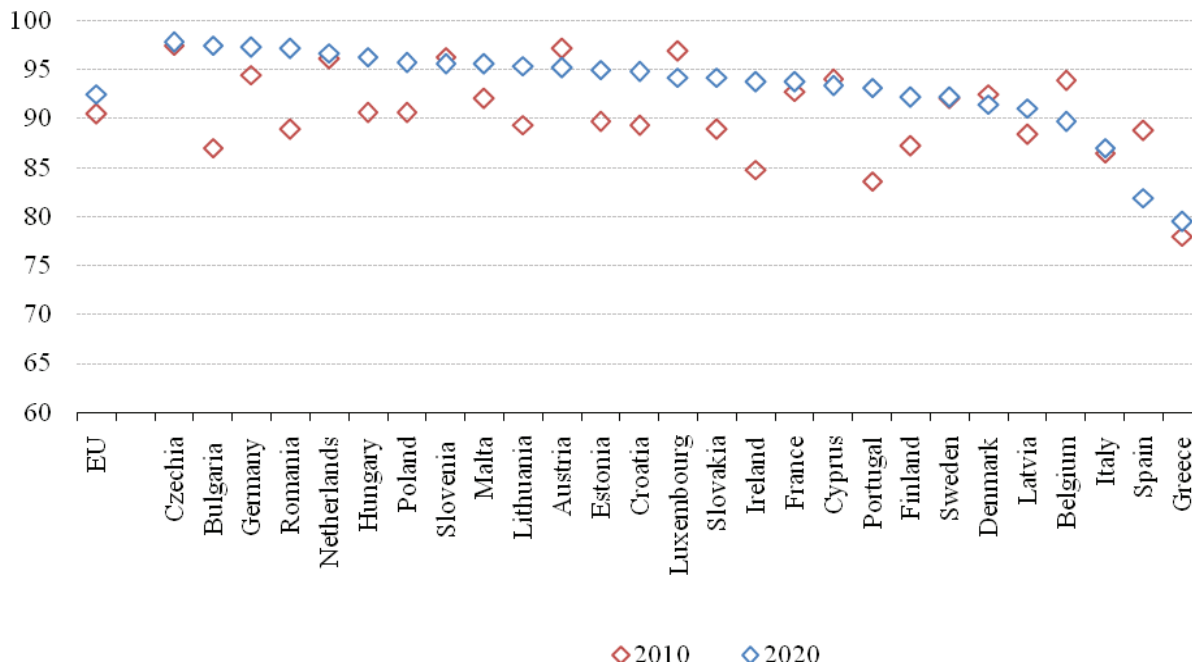
**Figure 1:** Employed & unemployed persons with ICT education in EU-27, 2010-2020, in .000



*Source: Authors according to Eurostat (2021a)*

The number of employed persons with ICT education has increased from 1.8 million in 2010 to 2.7 million in 2020. The number of unemployed persons with ICT education does not fluctuate similarly. In the period from 2010 to 2020 ranges from 190 to 210 thousand. Due to the constant number of unemployed persons, the share of the unemployed in the totally employed population of ICT educated persons is lower from year to year in overall EU-27 trend, while some national societies (as Lithuania, Luxembourg, Belgium and Spain) follow an oppositely different trend, as shown in Figure 2 below.

**Figure 2:** Share of employed person in the labour force with an ICT education, 2010 and 2020



Source: Eurostat (2021a)

As shown in Figure 2 in the EU-27, the share of employees in the labour force with ICT education in 2020 increased compared to 2010 from 90.5% to 92.5%, i.e. increased in most EU countries, except Slovenia, Austria, Luxembourg, Cyprus, Denmark, Belgium and Spain. The largest increase in the share of employees in the labour force with an ICT education is present in Bulgaria and Portugal. Czech Republic, Netherlands, Slovakia, France, Cyprus, Denmark, Italy and Greece have not shown a great change of employed persons in the labour force with an ICT education in a period shown in Figure 2-

Additionally, when discussing countries characterized by gender ICT employment parity or those that have nearly reached parity we surprisingly discover those are primarily former socialist countries - Bulgaria, Croatia and Latvia. In fact, on this indicator, the average score of the region’s bottom 10 overall performers on the index is better on than that of the top ten overall performers. Further on, many Eastern European countries – and Balkan states, in particular – perform well. Additionally, two of the eight world highest ranked countries in terms of female STEM researchers are located in Eastern Europe (Equal Measures 2030, 2022).

**4. Data and Methodology**

Pisker, et.al. (2021) research paper focused on the share of women employees’ ICT specialists in total employment in the ICT sector, in the period from 2004 to 2019 determining deviation in standard deviations (Z-score) of each of the European Union countries from the EU-27 average in 2019. According to the results obtained, the largest positive (Bulgaria, Lithuania, Latvia, Romania, Estonia) and the largest negative (Czech and Hungary) deviations of the share of women in the ICT sector have been found in the former socialist countries.

This paper aims to reveal the correlation between the share of ICT educated women employees' and selected socio-economic and educational indicators for three composite groups in EU-27, namely Overall EU countries, Former socialist EU countries and All other EU countries. The statistical method of correlation analysis was used to determine the correlation. Regression analysis was not used as a research method in this paper. According to the latest published data, in the period from 2012 to 2020, on financial aid to students, expenditure on educational institutions, funding of education and financial and economic effects of each country, the intention of this paper is to determine a connection of women's employment with their ICT education. An estimate of the parameters that can determined the quantitative effect among the variables is to be prepared the future research papers.

The analysis conducted included 23 different variables. In an additional analysis part, besides overall EU-27 observation, EU-27 countries are divided into two groups: former socialist EU countries (including Bulgaria, Czech Republic, Croatia, Hungary, Poland, Romania, Slovenia, Slovakia, Lithuania, Latvia and Estonia) and all other EU-27 countries to determine whether the share of women employed in the ICT sector is linked to the corresponding variables giving the affiliation to certain characteristics of specific socio-cultural heritage.

Data used for the analyses are obtained from Eurostat (2021):

Employed persons with ICT education. Broad definition based on the ISCO-08 classification and including jobs like ICT service managers, ICT professionals, ICT technicians, ICT installers and servicers [isoc\_ski\_itsex] - % of employed women with ICT education aged 15-74 of total Employed persons with ICT education in 2019 and 2020, (Eurostat, 2021a). BDP at market prices, current prices, euro, per capita, 2020 downloaded from Main GDP aggregates per capita [nama\_10\_pc], 2020, (Eurostat, 2021f).

Value added, gross, Wages and salaries, Employers' social contributions in Information and communication, Percentage of gross domestic product (GDP) are taken from Gross value added and income by A\*10 industry breakdowns, NACE\_R2, [NAMA\_10\_A10], 2020, (Eurostat, 2021e).

Financial aid to students for all ISCED 2011 levels excluding early childhood educational development taken from Financial aid to students by education level - as % of total public expenditure [educ\_uae\_fina01], 2018, (Eurostat, 2021c).

Direct expenditure on educational institutions for Early childhood education, Primary and lower secondary education (levels 1 and 2), Upper secondary and post-secondary non-tertiary education (levels 3 and 4), Tertiary education (levels 5-8), All ISCED 2011 levels excluding early childhood educational development downloaded from Expenditure on educational institutions by education level and programme orientation [educ\_uae\_fini03] Percentage of total public expenditure, 2012 to 2018, (Eurostat, 2021b).

Funding of education: Early childhood education, Primary and lower secondary education (levels 1 and 2), Upper secondary and post-secondary non-tertiary education (levels 3 and 4), Tertiary education (levels 5-8) downloaded from Funding of education by education level, programme orientation and recipient of funding [educ\_uae\_finf01], including Central Government, State Government and Local Government, Percentage, 2018, (Eurostat, 2021d).

Financial aid to students for Primary and lower secondary education (levels 1 and 2), Upper secondary and post-secondary non-tertiary education (levels 3 and 4), Tertiary education (levels 5-8) and All ISCED 2011 levels excluding early childhood educational development Financial aid to students by education level - as % of total public expenditure [educ\_uae\_fina01], 2012-2018, (Eurostat, 2021c).

Public expenditure on education for Primary and lower secondary education (levels 1 and 2), Upper secondary and post-secondary non-tertiary education (levels 3 and 4), Tertiary education (levels 5-8), All ISCED 2011 levels excluding early childhood educational development downloaded from Public expenditure on education by education level and programme orientation - as % of GDP [educ\_uae\_fini03], 2012 to 2018, (Eurostat, 2021g). Public expenditure on education for early childhood education was not taken into consideration as incomplete for 2012 to 2018.

## 5. Results and Discussion

The first part of the analysis examined the correlation of employed ICT educated persons in 2019 -% of women in total employment in ICT sector in EU-27 countries with total GDP per capita in 2020 of each country, Gross value added in ICT sector 2020 as a percentage of GDP, Wages and salaries in Information and communication 2020, as Percentage of GDP, Employers' social contributions in Information and communication, 2020 as Percentage of GDP. The aim of this analysis was to determine whether there is a correlation between the share of employed women in total employment in the ICT sector and the financial indicators achieved in 2020. The results are shown in Table 1.

**Table 1:** Correlation employed women - % of total employment in 2019 with ICT education with financial indicators in 2020

Correlation employed women - % of total employment in 2019 with ICT education with:	Overall EU-27	Former socialist EU-27 countries	All other EU-27 countries
BDP at market prices, current prices, euro per capita, 2020	0.09323	-0.45229	0.05455
Gross value added, Information and communication, 2020, Percentage of GDP	0.22813	<b>0.48221</b>	0.15932
Wages and salaries in Information and communication, 2020, Percentage of GDP	<b>0.37713</b>	<b>0.75303</b>	-0.08562
Employers' social contributions, Information and communication, 2020, Percentage of GDP	-0.00177	0.01810	-0.03257

*Source: Authors' calculation*

The results showed that there is a weak positive correlation between the share of employed women with ICT education in 2019 and the achieved Gross value added in Information and communication ( $r = 0.228$ ). Also, there is a medium-strong positive correlation between the share of employed women in 2019 and Wages and salaries in Information and communication, 2020 ( $r = 0.377$ ). After the former socialist countries were singled out, the analysis showed that this correlation was higher in the former socialist countries ( $r = 0.482$  and  $r = 0.753$ ) than in other EU-27 countries ( $r = 0.159$  and  $r = -0.086$ ). From the results presented it can be assumed that due to higher wages in the ICT sector than in other sectors,

the share of employment of women with ICT education is growing. It is also observed that in the former socialist countries wages in the ICT sector are considerably higher than in all other sectors thus raising the employment share of ICT educated women. Unlike in all other EU-27 countries where women with different types of education also reach high salaries and therefore ICT education is not crucial for higher women earnings.

A moderately strong negative correlation was found between the share of employed women in 2019 and GDP per capita in 2020 in the former socialist countries ( $r = -0.452$ ), but it does not exist in the group of all other EU-27 countries or overall EU-27 countries. The results presented in Table 1 are partly in line with the result of Frieze & Quesenberry (2019) according to which a negative correlation was found between the financial indicator Gross national income and Women's % of bachelor's degrees in ICT ( $r=0.31$ ) (Frieze & Quesenberry, 2019). There is no correlation between the share of employed women and ICT education in 2019 and Employers' social contributions in the Information and communication sector in 2020, neither for the EU-27 total nor for groups composed.

**Table 2:** Correlation employed women - % of total employment in 2019 with ICT education with Financial aid to students in 2018

<b>Correlation employed women - % of total employment in 2019 with ICT education with:</b>	<b>Overall EU-27</b>	<b>Former socialist EU-27 countries</b>	<b>All other EU-27 countries</b>
Financial aid to students by education level - as % of total public expenditure, All ISCED 2011 levels excluding early childhood educational development, 2018	0.25523	<b>0.60898</b>	-0.45512

*Source: Authors' calculation*

The variable Financial aid to students All ISCED 2011 levels excluding early childhood educational development, 2018 is included in the analysis to determine whether there is a link between financial investment in student work (which includes women) and employment of women with ICT education in 2019. Analysis showed that there is a weak but statistically positive correlation when overall EU-27 countries were taken into account ( $r = 0.255$ ), but it is strong in the former socialist countries ( $r = 0.609$ ) and weak and negative in other EU-27 countries ( $r = -0.455$ ). Therefore, the analysis of Financial aid to students and women's employment was expanded in Table 5.

**Table 3:** Correlation employed women - % of total employment in 2019 with ICT education with Expenditure on educational institutions 2012 to 2018

<b>Correlation employed women - % of total employment in 2019 with ICT education with Expenditure on educational institutions by education level and programme orientation [educ_uoe_fini03] Percentage of total public expenditure, Average 2012-2018</b>	<b>Overall EU-27</b>	<b>Former socialist EU-27 countries</b>	<b>All other EU-27 countries</b>
Early childhood education	0.11640	0.17508	0.09039
Primary and lower secondary education (levels 1 and 2)	0.06485	-0.15119	0.21604

<b>Correlation employed women - % of total employment in 2019 with ICT education with Expenditure on educational institutions by education level and programme orientation [educ_uoe_fini03] Percentage of total public expenditure, Average 2012-2018</b>	<b>Overall EU-27</b>	<b>Former socialist EU-27 countries</b>	<b>All other EU-27 countries</b>
Upper secondary and post-secondary non-tertiary education (levels 3 and 4)	-0.12231	-0.23202	-0.13699
Tertiary education (levels 5-8)	-0.15165	-0.14069	-0.25302
All ISCED 2011 levels excluding early childhood educational development	0.00205	-0.06732	0.04368

*Source: Authors' calculation*

The results showed that the correlation between the share of employed women with ICT education in 2019 and Expenditure on educational institutions (average 2012 - 2018) is very weak or even negative at the overall EU-27 level for both former socialist countries and all other EU-27 countries.

**Table 4:** Correlation employed women - % of total employment in 2019 with ICT education with Funding of education, 2018

<b>Correlation employed women - % of total employment in 2019 with ICT education with Funding of education by education level, programme orientation and recipient of funding, Expenditure of government before intergovernmental transfers, Percentage, 2018</b>	<b>Overall EU-27</b>	<b>Former socialist EU-27 countries</b>	<b>All other EU-27 countries</b>
Early childhood education	0.20176	0.29810	0.07863
Primary and lower secondary education (levels 1 and 2)	<b>0.39003</b>	<b>0.51399</b>	<b>0.38538</b>
Upper secondary and post-secondary non-tertiary education (levels 3 and 4)	0.29655	<b>0.57764</b>	0.20969
Tertiary education (levels 5-8)	0.15035	<b>0.60353</b>	0.31030

*Source: Authors' calculation*

The results showed that there is moderately strong positive correlation between the share of employed women with ICT education in EU-27, 2019 and Funding of education in Primary and lower secondary education ( $r = 0.390$ ), in Upper secondary and post-secondary non-tertiary education ( $r = 0.297$ ) and weak in Early childhood education ( $r = 0.202$ ) and Tertiary education ( $r = 0.150$ ). The connection is higher in the former socialist countries at all levels of education ( $r = 0.30$  to  $0.60$ ). In the group of other EU-27 countries, the correlation with the share of women with ICT education is higher than in the group of all EU-27 countries in Funding of education in Tertiary education ( $r = 0.310$ ).

Since the results showed a link between the share of employed women and ICT education in 2019 and the Financial aid to students for all levels excluding early childhood educational development (Table 2), the analysis was expanded to examine the link between women's employment and financial assistance to students at all levels. Education, with the further analysis using more recent published data, i.e. women's employment in 2020. The averages of

the published financial aid to students' data for the period from 2012 to 2018 were used for the analysis.

**Table 5:** Correlation employed women - % of total employment in 2020 with ICT education with Financial aid to students, Average 2012 to 2018

<b>Correlation employed women - % of total employment in 2020 with ICT education with Financial aid to students by education level - as % of total public expenditure [educ_uoe_fina01], Average 2012-2018</b>	<b>Overall EU-27</b>	<b>Former socialist EU-27 countries</b>	<b>All other EU-27 countries</b>
Primary and lower secondary education (levels 1 and 2)	0.21923	<b>0.51646</b>	-0.15440
Upper secondary and post-secondary non-tertiary education (levels 3 and 4)	0.29220	0.08664	<b>0.36361</b>
Tertiary education (levels 5-8)	<b>0.31510</b>	0.16107	0.28750
All ISCED 2011 levels excluding early childhood educational development	<b>0.35980</b>	<b>0.50471</b>	0.21469

*Source: Authors' calculation*

The data presented in Table 5 showed that there is a moderately strong positive correlation between the share of employed women with ICT education in the EU-27, 2020 and Financial aid to students by education level in Tertiary education ( $r = 0.315$ ) and education and all ISCED levels ( $r = 0.360$ ), but for the former socialist EU-27 countries there is a strong positive correlation between the participation of employed women with ICT education 2020 and Financial aid to students by education level in Primary and lower secondary education ( $r = 0.516$ ) and all ISCED levels ( $r = 0.505$ ). In contrast to the former socialist countries, in all other EU-27 countries there is a medium-strong positive correlation with Upper secondary and post-secondary non-tertiary education ( $r = 0.364$ ).

**Table 6:** Correlation employed women - % of total employment in 2020 with ICT education with Public expenditure on education by education level and programme orientation - as % of GDP, Average 2012-2018

<b>Correlation employed women - % of total employment in 2020 with ICT education with Public expenditure on education by education level and programme orientation - as % of GDP, Average 2012-2018</b>	<b>Overall EU-27</b>	<b>Former socialist EU-27 countries</b>	<b>All other EU-27 countries</b>
Primary and lower secondary education (levels 1 and 2)	0.12124	<b>-0.5477</b>	<b>0.41278</b>
Upper secondary and post-secondary non-tertiary education (levels 3 and 4)	-0.07599	<b>-0.4102</b>	-0.15134
Tertiary education (levels 5-8)	0.07866	-0.1916	0.07402
All ISCED 2011 levels excluding early childhood educational development	0.11603	<b>-0.7051</b>	<b>0.30675</b>

*Source: Authors' calculation*

The data presented in Table 6 show that there is no correlation between the share of employed women and ICT education with Public expenditure on education, if overall EU-27 countries

are observed. However, it is strong and negative in the former socialist countries, except in tertiary education. In contrast, apart from former socialist countries, for all other EU countries there is a correlation between the share of employed women and Public expenditure on education in Primary and lower secondary education ( $r = 0.413$ ) and all ISCED levels ( $r = 0.307$ ). From the results presented it can be concluded that women ICT education and employment in the former socialist countries is positively related to student scholarships, and in all other EU-27 countries there is a statistically positive connection with Public expenditure on ICT education.

According to the results presented in Tables 5 and 6, it can be concluded that the former socialist countries should study and apply the ways of financing education from the state budget to all other EU-27 countries in order to turn negative results into positive ones. Furthermore, all other EU countries should transfer the experience of former socialist countries in the way of student scholarships, as it is obvious that this connection has positive effects on the employment of women with ICT education. In this way, the overall effects of the EU-27 gender balanced ICT education and employment would be more effective.

## 5. Conclusion

The research analysis conducted revealed the following main findings:

Analysis of employed women as a percentage of total employment with ICT education correlated with Financial aid to students showed that there is a weak positive correlation with overall EU-27 countries taken into account, being strong and positive in the former socialist countries and weak and negative in all other EU-27 countries.

The correlation between the share of employed women with ICT education and Expenditure on educational institutions is very weak or even negative at the EU-27 level for both former socialist countries and all other EU-27 countries.

Moderately strong positive correlation has been observed between the share of employed women with ICT education in EU-27 and Funding of education in Primary and lower secondary, Upper secondary and post-secondary non-tertiary education while weak in Early childhood education and Tertiary education. The connection is higher in the former socialist countries at all levels of education while within the group of all other EU-27 countries the correlation result is higher than in the group of overall EU-27 countries in Funding of education in Tertiary education.

The data also showed that there is a moderately strong positive correlation between the share of employed women with ICT education in the EU-27 and Financial aid to students by education level in Tertiary education and all ISCED levels. In contrast to the former socialist countries, in all other EU-27 countries there is a medium-strong positive correlation with Upper secondary and post-secondary non-tertiary education.

Further on, there is no correlation between the share of employed women and ICT education with Public expenditure on education, if overall EU-27 countries are observed. However, correlation is strong and negative in the former socialist countries, except in tertiary education. In contrast, apart from former socialist countries, for all other EU countries there is a correlation between the share of employed women and Public expenditure on education in Primary and lower secondary education and all ISCED levels.



Overall, the research presented has shown how Financial aid to students and Funding of education positively influences women ICT education and employment in former socialist countries, while state Expenditures on educational institutions follow the opposite trend pointing toward new policy developments needed in former socialist countries leading towards stronger individual student scholarship practices in order to level up gender balance in ICT sector education and employment for socialist countries.

On the contrary, all other EU countries show negative relation toward student scholarships as traditionally those countries find different models of individual support towards education (as student loans). Additionally, having higher life standard and wider job offer with higher job security and full-time work employment rates these countries show negative relation towards financial aid to students as this might decrease their individual achievement motivation.

Research constraint and limitations of this research paper are recognized in the omitted parallel analysis of men with ICT education employment, i.e. total employment, aiming to obtain the full gender spectrum results when compared to women colleagues' results presented. Furthermore, the correlation between the variables was calculated without showing statistical significance, although with the intention of fulfilling this requirement in further analyses which are to calculate the statistical significance of individual results followed by regression analysis.

Conclusively, the practical implications of the research paper are for the policymakers and practitioners to combine the best practices of both worlds in reversing negative trends to positive ones, enabling gender-balanced solutions. Cross-cultural solutions with careful and patient, tailor-fitted solutions can bring positive effects towards higher representative quotas for women ICT education and employment aiming towards strengthening and opening new frontiers for overall gender equality in numerous lairs of its social complexity.

## REFERENCES

- Berger, P. L. (1966). *The social construction of reality: A treatise in the sociology of knowledge*. Anchor.
- Castells, M. (1996). *The information age (Vol. 98)*. Oxford Blackwell Publishers.
- Castells, M. (2002). *The Internet galaxy: Reflections on the Internet, business, and society*. Oxford University Press.
- Crenshaw, K. (1989). *Demarginalizing the intersection of race and sex: A black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics*. u. Chi. Legal f., 139.
- Davaki, K. (2018). *The underlying causes of the digital gender gap and possible solutions for enhanced inclusion of women and girls*. [https://www.europarl.europa.eu/RegData/etudes/STUD/2018/604940/IPOL\\_STU\(2018\)604940\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2018/604940/IPOL_STU(2018)604940_EN.pdf) (accessed 20 January 2022)

**Equal Measures 2030. 2019 SDG Gender Index.** Retrieved from Key Findings: <https://www.equalmeasures2030.org/datahub/2019-sdg-gender-index/key-findings/> (accessed 20 January 2021)

Eurofound and European Commission Joint Research Centre. (2021). **European Jobs Monitor 2021: Gender gaps and the employment structure, European Jobs Monitor series.** Luxembourg: Publications Office of the European Union.

European Commission, "2030 Digital Compass: The European way for the Digital Decade," [https://ec.europa.eu/info/sites/info/files/communication-digital-compass-2030\\_en.pdf](https://ec.europa.eu/info/sites/info/files/communication-digital-compass-2030_en.pdf). (accessed 20 January 2021)

European Commission, "**Digital Economy and Society Index (DESI) 2020**" 2020.

European Commission, "**Europe 2020 A European strategy for smart, sustainable and inclusive growth,**" <https://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf> (accessed 20 January 2021)

Eurostat. (2021). **Employed persons with ICT education by labour status, 2021a.**

Eurostat. (2021). **Expenditure on educational institutions by education level and programme orientation, 2021b.**

Eurostat. (2021). **Financial aid to students by education level - as % of total public expenditure, 2021c.**

Eurostat. (2021). **Funding of education by education level, programme orientation and recipient of funding, 2021d.**

Eurostat. (2021). **Gross value added and income by A\*10 industry breakdowns, Information and communication, NACE\_R2, 2021e.**

Eurostat. (2021). **Main GDP aggregates per capita, 2021f.**

Eurostat. (2021). **Public expenditure on education by education level and programme orientation - as % of GDP, 2021g.**

Frieze, C., & Quesenberry, J. L. (2019). **Cracking the digital ceiling: Women in computing around the world.** Cambridge University Press.

Galpin, V. (2002). **Women in computing around the world.** ACM SIGCSE Bulletin, 34, 94–100.

Gender, E. I. (2018). **Women and men in ICT: a chance for better work-life balance.** Luxembourg: Publications Office of the European Union.

Hilty, L. M., & Hercheui, M. D. (2010). **ICT and sustainable development.** In What kind of information society? Governance, virtuality, surveillance, sustainability, resilience (pp. 227–235). Springer.

- Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviours, institutions and organizations across nations*. Sage publications.
- Huyer, S., & Sikoska, T. (2003). *Overcoming the gender digital divide: understanding ICTs and their potential for the empowerment of women*. INSTRAW Santo Domingo.
- Kerras, H., Sánchez-Navarro, J. L., López-Becerra, E. I., & de-Miguel Gomez, M. D. (2020). *The impact of the gender digital divide on sustainable development: Comparative analysis between the European Union and the Maghreb*. Sustainability, 12, 3347.
- Kostoska, O., & Kocarev, L. (2019). *A novel ICT framework for sustainable development goals*. Sustainability, 11, 1961.
- Lagesen, V. A. (2008). *A cyberfeminist utopia? Perceptions of gender and computer science among Malaysian women computer science students and faculty*. Science, technology, & human values, 33, 5–27.
- Lagesen, V. A., Pettersen, I., & Berg, L. (2021). *Inclusion of women to ICT engineering—lessons learned*. European Journal of Engineering Education, 1–16.
- Lupton, D. (2015). *Digital sociology*. Routledge London.
- Mariscal Avilés, J., Mayne, G., Aneja, U., & Sorgner, A. (2018). *Bridging the gender digital gap*. Tech. rep., Economics Discussion Papers.
- Mauss, M. (2002). *The gift: The form and reason for exchange in archaic societies*. Routledge.
- McLuhan, M. (1989). *The Global Village: Transformations in World Life and Media in the 21st Century (Communication and Society)*. Oxford: Oxford University Press.
- Mellström, U. (2009). *The intersection of gender, race and cultural boundaries, or why is computer science in Malaysia dominated by women?* Social studies of science, 39, 885–907.
- OECD. (2018). *Bridging the Digital Gender Divide Include, Upskill, Innovate*. OECD. <https://www.oecd.org/digital/bridging-the-digital-gender-divide.pdf> (accessed 20 January 2021)
- Pisker, B., Radman-Funarić, M., & Kreševljak, I. (2019). *The Glass Ceiling Patterns: Gap Evidence*. (M. Leko Šmić, & B. Crnković, Eds.) International Scientific Symposium: Economy of eastern Croatia - Vision and Growth, pp. 1047-1061. <https://www.dropbox.com/s/sp9kp5ji9lsr1qp/GIH%20Zbornik%202019.pdf?dl=0> (accessed 20 January 2021)
- Pisker, B., Radman-Funarić, M., & Ramanathan, H. (2020). *Global Issues in Gender Inequality: A Comparative Study*. (M. Leko Šmić, & B. Crnković, Eds.) Region Entrepreneurship Development, pp. 1246-1260. [http://www.efos.unios.hr/red/wp-content/uploads/sites/20/2020/06/RED-2020-Proceedings\\_.pdf](http://www.efos.unios.hr/red/wp-content/uploads/sites/20/2020/06/RED-2020-Proceedings_.pdf) (accessed 15 December 2021)

Pisker, B., Radman-Funarić, M., & Sudarić, Ž. (2021). *Women in ICT: The Case of Croatia Within European Union*. International Conference on Digital Economy, (pp. 3–15).

Radman-Funarić, M. (2018). *Uvod u gospodarsku statistiku tko kaže da lažem? U potpisu–statistika*. Veleučilište u Požegi. Požega.

Reisman, D. A. (2012). *The social economics of Thorstein Veblen*. Edward Elgar Publishing.

Saidu, A., Tukur, A., & Adamu, S. (2014). *Promoting sustainable development through ict in developing countries*. European Journal of Computer Science and Information Technology, 2, 24–29.

*A scientific paper*

**Tamara Slišković, Ph. D.**

University of Zagreb-Croatia, Faculty of Economics and Business

E-mail address: tamara.sliskovic@efzg.hr

**Tomislav Sekur, Ph. D.**

University of Zagreb-Croatia, Faculty of Economics and Business

E-mail address: tsekur@efzg.hr

**Marija Beg, Ph. D.**

University of Zagreb-Croatia, Faculty of Economics and Business

E-mail address: mbeg@efzg.hr

## **THE COVID-19 PANDEMIC EFFECTS ON THE HOUSING MARKET OF THE NORTHERN AND PANNONIAN CROATIA<sup>1</sup>**

### ***ABSTRACT***

*The COVID-19 pandemic has brought numerous changes to the various segments of the economy. After the unexpected initial shock of the pandemic in Croatia and the consequent lockdown in March 2020, there were some “black” predictions that stable and positive trends in the housing market in Croatia will be reversed. However, the stable growth of the housing prices on the national market has continued in 2020, as well as in 2021. In this paper, we analyse housing market trends of Northern and Pannonian Croatia. This part of Croatia includes all continental counties but excludes the City of Zagreb. In our analysis, we use data which cover the period from 2010 to 2021. Using the hedonic modeling analytic frame, we are assessing the effects of the COVID-19 pandemic, but also of some other market shocks on housing prices and the volume of transactions in the observed part of Croatia. Through the calculation of the hedonic index of asked and realized housing prices, we conclude that the housing prices in Northern and Pannonian Croatia have increased in the recent period. Also, we did not find the evidence that the pandemic was statistically significant determinant of the housing price movements. However, the effect of the government's measure of subsidizing housing loans, which has been implemented in the last five observed years, could be assessed as statistically significant.*

**Key words:** *housing market, housing prices, Northern and Pannonian Croatia, COVID-19, hedonic approach.*

### **1. Introduction**

The COVID-19 pandemic can be marked as a shocking event considering not only the health systems but the whole economies. Due to the pandemic, the Croatian economy was completely closed in March and April 2020, and ever since certain measures that prevent the normal functioning of all economic activities have been in force. The research shows that the housing market is strongly interdependent with economic trends (Slišković, 2018). It is a very

---

<sup>1</sup> This work has been supported by the Croatian Science Foundation under the project no. 6785.

important segment of the national economy especially in terms of subsistence as housing is one of the basic human needs. Most of the housing market participants (e.g., homeowners, potential buyers, renters, tax policy makers) are interested in the movement of housing prices.

The aim of this paper is to assess the effects of the COVID-19 pandemic on the real estate market, i.e., the housing prices and the volume of transactions. The model will be extended for the effects of the government's measure of subsidizing housing loans since this subsidy in theory leads to a correction in the housing price. The empirical assessment of the housing price is based on a hedonic approach which considers the heterogeneity of real estate. Namely, a hedonic modeling analytical frame enables each (even qualitative) characteristic of the housing unit to be connected to a certain degree of user satisfaction, finally contributing to the formation of housing overall price. The price indices estimated by this model are superior to the price indicators which include only average or median apartment prices. Since the housing prices have been adjusted for the qualitative characteristics of each observed unit through hedonic modeling, it is possible to monitor a "pure" change in housing prices. Also, we used two types of index prices as a dependent variable in our model - requested and realized housing prices. The model was formed as a standard hedonic model, and the parameters were estimated by the least squares method.

As housing markets are generally localized, following the usual division of Croatia into three regions (the City of Zagreb, the Adriatic, and the Continent Croatia) we analyse Northern and Pannonian Croatia (two continent regions, excluding Adriatic Croatia and the City of Zagreb, as defined by NUTS 2 statistical regions of Croatia). The division also follows the idea that Croatia has at least two regions with different climatic, touristic, and demographic conditions (continent and coast) with Zagreb being seen as a single market because it is the capital and the most dynamic housing market in Croatia. At the moment, there is no research in Croatia that looks at the COVID-19 effects on the housing prices in Northern and Pannonian Croatia, so the assessment of this effect is the main contribution of this research.

The paper is structured in six chapters. The second part provides a more detailed overview of the shocks in 2020 and 2021 on the Croatian housing market, which are empirically investigated. The third part gives the economic profile of Northern and Pannonian Croatia. The fourth part presents the data and methodology, while the empirical results and discussion are presented in the fifth part. Finally, the conclusion summarizes the main findings of the work, research limitations and recommendations for further research in this field.

## **2. The crucial events affecting the Croatian housing market in recent period**

Last decade would probably be mostly known as a decade of economic recovery and prosperity after the global world crisis from 2008 if it wasn't for the COVID-19 pandemic. Now, the world will remember it mostly for the global pandemic of the new coronavirus SARS-CoV-2, and the year 2020 will be historically known. A new disease called COVID-19 caused by coronavirus had no cure and was spreading extremely fast which led nations around the world to fight with it using various methods. Most of the methods aiming to slow down the spread of this easily transmitted virus implied some form of economic lockdown.

The coronavirus first appeared in Croatia on February 25, 2020, and due to the growing number of infected the government introduced some measures to slow its spread. There are two important dates indicating the start of the so-called *lockdown*: i) March 21, when the Civil Protection Headquarters of the Republic of Croatia passed a Decision on the strict restriction

of detention on the streets and other public places (OG 34/2020) and *ii*) March 23 when the Decision on the Prohibition of Leaving Residence and Permanent Residence in the Republic of Croatia (OG 35/2020) prohibits leaving the place of residence and permanent residence. These strong measures were in force until the end of April when they started gradual relaxation, depending on the epidemiological situation in each county. A major closure of the economy due to the coronavirus pandemic occurred again in November and December and were gradually relaxed as the summer months of 2021 were coming. In general, the 2021 was mostly marked with different epidemiological measures in contrast to the economic measures introduced in 2020.

In addition to the above-mentioned external shocks that are assumed to have affected the housing market, some internal shocks related to that market alone occurred in the analysed period. Namely, in 2017 the Republic of Croatia started subsidizing housing loans in order to facilitate the housing of Croatian citizens through the Agency for Legal Transactions and Real Estate Brokerage (APN). The goal of this measure was demographic renewal of the population and putting an end to the growing trend of (young) people emigrating, and later also the urban regeneration of certain settlements. Therefore, the measure itself is aimed at young Croats under the age of 45 who, in order to apply for a subsidy, must first find a residential property and a commercial bank to finance the loan. The next step, after the loan is approved, was to apply for the subsidy. This implies a certain amount of uncertainty, but this did not diminish the attractiveness of the measure in any way. In addition, the applicant (or spouse) may not own an apartment or house, or if they have only one apartment or house, they must sell it to buy a bigger one.

The so-called APN subsidized the loan up to the amount of 100,000 EUR, or up to 1,500 EUR per square meter. A housing loan may be higher than that amount, but that part is not subsidized. There is a condition related to the loan repayment period, which must not be shorter than 15 years. The subsidy itself takes place through the repayment of part of the housing loan (part of the annuity), primarily in the first loan repayment period. Although the type of subsidy has not changed substantially, from 2017 to 2021 certain conditions of subsidy have changed. In 2017 the state covered 50% of the monthly annuity in the first four years of loan repayment, whereby the period could be extended by an additional two years if the family gives birth (or adopts) a child. From 2018, different subsidy rates are used depending on the level of development of the city or municipality in which the house/apartment is located, and subsidies range from at least 30% for the most developed cities and municipalities to a maximum of 51% for least developed cities and municipalities. The duration of the subsidy is five years, with an additional two years for each new-born (or adopted) child. In addition, from 2019, an additional year of loan duration is subsidized for each child that the family already has.

In every year from the subsidies start except 2020 there was only one round of competition for the subsidies. In 2020, there were two rounds of competitions (in April and September). In general, the application deadline is always a substantially short period of one month which is a really short period given the characteristics of the housing market. But neither this short period nor the uncertainty of getting the subsidy discouraged the growing number of applications for subsidies. According to the Ministry of Physical Planning, Construction and State Assets (MPGI, 2022) 22,169 applications for subsidies have been approved since the implementation of this measure in 2017. Also, they stated the APN receives new requests for additional subsidies for the birth of a child daily, with a total of about 5,000 children having been born since 2017. They conclude the measure is successful. As already stated, the main

goal of this paper is to seize the effects of these subsidies (along with the COVID-19 effects) on the overall housing prices in Northern and Pannonian Croatia.

To achieve the paper aims, we use a hedonic modeling approach whose research subjects are narrower geographic markets and because they take into account the qualitative characteristics of each good. Here, the characteristics of a particular market are considered, and prices are modelled using a specific set of market-specific variables, or a set of variables describing the characteristics of real estate in that market. Modeling hedonic housing price indices in Croatia started 17 years ago with the Botrić and Kordej de Villa (2005) who aimed at determining regional differences in the real estate market in Croatia. Recent important works concerning our subject of the research are those by Kunovac and Kotarac (2019) where they improved hedonic price index, and by Slišković and Sekur (2020) who use the hedonic model to construct a housing price index for Croatia and four regions (City of Zagreb, central and southern Adriatic, Istria and northern Adriatic and region Other).

There are a few papers analysing the effects of the pandemic on the housing market. Kunovac and Kotarac (2020) in their research conclude that the pandemic and earthquake in Zagreb in the first half of 2020 simultaneously affected the prices and number of real estates sold in Zagreb. They find that there was a decline in the number of properties sold and yet real estate prices continued to rise in the analysed period. Slišković et. al (2021) estimate hedonic housing model on the national level and for the three separate regions in Croatia. Their results showed no evidence to suggest that the COVID-19 pandemic and the measures implemented in 2020 significantly affected the steady upward trend in housing prices in 2020. This research is somewhat similar to this one, but we look at one specific part of Croatia and at the volume of transactions. Namely, it is possible that the pandemic resulted in a reduction in the number of total transactions.

In addition, a housing loan subsidy program also affects the volume of transactions and thus the housing price. This impact was assessed in research conducted by Kunovac and Žilić (2020) and Tica (2020). Kunovac and Žilić (2020) show that loan subsidies led to a concentration of housing transactions in the month when subsidy applications were submitted. They found that this government measure accounted for 10% of all residential transactions in Croatia. Consequently, housing prices (mostly in richer regions) increased in the period around the introduction of the subsidy. Tica (2020) takes into account macroeconomic determinants of residential real estate price movements and finds that in the period after the introduction of the subsidy program the growth rate of residential real estate prices in the City of Zagreb was between 3 and 10 percentage points per year higher than implied by economic fundamentals. On the other hand, he found no evidence of statistical significance of housing loan subsidies for other regions (Adriatic and others). In the context of the international assessment of COVID-19 pandemic effects on real estate market, several papers stand out. Boesel, Chen and Nothhaft (2021) analyse the effects of pandemic on housing preferences in the United States. They use CoreLogic Single-Family Rent Index (SFRI), CPI rent of primary residence and the OER (Owners' Equivalent Rent) at a national level to assess the movement of home prices, rent and inflation. Furthermore, Llaneza Hesse and Raya Vilchez (2021) use panel data on short-term accommodations in the city of Barcelona to identify the impact of the pandemic on four outcome variables: price, revenue, occupancy rate and minimum renting length (in days). Their main finding suggest that the short-term housing market experienced decreasing prices and occupancy but also decline of the revenues. The real estate market of the city of Krakow was in focus of Marona and Tomal (2020). They assess the impact of COVID-19 pandemic on the workflow of real estate brokers and their clients' attitude. The



pandemic changed habits of real estate brokers as they intensified the use of digital technologies in running their businesses. Also, their clients like landlords in numerous cases changed their strategies, i.e. from short-term rental into the long-term one.

In line with the above-mentioned studies, we conduct the hedonic modeling of housing prices, calculating hedonic index of asked and realized housing prices while looking at the particular region of Croatia. Since the effects of the pandemic and APN shocks on the housing market in Northern and Pannonian Croatia have not been investigated in detail, the key contribution of this research stems from the inclusion of volume of transactions effects on the housing market in the analysed region.

### 3. The economic profile of the Northern and Pannonian Croatia

#### 3.1. The macroeconomic profile of the observed region

According to Nomenclature of Territorial Units for Statistics (NUTS) of the European Union, Croatia is divided in four NUTS2 regions. Between 2007 and 2012, there were three NUTS2 regions, and between 2012 and 2021, Croatia was divided in two regions – Adriatic Croatia and Continental Croatia. In last revision from 2021, Continental Croatia was divided in three parts – Pannonian Croatia, Northern Croatia, and City of Zagreb (Table 1).

**Table 1:** Division of Croatia at NUTS2 level

NUTS2 Region	Counties
Adriatic Croatia	County of Primorje-Gorski Kotar
	County of Lika-Senj
	County of Zadar
	County of Šibenik-Knin
	County of Split-Dalmatia
	County of Istria
	County of Dubrovnik-Neretva
City of Zagreb	City of Zagreb
Northern Croatia	County of Međimurje
	County of Varaždin
	County of Koprivnica-Križevci
	County of Krapina-Zagorje
	County of Zagreb
Pannonian Croatia	County of Bjelovar-Bilogora
	County of Virovitica-Podravina
	County of Požega-Slavonia
	County of Brod-Posavina
	County of Osijek-Baranja
	County of Vukovar-Srijem
	County of Karlovac
County of Sisak-Moslavina	

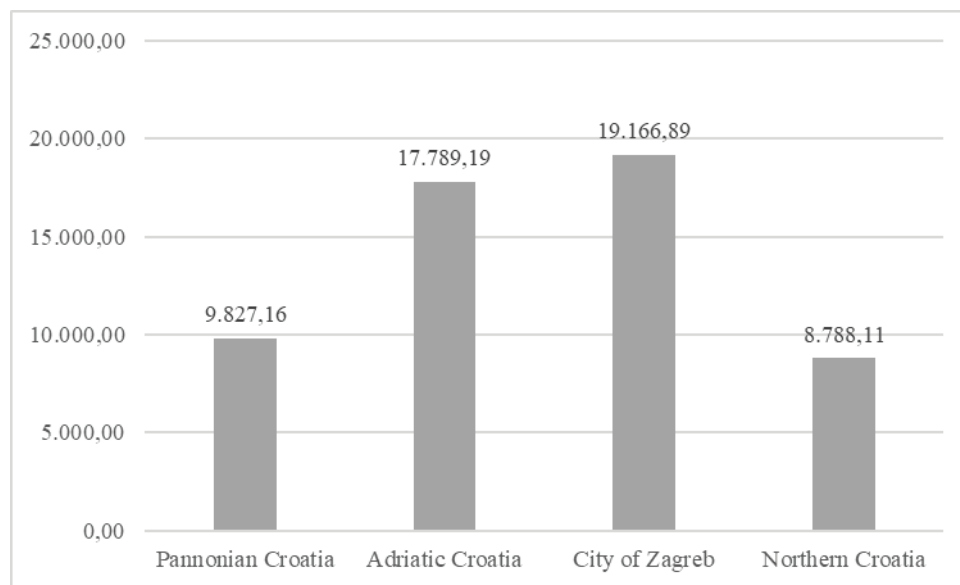
Source: Eurostat, 2020

This paper will be focused on Northern and Pannonian Croatia which includes 13 continental counties of Croatia. In general, continental part of Croatia is slightly more developed when compared to coastal part of Croatia, but this is mainly the result of the economic strength of

the city of Zagreb. In our analysis we will exclude city of Zagreb and focus on the rest of the continental Croatia, i.e., Northern and Pannonian NUTS2 regions. In this part of the paper we will describe economic profile of the counties of these two NUTS2 regions.

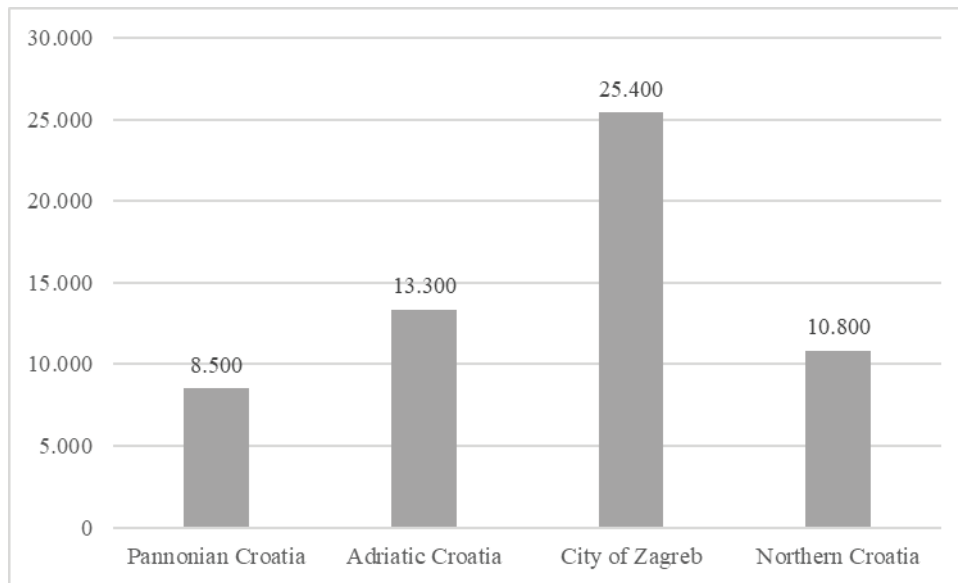
Economic strength of Northern and Pannonian regions is relatively low when compared to other parts of Croatia. If we compare NUTS2 regions of Croatia, it is evident that Northern and Pannonian Croatia lag behind other regions in terms of either total GDP or GDP p.c. GDP of Northern Croatia is around 8.8 billion EUR (which is around 16% of Croatian GDP) in 2019, whereas GDP of Pannonian Croatia is around 9.8 billion EUR (which is around 18% of Croatian GDP) (Graph 1).

**Graph 1:** Comparison of GDP of Croatian NUTS2 regions in millions of EUR in 2019



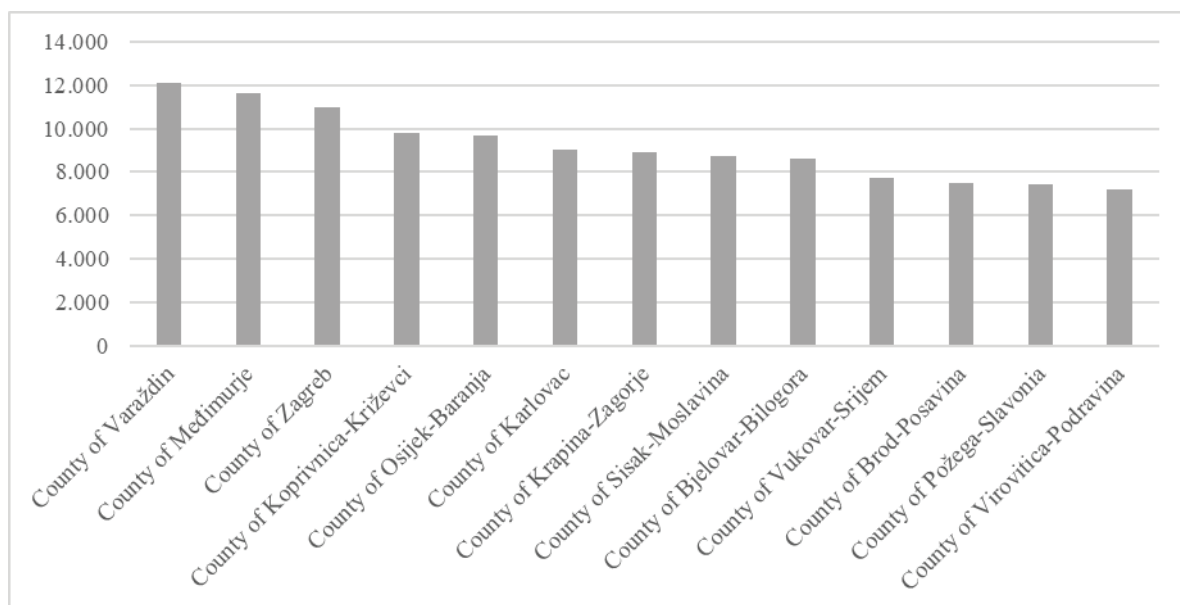
Source: Eurostat database, 2022 [nama\_10r\_3gdp]

If we take relative indicator, that is GDP p.c., Northern and Pannonian Croatia lag behind as well. The lowest level of standard of Croatian NUTS2 regions is for Pannonian Croatia (8,500 EUR in 2019) whereas for Northern Croatia is a little bit higher and it amounts 10,800 EUR (Graph 2).

**Graph 2:** Comparison of GDP p.c. of Croatian NUTS2 regions in EUR in 2019

Source: Eurostat database, 2022 [nama\_10r\_3gdp]

Northern Croatia consists of five counties, whereas Pannonian Croatia is made of eight counties. If we compare them by the economic indicators such as GDP p.c. and the level of employment, it can be easily seen that counties of Northern Croatia have better economic performances than those of Pannonian Croatia. Namely, four out of five richest (as measured by GDP p.c.) counties belong to Northern Croatia and the fifth county of Northern Croatia (County of Krapina-Zagorje) is on the seventh place. Counties of Pannonian Croatia are at the bottom of this list. To be more geographically specific, all Slavonian counties (easternmost Croatia) are also the poorest (Graph 3).

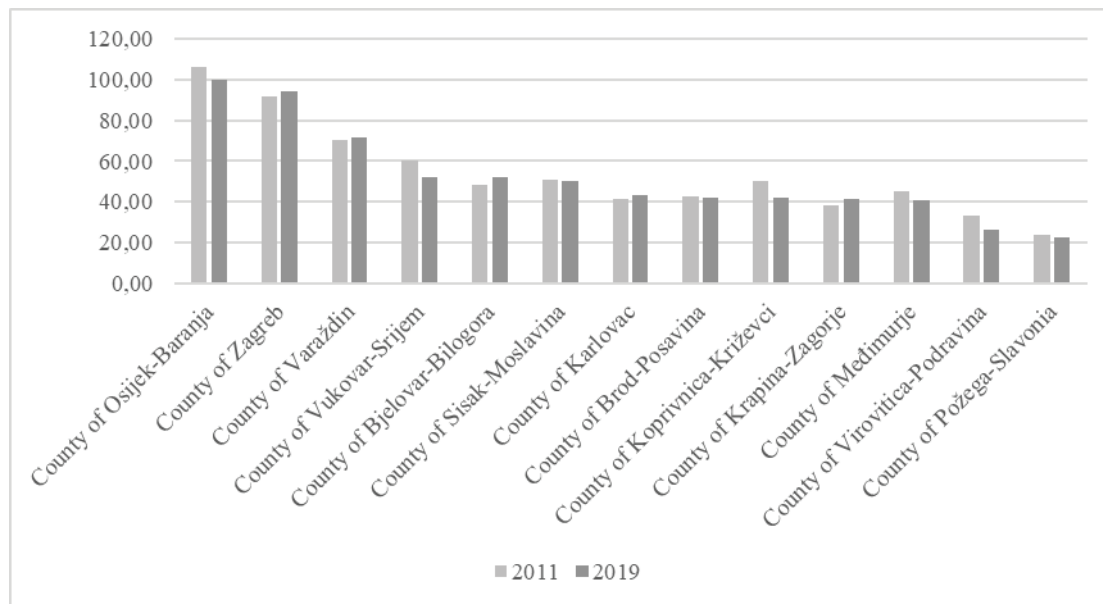
**Graph 3:** GDP p.c. of the counties of Northern and Pannonian Croatia in EUR in 2019

Source: Eurostat database, 2022 [nama\_10r\_3gdp]

Situation is not better for the counties of eastern Croatia if we compare counties by employment. Although County of Osijek-Baranja has the most employees of all 13 counties

of Northern and Pannonian Croatia, its employment shrunk in the last decade by 6%. The same is true for other counties of eastern Croatia. Counties of Northern Croatia have performed better in the last decade with three counties of Northern Croatia experiencing employment growth (County of Zagreb 3%, County of Varaždin 2% and County of Krapina-Zagorje 7%) while employment in counties of Međimurje and Križevci-Koprivnica decreased by 10 and 17%, respectively (Graph 4).

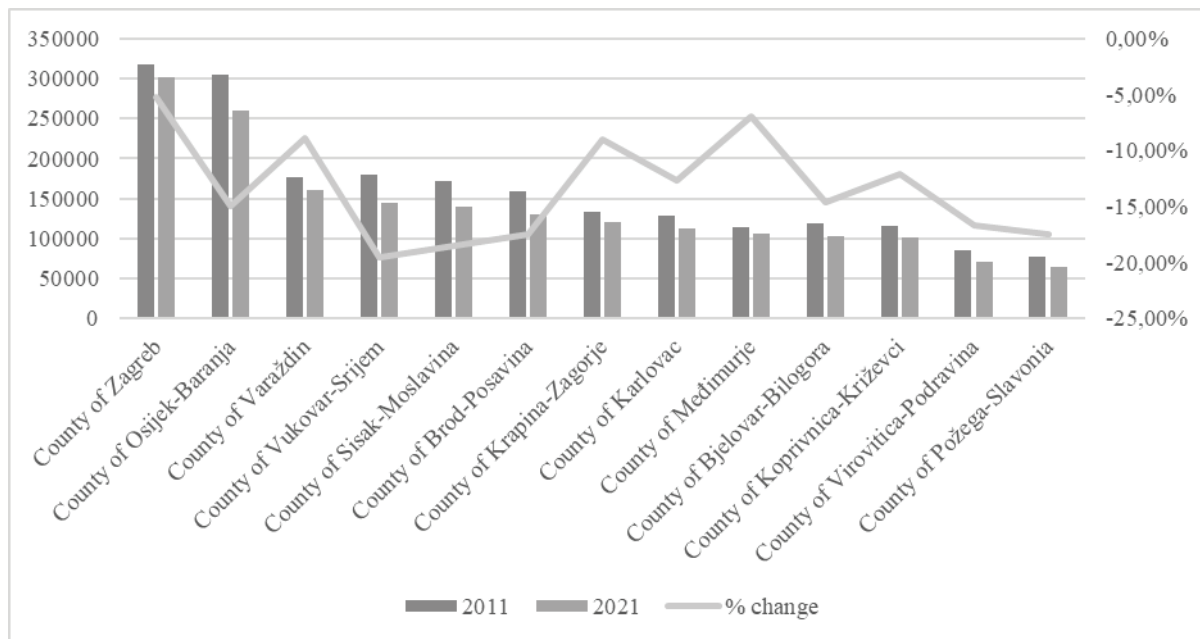
**Graph 4:** Employment of counties of Northern and Pannonian Croatia in 2011 and 2019 (in thousands)



Source: Eurostat database, 2022 [nama\_10r\_3empers]

Poor economic performance of the counties of Northern and Pannonian Croatia is accompanied with the demographic collapse. From 2011 to 2021, Croatia lost 9.25% of its population. At the county level, not even one county experienced population growth and counties that lost most of its population are from Pannonian Croatia (County of Vukovar-Srijem -19.54%, County of Sisak-Moslavina -18.49% and County of Brod-Posavina -17.53%) (Graph 5).

**Graph 5:** Absolute and relative population change of the counties of Northern and Pannonian Croatia 2011-2021



Source: Croatian bureau of statistics, 2022

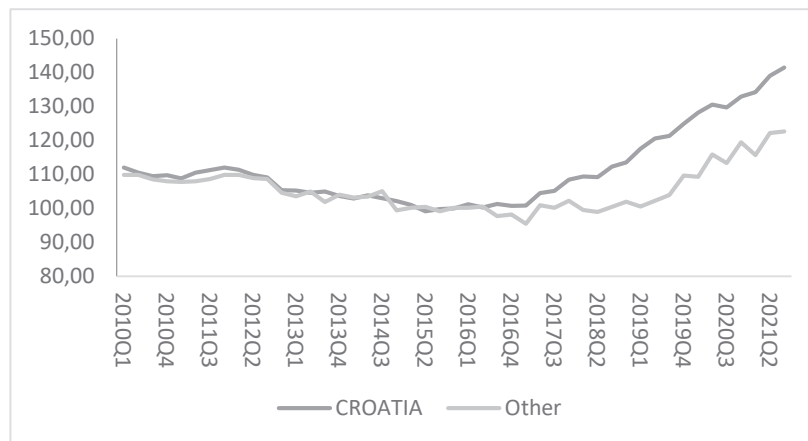
### 3.2. The overview of the housing market in Northern and Pannonian Croatia

Housing market price indicators are publicly available in Croatia and housing price index is the most relevant indicator. It is published by the Croatian bureau of statistics quarterly. Creators of the index take into account strong polarization of the Croatian market and therefore calculate index for three regions: the city of Zagreb, Adriatic Croatia and the “Other”. The region “Other” corresponds to the Croatian NUTS2 regions of Northern and Pannonian Croatia which will be in the focus of our analysis.

Housing prices are one of the most interesting indicators for those interested in studying housing market trends<sup>2</sup>. Descriptive analysis of data show that, with certain oscillations, prices are growing since 2017 at national level. The same is true for the prices in Northern and Pannonian Croatia but with more pronounced price oscillations than at the national level. Also, the magnitude of price increase in the observed period for Northern and Pannonian remained slightly lower when compared to national level (Graph 6).

<sup>2</sup> As already discussed, our analysis will be focus on counties of Northern and Pannonian Croatia, but it will also include some parts of Adriatic Croatia that are not on the coast (for example, cities and municipalities that are more than 10 km away from the coast will be included).

**Graph 6:** House price index (Ø 2015. = 100) for Croatia and region Other in the period 2010Q1-2021Q3



Source: Croatian Bureau of Statistics, House Price Indices (2022)

The price dynamics shown on Graph 1 is very interesting from the aspect of the pandemic shock that has shaken many economies around the world. Although some measures related to the COVID-19 pandemic have slowed economic growth in Croatia, the pandemic itself does not appear to have affected housing prices. Despite the great uncertainty as the GDP growth fell during 2020, the growth of housing market prices remained stable during 2020, but also in 2021.

Another variable of interest is the number of real estate transactions (purchases and sales). Data on total sales, as well as on sales by individual types of real estate have been mostly available since 2017. They are published by local and regional self-government authorities (counties and cities). For the purpose of this paper, the consolidated statistics on the approximate number of sales<sup>3</sup> have been taken from the consolidated database on the number of real estate transactions, which is published on the website of the Institute of Economics, Zagreb.

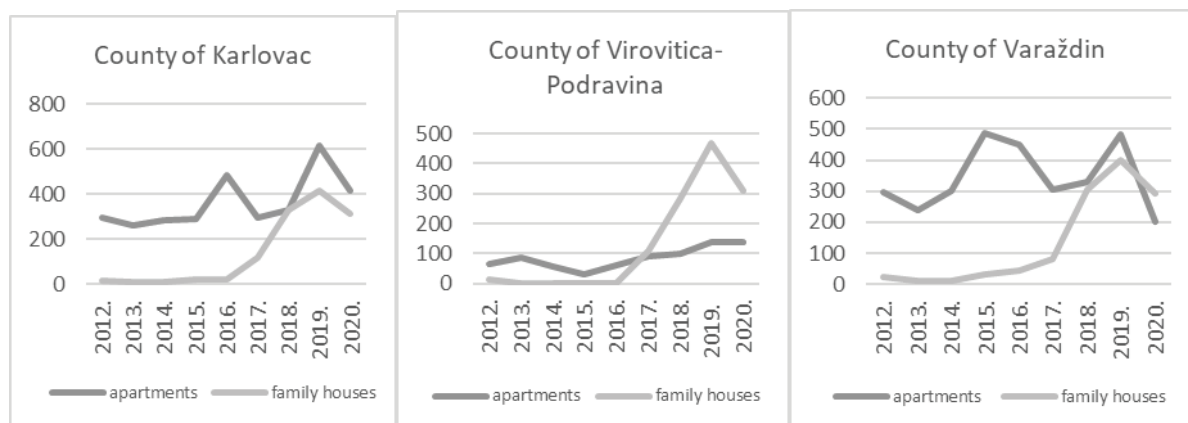
With the onset of the pandemic circumstances in Croatia, it was assumed that there will be a drastic reduction in the number of real estate transactions because of the pandemics. Available data show that the total number of real estate sales in 2020 decreased by approximately 8% compared to the previous year. Specifically, the number of transactions in 2019 was 111,673, while in 2020 it was 103,093. Purchases and sales of agricultural land accounts for around one third of all transactions, followed by the purchase and sale of apartments and suites (22.9%), construction land (15.7%) and family houses (13.4%). Despite the decline in the number of transactions at the national level, the value of real estate sales in 2020, due to rising prices, increased by 0.5% (Vizek et. al, 2021).

If we look at the total number of real estate transactions in counties of Northern and Pannonian Croatia, it can be seen that the total number of sales in the period 2019-2020 decreased in all counties, except in counties of Zagreb, Vukovar-Srijem, Požega-Slavonia and Brod-Posavina (EIZ, 2022). If we look at housing transactions (apartments /suites and family houses) the number of residential real estate sold has grown in most counties. The exceptions

<sup>3</sup> The consolidated database does not include all types of real estate, for which data exist in individual reports of counties and cities. Also, transaction data are not included if less than 10 were recorded for each local unit during one year.

are counties of Karlovac, Varaždin and Virovitica-Podravina which in 2020 recorded a decrease in the number of sold apartments and family houses compared to the previous year (Graph 7). In County of Međimurje and County of Zagreb, there was a decrease in apartments sales and an increase in houses sales. The opposite situation is present in County of Sisak-Moslavina.

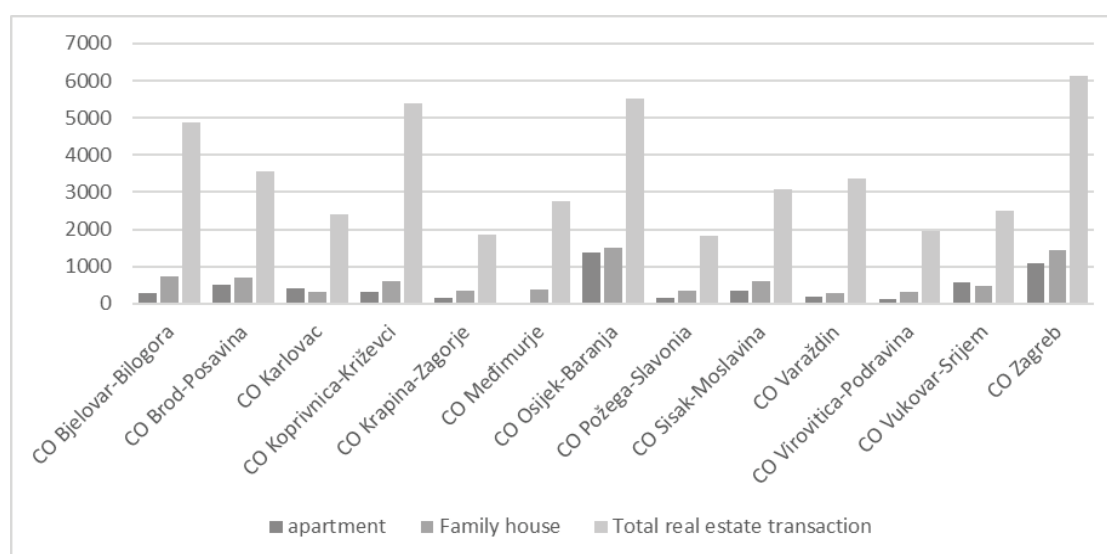
**Graph 7:** The number of sales of residential objects in selected counties



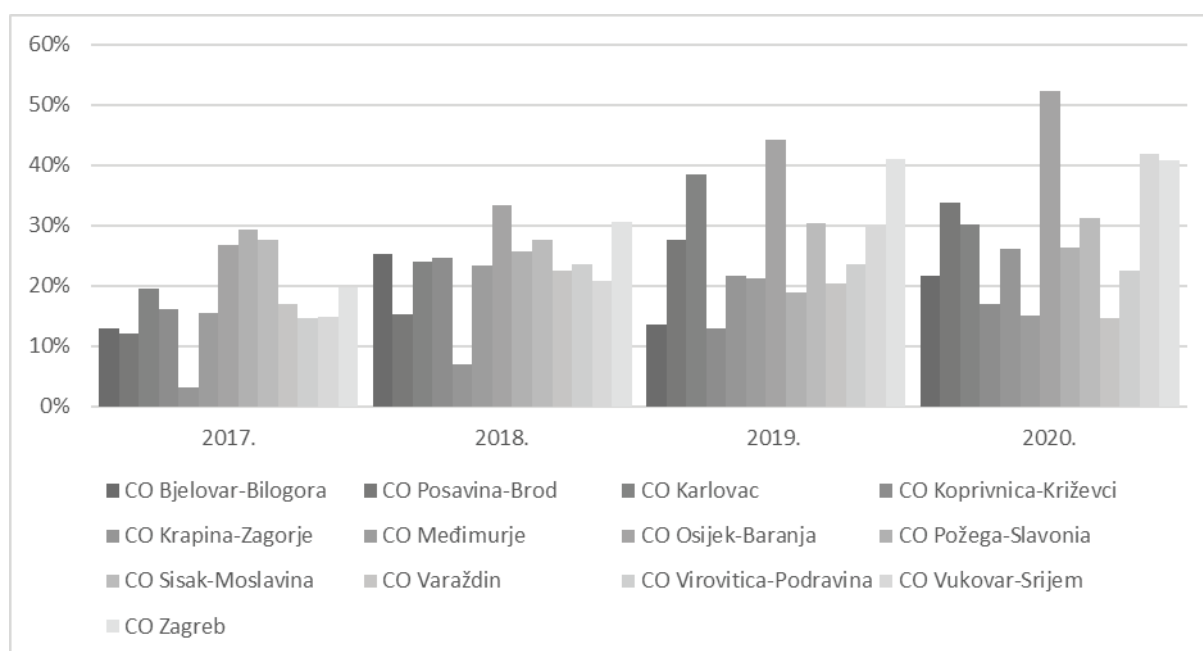
Source: EIZ, The number of purchase and sale transactions per units of local self-government (2012-2020), 2022

This research is focused on the particular housing market segment. Residential objects include apartments and family houses. The shares of residential sales in total sales on county level are displayed in Graph 8. The presented data show that County of Osijek-Baranja has the largest share of residential objects in total transactions (over 50%). It is followed by counties of Zagreb and Vukovar-Srijem (over 40%). Furthermore, the share of housing sales in total transactions is growing in almost all analysed counties in the period 2017-2020 (Graph 9) since counties and cities have the obligation to issue reports on developments in housing market.

**Graph 8:** The number of total transactions and transactions of residential objects (apartments and houses) in 2020



Source: EIZ, The number of purchase and sale transactions per units of local self-government, 2022

**Graph 9:** The share of residential property transactions in total transactions

Source: EIZ, *The number of purchase and sale transactions per units of local self-government, 2022*

Based on a descriptive analysis of the presented indicators, it is not indicative that the impact of the COVID-19 pandemic on the housing market in Northern and Pannonian Croatia was negative. It is obvious that housing prices are rising and that pandemic circumstances have not reversed this positive trend. Regarding the level of transactions, the negative effect could be reflected in the decline of the total number of transactions, but this conclusion is not consistent when looking only at residential units. Moreover, the data presented in Graph 9 indicate that the share of residential in total transactions in the pandemic year (compared to the previous year) increased in all counties, except in counties of Karlovac, Međimurje and Varaždin where it decreased, while in counties of Virovitica-Podravina and Zagreb it remained unchanged. All this indicates that the pandemic circumstances did not have a significant negative impact on the housing market in Northern and Pannonian Croatia, but this conclusion will be empirically examined in the following segments of this paper.

#### 4. Data and methodology

Empirical analysis was conducted on data purchased from the “Burza nekretnina”. The available data cover the period from 2010 to 2021. The database itself has certain shortcomings and that represents the basic limitation of this research. Primarily, the “Burza nekretnina” does not have recorded data on all sales that took place in Croatia, but only those reported by individual agencies that mediate in the real estate transactions. The process of data collection by the “Burza nekretnina” has improved over the years but there are still large differences in relation to the total number of real estate sold on the market. The sample collected by the “Burza nekretnina” represents a small part of actual transactions. Furthermore, the purchased database contains only data on apartments, which means that data on family houses are missing. The advantage of the “Burza nekretnina” database is that it contains data on advertised, but also realized prices of the properties that are in the process of buying or selling. The data on realized prices are valuable because they are not publicly available. In addition to the data on prices, the database also contains data on the location and



qualitative characteristics of apartments, which is the basis for empirical analysis within the hedonic model.

The database contains data on 562 apartments that were the subject of transaction in Northern and Pannonian Croatia. The distribution of data by counties is listed in Table 2. Given the fact that in the database of the “Burza nekretnina” some counties recorded a negligible number of apartment sales, we excluded from the empirical analysis those counties in which less than 10 transactions were recorded.

**Table 2:** The division of Northern and Pannonian Croatia into counties

Variable	<b>BJELBIL</b>	<b>BROPOS</b>	<b>KARL</b>	<b>KOPKRI</b>	<b>KRAZAG</b>
Observations	194	1	66	6	24
Description	Bjelovar-Bilogora	Brod-Posavina	Karlovac	Koprivnica-Križevci	Krapina-Zagorje
Variable	<b>OSBAR</b>	<b>VUKSRIJ</b>	<b>VAR</b>	<b>MED</b>	<b>POZSLA</b>
Observations	135	2	16	1	1
Description	Osijek-Baranja	Vukovar-Srijem	Varaždin	Međimurje	Požega-Slavonija
Variable	<b>SISMOS</b>	<b>VIRPOD</b>	<b>ZAGR</b>		
Observations	5	0	111		
Description	Sisak-Moslavina	Virovitica-Podravina	Zagreb		

Source: Authors

Data are included in the hedonic model depending on the nature of the variable as a numerical (requested and achieved apartment prices, area and number of rooms) or dummy variable. All variables used in the model are listed and described in Table 3.

**Table 3:** The variables used in an analysis

Variable	Label	Description
<b>Dependent variable</b>		
Market price	P1	Asked price of the apartment in euros per square meter
Postignuta cijena	P2	Realized price of the apartment in euros per square meter
<b>Independent variable</b>		
Area	M2	The size of the apartment in square meters
Number of rooms	ROOMS	Number of rooms including living room and bedrooms
New construction	NEW	Binary variable that takes a value of 1 if the property was sold in the year it was built, or in the year following construction (0 in all other cases)
Krapina-Zagorje	KRAZAG	Binary variable that takes the value 1 if the apartment is located in Krapina-Zagorje, and 0 in the case of other counties
Bjelovar-Bilogora	BJELBIL	Binary variable that takes the value 1 if the apartment is located in Bjelovar-Bilogora, and 0 in the case of other counties
Karlovac	KARL	Binary variable that takes the value 1 if the apartment is located in Karlovac, and 0 in the case of other counties
Osijek-Baranja	OSBAR	Binary variable that takes the value 1 if the apartment is located in Osijek-Baranja, and 0 in the case of other counties

Variable	Label	Description
Varaždin	VAR	Binary variable that takes the value 1 if the apartment is located in Varaždin, and 0 in the case of other counties
Zagreb	ZAGR	Binary variable that takes the value 1 if the apartment is located in Zagreb, and 0 in the case of other counties
Year of sale	YEAR	Binary variable with 12 modalities that describes the year in which the apartment was sold on the market. For example, modality Y2021 assumes a value of 1 if the apartment was sold in 2021, and a value of 0 in the remaining cases.
Pandemic shock	COVID	Binary variable that takes the value 1 if the apartment is sold from the beginning of March 2020 onwards (it tries to include the beginning of the pandemic in Croatia), 0 if the apartment was sold earlier
Subsidies on housing loans	APN	Binary variable that takes the value of 1 if the apartment was sold in the month when the public call for subsidies was opened and in the month before; 0 in the remaining cases

Source: Authors

In order to examine effects of all mentioned variables on apartment prices in Northern and Pannonian Croatia, we set up a hedonic model in its standard form. Standard form implies that the dependent variable is natural logarithm of price per square meter, while independent variables are levels. The model presented here is similar to those presented in Kunovac et al. (2008), Slišković and Tica (2019), Slišković and Sekur (2020) and Slišković et. al (2021). Its concrete form is as follows:

$$\ln p_{j,i} = \alpha + \sum_{j=1}^{m-1} \beta_j X_{ij} + \sum_{j=1}^l \gamma_j W_{ij} + \sum_{j=2}^T \delta_j D_{ij} + \sum_{j=1}^k \theta_j S_{ij} + \varepsilon_i, \quad i = 1, 2, \dots, N$$

The dependent variable is expressed in two modalities: asked price (P1) and realized price (P2).  $X_j$  includes locational dummy variables for individual counties. In order to avoid dummy variable trap, we included m-1 modalities on the right side of the equation, while the dropped one is captured in the constant term of the regression.  $W_{ij}$  represents a matrix of variables that describe the qualitative characteristics of apartments, and includes  $l$  characteristics. Concretely, we included basic variables like floor area, number of rooms and year of construction (i.e. if the apartment is newly built).  $D_{ij}$  represents the time indicator of a variable with T modalities. As our time dimension is represented by years,  $T = 12$ . The first year in observed period is included in intercept. This allowed simpler interpretation of other time variables, where estimated parameters reflect differences in relation to the 2010. After estimating parameters of the year of sale variables, we constructed hedonic price indices of asked and realized prices following the time-dummy method (see Hill, 2011 for details). Finally,  $S_{ij}$  includes market shocks, namely pandemic shock and the APN shock.

To test the robustness of the results, we estimated 3 models for every dependent variable. Somewhat broader models include the effects of shock, while these effects are omitted from models which served for the construction of hedonic price index. For example, one of the broader models has concrete form as follows:

$$\ln P_i = \beta_0 + \beta_1 KRAZAG_i + \beta_2 KARL_i + \beta_3 OSBAR_i + \beta_4 VAR_i + \beta_5 ZAGR_i + \beta_6 M2_i + \beta_7 ROOMS_i + \beta_8 NEW + \beta_9 COVID_i + \beta_{10} APN_i + \sum_{j=2}^{12} \delta_j D_j + \varepsilon_i$$

### 5. The results of the empirical analysis

Hedonic models of asked (P1) and realized (P2) prices were estimated in 3 variants. Model 1 does not include COVID and APN shocks, so that the obtained parameters can be used to

construct the “clear” hedonic index of apartment prices. This indicator illustrates the “clear” change in prices between observed periods, and it doesn’t consider the shocks that have occurred in the last two years. COVID and APN shocks are omitted from the 1 and 1a estimated models because of assumption that they could take over part of the price effects arising from changes in general value relations in the housing market.

Models 2 and 2a include the COVID and APN variables, while the third models are derived from the results obtained from former estimations. Namely, the biggest jump in asked and realized prices is present in 2020. This year is additionally specific because it is the only year in which competition for subsidizing housing loans was announced in two rounds. For this reason, it is assumed that housing loan subsidies in that year had a stronger effect than in other years. The results of all estimated models are shown in Table 4. In most cases, there are no significant differences in the conclusions resulting from the asked and realized price models, so there is no need to interpret them separately.

**Table 4:** The results of the estimation of hedonic models of asked and realized prices in Northern and Pannonian Croatia

Variable ↓ Model →	Dependent variable: log(P1)			Dependent variable: log(P2)		
	1	2	3	1a	2a	3a
C	6,86***	6,86***	6,86***	6,80***	6,80***	6,80***
KRAZAG	0,07*	0,07*	0,07*	0,07*	0,07*	0,07
KARL	0,15**	0,15**	0,15**	0,11**	0,12**	0,12**
OSBAR	0,05	0,05	0,05	0,07**	0,07**	0,06*
VAR	0,08	0,08	0,08	0,07	0,07	0,07
ZAGR	0,18***	0,18***	0,18***	0,21***	0,21***	0,21***
M2	0,00**	0,00**	0,00**	0,00***	0,00***	0,00***
ROOMS	0,00	0,00	0,00	0,00	0,00	0,00
NEW	0,18***	0,18***	0,18***	0,23***	0,23***	0,23***
Y2011	-0,05	-0,05	-0,05	-0,06	-0,06	-0,06
Y2012	-0,02	-0,02	-0,02	0,00	0,00	0,00
Y2013	-0,15*	-0,15*	-0,15*	-0,18**	-0,18**	-0,18**
Y2014	-0,10*	-0,10*	-0,10*	-0,17***	-0,17***	-0,16*
Y2015	-0,14**	-0,14**	-0,14**	-0,18***	-0,18***	-0,17*
Y2016	-0,14**	-0,14**	-0,14**	-0,16***	-0,16***	-0,16**
Y2017	-0,14*	-0,14*	-0,14*	-0,12	-0,12	-0,12
Y2018	-0,09	-0,09	-0,09	-0,01	-0,01	-0,01
Y2019	-0,06	-0,09	-0,06	-0,12**	-0,13**	-0,12**
Y2020	0,19***	0,16**	0,14	0,14**	0,13*	0,09
Y2021	0,11*	0,10	0,10	0,08	0,09	0,09
COVID	-	-0,00	0,01	-	-0,02	0,00
APN	-	0,06	-	-	0,05	-
APN*Y2020	-	-	0,10	-	-	0,11**
ADJ R <sup>2</sup>	0,32	0,32	0,32	0,31	0,31	0,32

Note: Asterisks indicate a rejection of the null hypothesis ( $\beta=0$ ) at a significance level of 1% (\*\*\*), 5% (\*\*) and 10% (\*); Note 2: White heteroskedasticity-consistent standard errors & covariance

Source: Authors' calculation

The obtained results should be interpreted with some caution. The input database has plenty of shortcomings, which were described earlier. The Northern and Pannonian region represents the part of Croatia for which the smallest number of observations is available. This leads to the conclusion that the housing market in this segment is significantly less active than in the City of Zagreb and the Adriatic region. For this reason, it is logical to expect that those parts of the observed region, which are located closer to the most frequent market (City of Zagreb), will be more attractive. The assumption is confirmed by the obtained results, according to which the prices of apartments in Counties of Zagreb and Karlovac are statistically significantly higher than the prices of apartments located in the County of Bjelovar-Bilogora<sup>4</sup>. The statistically significant, but somewhat lower positive difference in prices is present in Krapina-Zagorje County. If we look at the effects of qualitative characteristics of apartment on their prices, it is clear that new construction is a feature that is strongly associated with higher housing prices in this market segment. The floor area of the apartment was assessed as statistically significant, but its effect is negligibly small (close to zero).

The estimated parameters of the variables “year of sale” enabled the construction of a hedonic index of asked and realized prices of apartments (Graph 10). It can be seen that both price categories in the period 2013-2017 were lower compared to the beginning of the observed period (2010), after which, with minor oscillations, they returned to the level from 2010. The turning point is obviously 2020, in which apartment prices rose sharply. In the last observed year, asking prices decreased compared to 2020, but are still above the level from the beginning of the observed period. On the other hand, realized prices return to the level of 2010. These results are quite contradictory to those available in official statistical sources, which is certainly due to the poor quality of the database that served as an input for estimating the presented indices.

**Graph 10:** The estimated indices of asked and realized prices of apartments in Northern and Pannonian Croatia



Source: Authors' calculation

The results of the estimated models (Table 4) clearly show that the COVID pandemic cannot be considered as a statistically significant determinant of the apartment prices in the observed

<sup>4</sup> County of Bjelovar-Bilogora is included in the constant term of regression, so it represents the base modality.

market region. On the other hand, contrary to initial expectations, we found very weak evidence of a statistically significant positive effect of subsidizing housing loans on realized prices. In particular, we found a statistically significant and positive effect of the APN variable which is limited to 2020. According to the presented results, the prices of apartments in 2020 could be higher 11% in the periods in which public competition for housing loans subsidies was open. The reason for this probably lies in the fact that in that year the competition for subsidizing housing loans was exceptionally announced twice, which likely had an impact on the growth of demand for apartments, and consequently on prices realized in the purchase process.

## 6. Conclusion

The aim of this paper was to assess the effects of the COVID-19 pandemic and government's measure of subsidizing housing loans on the housing prices in Northern and Pannonian Croatia. The mentioned effects were analysed within the hedonic pricing model, and the input data are the data purchased from "Burza nekretnina" on sold apartments in Croatia in the period from 2010 to 2021. We also look at the volume of transactions, whose data we obtained from the Institute of Economics. This contributes greatly on our research as the volume of transactions allows us to look at the effects of the coronavirus pandemic on the housing market in a different light, as COVID-19 probably reflected on the housing market decreasing total volume of transactions.

Although the purchased database has enabled our work, the main limitation of the work stems just from it. Namely, this database contains only data on apartments, which means that data on family houses and other types of real estate are missing. Thus, the obtained results should be interpreted with some caution. This might also explain why these two regions represents the part of Croatia for which the smallest number of observations is available.

The assessment of asked and realized housing prices in Northern and Pannonian Croatia using hedonic models resulted in next statements. First, despite the economic crisis caused by a coronavirus pandemic, in 2020 and 2021 the growth of housing prices continued even on these regional markets. Location showed to be important and significant factor in the model, and the most frequent markets close to the capital city the most attractive. When we looked at the effects of qualitative characteristics of apartment on their prices, new construction was strongly associated with higher housing prices in this market segment. The floor area of the apartment was also assessed as statistically significant, but its effect is negligibly small.

Next, the results show that the COVID pandemic cannot be considered as a statistically significant determinant of the apartment prices in the observed market region. On the other hand, results show positive effect of subsidizing housing loans on realized prices, but the evidence is very weak as the statistically significant effect of subsidising is limited to 2020. The reason for this might be the fact that the competition for subsidizing housing loans was exceptionally announced twice in this year, while in other years it was only once. This probably had an impact on the growth of demand for apartments, and consequently on prices realized in the purchase process. This result leads to a question if the government measure of loan subsidizing fulfils its primary demographic function, given the fact that the worst situation with emigration is just in eastern Croatia.

As for the number of total real estate transactions (purchases and sales) the assumption of their drastic reduction because of the coronavirus pandemics confirmed. Descriptive analysis

of data shows that the total number of real estate transactions in 2020 decreased by approximately 8% compared to the previous year. However, this conclusion is also debatable if we look only at the number of transactions of residential objects, as it has increased in mentioned period in most of the observed counties.

Finally, it should be noted once again that the main limitation of this paper is in shortcomings of the database used for empirical analysis. Improving the quality of data in terms of collection of information on houses along with apartments and collection of more details on real estate characteristics (e.g., more precise location, if it is a bigger city, etc.) would be useful and would improve the results.

## REFERENCES

- Boesel, M., Chen, S. & Nothaft, F.E.: (2021) *Housing preferences during the pandemic: effect on home price, rent, and inflation measurement*. *Bus Econ* 56, 200–211 (2021). <https://doi.org/10.1057/s11369-021-00241-4>
- Botrić, V., Kordej De Villa, Ž. (23.-27. kolovoz 2005): *Determinants of regional housing market in Croatia*. 45th Congress of the European Regional Science Association. Amsterdam
- Croatian Bureau of Statistics (2022): *House Price Indices*. Statistics in line (released 17.1.2022)
- Croatian bureau of statistics (2022): *Popis '21 Predstavljanje prvih rezultata* (released 14 January 2022)
- Eurostat (2020): *Statistical regions in the European Union and partner countries*, NUTS and statistical regions 2021, 2020 Edition, available at: <https://ec.europa.eu/eurostat/documents/3859598/10967554/KS-GQ-20-092-EN-N.pdf/9d57ae79-3ee7-3c14-da3e-34726da385cf?t=1591285035000> (accessed 17 March 2022)
- Eurostat database (2022): <https://ec.europa.eu/eurostat/data/database> (accessed 17 March 2022)
- EIZ (2022): *The number of purchase and sale transactions per units of local self-government (2012-2020)*. The Institute of Economics, Zagreb, official web page, <https://www.eizg.hr/publications/serial-publications/an-overview-of-the-real-estate-market-in-the-republic-of-croatia/4274> (accessed 5 March 2022)
- Hill, R. (2011): *Hedonic Price Indexes for Housing*. OECD Statistics Working Papers, 2011/01. OECD Publishing.
- Kunovac, D., Kotarac, K. (2019): Residential Property Prices in Croatia. The Croatian National Bank Surveys, No 37, <https://www.hnb.hr/documents/20182/2626448/s-037.pdf/19242b77-77f4-51c9-803d-0ccb387a081d> (accessed 11 March 2022)
- Kunovac, D., Kotarac, K. (2020): *Utjecaj pandemije i potresa na tržište nekretnina u Zagrebu u prvoj polovini 2020*. HNBlog, <https://www.hnb.hr/-/utjecaj-pandemije-i-potresa-na-trziste-nekretnina-u-zagrebu-u-prvoj-polovini-2020> (accessed 20 March 2021)

Kunovac, D., Žilić, I. (2020): *Home sweet home: The effects of housing loan subsidies on the housing market in Croatia*, Croatian National Bank Working Papers W-60, <https://www.hnb.hr/documents/20182/3596318/w-060.pdf/955d2e9e-76d7-8b3e-3c1a-8a8732ff326e> (accessed 15 March 2021)

Kunovac, D., Đozović, E., Lukinić, G., Pufnik, A. (2008): *Primjena hedonističke metode za izračunavanje indeksa cijena nekretnina u Hrvatskoj*. Istraživanja (I-20). Zagreb: Hrvatska narodna banka

Llaneza Hesse, C. and Raya Vilchez, J. M. (2022): *The effect of COVID-19 on the peer-to-peer rental market*. *Tourism Economics*, 28(1), 222–247. <https://doi.org/10.1177/135481662111044229>

Marona, B. and Tomal, M. (2020): *The COVID-19 pandemic impact upon housing brokers' workflow and their clients' attitude: Real estate market in Krakow*. *Entrepreneurial Business and Economics Review*, 8(4), 221-232. <https://doi.org/10.15678/EBER.2020.080412>

MPGI (2022): *Subvencioniranje stambenih kredita*, Ministry of Physical Planning, Construction and State Assets, official web page, <https://mpgi.gov.hr/oministarstvu/djelokrug/programi-stambenog-zbrinjavanja/subvencioniranje-stambenih-kredita-8253/8253>, (accessed 15 March 2022)

Official gazette (2020): Odluka o mjeri strogog ograničavanja zadržavanja na ulicama i drugim javnim mjestima. Zagreb: Narodne novine 34/2020

Official gazette (2020): Odluka o zabrani napuštanja mjesta prebivališta i stalnog boravka u Republici Hrvatskoj. Zagreb: Narodne novine 35/2020

Slišković, T., Solenički, M., Beg, M. (2021): *2020. - Godina šokova - Procjena učinka na cijene stanova u Hrvatskoj*, *Ekonomski misao i praksa: časopis Sveučilišta u Dubrovniku*, 3 (2021), 2; pp. 393-416.

Slišković, T., Sekur, T. (2020): *The Calculation of Regional Index of Dwelling Prices in Croatia*, Proceedings of the 14th Economics & Finance Conference, Lisbon. International Institute of Social and Economic Sciences, Prague, pp. 134-156.

Slišković, T., and Tica, J. (2019): *Značaj udaljenosti u hedoničkom modelu određivanja cijena stanova u Zagrebu*, *Ekonomski pregled*, 70(5), pp. 677-705

Slišković, T. (2016): *Međuovisnost makroekonomske aktivnosti i tržišta nekretnina u Hrvatskoj*. Unpublished doctoral dissertation, Faculty of Economics and Business, Zagreb

Slišković, T. (2018): *Analiza međuovisnosti stambenog tržišta i makroekonomskog sustava u Hrvatskoj*, in Družić, G.; Družić, I., ed.: *Zbornik radova znanstvenog skupa "Modeli razvoja hrvatskog gospodarstva"*, Zagreb: Hrvatska akademija znanosti i umjetnosti i Ekonomski fakultet Sveučilišta u Zagrebu, pp. 247-280

Tica, J. (2020): *Čimbenici kretanja cijena stambenih nekretnina u Hrvatskoj*. *Zbornik Ekonomskog fakulteta u Zagrebu*, Vol. 18, No. 2, str. 15-33

Vizek, M., Slijepčević, S., Rašić Bakarić, I. & Stojčić, N. (2021): *An overview of the real estate market in the Republic of Croatia 2020. The Institute of Economics, Zagreb.* Available at: <https://www.eizg.hr/publications/serial-publications/an-overview-of-the-real-estate-market-in-the-republic-of-croatia/4274> (accessed 5 March 2022)



*A scientific paper*

**Iva Sundji, mag. oec., lecturer**

Visoka škola Aspira

E-mail address: isundji@gmail.com

**Filip Bartoluci, mag.oec.**

Visoka škola Aspira

E-mail address: filip.bartoluci@gmail.com

**Dino Bartoluci, mag.oec., lecturer**

Edward Bernays University College

E-mail address: dino.bartoluci@gmail.com

## **CHALLENGES AND OPPORTUNITIES FOR THE DEVELOPMENT OF MEDICAL TOURISM IN CONTINENTAL CROATIA**

### ***ABSTRACT***

*In recent years, health systems around the world have become overloaded, that has led to rising health care prices and health insurance premiums. It is the medical service providers who have recognized the possibility of increasing the quality of health care services, providing privacy, lower costs and providing a number of medical procedures that are not available to patients in their home countries. Health tourism as the broadest type of tourism is recognized as the driving force of tourism development in Croatia, is divided into three segments: spa, wellness and medical tourism. Medical tourism as a part of health tourism includes trips primarily motivated by the use of medical services of a greater or lesser degree of complexity, such as dental, surgical, rehabilitation, etc. The increase in travel motivated by the use of medical tourism services encourages the opening of new and raising the quality of existing specialized health care institutions and the possible dispersion of the offer to the continental part of Croatia except the city of Zagreb. It was the coronavirus pandemic that pointed out that medical tourism in the destinations of continental Croatia can compete with destinations on the coast with its natural and social resources that have not yet been sufficiently explored and touristically valorised. As this is mostly a rural area that is not suitable for the development of mass tourism, the aim of this paper is to investigate and present medical tourism as a tourist product that would complement and increase the quality of the existing tourist offer. For the purpose of this research, a survey among medical experts was conducted, and following research methods were used: desk research to search for various information and knowledge in the field of medical tourism and general scientific methods such as analysis and synthesis and descriptive statistics*

**Key words:** *health tourism, medical tourism, continental Croatia.*

### **1. Introduction**

From the very beginning of travel, health has been considered one of the oldest and strongest travel motives (Alfier, 1982: 456). Although in the beginning curative and bathing tourism was developed, nowadays health and preventive tourism is developing more and more (Bartoluci

M., Škorić S., Andrijašević M., 2021: 153). This leads to the definition of health tourism in which health tourism implies a temporary change of permanent residence of an individual in a certain favorable climate or bathing place for health prevention, curative (treatment) and rehabilitation (Vukonić B., Čavlek N. (ur), 2001: 454). The definition shows that, depending on the different needs and interests of users, health tourism segment can be divided into wellness, spa and medical tourism. It is developed in regions with a favourable climate, thermal springs, spas, sea and other natural resources that have a positive effect on health. Health tourism and the desire for its development exists in almost all developed country, and it is a topic written by many tourism experts (Clift S., Page S.J.: 1996; Pilzer P. Z.: 2007; Smith M., Puczko L.: 2008; Wang, C. H.: 2011; Alfier D.: 1996, Čavlek N.: 1997; Hitrec T.: 1998; Kušen E. 2002; Vukonić B.: 2010; Bartoluci M. et al: 2011 i dr.) (Bartoluci M., Škorić S., Andrijašević M., 2021: 153). According to the *Strategija razvoja turizma do 2020. godine* by criteria and competitiveness, health tourism has been recognized as one of the leading Croatian product groups. Although in recent years significant efforts have been made, especially in medical tourism, it is still in its infancy compared to some of the world's leading tourist destinations. The subject of this paper is to present medical tourism as a driver of development and enrichment of the tourist offer in continental Croatia. The increase in travel motivated by the use of medical tourism services encourages opening of new and raising the quality of existing specialized health care institutions and the possible dispersion of the offer to the continental part of Croatia except the city of Zagreb. The coronavirus pandemic pointed out that tourism in the destinations of continental Croatia could compete with destinations on the coast with its natural and social resources.

The aim of this paper is to research and present medical tourism as a tourist product that would complement and increase the quality of the existing tourist offer. The hypothesis of this paper is to show the perspective for the development of medical tourism in continental Croatia, with the development of other specific types of tourism, in the development of a unique tourism product.

## 2. The importance of medical tourism

The generally accepted definition of medical tourism implies leaving the place of permanent residence in order to perform an examination and / or one-time medical procedure / service (Ivandić N., Kunst I., Telišman-Košuta N., 27) such as cosmetic surgery services, various aesthetic treatments, all types of dental services, heart, hip, knee surgery..., treatments that are not allowed or underdeveloped in one's own country, etc. (Hall, 2011: 5-6). Medical tourism places emphasis on treatment (curative) with the possibility of choosing the tourist destination, which will provide users with all the required services.

There is a large market for medical tourism in highly developed countries, where with the growth of GDP (Liu J. G., Zhang Y. J. : 2016) the price of health services grows significantly. It is estimated that globally, the "industry" of medical tourism is worth over 100 billion dollars with a growing trend (Blažević, 2019: 31).

There is a large market for medical tourism in highly developed countries, where the price of health services in their own country increases significantly with the growth of GDP. It is estimated that the "industry" of medical tourism is worth over 100 billion USD worldwide with a growing trend (Blažević, 31).

Over the past decade, European health systems have been facing increasingly common challenges (European Commission, 2021: 1):

- Europe's population is aging and more exposed to many chronic diseases, leading to rising demand for healthcare and increasing fiscal pressure,

- The costs of innovative technologies and medicines are rising and burdening public finances,
- Healthcare professionals are unevenly distributed and lacking in some areas of care,
- Access to health care is not equally accessible, leading to inequalities in health outcomes in society.

Above mentioned encourages the development of medical tourism. Namely, in many EU countries, such as Germany, Austria, and other outbound markets important for Croatia, the prices of medical services are much higher, and as such represent an important motive for travel. In developed countries, the population is getting older and life expectancy is increasing, and the money they have saved for their entire working life is mostly spent on health. Apart from the prices of medical tourism services, for individuals, medical tourism services are the only option in order to be able to receive adequate medical care at an affordable price. Also, one of the motives for using health services abroad can be long waiting lists in own country, and the fact that health insurance usually covers only basic health services or there are no conditions and staff to provide more complex services (Krajnović A., Babić R., Bosna J., 2013: 18). Undoubtedly, one of the drivers of the development of medical tourism in Europe is the directive on cross-border healthcare, which provides citizens of the EU with free access to healthcare in all Member States that the EU needs to reimburse.

There are many attractive destinations in the world today where the use of medical tourism services is associated not only with a high level of quality medical services, shorter waiting lists for medical treatments, savings in treatment costs and quick resolving health problems, but also in motivation with an attractive location, where medical treatments and holiday treatments are combined. Among the most popular destinations of medical tourism, especially cosmetic procedures, are many Asian countries and destinations in Central and South America. In the market, to users of medical tourism services, as well as their travel companions, are usually offered all-inclusive packages that include treatments, accommodation, and flight costs, but also all arrangements for the patient, including hospital services and even sightseeing. The savings can be large compared to the cost of treatment in their own country, even when the cost of travel and accommodation are included in the total price. For example, the cost of replacing a heart barrier in the United States is 200,000 USD, while the same medical procedure in India is performed for 10,000 USD (Blažević, 2019: 29). It can be concluded that the price and quality of treatment can drastically vary around the world, and it is very important to look for a medical service and a facility that meets international standards. Often lower costs of medical services mean lower quality of these services, and not all clinics follow the same quality standards. At the global level, institutions such as the JCI (*Joint Commission International*) and the WHO (*World Health Organization*) accredit clinics and set quality standards. In addition to the above, there are numerous state institutions and initiatives at the global level whose main goal is the introduction of quality systems in medical tourism, primarily related to care for users of medical services, service efficiency, user safety and customer satisfaction.

It is evident that medical tourism encourages migration in the global market, which opens employment opportunities in the labor market in less developed countries, which certainly opens up many opportunities for the economy of continental Croatia. The comparative advantage for Croatian tourism is the proximity of outbound markets and the fact that individuals often decide to have a medical procedure in the country where they came from or in where their family and friends are.

In addition to the price, the motives for the development of medical tourism are often in the legal restrictions of certain countries where certain medical procedures or treatments are forbidden or cannot be performed. Examples are gynecological issues, artificial insemination, egg transplantation to organ transplantation, etc. The medical services are combined with other

healthy and active holiday services, which increases the added value of tourist and other facilities.

### **3. Attractiveness of health tourism in continental Croatia**

In Croatia, primarily continental Croatia, there are many untapped opportunities for medical tourism development from dental procedures, plastic surgery, various aesthetic facial and body treatments, providing top surgical procedures and other treatments and connecting them with a pleasant weekend or vacation. Some countries have specialized in certain segments of medical tourism and have achieved an enviable level of competitiveness. A similar study was conducted by Dryglas and Lubowiecki-Vikuk in 2019, analyzing the attractiveness of Poland as a medical tourism destination from the perspective of German and British tourists.

The prices of medical services for medical tourism are significantly lower compared to Western countries, which is certainly a comparative advantage for Croatian tourism. Thus, for example, individual procedures can save from 40 to 60%, on the website of a polyclinic in Zagreb, it is shown that the average cost of breast augmentation in the US is from 7,000.00 to 9,000.00 USD, while in Croatia it is the same surgery from 4,100.00 to 4,400.00 USD, further the prices of liposuction in the USA range from 10,000.00 to 15,000.00 USD, while in Croatia they are 3,600.00 to 5,600.00 USD, depending on the severity of the procedure (Stephano, 2017: 38).

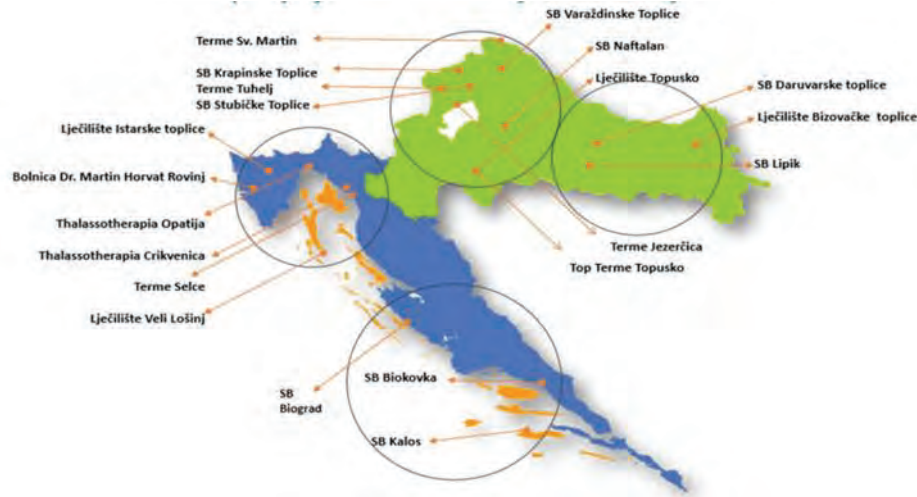
Medical tourism is focused on specific medical procedures and therapies, for which appropriate infrastructure is a must (hospitals, clinics, professionals, and equipment) with the inclusion of elements of health tourism as accompanying treatments. The current market position of medical tourism in Croatia is primarily determined by the individual efforts of private practices and clinics in penetrating the market, affordable prices for internationally acceptable quality in several areas of medical expertise and the credibility of staff and equipment. When observing the offer of medical tourism at the level of the whole country, it is still sporadic, insufficiently diversified, relatively disorganized, and poorly recognizable (Akcijski plan razvoja zdravstvenog turizma, 16). The largest concentration of medical tourism service providers is located in northern Croatia, the city of Zagreb, Istria and Kvarner. The biggest problem of medical tourism, when it comes to demand, is certainly the lack of statistical monitoring of this specific tourism product and it is currently impossible to determine the number of its current users.

Compared to the destinations of coastal Croatia, continental tourism has been neglected for years, and on the other hand there is a high seasonality of tourism and direct dependence of the Croatian economy on the tourist season (June, July and August). Due to the coronavirus pandemic, this trend is slowly changing, and an increasing number of tourists are showing interest in tourism activities in continental Croatia, far from the destinations of mass tourism prevalent in the Croatian coast (Sundji I., Bartoluci F., Bartoluci D., 2021: 280). It is continental Croatia that has a comparative advantage in the development of medical tourism, which can be of great importance for the economic development of this area of Croatia.

According to the existing data, the largest number of medical tourism providers are health resorts, special hospitals for medical rehabilitation and companies for performing health activities (Gračanin M., 2010: 216). Medical tourism is primarily related to the offer of a growing number of specialized health institutions, mostly small and medium-sized clinics specializing mainly in dentistry, plastic surgery, orthopedics, etc. According to data collected directly from special hospitals for medical rehabilitation and health resorts, a total of 5,222 beds and 3,680 medical and non-medical staff are employed. Special hospitals for medical rehabilitation and health resorts have 2,146 beds contracted with the Croatian Health Insurance Institute (HZZO). Although large medical institutions such as clinical hospitals, clinical or general hospitals have not shown interest in medical tourism, but during the activities so far,

the Health Tourism Service of the Ministry of Health has identified development investment projects of health institutions - special hospitals for medical rehabilitation and spas in total. from 172,635,563.82 EUR without VAT (215,794,454.77 EUR with VAT) as a "Grozd projekt" of health tourism. The "Grozd projekt" of health tourism includes the following special hospitals for medical rehabilitation and health resorts.

**Figure 1:** Thermal (SPA) and spa destinations in Croatia - Catalog of health tourism projects



Source: Ministarstvo zdravstva - Zavod za zdravstvene usluge u turizmu, Katalog projekata zdravstvenog turizma,

<https://zdravstvo.gov.hr/UserDocsImages//2017%20dokumenti%20razni//Katalog%20projekata%20zdravstvenog%20turizma.pdf>

The picture shows that in continental Croatia, according to "Grozd projekt", there are 12 facilities included in the project that will provide services in all three forms of health tourism, and which will specialize in certain services in medical tourism in accordance with international standards.

The connection between the provision of health tourism services through the value chain of all participants in the tourist offer at the level of tourist destination, best represents the totality of health tourism as a system in which medical tourism is one important subsystem. To create such a complex system of health tourism, it is necessary to ensure not only good organizational, but also overall qualitative and substantive assumptions through the creation of a total value chain of demand, needs and desires of medical tourists, hospitals, and doctors, which continental Croatia certainly has. The quality of the content offered in medical tourism must be accompanied by good organization and access to the patient, his family, and friends who have become participants in the tourist demand. It is extremely important for continental tourism to position itself as a destination for medical tourism, with offer that includes top clinics and hospitals that offer, and which cannot lag behind the highest health standards compared to the countries from which these tourists come.

#### 4. Survey results

For the purpose of writing this paper, an online survey was conducted on a sample of 100 respondents, experts in the field of tourism and health. Of the 100 respondents, 50 answered all questions. This research was conducted using a questionnaire on a selected sample of experts in the field of health, namely: 30 experts from spas and health care institutions, 15 from the field of tourism and hospitality and 5 from tourist boards and other experts from scientific and professional institutions dealing with tourism.

The survey questionnaire itself consists of 5 main and 3 auxiliary questions in which the respondents assessed the current development of medical tourism in continental Croatia and assessed the possibilities for future development. Auxiliary questions were asked in order to complete the answers and create a better picture of the current and future development of medical tourism.

The largest number of respondents, 49%, assessed the current development of medical tourism in continental Croatia as sufficient (2), while 30.5% of them rated the current development as good (3), which indicates a relatively low level of medical tourism development. which is confirmed by the Akcijski plan razvoja zdravstvenog turizma, which states that the highest concentration of medical tourism providers is in Istria and Kvarner and northern Croatia and the city of Zagreb.

Respondents rated the quality of accommodation in institutions that provide services in medical tourism as sufficient (2), 22% and good (3), 58%, which indicates a relatively low quality of existing accommodation. In addition to the question, an additional question was asked in order to gain insight into the number of accommodation facilities, which was assessed as sufficient (2) (66% of respondents), which indicates insufficient construction of accommodation facilities in relation to tourist demand.

The majority of respondents, 77%, rate the future of medical tourism in continental Croatia as excellent (5), with the development of other specific types of tourism, in the development of a unique tourist product. Which means that through such a model can be successfully valorized cumulative effects of different specific types of tourism that are complementary, which is consistent with the results of some previous research (Sundji I., Bartoluci F., Bartoluci D., 2021: 287). As an additional question, respondents were asked to indicate which specific types of tourism would help medical tourism in creating a unique tourism product, and the largest number of answers were rural, sports-recreational, cultural and eno-gastronomic tourism, more than 60% of respondents, which is expected given to the very high quality of these types of tourism (Institut za turizam, 2019: 52).

The largest number of respondents, 80% of them, are of the opinion that there is quality medical staff in continental Croatia and that the development of medical tourism opens the possibility of creating new jobs opportunities.

The largest number of respondents (78%) are of the opinion that the development of medical tourism would raise the quality of the existing tourism offer of continental Croatia, which would also help solve the problem of seasonality of Croatian tourism. As an additional question, respondents were asked to rate, on a scale of 1 to 5, whether, in their opinion, the development of medical tourism affects the quality of public health services. Grade 1 indicates that the impact of the development of medical tourism is negligible, grade 5 that it is extremely significant, on the quality of health care services. Respondents mostly answered with a score of 3 (50%) that it is noticeable and a score of 4 (20%) that it is significant, from which can be concluded that some medical professionals fear that future development of medical tourism could reduce the quality of services in the health system.

## 5. Conclusion

According to numerous authors, health is considered to be one of the oldest and strongest motives that move people to travel. Medical tourism is a global phenomenon that encourages the development of medicine and tourism, given that every year more and more users travel for health treatments abroad, that results in high economic effects. Given that it is about human health and life, medical tourism is an extremely sensitive area, and its future development is unquestionable. The steady rise in prices of medical services in developed countries and longer waiting lists for medical services, are encouraging patients from these countries to travel to less

developed countries in search of fast and cheap medical services, which is a comparative advantage for Croatian tourism, especially in continental tourism. Namely, in Croatia the prices of medical services are still lower than in developed European countries, important outbound markets for Croatian tourism, which is a strong motive for the arrival of medical tourists.

The development of continental tourism, compared to the destinations of coastal Croatia, has been neglected for years, which began to change after the coronavirus pandemic. According to the research, medical tourism in continental Croatia is still underdeveloped, but its future development is rated excellent, which indicates that in the observed area there are all prerequisites for its quality development, which would significantly affect the quality of tourism, employment, but and helped solve the problem of seasonality of Croatian tourism. Also, the conducted research shows that there is a certain fear of the development of medical tourism, because in this way the quality of health care services would be jeopardized. It is necessary to encourage the importance of developing this form of tourism, but in an organized and well-designed way, considering that it is a type of tourism that encourages economic development not only private but also public sector.

## REFERENCES

Alfier D. et al (1982): *Ekonomika Jugoslavije, Ekonomika turizma*, u redakciji Jakova Sirotkovića i Vladimira Stipetića, Informator, Zagreb

Bartoluci M., Škorić S., Andrijašević M. et al (2021): *Menadžment sportskog turizma i njegovih srodnih oblika*, Zdravstveni turizam, Školska knjiga, Zagreb

Blažević O. (2019): *Doprinos zdravstvenoga turizma ekonomskoj održivosti turističke destinacije*, Disertacija, Sveučilište u Rijeci, Fakultet za menadžment u turizmu i ugostiteljstvu; Opatija

Dryglas D., Lubowiecki-Vikuk A. (2019): *The Attractiveness of Poland as a Medical Tourism Destination from the Perspective of German and British Consumers*, Entrepreneurial Business and Economics Review, Vol. 7, No. 2

Europska komisija (2021): Tematski informativni članak o europskom semestru - Zdravstveni sustavi, dostupno na: [https://ec.europa.eu/info/sites/default/files/file\\_import/european-semester\\_thematic-factsheet\\_health-systems\\_hr.pdf](https://ec.europa.eu/info/sites/default/files/file_import/european-semester_thematic-factsheet_health-systems_hr.pdf)

Gračanin M. (2010): *Wellness u zdravstvenom turizmu Hrvatske*, Hrvatski znanstveno stručni skup o menadžmentu u turizmu i sportu, Vol. 1 No. 1

Institut za turizam (2014): *Akcijski plan razvoja zdravstvenog turizma*, [https://mint.gov.hr/UserDocsImages/arhiva/150608\\_AP\\_%20Zdravstveni%20turizam.pdf](https://mint.gov.hr/UserDocsImages/arhiva/150608_AP_%20Zdravstveni%20turizam.pdf)

Institut za turizam (2020): *Stavovi i potrošnja turista u Hrvatskoj - Tomas Hrvatska 2019*, dostupno na: <http://www.iztg.hr/files/file/RADOVI/KNJIGE/TOMAS-Hrvatska-2019.pdf>

Ivandić N., Kunst I., Telišman-Košuta N. (2016) *Pretpostavke održivosti zdravstvenog turizma u Republici Hrvatskoj - načela razvoja i ključni činitelji uspjeha*, Radovi Zavoda za znanstveni rad Varaždin, Vol. No. 27

Ivanišević G. (2015): *Zdravstveni i lječilišni turizam u Hrvatskoj, Hrvatska -zdravstveni i lječilišni turizam*, Knjiga izlaganja na znanstvenom skupu na Velom Lošinj 4.-5.9.2015., Hrvatski liječnički zbor, Zagreb

Krajnović A., Babić R., Bosna J. (2013): *Medicinski turizam - neki marketinški i etički aspekti*, Oeconomica Jadertina 1/2013., Prethodno priopćenje, dostupno na: <https://hrcak.srce.hr/file/160081>

Liu, J. G., & Zhang, Y. J. (2016): *Medical tourism: Literature review and research prospects*. Tourism Tribune, 6, 113-126

Ministarstvo zdravstva - Zavod za zdravstvene usluge u turizmu (2017): *Katalog projekata zdravstvenog turizma, FP*, dostupno na: <https://zdravstvo.gov.hr/UserDocsImages//2017%20dokumenti%20razni//Katalog%20projekata%20zdravstvenog%20turizma.pdf>

Stephano R.-M. (2016): *Poliklinika Bagatin: Health and Wellness Destination Guide*. Medical Tourism Magazine

Sundji I., Bartoluci F., Bartoluci D. (2021): 10th International Scientific Symposium on Region, Entrepreneurship, Development (RED), 277-297

Vukonić B., Čavlek N. (ur) (2001): *Rječnik turizma*, Masmedia, Zagreb



*A scientific paper*

**Marija Šimić Šarić, Ph. D., Associate Professor**

University of Split, Faculty of Economics, Business and Tourism

E-mail address: msimic@efst.hr

**Sandra Pepur, Ph. D., Associate professor**

University of Split, Faculty of Economics, Business and Tourism

E-mail address: sandra.pepur@efst.hr

**Mateo Šetka, mag. oec.**

University of Split, Faculty of Economics, Business and Tourism

E-mail address: msetka01@gmail.com

## **CROWDFUNDING SUCCESS DETERMINANTS – STUDY OF CROATIAN CROWDFUNDING CAMPAIGNS**

### **ABSTRACT**

*As an alternative method of financing, crowdfunding has been gaining importance since the financial crisis in 2007. The availability of the Internet, on the one hand, provides various capital seekers with access to necessary financial resources for their ideas/projects, and on the other, allows a large number of individuals around the world to invest in those ideas/projects. The use of crowdfunding platforms, i.e. websites, enables the two actors to connect. The number of crowdfunding platforms has been continuously increasing. Many of them have become specialised in a particular type of crowdfunding, such as donation-based, reward-based, lending-based or equity-based. In addition, different crowdfunding platforms offer one of the two crowdfunding models: “All-Or-Nothing” or “Keep-It-All”. Crowdfunding, as an alternative source of funding, is still in its initial stage in Croatia, and because of that, there is no knowledge about various factors and their influence on the success of crowdfunding campaigns. Therefore, the main purpose of this study was to identify crowdfunding success determinants. The research was conducted on 78 Croatian crowdfunding campaigns. The campaigns were launched on two best-known and available crowdfunding platforms: Kickstarter and Indiegogo in the period from 2014 to 2019. The collected data were processed using the statistical program IBM SPSS Statistics and applying the Mann – Whitney U test. The results show that there is a statistically significant difference between successful and unsuccessful campaigns regarding the project goal, the duration of the campaign and the number of campaign backers, while there is no statistically significant difference with regard to the level of average investment per backer.*

**Key words:** *crowdfunding success determinants, Croatia, crowdfunding campaigns.*

### **1. Introduction**

The traditional methods of financing, e.g. bank loans, bond issuance, leasing, factoring, etc. are usually used to finance projects using external sources of financing (Prohaska and Olgić, 2005; Knežević and Has, 2018). Companies, particularly those that are young and/or small,

often fail to finance their projects with traditional sources of financing because their assets do not guarantee the return of borrowed funds. Although companies or individuals can have great ideas, they are often not feasible because they cannot be financed by the traditional sources of financing (Yang and Zhang, 2016). In these circumstances, if the ideas are approved by a large number of people, even though they cannot finance the project individually, they can do it together by joining specialized crowdfunding platforms. Therefore, companies have started turning to alternative sources of financing, including crowdfunding or group financing. Čondić-Jurkić (2015) defines crowdfunding as an alternative way of financing projects where more people decide to invest smaller amounts of money in order to finance an idea and in turn expect a symbolic gift, reward, priority rights, etc. Furthermore, “*crowdfunding represents the provision of small amounts of money by a large number of individuals for different needs (cultural, sport-related, technological, or business) through the mobile phone or online platform*” (Šimić Šarić, 2021). In addition, financing through crowdfunding does not require large investments from large investors or standard financial intermediaries (Shneor and Vik, 2020). Crowdfunding platforms apply one of the two following models: Keep-It-All (KIA) or All-Or-Nothing (AON). In the AON model, the set goal represents the goal below which the project does not keep any of the pledged funds, and the crowd does not get any reward. Whereby, the KIA model allows to keep the entire pledged amount, regardless of whether the set goal has been achieved or not (Cumming et al., 2020). Komoreki and Kraus (2015) concluded in their paper that the key factor for the success of the concept of crowdfunding is the digitalization of the society, which is further supported by the increase of Internet users by 570% from 2000 to 2012. Bago and Pilipović (2016) state that crowdfunding financing has helped many start-ups and innovators to overcome their own lack of funding needed to develop and launch a particular idea, some of which are still achieving enviable results. The development of crowdfunding varies greatly between countries. According to Fanea-Ivanovici and Siemionek-Ruskan (2019) CEE EU countries lag behind other EU countries in crowdfunding development as well in positions in world rankings. In addition, there is a lack of scientific research about crowdfunding in the CEE region (Svidroňová et al., 2021) including Croatia. According to the data collected and published by crowdfunding.hr, the first data for Croatia dates back to 2011, when crowdfunding campaigns from Croatia raised \$2,555. In addition, according to the same site from 2011 to the end of 2017 crowdfunding campaigns raised a total of \$3,959,622 with the success rate of 28.30%. The total number of campaigns launched in Croatia by the end of 2017 was 272, with 77 successfully executed. In 2017, a record \$2,249,759 were raised with 26 of the 78 projects completed, representing a success rate of 33.33%. If we compare this data with those published by fundly.com (2018), the success rate is far below the global one. Namely, in 2017 the global success rate was 50%. Also, according to Cepor (2020) crowdfunding in Croatia is still underdeveloped. Given the above, this research focuses on low success rate of Croatian crowdfunding campaigns and investigates crowdfunding success determinants.

## **2. Determinants of crowdfunding campaign success**

### **2.1. A review of empirical research**

Although crowdfunding is a relatively new concept term, some scholars have already researched the determinants that affect the success of campaigns. Additionally, according to Shneor et al. (2021), drivers of crowdfunding success are the key area in crowdfunding research. Mollick (2014) conducted a research on a sample of 48,526 US-based crowdfunding campaigns on Kickstarter, a crowdfunding site. The analyzed success factors were: project goal, percentage of the success of crowdfunding campaigns, number of backers, average

investment per backer, the number of Facebook friends of founders, categories that campaigns are categorized into, news published by the campaign founder during and after the campaign, comments from backers, and the duration of the campaign. Mollick analyzed the sample and compared the data of all the campaigns started and of those that were successfully completed. The results showed that the set goal of successfully funded campaigns averaged \$5,604 with an average of 122 backers, while the average goal of all campaigns was \$9,866 with an average of 66 backers. Successful campaigns on average had more comments from backers and campaign founders published more news. Performance was positively correlated with the number of Facebook friends and investment per backer, and negatively correlated with the campaign duration. Crosetto and Regner (2014) studied the time dynamics of fundraising in their paper. They found that out of the 41% of projects that successfully raised money, most of the money had been raised early in the campaign and that on average successful campaigns lasted for a shorter period. They found that if the target amount was lower, the campaigns were more successful and if the target amount was higher, the campaigns were less successful. They also concluded that if quality communication was conducted with potential backers that the success rate of achieving the set goal was higher. Furthermore, Frydrych et al. (2014) conducted a study analyzing crowdfunding success factors like: project goal, funds raised, backers, funds per backer, duration, number of reward-levels, videos, and whether the project was created by one person or a team. They found out that successfully implemented campaigns had a lower funding target and lasted for a shorter period. There were no clear results with regard to the number of different rewards, but they suggested that campaigns were more successful if the project was presented by a video. Since the analyzed projects were mostly initiated by one person, the authors could not come to a clear conclusion compared to the projects created by a team of people. In their paper, Marelli and Ordanini (2016) also investigated what influences the success of crowdfunding campaigns. They noted that the existence of videos and special offers for early backers greatly increases the chances of success of a crowdfunding campaign, and that an unrealistically high funding goal and an extension of the time to market negatively affect its success. According to the authors, the use of special offers made by early backers gives importance to the project, whereby crowdfunding platform algorithms recognize the campaign as being attractive. In this way, the platform automatically positions the campaign on the first page and thus attracts new backers. Kunz et al. (2016) attempted to detect which factors affect campaign performance. In addition to the usual factors listed earlier in the text, some specific features were analyzed such as: limited number of rewards, size of a network of a project initiator, time of delivery for the rewards, length of project description, and the quality of the project page. The hypothesis that limiting the amount of rewards increases the chances of campaign success was rejected. The hypothesis that having more friends on social networks, i.e. more Facebook friends has a positive effect on the success of the crowdfunding campaign, was accepted. It was also confirmed that a longer delivery time also reduces the likelihood of a campaign success. If the project description is more detailed, the probability of campaign success increases. However, expanding the content on the project page does not increase the probability of campaign success. Furthermore, Bilau and Pires (2018) examined whether campaigns with lower funding targets, with a longer duration, with more backers and those with more Facebook shares were more successful than those with fewer backers. They concluded that projects with a lower project goal and those that lasted for a shorter period were more successful. The authors also concluded that campaigns with more backers and those with more Facebook shares were more successful. Based on this last result, the authors concluded that in general social networks could positively influence the success of crowdfunding campaigns.

## 2.2. Crowdfunding campaign success factors

By reviewing relevant research, a conclusion is drawn on the existence of a large number of factors that can affect the success of launched crowdfunding campaigns. Based on other similar research conducted in the world and given the availability of data on campaigns conducted from the Republic of Croatia, the following factors have been identified as the most crucial ones and will be analyzed on the example of crowdfunding campaigns in Croatia:

- Project goal

Project goal is the financial amount that has to be raised through a crowdfunding campaign. When designing a project, the costs must be calculated in detail, in order to know how much to set as a goal. If the target amount is set too low, there is a danger of not being able to finance the entire project, while on the other hand, if the target amount is set too high, the campaign might fail. In any case, it is necessary to set as a realistic goal as possible to run a better media campaign.

- Duration of the campaign

The duration is, just as the project goal, determined in advance by setting the campaign end date when starting the campaign. When determining the duration of the campaign, the time required to promote the campaign should be taken into account. Therefore, the duration of the campaign should not be set to be too short. On the other hand, if a too long deadline is defined, it may indicate the founder's insecurity towards his/her own project. The campaign can be stopped even before the deadline expires and the most common reasons for this are that the campaign failed or the project goal was achieved multiple times. Relevant research has shown that campaign duration significantly affects campaign success. Successfully implemented crowdfunding campaigns on average lasted for a shorter period.

- Number of backers

The number of backers denotes the number of funders/investors who supported the campaign. Campaign founders try to motivate potential backers to invest in the presented campaign by creating and presenting promotional materials. The better the project and the accompanying promotional activities, the greater the possibility for backers to notice the project, identify with it, and invest in it. The results of previous research indicate that successful crowdfunding campaigns have, on average, more backers than the unsuccessful ones.

- Average investment

The total amount of the money donated divided by the number of backers, represents the average investment, i.e. it is the money invested per backer. If a project has a lot of backers it does not necessarily mean it will be successful because fewer backers with higher funding can support the project and thus raise the requested amount. Research has shown that successful crowdfunding campaigns on average have more money invested per backer, while unsuccessful crowdfunding campaigns are funded by backers with smaller amounts.

### 3. Sample description, methodology and hypotheses

The research on the determinants of the success of crowdfunding campaigns in Croatia is conducted on the data collected on crowdfunding platforms Kickstarter and Indiegogo<sup>1</sup>. The data from Kickstarter were collected using Python, whereas the data from Indiegogo were collected manually. The data include Croatian crowdfunding campaigns conducted from the beginning of 2014 to the end of 2019. The total number of backers for the observed campaigns was 14,504 and the campaigns raised \$906,783. The average duration of the campaign was 36.79 days and 35.90% of the campaigns successfully raised funds. Furthermore, out of a total of 78 campaigns, 19 campaigns were conducted on the Kickstarter platform, i.e. 24%, while the remaining 59 campaigns were conducted on the Indiegogo platform, which corresponds to a share of 76%.

According to a review of relevant research, potential success factors for campaigns in Croatia to be analyzed are:

- a) number of backers,
- b) collected funds (amount in US dollars) or collected funds per backer (amount in US dollars; calculated as collected funds divided by the number of backers),
- c) project goal (amount in US dollars),
- d) duration of the campaign (shown in days; calculated as the period from the beginning of the campaign to its end date).

**H1** There is a statistically significant difference between successful and unsuccessful campaigns with regard to the project goal.

The results of previous researches suggest that the project goal affects the success of the crowdfunding campaign. Successful crowdfunding projects have on average set a smaller project goal. The project goal as a determinant of the success of crowdfunding campaigns was researched by: Xu and Zhu (2018) on Chinese platforms Ten-cent Charitable Foundation and Qingsongchou; Kuppuswamy and Bayus (2015) on the Kickstarter platform; Mollick (2014) on projects originating in the United States, excluding extreme projects with a funding goal of less than \$100 and above \$1 million; Marelli and Ordanini (2016) on projects from the US, Canada and the UK on the Kickstarter platform. Furthermore, Crosetto and Ragner (2014) conducted research on German crowdfunding platform Startnext, Frydrych et al. (2014) on New York campaigns from the Kickstarter platform, and Bilau and Pires (2018) on Portuguese platform PPL. In all the above research, the authors concluded that the set project goal affects the success of the campaign. From the results of the conducted analyses, it can be concluded that successfully funded projects on average had set lower funding goal. Therefore, it was concluded that higher funding goal was negatively related to the success of the campaign, i.e. that the funding goal was negatively correlated with the success of the crowdfunding campaign.

**H2** There is a statistically significant difference between successful and unsuccessful campaigns with regard to campaign duration.

---

<sup>1</sup> It should be noted that the Indiegogo platform for individuals and legal entities with an address in Croatia has been unavailable from December 2019 due to the introduction of the Stripe payment processor which was not supported in Croatia (Šimić, Netokracija, 2019.). According to the latest information, the Stripe payment system has been available for Croatia from April 2022 (Kostanić, Netokracija, 2022).

Xu and Zhu (2018) concluded that funding period, measured in days, affects the success of a crowdfunding campaign, while Kuppuswamy and Bayus (2015) found that campaigns of successfully funded projects on average last shorter. Mollick (2014) and Kunz et al. (2016) found in their respective researches that extending the duration of a crowdfunding campaign negatively affects its success. Liu and Liu (2016) also concluded that duration and success were negatively correlated. In their study, Frydrych et al. (2014) concluded that the duration of successful projects is shorter than the duration of unsuccessful ones, but that this difference is not so large to be considered significant.

**H3** There is a statistically significant difference between successful and unsuccessful campaigns with regard to the number of backers.

Kuppuswamy and Bayus (2015) and Bilau and Pires (2018) concluded that successfully funded campaigns have on average a larger number of backers, as was confirmed by Frydrych et al. (2014) who stated that successful campaigns have five times more backers than unsuccessful campaigns.

**H4** There is a difference between successful and unsuccessful campaigns with regard to the level of average investment.

The results of research conducted by Kuppuswamy and Bayus (2015) show that unsuccessfully funded campaigns had an average contribution of \$59.35 per backer. Successfully funded campaigns, i.e. those that reached the required 100% of the funding target, received donations of \$118.68 per backer. Campaigns that continued to raise funds after the goal was achieved, i.e. those that raised over 100% of the required funds, received an average of \$77.02 per backer. This shows that campaigns that ultimately failed were on average funded by backers with smaller amounts. Frydrych et al. (2014) also showed that on average more money was donated to successfully funded projects. According to research conducted on Kickstarter, \$88 per backer were invested in successfully funded projects, while in unsuccessful ones the average amount invested was \$74 per backer.

The dependent variable is the success of the crowdfunding campaign. The campaigns are divided into two groups - one group consists of campaigns that successfully achieved their funding, and the other of those were unsuccessfully funded, as they did not achieve the funding target. In order to examine the success factors of crowdfunding campaigns in Croatia, the collected data is processed using the statistical program IBM SPSS Statistics and Microsoft Excel.

## **4. Results**

### **4.1. Descriptive statistics**

For the collected data, the descriptive statistics is given in Tables 1, 2 and 3. Table 1 shows descriptive statistics of observed variables: number of backers, raised funds, average investment, project goal, and campaign duration for all campaigns, while Tables 2 and 3 show statistics of the analyzed variables for the group of campaigns that successfully raised funds or campaigns that were unsuccessful.

According to the data in Table 1 the average number of backers per project is 185.95. Looking at the data for raised funds, total of \$ 906,783 was raised, whereby \$ 11,625.42 was

raised on average per crowdfunding campaign. Furthermore, one or more campaigns did not raise a single dollar, while the most successful campaign raised \$ 290,324. The mean value for the average investment per backer was \$ 56,955. Regarding the project goal of the observed campaigns averaged \$ 22,751.47, while they attempted to raise a total of \$ 17,74615. The campaign tried to raise a minimum of \$ 288, while the biggest project target was set at \$ 100,000. The observed crowdfunding campaigns lasted an average for 36.79 days.

**Table 1:** Descriptive statistics – all campaigns

		Number of backers	Raised funds	Average investment per backer	Project goal	Project duration (in days)
N	Valid	78	78	76	78	78
	Missing	0	0	2	0	0
Mean		185,95	11625,42	56,955	22751,47	36,79
Std. Error of Mean		42,224	4051,829	6,382	2862,363	1,829
Median		43,00	2551,50	40,662	10000,00	34,00
Mode		1 <sup>a</sup>	0 <sup>a</sup>	1,000	3000	60
Std. Deviation		372,911	35784,784	55,639	25279,702	16,156
Variance		139062,647	1280550801,702	3095,700	639063322,590	261,022
Skewness		3,973	6,585	2,570	1,459	,086
Std. Error of Skewness		,272	,272	,276	,272	,272
Kurtosis		18,249	49,224	7,987	1,399	-,734
Std. Error of Kurtosis		,538	,538	,545	,538	,538
Minimum		0	0	1,000	288	1
Maximum		2364	290324	312,279	100000	62
Sum		14504	906783	4328,587	1774615	2870
Percentiles	25	7,75	324,25	23,685	4962,50	28,00
	50	43,00	2551,50	40,662	10000,00	34,00
	75	212,50	9249,50	67,642	40000,00	53,25

a. Multiple modes exist. The smallest value is shown

Source: Authors

Tables 2 and 3 break down descriptive data into two groups of conducted crowdfunding campaigns, and compare descriptive data related to successful or unsuccessful crowdfunding campaigns.

**Table 2:** Descriptive statistics – successful campaigns

		Number of backers	Raised funds	Average investment per backer	Project goal	Project duration (in days)
N	Valid	28	28	28	28	28
	Missing	0	0	0	0	0
Mean		435,93	28298,93	57,960	12417,14	29,68
Std. Error of Mean		101,074	10642,244	8,125	2972,394	2,084
Median		235,00	9816,50	47,622	5850,00	30,00
Mode		188	327 <sup>a</sup>	20,682	10000	30

		Number of backers	Raised funds	Average investment per backer	Project goal	Project duration (in days)
Std. Deviation		534,831	56313,464	42,993	15728,430	11,029
Variance		286044,217	3171206262,735	1848,405	247383502,942	121,634
Skewness		2,460	4,083	2,190	1,954	-,353
Std. Error of Skewness		,441	,441	,441	,441	,441
Kurtosis		6,225	18,485	5,690	2,887	,061
Std. Error of Kurtosis		,858	,858	,858	,858	,858
Minimum		8	327	20,682	288	5
Maximum		2364	290324	214,325	60000	51
Sum		12206	792370	1622,886	347680	831
Percentiles	25	134,25	6095,25	29,732	3712,50	21,25
	50	235,00	9816,50	47,622	5850,00	30,00
	75	526,00	18942,00	66,768	10000,00	36,75
a. Multiple modes exist. The smallest value is shown						

Source: Authors

Table 2 shows that 28 crowdfunding campaigns were successfully implemented. On average, the campaigns were supported by 435.93 backers and raised an average of \$ 28,298.93, while a total of \$ 792,370 was raised. An average investment per backer amounted \$ 57.96, with the minimum of \$ 20.68 and a maximum of \$ 214.33. The project goal averaged \$ 12,417.14. The lowest project goal set for successful campaigns was \$ 288, while the highest was \$ 60,000. Successful campaigns lasted on average 29.68 days, whereby the shortest lasted 5 days and the longest lasted 51 days.

**Table 3:** Descriptive statistics – unsuccessful campaigns

		Number of backers	Raised funds	Average investment per backer	Project goal	Project duration (in days)
N	Valid	50	50	48	50	50
	Missing	0	0	2	0	0
Mean		45,96	2288,26	56,369	28538,70	40,78
Std. Error of Mean		10,203	584,336	8,987	3931,223	2,441
Median		12,50	631,00	35,289	19000,00	38,00
Mode		1 <sup>a</sup>	0 <sup>a</sup>	1,000	3000	60
Std. Deviation		72,149	4131,882	62,267	27797,947	17,263
Variance		5205,509	17072447,502	3877,145	772725853,398	298,012
Skewness		2,061	3,024	2,587	1,136	-,242
Std. Error of Skewness		,337	,337	,343	,337	,337
Kurtosis		3,588	9,493	7,655	,371	-,957
Std. Error of Kurtosis		,662	,662	,674	,662	,662
Minimum		0	0	1,000	650	1
Maximum		301	19888	312,279	100000	62



		Number of backers	Raised funds	Average investment per backer	Project goal	Project duration (in days)
Sum		2298	114413	2705,701	1426935	2039
Percentiles	25	3,00	122,75	20,587	5414,75	30,00
	50	12,50	631,00	35,289	19000,00	38,00
	75	47,25	2789,50	73,125	50000,00	60,00
a. Multiple modes exist. The smallest value is shown						

Source: Authors

According to the descriptive statistics of crowdfunding campaigns that were marked as unsuccessful (Table 3), it can be seen that 50 campaigns were not successfully implemented. Unsuccessful crowdfunding campaigns in total supported 2298 backers and the campaigns raised a total of \$ 114,413, with the mean of \$ 2,288.26. Average investment per backer was \$ 56.37. The project goal of the failed campaigns averaged \$ 28,538.70, and the sum of the set project goals of all the failed campaigns was \$ 1,426,935. Crowdfunding campaigns that did not collect the amount set as a project goal lasted an average of 40.78 days.

In view of the above data on successful and unsuccessful campaigns, the following can be concluded. The mean duration of the campaigns for successful campaigns is shorter than for unsuccessful campaigns (29,68 days vs. 40,78 days) and the mean project goal is lower for successful vs. unsuccessful campaigns (\$ 12417,14 vs \$ 28538,70). The results are in accordance with the results of Mollick (2014), Frydrych et al. (2014), Xu and Zhu (2018), Bilau and Pires (2018) and Šimić Šarić (2021). Furthermore, the average number of backers for successful campaigns in relation to unsuccessful campaigns is higher (435,93 vs. 45,96) as well as the average investment per backer (\$ 57,960 vs. \$ 56,369). The results are also in line with previously conducted research such as Kuppuswamy and Bayus (2015), Bilau and Pires (2018) and Frydrych et al. (2014).

#### 4.2. Testing the hypothesis

Hypothesis testing was performed using the Mann-Whitney U test, which tests whether successful and unsuccessful campaigns differ with regard to the values of individual characteristics or variables stated in the hypothesis. The Mann-Whitney U test is applied to two independent samples measured using a sequential scale (Pivac, 2010). If the sample is greater than 8 in each of the observed groups, a z-test can be used whose empirical value is calculated by the formula:  $z^* = \frac{|2 \cdot T_i - n_1 \cdot (n+1)| - 2}{\sqrt{\frac{n_1 \cdot n_2 \cdot (n+1)}{3}}}$ , where  $T_i$  is the sum of the ranks of one

sample,  $n_i$  is the number of subjects in the group in which the sum of ranks was taken,  $n$  is the total number of respondents in both samples. If  $|z^*| < z_{\text{tab}} \rightarrow H_0$  or if the empirical significance  $\alpha^* > 5\% \rightarrow H_0$ , there is no difference in the ranks in the selected samples.

**Table 4:** Mann-Whitney U test – ranks by campaign success

Ranks				
	Campaign success	N	Mean Rank	Sum of Ranks
Project goal	Unsuccessful campaign	50	44.94	2247.00
	Successful campaign	28	29.79	834.00
	Total	78		
Campaign duration	Unsuccessful campaign	50	44.70	2235.00
	Successful campaign	28	30.21	846.00
	Total	78		
Number of backers	Unsuccessful campaign	50	28.00	1400.00
	Successful campaign	28	60.04	1681.00
	Total	78		
Average investment (per backer)	Unsuccessful campaign	48	36.10	1733.00
	Successful campaign	28	42.61	1193.00
	Total	76		

*Source: Authors' presentation of data obtained by the SPSS*

Table 4 shows the rankings by each characteristic in terms of campaign success. The results show that unsuccessful campaigns have on average a higher project goal and a longer duration of the campaign. Successful campaigns, on the other hand, have more backers and have received more funds per backer. Follows a test of differences for each of the four factors observed with regard to campaign success.

**H1** There is a statistically significant difference between successful and unsuccessful campaigns with regard to the project goal.

**Table 5:** The results of Mann-Whitney U test with regard to the project goal

Test Statistics <sup>a</sup>	
	Project goal
Mann-Whitney U	428.000
Wilcoxon W	834.000
Z	-2.836
Asymp. Sig. (2-tailed)	.005
a. Grouping Variable: Campaign success	

*Source: Authors' calculations*

From Table 5 it can be seen that the empirical significance  $\alpha^* = 0.005 = 0.5\% \Rightarrow \alpha^* < 5\%$ , so it is concluded that hypothesis H1 is accepted, i.e. there is a statistically significant difference between successful and unsuccessful campaigns with respect to the project goal.

**H2** There is a statistically significant difference between successful and unsuccessful campaigns with regard to campaign duration.

**Table 6:** The results of Mann-Whitney U test with regard to campaign duration

Test Statistics <sup>a</sup>	
	Campaign duration
Mann-Whitney U	440.000
Wilcoxon W	846.000
Z	-2.731
Asymp. Sig. (2-tailed)	.006
a. Grouping Variable: Campaign success	

*Source: Authors' calculations*

According to Table 6, the marginal significance  $\alpha^* = 0.006 = 0.6\% \Rightarrow \alpha^* < 5\%$ , so it can be concluded that hypothesis H2 is accepted, i.e. that there is a statistically significant difference between successful and unsuccessful campaigns with regard to the duration of the campaign.

**H3** There is a statistically significant difference between successful and unsuccessful campaigns with regard to the number of backers.

**Table 7:** The results of Mann-Whitney U test with regard to the number of backers

Test Statistics <sup>a</sup>	
	Number of backers
Mann-Whitney U	125.000
Wilcoxon W	1400.000
Z	-5.991
Asymp. Sig. (2-tailed)	.000
a. Grouping Variable: Campaign success	

*Source: Authors' calculations*

According to Table 7, the marginal significance  $\alpha^* = 0.00 \Rightarrow \alpha^* < 5\%$ , so the conclusion is that hypothesis H3 is accepted, i.e. that there is a statistically significant difference between successful and unsuccessful campaigns with regard to the number of backers.

**H4** There is a difference between successful and unsuccessful campaigns with regard to the average investment per backer.

The last hypothesis tests whether campaigns differ in performance with regard to the average investment per backer. According to the test results in Table 5, the marginal significance  $\alpha^*$

$= 0.216 = 21.6\% \Rightarrow \alpha > 5\%$  thus which means that hypothesis H4 is rejected, i.e. it can be concluded that there is no statistically significant difference between successful and unsuccessful campaigns with regard to the average investment per backer. The obtained result can be seen as a consequence of a slightly small difference in the average investment per backer between successful and unsuccessful campaigns, and that's only \$ 1,591.

**Table 8:** The results of Mann-Whitney U test with regard to the average investment per backer

Test Statistics <sup>a</sup>	
	Average investment per backer
Mann-Whitney U	557,000
Wilcoxon W	1733,000
Z	-1,238
Asymp. Sig. (2-tailed)	,216
a. Grouping Variable: Campaign success	

*Source: Authors' calculations*

Acceptance of the null hypothesis can be supported by the fact that  $|z^*| = 1.238 < z_{tab} = 1.96$  and by calculating the marginal significance  $\alpha^* = 0.216 = 21.6\%$ , which is greater than 5%.

#### 4. Conclusion

Comparing the data on the success of campaigns in Croatia and in the world, it was found that campaigns launched in Croatia are moderately successful. Therefore, the question arose as to what the factors of campaign success are, i.e. whether successful and unsuccessful campaigns in Croatia are distinguished by the same characteristics that determine success as was established by similar previous research conducted abroad. Therefore, the paper presents four hypotheses that were tested by the Mann-Whitney U test and that each referred to one feature. Research results have confirmed that there is a statistically significant difference between successful and unsuccessful campaigns with regard to the set project goal, the duration of the campaign and the number of campaign backers. In other words, successful campaigns had a lower funding target, had a shorter fundraising period, and more backers. A statistically significant difference between successful and unsuccessful campaigns was not confirmed with regard to the average funding per backer and this hypothesis was rejected. Although descriptive data show that successfully implemented crowdfunding campaigns have larger donations per backer, the difference is so small that it is not statistically significant. Summarizing the results of the research, it can be concluded that the same factors influence the success of crowdfunding campaigns in Croatia in the same way as in other countries where previous research was conducted and where crowdfunding was analyzed.

Research on crowdfunding in Croatia has shown that crowdfunding is present as an alternative source of financing. However, given its level of development and realized potential, it is still in its infancy in comparison to global trends. There are three main reasons for the poor development of crowdfunding in Croatia. First, there is no single legal regulation that would unite the existing numerous existing legal acts on crowdfunding. Second, the

citizens' habits of using the Internet as they still, partly for fear of fraud, rarely use online payment methods and are, therefore, not familiar with the concepts and advantages of online financing. Lastly, some of the world's largest crowdfunding platforms are not available in Croatia, so to start a campaign on these platforms, an individual must open a company or at least a bank account in countries where these platforms are based. One of the reasons for the position of crowdfunding is the non-existence of a single legal act on crowdfunding that would unite all the numerous ones that exist.

This research and its conclusions should also be viewed in light of the limitations that existed during the analysis. These limitations are primarily related to the relatively small number of features used in the analysis. This issue could be addressed in the future research by including more variables like signaling variables (project comments and project updates), the use of video or picture, spelling errors or sentiment analysis of project. In addition, the suggestion for the further research is to use different statistical analysis, like multivariate or binary logistic regression. Furthermore, future research may focus on neighboring countries as well as on equity crowdfunding that is different and specific in relation to reward-based crowdfunding.

## REFERENCES

- Bago, A., Pilipović, O. (2016): *Skupno financiranje*, Zbornik radova Veleučilišta u Šibeniku, No. 3-4/2016, pp. 23-36.
- Bilau, J., Pires, J. (2018): *What drives the funding success of reward-based crowdfunding campaigns?*, Poslovna izvrsnost, No.2, pp. 27-40.
- Bouncken, R. B., Komorek, M., Kraus, S. (2015): *Crowdfunding: The Current State Of Research*, International Business & Economics Research Journal, 14, pp. 407-416.
- CEPOR (2020): *Izvešće o malim i srednjim poduzećima u Hrvatskoj – 2020. uključujući dio rezultata GEM – Global Entrepreneurship Monitor istraživanja za Hrvatsku za 2019. godinu*, Zagreb.
- Crosetto, P., Regner, T. (2014): *Crowdfunding: Determinants of success and funding dynamics*, Jena Economic Research Papers, pp. 1-24.
- Crowdfunding.hr <https://www.tportal.hr/tehnoclanak/rekordna-godina-hrvaticrowdfundingom-skupili-15-milijuna-kuna-foto-20180214> (accessed 10 December 2021)
- Cumming, D. J., Leboeuf, G., Schwienbacher, A. (2020): *Crowdfunding Models: Keep-It-All vs. All-Or-Nothing*, Financial Management, 49(2), pp.331-360.
- Čondić-Jurkić, I. (2015): *Crowdfunding – što znamo o alternativnom izvoru financiranja?*, Notitia – časopis za održivi razvoj No. 1, pp. 71-83.
- Fanea-Ivanovici, M., Siemionek-Ruskań, M. (2019): *A comparative analysis of crowdfunding in Poland and Romania*, in Proceedings of the International Conference on Business Excellence Vol. 13, No. 1, pp. 182-193.

Frydrych, D., Bock, A. J., Kinder, T., Koeck, B. (2014): *Exploring Entrepreneurial Legitimacy in Reward-Based Crowdfunding*, An International Journal of Entrepreneurial Finance, 16, pp. 247-269.

Fundly. com <https://blog.fundly.com/> (accessed 15 June 2021)

Knežević, D., Has, M. (2018): *Financiranje malih i srednjih poduzeća u Republici Hrvatskoj i usporedba s Europskom unijom*, Obrazovanje za poduzetništvo – E4E: znanstveno stručni časopis o obrazovanju za poduzetništvo No. 1, pp. 165-180.

Kostanić, A.M. (2022): *Stripe, poznati alat za procesiranje online plaćanja, konačno dostupan u Hrvatskoj*, Netokracija, <https://www.netokracija.com/stripe-konacno-dostupan-u-hrvatskoj-192114> (accessed 9 May 2022)

Kunz, M. M., Bretschneider, U., Erler, M., Leimeister, J. M. (2016): *An empirical investigation of signaling in reward-based crowdfunding*, Electronic Commerce Research, 17, pp. 425-461.

Kuppuswamy, V., Bayus, B. L. (2015): *Crowdfunding Creative Ideas: The Dynamics of Project Backers in Kickstarter*; A shorter version of this paper is in Hornuf, L. and Cumming, D. (ed.): *The Economics of Crowdfunding: Startups, Portals, and Investor Behavior* - 2017 Forthcoming.

Liu, C., Liu, J. (2016): *Antecedents of Success Rate of Award-Based Crowdfunding: The Case of the “Kickstarter”*, Modern Economy, 7, pp. 250-261.

Marelli, A., Ordanini, A. (2016): *What Makes Crowdfunding Projects Successful ‘Before’ and ‘During’ the Campaign?*, in: Brüntje, D. And Gajda, O., (ed.): *Crowdfunding in Europe - State of the Art in Theory and Practice*, Springer, pp 175-192.

Mollick, E. (2014): *The dynamics of crowdfunding: An exploratory study*; Journal of Business Venturing, 29, pp 1-16.

Pivac, S., (2010): *Statističke metode*, e-nastavni materijali, Ekonomski fakultet u Splitu, Split

Prohaska, Z., Olgić, B. (2005): *Programi financiranja malih i srednjih poduzeća u Republici Hrvatskoj*, Entrepreneurship and macroeconomic management, pp. 605-618.

Shneor, R., Vik, A. A. (2020): *Crowdfunding success: a systematic literature review 2010–2017.*, Baltic Journal of Management, Vol. 15, No. 2.

Shneor, R., Mrzygłód, U., Adamska-Mieruszewska, J., Fornalska-Skurczyńska, A. (2021). *The role of social trust in reward crowdfunding campaigns’ design and success*, Electronic Markets, pp 1-16.

Svidroňová, M. M., Vaceková, G., Plaček, M., Matulová, M., Hrůzová, L., Harringová, L. (2021): *Alternative non-profit funding methods: crowdfunding in the Czech Republic and Slovakia*, Applied Economics Letters, 28(9), pp748-754.

Šimić, I. (2019.) *Indienogo – kako će izuzimanje Hrvatske s ove platforme utjecati na domaće projekte?*, Netokracija, <https://www.netokracija.com/indiegogo-hrvatska-nije-podrzana-alternativa-162755>, (accessed 9 May 2022)

Šimić Šarić, M. (2021): *Determinants of crowdfunding succes in Central and Eastern European Countries*, Management: Journal of Contemporary Management Issues 26 (2), 99-113.

Xu, Y., Zhu, N. (2018): *Successful Factors and Prediction of Crowdfunding on WeChat*, American Journal of Industrial and Business Management, 8, pp. 946-962.

Yang, D., Zhang, X. (2016): *Review of the Domestic Crowdfunding Industry Development*, Journal of Service Science and Management, 9, pp. 45-49.

*A scientific paper*

**Zvonimira Šverko Grdić, Ph. D., Associate Professor**

University of Rijeka, Faculty of Tourism and Hospitality Management

E-mail address: zgrdic@fthm.hr

**Aleksandar Racz, Ph. D., Assistant Professor**

University of Applied Sciences, Zagreb

E-mail address: Aleksandar.racz@zvu.hr

**Renata Belas, M. Sc.**

University of Rijeka, Faculty of Tourism and Hospitality Management

E-mail address: ds3426@fthm.hr

## **TOWARDS CIRCULAR ECONOMY - A COMPARATIVE ANALYSIS OF THE COUNTRIES OF THE EUROPEAN UNION**

### ***ABSTRACT***

*Applying the concept of a circular economy promotes environmental protection and social well-being and enables economic growth consistent with sustainable development. A circular economy can reduce environmental degradation, but also increase the creation of a new value. The economic disruption caused by the 2020 pandemic has reinforced the consideration of a more urgent transition to the concept of sustainable consumption and production, which is closely linked to the concept of the circular economy. For this transition, among other important elements, it is necessary to provide financial resources that allow a faster and easier transition to a new way of doing business. The current linear method of production at all stages of production consumes energy, is based on the laws of "take out - make - use - throw away" and is an unsustainable method of production. The circular economy allows for an economic system in which raw materials circulate and are transformed from one form to another, producing no or minimal amounts of waste. The idea of the circular economy concept developed from an understanding of the negative environmental impacts of the current linear method of production. The aim of this article is to analyse the success of the application of the circular economy model in the countries of the European Union. Using Eurostat data and statistical analysis, the paper examines which countries are more successful in implementing the circular economy model. The results of the study show that countries that are more economically developed (in terms of higher GDP) and have a stronger environmental awareness have better indicators for the implementation of the circular economy.*

**Key words:** *Circular economy, European Union, analysis, financing.*

### **1. Literature review**

The introduction of the circular economy arose in response to the need to eliminate the shortcomings of the existing linear management system. In contrast to the linear mode of production, circular economy systems preserve the added value of products for as long as possible and aim to avoid waste generation. The concept of circular economy has been studied



since the 1970s. More important observations were made by authors Pearce and Turner, who studied the impact of natural resources on the economic system and the implications for linear and open perspectives (Ghisellini, Cialani, Ulgati, 2016, 26). Such considerations were influenced by the author Bouding (1966), who studied the Earth as a closed, circular system with limited assimilative capacity and concluded that the economy and the environment should coexist in equilibrium (Geissdoerfer, Savaget, Bocken, Hultink, 2017, 759). Authors Stahel and Reday (1976) listed certain characteristics of the circular economy, focusing on the industrial economy. They envisioned the economy as a closed loop in which materials circulate and thus: prevent the generation of waste, create new jobs, achieve resource efficiency, and dematerialize the industrial economy. Author Stahel (1982) emphasized that using the concept of use instead of ownership of goods is the most relevant sustainable business model for a circular economy, allowing industry to make profits without externalizing the costs and risks associated with waste (Geissdoerfer, Savaget, Bocken, Hultink, 2017, 759). At the very beginning, the concept of circular economy included the 3Rs principle (reduce, reuse, recycle), and in new approaches (now) it includes the 6Rs principle (reuse, recycle, transform, recycle, reduce, recover) (Jawahir, Bradley, 2016, 105).

In addition to the scientific community, this concept has also gained the attention of stakeholders who create laws and make decisions, and thus can influence governments and international agencies at the local, regional, national, and international levels in promoting a new concept for the functioning of the economy (Geisendorf, Pietrulla, 2017, 772, Bocken, et al., 2017, 480). The circular economy is defined in different ways. The two most commonly cited definitions of the circular economy are: "The centre of the circular economy is the circular (closed) flow of materials and raw materials and energy use through multiple stages" (Franklin-Johnson, Figgie, Canning, 2016, 591). Another definition states that it is "an economy based on a spiral cycle or system that minimizes degradation of matter, energy flow, and the environment without limiting economic growth or social and technical progress" (Geng et al., 2008, 997). The Ellen MacArthur Foundation (2019, 19) describes the circular economy as "an industrial economy that is renewable or regenerative in design or other purpose." The author Webster (2017, 33) says that the circular economy aims to create products, components, and materials that one of the main principles of the circular economy is "waste is food," which means that all materials and products that have been used and have reached the end of their life can be reused as inputs for the production of new products (Tukker, 2013, 80, Van Weelden, Muggie, Bakker, 2016, 740). Although the idea of introducing the concept of circular economy is widely used in EU documents and laws, the assessment of progress varies depending on the author (EASAC, 2016; Haupt et al. 2017, 620; Kovanda 2014, 82; Hashimoto et al. 2009, 2860; Yuan et al., 2006, 5). Most research on progress in implementing the circular economy concept has focused on individual products or specific parts of the production process, and opinions on the possibility of progress have formed accordingly (Huysman et al. 2017, 50). For some elements of the production cycle, the knowledge base has actually improved in recent years (BIO by Deloitte 2015, 21; Cullen and Allwood 2013, 3060; Graedel et al. 2013, 6297; Reck et al. 2012, 692, Wang et al. 2007, 5122). As well as for the possibility of implementing the circular economy concept in an individual company or industry (Pauliuk 2018, 150; Lieder and Rashid 2016, 40). However, comprehensive estimates of the circular economy at the national or macro level are very rare (Nuss et al. 2017, 23; Haas et al. 2015, 770; Hashimoto et al. 2004, 215).

## 2. Application of the circular economy in the European Union

Based on the Single Market and the possibilities of digital technology, the Circular Economy can renew the industrial base of the European Union and stimulate business creation and entrepreneurship. Innovative models based on closer customer relationships, mass personalization, the sharing and collaboration economy, and digital technologies will accelerate the transition to a circular economy, dematerialize the economy, and reduce Europe's dependence on raw materials. In addition, the circular economy will bring citizen's high quality, functional and safe products that are efficient, affordable, last longer and can be reused, repaired and recycled to a high quality. Through its legislative activity, the European Union establishes the principles of sustainability and other principles to regulate the following aspects:

- Improve the durability of products and the ability to reuse, upgrade, and repair them; address the presence of hazardous chemicals in products; and increase the energy and resource efficiency of products;
- Increasing the percentage of recycled content in products and ensuring their efficiency and safety;
- Enabling re-production and high quality recycling;
- Reducing carbon footprint and environmental impact;
- Limiting single use and preventing premature obsolescence of products;
- Introducing a ban on the destruction of unsold durable goods;
- Promoting the "product as a service" model or other models in which producers retain ownership of the product or responsibility for its functionality throughout its life cycle;
- Mobilizing the potential for digitization of product information, including solutions such as digital passports, labels, and watermarks;
- Rewarding products based on their sustainability performance levels, including linking high performance levels to incentives.

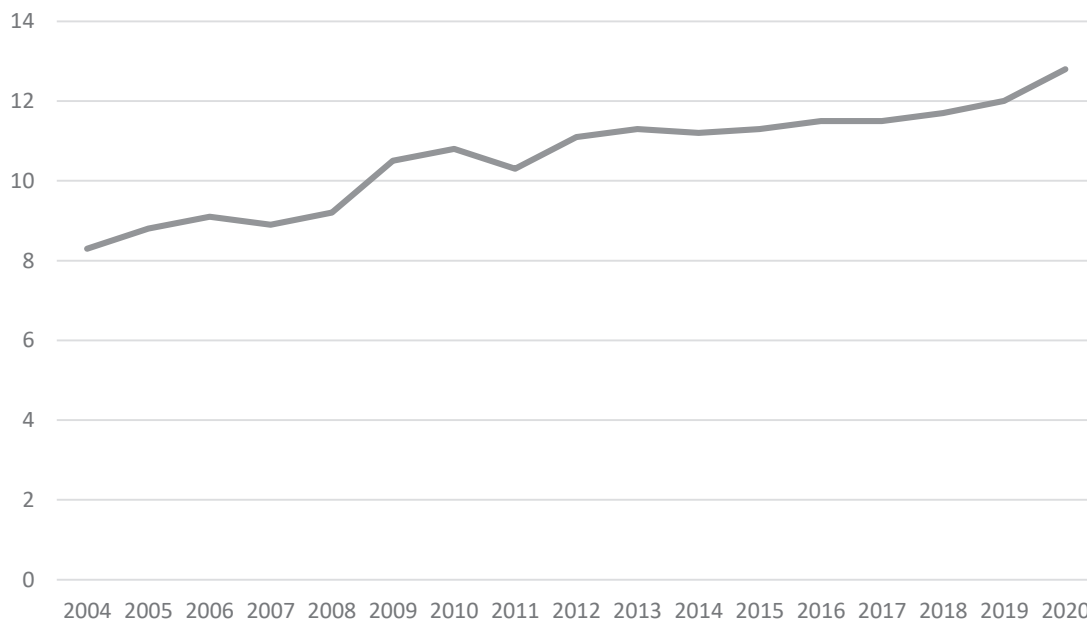
These aspects aim to motivate manufacturers and companies to adopt new business models. Above all, it is extremely important to raise awareness of the importance of sustainability. Indeed, knowledge can be the driving force. The goal of creating a green business and a circular economy should not be the fear of paying fines for not complying with regulations and laws, but the goal is to raise awareness and open new perspectives for a better future for everyone. Every project starts with small steps, just as one individual brings about a change that ultimately transforms the entire economy and industry. The European Union is an excellent catalyst in this process and aims to achieve even better competitiveness through the transition.

Circular economy and sustainability must be embedded in all stages of the value chain to achieve a full circular economy: from design to production to consumer. The transition to a circular economy requires new materials and products with new designs, new technologies and production processes. Using less material while providing the same or greater product benefits is an important part of the transition to the circular economy. It also requires replacing materials with a high environmental impact, such as concrete, with materials with a lower environmental impact, such as those made from renewable bio-based sources. However, it is not just about materials; innovations in new workplaces and management models are equally important. Entire value chains and material flows must become circular. Information about the environmental performance of products can enable consumers to increase demand for sustainable solutions. Value chain data will facilitate circular

collaboration and increase efficiency. Research and innovation are critical to fill knowledge gaps and develop specific technological solutions.

Since there was no single summary indicator for the circular economy at the macroeconomic level, Eurostat developed a new indicator for the EU monitoring framework for the circular economy. This new indicator is called the circular economy rate and measures the contribution of recycled materials to total material consumption. The circular economy rate is the share of material resources used in the EU from recycled products and materials, avoiding the extraction of primary raw materials. A higher circular rate means that more secondary materials replace primary raw materials, reducing the environmental impact of primary material extraction. In 2020, the EU-27 circular rate was 12.8%, slightly higher than the previous year and 4.5 percentage points higher than 2004, the first year for which data are available.

**Graph 1:** Circular material use rate EU-27, 2004-2020 (%)



Source: Eurostat, *Material Flows in Circular Economy*,  
[https://ec.europa.eu/eurostat/databrowser/view/cei\\_srm030/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/cei_srm030/default/table?lang=en) (accessed at: 24. February 2022.)

The circular material use rate is lower than other circular economy indicators, such as the recycling rate, which is about 56% in the EU-27. This is because some types of materials cannot be recycled, such as fossil fuels that have been burned to generate energy. Examples of materials that are calculated as part of the recycling rate include food, feed, and fossil fuels used for energy production or materials use - e.g., plastics, buildings, infrastructure, and vehicles. Only some of these materials end up as waste at the end of their life cycle and are therefore calculated based on recycling rates. A higher recycling rate can be achieved in a variety of ways, from increasing recycling rates to using more efficient production technologies or by extending product life. Similar to recycling rates, there is wide variation by material category in the recycling rate. In 2019, the recycling rate in the EU-27 was 24% for metal ores, 15% for non-metallic minerals (including glass), 9% for biomass (including paper, wood, fabric, etc.), and less than 3% for fossil fuels (including plastics and fossil fuels). Fossil fuels are less suitable for recycling because they are mainly used for energy purposes, which means that they are converted into emissions that are further released into the air. However,

great strides can be made in recycling plastics. Biomass is also partly unsuitable for recycling (e.g. food and feed or wood for energy purposes), but progress is possible through the reduction of food waste, recycling of natural materials, etc.

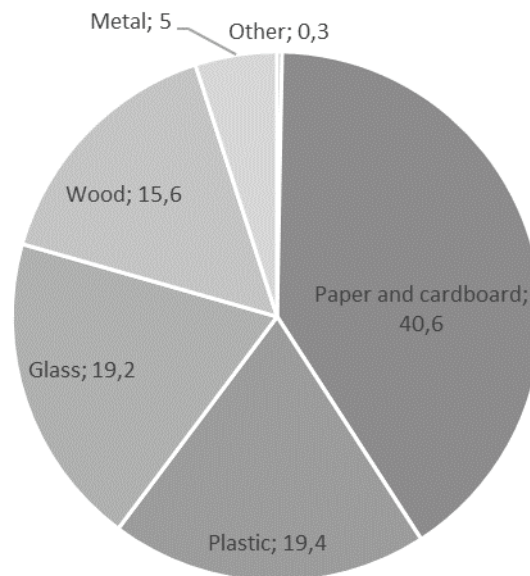
**Table 1:** Circular material use rate, 2010-2020 (in %)

Countries	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Rate of growth 10/20
EU-27	10,8	10,3	11,1	11,3	11,2	11,3	11,5	11,5	11,7	12	12,8	1,7%
Belgium	13	14	16,9	16,8	17,6	17,7	17,6	18,5	19,9	23,5	23	5,9%
Bulgaria	2,1	1,8	1,9	2,5	2,7	3,1	4,4	3,5	2,5	2,3	2,6	2,1%
Czech	5,3	5,4	6,3	6,7	6,8	6,9	7,5	9,1	10,5	11,3	13,4	9,7%
Denmark	8	7	6,4	7,7	9	8,3	8	7,9	8,1	7,6	7,7	-0,38%
Germany	11,4	10,8	11,2	11,3	11,3	12	12,2	11,8	12,4	12,9	13,4	1,6%
Estonia	8,8	14,2	19,1	14,6	10,9	11,3	11,6	12,4	13,5	15,6	17,3	6,9%
Ireland	1,7	2,1	1,8	1,7	2	1,9	1,7	1,7	1,6	1,6	1,8	0,6%
Greece	2,7	2,2	1,9	1,8	1,4	1,9	2,3	2,8	3,3	4,1	5,4	7,1%
Spain	10,4	9,8	9,8	8,9	7,7	7,5	8,2	8,8	9	9,6	11,2	0,7%
France	17,5	16,8	16,9	17,3	17,8	18,7	19,4	18,8	19,7	20	22,2	2,4%
Croatia	1,6	2,4	3,6	3,9	4,8	4,6	4,6	5,2	5	5,2	5,1	12,2%
Italy	11,5	11,6	13,9	16	16,1	17,2	17,8	18,4	18,8	19,5	21,6	6,5%
Cyprus	2	1,9	2	2,4	2,2	2,4	2,4	2,4	2,8	2,9	3,4	1%
Latvia	1,2	2,9	1,3	3,8	5,3	5,3	6,5	5,4	4,7	4,3	4,2	13,3%
Lithuania	3,9	3,6	3,8	3,1	3,7	4,1	4,6	4,5	4,3	3,9	4,4	1,2%
Luxembourg	24,1	20,7	18,5	15,4	11,3	9,7	7,1	10,6	10,8	10,5	13,6	-5,9%
Hungary	5,3	5,4	6,1	6,2	5,4	5,8	6,5	6,9	7	7,3	8,7	5%
Malta	5,3	4,5	3,9	6,3	6,4	4,6	4,2	6,5	8,3	7,7	7,9	4,1%
Netherlands	25,3	25	26,5	27,1	26,6	25,8	28,5	29,7	28,9	30	30,9	2,0%
Austria	6,6	6,8	7,5	8,7	9,6	10,7	11,2	11,4	11,1	11,5	12	6,2%
Poland	10,8	9,2	10,6	11,8	12,6	11,6	10,2	9,9	9,8	10,3	9,9	-0,87%
Portugal	1,8	1,7	2	2,5	2,4	2,1	2,1	2	2,2	2,3	2,2	2%
Romania	3,5	2,5	2,6	2,5	2,1	1,7	1,7	1,7	1,5	1,3	1,3	-9,42%
Slovenia	5,9	7,6	9,3	9,3	8,5	8,6	8,7	9,8	10	11,4	12,3	7,6%
Slovakia	5,1	4,8	4,1	4,6	4,8	5,1	5,3	5	4,9	6,4	6,4	2,3%
Finland	13,5	14	15,3	10,1	7,3	6,4	5,3	5,6	5,9	6,3	6,2	-7,5%
Sweden	7,2	7,6	8,2	7,2	6,4	6,7	6,8	6,7	6,6	6,5	7,1	-0,14%
United Kingdom	14	13,8	14	14	14	15	15,7	15,7	16	16,4	-	-

Source: Eurostat, *Material Flows in Circular Economy*,

[https://ec.europa.eu/eurostat/databrowser/view/cei\\_srm030/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/cei_srm030/default/table?lang=en) (accessed at: 24. February 2022.)

Countries that have achieved the highest growth rates in the period 2010-2020. are: Latvia, Croatia, Czech Republic and Greece. But in countries like Romania and Luxembourg this indicator has decreased. In 2020, the circular material use rate was highest in the Netherlands (30.9%), followed by Belgium (23%) and France (22.2%). The lowest rates were recorded in Romania (1.3%), followed by Ireland (1.8%) and Portugal (2.2%). The differences in circular material use rate across Member States are not only due to the level of recycling in each country, but also to structural factors in the economies. The circular material use rate is high when the amount of waste recycled is large. However, the circular material use rate can also be high when domestic consumption of materials is low, i.e., materials consumed by the government. This, in turn, is the case when exports of materials for domestic use are low, imports of materials for domestic use are low, or exports of domestically sourced materials are high.

**Graph 2:** Packaging waste generated by packaging material EU-27, 2019

Source: Eurostat, Packaging waste statistics, [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Packaging\\_waste\\_statistics#Waste\\_generation\\_by\\_packaging\\_material](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Packaging_waste_statistics#Waste_generation_by_packaging_material) (accessed at: 24. February 2022.)

In 2019, packaging waste in the EU was estimated at 177.44 kg per capita. This amount varied from 74 kg per capita in Croatia to 228 kg per capita in Ireland. The graph shows that in 2019, "paper and cardboard" (40.6%), plastic (19.4% each) and glass (19.2%), wood (15.6%) and metal (5%) were the most common types of packaging waste in the EU. Other materials account for less than 0.3% of the total amount of packaging waste generated in 2019.

The Packaging Waste Directive sets the following targets: at least 60% recovery (including waste incineration); between 55% and 80% of packaging waste to be recycled, with minimum quotas of 60% for glass, paper and cardboard, 50% for metals, 22.5% for plastics and 15% for wood (Directive of European Parliament, <https://eur-lex.europa.eu/legal-content/HR/LSU/?uri=CELEX:31994L0062>). These targets are calculated by weight by dividing the amount of packaging waste recycled by the total amount of packaging waste produced. The recycling rate for plastic packaging waste counts only the material that is recycled back into plastic. The rates for the use and recycling of all packaging waste in 2018 in EU member states are shown in the table below. Belgium has the highest recycling rate of 84.2%.

**Table 2:** Recovery and recycling rates for packaging waste, 2018-2019 (%)

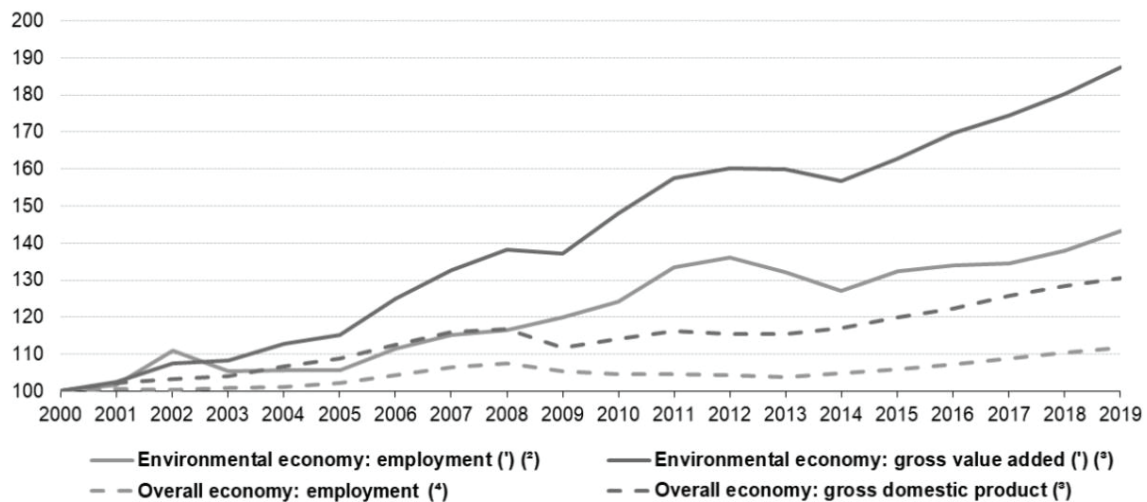
Countries	Recovery rate		Recycling rate	
	2018	2019	2018	2019
EU-27	80.9	80.7	66.3	64.8
Belgium	99.6	99.5	85.3	84.2
Bulgaria	60.5	-	60.4	-
Czech	73.9	75.5	69.6	71.2
Denmark	88.2	71.1	67.7	71.2
Germany	96.9	94.9	68.5	63.2
Estonia	86.5	99.8	60.4	66.2
Ireland	90.9	94.4	63.9	62.5
Greece	71.6	60.1	68.6	60.1
Spain	74.5	75.5	68.8	69.6
France	76.8	77.9	65.7	65.6
Croatia	58.4	48.9	58.4	48.9
Italy	77.6	79.1	68.3	69.6
Cyprus	70.1	70.2	70.2	66.8
Latvia	64.3	65.5	55.8	62.4
Lithuania	68.4	70.5	60.7	61.9
Luxembourg	94.1	94.3	70.9	71.5
Hungary	55.1	56.3	46.1	47.3
Malta	35.6	-	35.6	-
Netherlands	95.5	95.3	78.1	80.7
Austria	94.4	95.4	65.5	65.4
Poland	63.4	59.9	58.7	55.5
Portugal	66.5	72	57.6	62.8
Romania	60.0	-	57.9	-
Slovenia	75.3	80	70.1	67.1
Slovakia	69.1	69.7	66.6	67.5
Finland	114.6	115.1	70.2	70.6
Sweden	70.9	62.4	70.1	63.6
United Kingdom	68.2	-	62.1	-
Iceland	63.2	-	48.8	-
Liechtenstein	92.7	93.1	68.0	70
Norway	94.2	97.3	52.9	53.9

Source: Eurostat, <https://ec.europa.eu/eurostat/databrowser/view/ten00062/default/table?lang=en> (accessed at: 25. February 2022.)

The table shows the percentage of uses for all packaging waste in 2018 and 2019, with recycling being the main form of processing in all countries. A comparison of these two years shows that the recycling rate in countries such as Estonia and Portugal has increased, while the same rate has decreased in countries such as Denmark, Greece, Croatia and Sweden. Recycling rates have decreased in countries such as Greece and Croatia.

Eurostat estimates that employment in the EU-27 environmental economy increased from 3.1 million full-time equivalents in 2000 to 4.4 million full-time equivalents in 2018. The environmental economy generated €756 billion in output and €307 billion in gross value added in 2018. Between 2000 and 2019, employment and gross value added in the environmental economy grew faster than in the overall economy (Eurostat, Environmental economy).

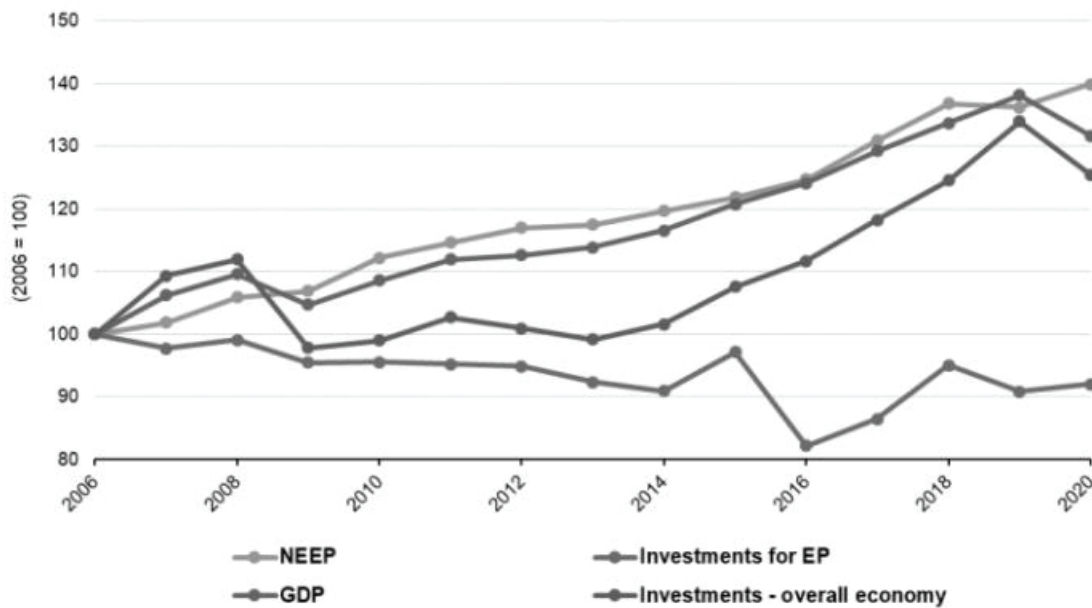
**Graph 3:** Development of key indicators for the environmental economy and the overall economy, EU – 27 2000-2018



Source: Eurostat, *Environmental economy*, [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental\\_economy\\_%E2%80%93\\_statistics\\_on\\_employment\\_and\\_growth#Development\\_of\\_key\\_indicators\\_for\\_the\\_environmental\\_economy](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental_economy_%E2%80%93_statistics_on_employment_and_growth#Development_of_key_indicators_for_the_environmental_economy) (accessed at: 25. February 2022.)

The first decade of the millennium was a period of near-constant job creation in the green economy. Employment grew at an average annual rate of 2%. The decline in employment in 2003 was an exception to the growth period that ended in 2012. From 2012 to 2014, the number of jobs declined for two consecutive years. Since then, employment has rebounded; reaching levels in 2019 and it is higher than in any of the previous years.

Between 2000 and 2019, the environmental economy outperformed the overall economy in terms of employment and value added. Even in 2009, when the financial crisis led to a 5% decline in GDP, gross value added from the production of environmental goods and services remained relatively stable. After the crisis, the environmental economy experienced strong growth until 2011 and remained stable in the following three years. Since 2014, the gross value added of the environmental protection sector has been growing at an average of 6% per year, which is a higher growth rate than GDP during this period ([https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental\\_economy\\_%E2%80%93\\_statistics\\_on\\_employment\\_and\\_growth#Development\\_of\\_key\\_indicators\\_for\\_the\\_environmental\\_economy](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental_economy_%E2%80%93_statistics_on_employment_and_growth#Development_of_key_indicators_for_the_environmental_economy)).

**Graph 4:** Key environmental protection and economic indicators, EU – 27, 2006-2020

Source: Eurostat, Environmental protection, [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental\\_protection\\_expenditure\\_accounts#Key\\_indicators\\_for\\_environmental\\_protection](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental_protection_expenditure_accounts#Key_indicators_for_environmental_protection) (accessed 2. April 2021)

National expenditure on environmental protection (NEEP) measures the resources used by population units to protect the natural environment in a given period. It is calculated as the sum of current expenditures for environmental protection (EP) and investments for EP activities, including net transfers to the rest of the world. Eurostat estimates that EU-27 environmental expenditures, as measured by the NEEP aggregate, have increased by 40% from 2006 to 2020, following the general trend of gross domestic product (GDP).

During the observed period (2006-2020), national expenditure in environmental protection decreased by 8%. The trend observed in national expenditure is quite different from that observed in total investment in the economy, especially for certain years (such as 2009, 2012, and 2020). The financial crisis in 2009 seems to have hit total investment in the economy much harder than environmental investment.

### 3. Analysis implementation in European Union

The concept of a circular economy is much discussed in the European Union, but so far, only limited progress has been made in its implementation. Significant efforts need to be made to keep the concept afloat. Between 2012 and 2018, the number of jobs related to the circular economy in the EU increased by 5% to around 4 million. It is reasonable to assume that the circular economy will have a positive impact on the creation of new jobs, but the conditions must be created to ensure that workers master the skills required for a green transition. To accelerate the transition, specific measures are needed to focus funding on more sustainable production and consumption patterns.

The Commission has adopted a Circular Economy Action Plan to move the European Union toward a more sustainable model of economic development (Action plan for Circular Economy). The action plan considers the entire product life cycle and takes a systemic approach that promotes partnerships along the value chain and across sectors. In addition, the



action plan includes a balanced combination of voluntary initiatives and regulatory measures in the areas of production, consumption, waste management and secondary raw materials. It also identifies five priority sectors: Plastics, Food Waste, Biomass and Biomass-based Products, Critical Raw Materials, and Construction and Demolition.

What stands out most is the scope of positive impacts on society as a whole. It offers the opportunity to make the economy sustainable and more competitive. This benefits European businesses, industries and citizens such as (Circular Economy, Eurostat):

- More innovative and efficient ways of production and consumption;
- Protection of businesses from resource scarcity and variable prices;
- Opportunities for local jobs and social inclusion;
- Optimization of waste management, improving recycling and reducing landfills;
- Energy savings, as fewer production processes require less energy;
- Environmental benefits in terms of climate and biodiversity, air, soil and water pollution.

On March 11, 2020, the European Commission adopted a new action plan for the circular economy - one of the main components of the European Green Agreement, a new European agenda for sustainable growth (Circular Economy, Eurostat). The new action plan points to initiatives throughout the product lifecycle and focuses on design, promoting circular economy processes, encouraging sustainable consumption, and striving to keep the resources used in the EU economy for as long as possible. In addition, the circular economy is closely linked to the EU's climate and energy goals and the Commission's Clean Energy for All Europeans package. The circular economy is also key to supporting the EU's sustainability commitments, as highlighted in the Communication "Next Steps for a Sustainable European Future", and in particular to achieving Sustainable Development Goal 12 on "Responsible Consumption and Production" (Circular Economy, Eurostat). The Circular Economy Action Plan details actions for (SDG Knowledge Hub):

- Make sustainable products the norm in the EU, for example by limiting single-use products and ensuring that products on the EU market last longer, are easier to reuse, repair and recycle, and contain as much recycled material as possible;
- Empower consumers by providing access to reliable product information at the point of sale, including product lifespan;
- Focus on the most resource-intensive high-potential sectors, including electronics and information and communications technology (ICT), batteries and vehicles, packaging, plastics, textiles, construction and buildings, and food;
- In addition, ensure less waste by transforming it into high-value secondary resources and taking action to reduce waste exports to the EU and combat illegal shipments.

Consumer information is one of the most important factors influencing the behaviour of people themselves. Raising awareness of the importance of negative consequences can greatly change the future. As a result, each project is strengthened and positive changes become visible.

#### **4. Funding and transitional aid**

The European Parliament and the Council have reached a preliminary agreement on the LIFE environment and climate program, which is part of the next long-term EU budget 2021-2027. The funding will focus on protecting the environment and mitigating climate change, and will

support the transition to clean energy with increased energy efficiency and a higher share of renewable energy. This will be one of the tools that will enable the EU to meet its climate targets and become climate neutral by 2050. To ensure a better quality of life for Europeans and invest in a more sustainable future, efforts will be made to protect the environment and the climate, in particular by increasing funding from LIFE and integrating climate action into all major EU spending programs. This will help Europe meet its commitments under the Paris Agreement and the United Nations Sustainable Development Goals and address some of the most important challenges of this century. Key elements of the new program LIFE (2021-2027) include (European Commission):

- Continued support for the transition to a circular economy and improved climate change mitigation. This includes financing the achievement of policy milestones in line with the EU's strategic long-term vision for a prosperous, modern, competitive and climate-neutral economy by 2050. Actions will support the full transition to a circular economy, the protection and improvement of EU air and water quality, the implementation of the EU's 2030 energy and climate policy framework, and the fulfilment of the Union's commitments under the Paris Agreement on climate change.
- Increased focus on supporting the clean energy transition. The new specific sub-program will stimulate investments and support activities targeting energy efficiency and renewable energy sources, especially for sectors and European regions lagging behind in the transition to clean energy.
- Increased focus on nature and biodiversity. The traditional part of LIFE, the new 'Strategic Nature Projects' dedicated to all Member States, will help integrate nature and biodiversity policy objectives into other funding policies and programs, such as agriculture and rural development, and ensure a more coherent approach across sectors.

LIFE program funds innovative projects that demonstrate the effectiveness of new techniques and methods in the environmental field. In addition to so-called "traditional" projects, LIFE also funds "integrated" projects that combine LIFE funds with other sources of support to maximize their impact in large areas. LIFE Projects may also provide technical assistance, strengthen capacity building, and conduct preparatory activities for the development of European environmental legislation. In addition, LIFE supports the European Solidarity Corps initiative, which provides opportunities for young people to engage in environmental and social activities. In addition, the LIFE program is divided into two subprograms: Environmental Protection and Climate. The Environment subprogram includes three main sectors (Environment and Resource Efficiency, Nature and Biodiversity, and Environmental and Information Management), and each of the subprograms includes different thematic priorities. The Climate Policy subprogram includes three main sectors: climate change mitigation, climate change adaptation, and climate management and information.

One of the subprograms of the Circular Economy and Quality of Life aims to facilitate the transition to a sustainable, circular, non-toxic, energy-efficient, and climate-resilient economy, and to protect, restore, and enhance the quality of the environment, either through direct interventions or by supporting integration with other policies. LIFE therefore co-finances projects in the environmental sector, particularly in the area of circular economy, including resource recovery from waste, water, air, noise, soil, and chemical management, and environmental management. The subprogram primarily provides grants to projects that implement innovative and best practice solutions in these areas through so-called Standard

Action Projects. It also covers the implementation, monitoring and evaluation of EU environmental policy and legislation through so-called strategic integrated projects.

## 5. Conclusion

The overall importance of the circular economy will not reach its potential if the entire waste management system does not fulfil its tasks, in which all collected resources are recycled and implemented into the circular system. In addition to all the future benefits of implementing the circular economy, there is also the advantage of avoiding the legislation that countries use to correct companies to reduce emissions, pollution and other harmful effects, which are severely punished for violations. Moreover, the circular economy offers a perfect symbiosis between ecology and economy, whose final products are extremely favourable for the possibility of creating greater competitiveness in the international market. Thus, the circular economy aims to completely change the way we observe and perceive the elements around us. Waste can truly become a new resource that will change the future.

At the level of the European Union as a whole, the indicator for the use of recycled material shows positive signs from year to year. However, there are different levels of implementation of the circular economy in the European Union. Countries that have achieved the highest growth rates in the period 2010-2020. are: Latvia, Croatia, Czech Republic and Greece. But in countries like Romania and Luxembourg this indicator has decreased. In 2020, the circular material use rate was highest in the Netherlands (30.9%), followed by Belgium (23%) and France (22.2%). The lowest rates were recorded in Romania (1.3%), followed by Ireland (1.8%) and Portugal (2.2%). The European Union is here to provide guidelines according to which each country or company should best adapt its business to better development. Besides, of course, it is necessary to raise the awareness and desire of citizens to get involved in the application of the circular economy by more actively implementing some of the environmental initiatives such as waste recycling, waste separation, energy saving and the like.

## REFERENCES

Action plan for circular economy, <https://eur-lex.europa.eu/legal-content/HR/TXT/HTML/?uri=CELEX:52020DC0098&from=CS>

BIO by Deloitte (2015): *Study on Data for a Raw Material System Analysis: Roadmap and Test of the Fully Operational MSA for Raw Materials*, Prepared for the European Commission, DG GROW, Available on: [https://ec.europa.eu/assets/jrc/msa/images/msa\\_final\\_report.pdf](https://ec.europa.eu/assets/jrc/msa/images/msa_final_report.pdf)

Bocken, N.M.P., Olivetti, E.A., Cullen, J.M., Potting, J., Lifset, R. (2017): *Taking the circularity to the next level: A special issue on the circular economy*, Journal of Industrial Ecology, Vol. 21, pp. 476–482, doi:10.1111/jiec.12606.

Cullen, J.M. i Allwood, J.M. (2013): *Mapping the global flow of aluminium: From liquid aluminium to end-use goods*, Environmental Science and Technology, Vol. 47, pp. 3057–3064, doi:10.1021/es304256s.

Directive of European parliament, <https://eur-lex.europa.eu/legal-content/HR/LSU/?uri=CELEX:31994L0062>

EASAC. (2016): *Indicators for a Circular Economy*. EASAC, ed.; EASAC Policy Report 30; Deutsche Akademie der Naturforscher Leopoldina: Halle (Saale), Germany, 2007., pp. 25-57.

Ellen MacArthur Foundation. (2013): *Towards the Circular Economy: Economic and Business Rationale from an Accelerated Transition*; Available on: <https://www.ellenmacarthurfoundation.org/assets/downloads/publications/Ellen-MacArthur-Foundation-Towards-the-Circular-Economy-vol.1.pdf>

European Commission, [https://ec.europa.eu/commission/presscorner/detail/en/IP\\_19\\_1434](https://ec.europa.eu/commission/presscorner/detail/en/IP_19_1434)

Eurostat, Circular Economy, <https://ec.europa.eu/eurostat/web/circular-economy>

Eurostat, Environmental economy, [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental\\_economy\\_%E2%80%93\\_statistics\\_on\\_employment\\_and\\_growth#Development\\_of\\_key\\_indicators\\_for\\_the\\_environmental\\_economy](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental_economy_%E2%80%93_statistics_on_employment_and_growth#Development_of_key_indicators_for_the_environmental_economy)

Eurostat, Environmental protection, [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental\\_protection\\_expenditure\\_accounts#Key\\_indicators\\_for\\_environmental\\_protection](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental_protection_expenditure_accounts#Key_indicators_for_environmental_protection)

Eurostat, <https://ec.europa.eu/eurostat/databrowser/view/ten00062/default/table?lang=en>

Eurostat, [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental\\_economy\\_%E2%80%93\\_statistics\\_on\\_employment\\_and\\_growth#Development\\_of\\_key\\_indicators\\_for\\_the\\_environmental\\_economy](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Environmental_economy_%E2%80%93_statistics_on_employment_and_growth#Development_of_key_indicators_for_the_environmental_economy)

Eurostat, Material Flows in Circular Economy, [https://ec.europa.eu/eurostat/databrowser/view/cei\\_srm030/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/cei_srm030/default/table?lang=en)

Eurostat, Packaging waste statistics, [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Packaging\\_waste\\_statistics#Waste\\_generation\\_by\\_packaging\\_material](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Packaging_waste_statistics#Waste_generation_by_packaging_material)

Franklin-Johnson, E.L., Figge, F., Canning, L. (2016): *Resource duration as a managerial indicator for Circular Economy performance*, Journal of Cleaner Production, Vol. 133, pp. 589–598, doi:10.1016/j.jclepro.2016.05.023.

Geisendorf, S. i Pietrulla, F. (2018): *The circular economy and circular economic concepts: A literature analysis and redefinition*, Thunderbird International Business Review, Vol. 60, pp. 771–782, doi:10.1002/tie.21924.

Geissdoerfer, M., Savaget, P., Bocken, N.M.P., Hultink, E.J. (2017): *The Circular Economy—A new sustainability Paradigm*, Journal of Cleaner Production, Vol. 143, pp. 757–768, doi:10.1016/j.jclepro.2016.12.048.

Geng, Y., Zhu, Q., Doberstein, B., Fujita, T (2008): *Implementing China's Circular Economy Concept at the Regional Level: A Review of Progress in Dalian, China*, Waste Management, Vol. 29, pp. 996–1002, doi:10.1016/j.wasman.2008.06.036.

- Ghisellini, P., Cialani, C., Ulgiati, S. (2016): *A review of circular economy: The expected transition to a balanced interplay of environmental and economic systems*, Journal of Cleaner Production. Vol. 114, pp. 11–32, doi:10.1016/j.jclepro.2015.09.007.
- Graedel, T.E., Harper, E.M., Nassar, N.T., Reck, B.K. (2015): *On the materials basis of modern society. Proceedings of the National Academy of Science of the USA*, Vol. 112, pp. 6295–6300, doi:10.1073/pnas.1312752110.
- Hashimoto, S., Moriguchi, Y., Saito, A., Ono, T. (2004): *Six indicators of material cycles for describing society's metabolism: Application to wood resources in Japan*, Resources Conservation and Recycling, Vol. 40, pp. 201–223, doi:10.1016/S0921-3449(03)00101-0.
- Hashimoto, S., Tanikawa, H., Moriguchi, Y. (2009): *Framework for estimating potential wastes and secondary resources accumulated within an economy—A case study of construction minerals in Japan*, Waste Management, Vol. 29, pp. 2859–2866, doi:10.1016/j.wasman.2009.06.011.
- Hass, W., Krausmann, F., Wiedenhofer, D., Heinz, M. (2015): *How circular is the global economy? An assessment of material flows, waste production, and recycling in the European Union and the world in 2005*, Journal of Industrial Ecology, Vol. 19, pp. 765–777, doi:10.1111/jiec.12244.
- Haupt, M., Vadenbo, C., Hellweg, S. (2016): *Do we have the right performance indicators for the circular economy? Insight into the Swiss waste management system*, Journal of Industrial Ecology, Vol. 21, pp. 615–627, doi:10.1111/jiec.12506.
- Huysman, S.; Schaepmeester, J.D.; Ragaert, K.; Dewulf, J.; De Meester, S. (2017): *Performance indicators for a circular economy: A case study on post-industrial plastic waste*, Resources, Conservatory and Recycling, Vol. 120, pp. 46–54, doi:10.1016/j.resconrec.2017.01.013.
- Jawahir, I.S. i Bradley, R. (2016): *Technological Elements of Circular Economy and the Principles of 6R-Based Closed-Loop Material Flow in Sustainable Manufacturing*, Procedia CIRP, Vol. 40, pp. 103–108, doi:10.1016/j.procir.2016.01.067.
- Kovanda, J. (2014): *Incorporation of recycling flows into economy-wide material flow accounting and analysis: A case study for the Czech Republic*, Resources Conservatory and Recycling, Vol. 92, pp. 78–84, doi:10.1016/j.resconrec.2014.08.006.
- Lieder, M. i Rashid, A. (2016): *Towards circular economy implementation: A comprehensive review in context of manufacturing industry*, Journal of Cleaner Production, Vol. 115, pp. 36–51, doi:10.1016/j.jclepro.2015.12.042.
- Nuss, P., Blengini, G.A., Hass, W., Mayer, A., Nita, V., Pennington, D. (2017): *Development of a Sankey Diagram of Material Flows in the EU Economy Based on Eurostat Data*, EUR 28811 EN, JRC technical reports; Publications Office of the European Union: Luxembourg, Available on: <https://ec.europa.eu/jrc/en/publication/development-sankey-diagram-material-flows-eu-economy-based-eurostat-data>

- Pauliuk, S., Wang, T., Muller, D.B. (2012): *Moving toward the circular economy: The role of stocks in the Chinese steel cycle*, Environmental Science and Technology, Vol. 46, pp. 148–154, doi:10.1021/es201904c.
- Reck, B.K. i Graedel, T.E. (2012): *Challenges in Metal Recycling*, Science, Vol. 337, pp. 690–695, doi:10.1126/science.1217501.
- SDG Knowledge Hub, <https://sdg.iisd.org/news/european-commission-adopts-circular-economy-action-plan/>
- Tukker, A. (2015): *Product services for a resource—Efficient and circular economy—A review*, Journal of Cleaner Production, Vol. 97, pp. 76–91, doi:10.1016/j.jclepro.2013.11.049.
- Van Weelden, E., Mugge, R., Bakker, C. (2016): *Paving the way towards circular consumption: Exploring consumer acceptance of refurbished mobile phones in the Dutch market*, Journal of Cleaner Production, Vol. 113, pp. 743–754, doi:10.1016/j.jclepro.2015.11.065.
- Wang, T., Muller, D.B., Graedel, T.E (2007): *Forging the anthropogenic iron cycle*, Environmental Science Technology, Vol. 41, pp. 5120–5129, doi:10.1021/es062761t.
- Webster, K. (2017): *The Circular Economy: A Wealth of Flows*, 2<sup>nd</sup> ed.; Ellen MacArthur Foundation Publishing
- Yuan, Z., Bi, J., Moriguichi, Y. (2006): *The circular economy, A new development strategy in China*, Journal of Industrial Ecology, Vol. 10, pp. 4–8.

*A scientific paper*

**Marko Tomljanović, Ph. D., Assistant Professor**

University of Rijeka, Faculty of Economics and Business, Rijeka, Republic of Croatia

E-mail address: marko.tomljanovic@efri.hr

**Igor Cvečić, Ph. D., Associate Professor**

University of Rijeka, Faculty of Economics and Business, Rijeka, Republic of Croatia

E-mail address: igor.cvecic@efri.hr

**Tomislav Franc, univ.bacc.oec., student**

University of Rijeka, Faculty of Economics and Business, Rijeka, Republic of Croatia

E-mail address: tomlav.franc@efri.hr

## **IMPLEMENTATION OF THE SUSTAINABLE DEVELOPMENT CONCEPT IN THE EU – PROGRESS AND PERSPECTIVES<sup>1</sup>**

### **ABSTRACT**

*Sustainable development is a concept that has been used in modern economic theory since the 1970s. Modern approaches to the concept point the need to achieve comparative objectives of economic growth, employment, environmental protection and risk prevention. The impact and challenges of globalization have affirmed the necessity of implementing this concept in all European and world development strategies, placing it as a key point of modern economic processes. This research aims to tackle relevant theoretical aspects and to analyse the current implementation of the sustainable development concept in the EU with specific indicators of sustainable development, and an overview of key programmes, initiatives and priorities. The purpose of the research is to determine crucial challenges and perspectives of the sustainable development concept implementation in the EU. The paper consists of six interconnected chapters. After the Introduction, the paper continues with a systematic presentation of key theoretical foundations of sustainable development, after which the research methodology and data are pointed out. The focal part of the paper includes an analysis of the current implementation of Sustainable Development Goals in the EU, based on secondary data collected from relevant European and international databases. The analysis enables the identification of crucial measures of sustainable development implementation in Europe, as well as challenges and perspectives for the future implementation of sustainable development. The concluding part gives a synthesis of key findings elaborated during the research. The research indicates positive tendencies in achieving the Sustainable Development Goals at the EU level. However, noticeable differences among regions and countries persist, based mostly on different development dynamics and other structural determinants.*

**Key words:** *European Union, sustainable development, UN SDGs, implementation challenges and perspectives.*

---

<sup>1</sup> This paper has been financially supported by the University of Rijeka, for the project ZP UNIRI 4/19

## 1. Introduction

Global economic trends and the opening of international markets have greatly conditioned the directions of development of the European economy, as well as its priorities. Faced with the rapid progress of key global competitors, European leaders realized in the late 1990s that the EU economy is lagging behind. The reasons stem from insufficient orientation toward and modest implementation of new technologies which reinforce the creation of new added value, but also Europe's concerns include energy dependence, aging population and migrant pressures for the social systems of the recipient countries (Kandžija and Cvečić, 2010). Such situation motivated the formation of forward-looking development plans, which should be based on 'green, sustainable and smart' growth. Generally speaking, new directions of development require consolidation and connection of the priorities of economic progress, employment creation and environmental protection. With such of an approach sustainable development has been placed in the centre of EU development planning. Given the comprehensiveness of the approach and the complexity of the concept itself, there is still no consensus around its unique definition, which differs among economic theorists and international organizations. However, key theoretical concepts of sustainable development are presented in the following sections.

The research problem stems from difficulties and limitations in the implementation and realization of the concept of sustainable development at the EU level and in particular Member States. The objectives of the research are to present relevant theoretical aspects, analyse the current implementation of the sustainable development concept in the EU, including active policy measures to boost the achievement of Sustainable Development Goals. Therefore, the purpose of the research is to determine crucial challenges and perspectives of the sustainable development concept implementation in the EU.

The research begins with an introduction in which the basic elements of the research are defined and the structure of the paper is shortly explained. After introductory considerations, the research continues with the methodological concept and then a systematic presentation of key theoretical fundamentals of sustainable development. The focal part of the paper includes the analysis of the current implementation of the sustainable development concept in the EU, with secondary data collected from relevant European and international databases. The analysis is further elaborated with the determination of key challenges and perspectives for the future implementation of sustainable development in the EU, including the essential measures already employed and possible scenarios which would promote further implementation of sustainable development. The paper concludes with a synthesis of key findings of the research.

## 2. Research methodology and data

The paper displays the analysis of the effectuation of the sustainable development concept in the European Union. The analysis is based on secondary data collected from Eurostat and the World Bank database. Depending on the availability of data, the analysis basically covers the period from 2010 to 2020. The limitations of the research arise from the missing data for particular indicators within the selected period, which further limits the implementation of the research and the determination of relevant scientific conclusions.

The analysed indicators are divided into three groups, i.e. indicators of education, indicators of economic performance of the European economy and indicators of sustainable development. In the group of education indicators, the following were analysed: (1) Investments in research and development (% of GDP); (2) Public investment in education (% of GDP); (3) Population aged 30-34 with tertiary education (%) and (4) Early school leavers aged 18-24 (%).

The performance overview of the European economy is characterized by the: (1) GDP growth rate (%); (2) Employment rate (population 20-64; %); (3) Unemployment rate (population 20-



64; %); (4) People at-risk-of-poverty and social exclusion and (5) High-tech export (% of total export).

Furthermore, indicators of sustainable development were analysed on the basis of the level of public investment in environmental protection in the EU during the period 2010-2020 (% of GDP), as well as the data from the Europe Sustainable Development Report 2021, which also monitors and assesses the success of the UN's Sustainable Development Goals in Europe. In this sense, it becomes clearer: (1) The positions of EU Member States, European Economic Area countries and Candidate Countries; (2) The success of individual groups in achieving their goals, and (3) The key areas of success of individual groups of countries that have been identified.

### 3. Theoretical foundations of sustainable development

The foundations for defining sustainable development were laid in the 1970s, when the United Nations, within the Brundtland report, stated that sustainable development means "*development that meets the needs of today's generations without compromising the ability of future generations to meet their needs*" (UN World Commission on Environment and Development, 1987). Pavić-Rogošić (2010) states that within the Brundtland report the definition was soon reinforced and expanded, so sustainable development can be described as "*a process of change in which resource utilization, investment trends, technical development orientation and institutional changes are in line with each other and meet the needs and expectations of present and future generations.*" Kandžija and Cvečić (2008) accentuate sustainable development as a simultaneous and parallel realization of three most important goals: economic competitiveness, employment and social equality, as well as environmental protection and risk prevention.

Črnjar (2009) looks at sustainable development through three key concepts, i.e. the development concept; the concept of needs and the concept of future generations. The settings of the development concept are mainly oriented toward economic issues, also taking into account cultural and social aspects. In the context of the second concept, the emphasis is placed on the needs of developed countries and those less developed, which due to their "*basic needs often have a detrimental effect on the environment, so it is necessary to find a balance in the distribution.*" The concept of future generations is closely based on the principles of the Brundtland Report, recognizing the need to introduce advanced technologies and develop economic and other scientific branches oriented toward the achievement of sustainability.

The EU is placing increasing emphasis on sustainable development within its policies and strategies, starting in the early 2000s, when the first step was taken by initiating the Lisbon Strategy. This Strategy was the basis for the development of the European economy in the following decade through the achievement of three key objectives, i.e.: (1) economic growth of 3% yearly, based on 'smart' sources; (2) promoting social development, and social convergence and cohesion, as well as targeting employment levels up to 70%, with special emphasis on new and better jobs, and (3) environmental protection, which is placed at the centre of economic processes by new development paradigms (Kandžija and Cvečić, 2008). Despite ambitious plans, the implementation of the Strategy faced significant difficulties, primarily due to insufficient coordination of Member States' activities and the aggravating political situation (Boromisa and Samardžija, 2009). In the midst of the implementation, it went through a revision, which resulted in the emphasis on the 'knowledge triangle'<sup>2</sup> and the need to implement the open method of coordination<sup>3</sup> in all implementation activities (Petak, 2012). The partial

---

<sup>2</sup> It points to the importance of linking education, research and innovation in order to achieve economic growth and create new jobs.

<sup>3</sup> It implies the application of positive experiences and methods of one Member State in the development policy and other policies of other Member States, while also adapting to national specifics.

success of the Lisbon Strategy and the beginning of the global economic crisis have instigated further affirmation of sustainable development and the set up of new priorities with the EUROPA 2020 Strategy.

EUROPA 2020 was launched in 2010 with the ultimate goal of affirming the EU as "the most competitive and fastest growing knowledge-based economy" by 2020 (European Commission, 2010). The overall logic of the Strategy is contained in its priorities, objectives and accompanying initiatives (Tomljanović, 2017), priorities being: smart, sustainable and inclusive economic growth. The European Commission (2010) divides the key objectives of the Strategy into: (1) Employment; (2) Research and Development; (3) Climate Change and Energy Sustainability; (4) Education and (5) the Fight Against Poverty and Social Exclusion, accompanied by certain quantitative requirements.<sup>4</sup> The achievement of the priorities and objectives would be impossible without the implementation of key initiatives: (1) Innovation Union; (2) Youth Initiative; (3) Digital Agenda for Europe; (4) Agenda for New Jobs; (5) European Platform against Poverty; (6) Resource Efficient Europe and (7) Industrial Policies of the Globalization Era.

A sort of a 'balance sheet' of achievements followed the expiration period of the EUROPE 2020 Strategy. Progress has been made in the area of investment in research and development and the generation of new services (Tomljanović, 2020). However, positive developments were not accompanied by adequate economic growth and increased productivity.<sup>5</sup> Nevertheless, the EU has continued and further strengthened its activities aimed at human resources development and especially towards achieving sustainable development, which is a direction that needs to be followed in the coming period, as a prerequisite of economic recovery.

The first steps towards the most recent activities were launched in 2019, when the EUROPA 2030 strategy was defined at the EU level: This new strategy aims to achieve and ensure safe, affordable and environmentally friendly energy by 2030; by achieving key goals, such as: (1) reducing emissions of greenhouse gases by 40% compared to 1990 values; (2) increasing the consumption of renewable energy sources to 27% and (3) orientation towards green industries and saving 27% of energy by such an approach (European Commission, 2019).

The implementation and evolution of sustainable development at the EU level (including the EUROPE 2030) takes place in parallel and in close connection with the activities of the United Nations, which defined the 'Sustainable Development Agenda 2030' in 2015. This Agenda includes 17 key goals of sustainable development and 169 related sub-goals (United Nations, 2022).

The sustainable development concept is impossible to comprehend without its relation with the environmental policy; which has evolved since 1972 in the EU. Korošec (2013) states that in the very beginning, environmental protection policy was mostly aimed at "*setting minimum standards that Member States had to comply with in order to keep the level of environmental pollution at a satisfactory level.*" After the reforms and changes implemented through the Maastricht Treaty, the Amsterdam Treaty and the Lisbon Treaty, Environmental Policy was deservedly 'recognized' at the EU level. This is based on the assumption of the '*simultaneous achievement of economic growth and environmental goals*', so therefore "*environmental protection standards do not limit the achievement of international competitiveness*" (Kandžija and Cvečić, 2010). Črnjar (2009) emphasizes the key principles of the European Environmental Policy, i.e.: (1) the "polluter pays" principle; (2) the precautionary principle and (3) the rectification principle.

Taking into account all of the above, we could assume that sustainable development is a concept of coordinated achievement of economic and social goals, while respecting and affirming the

---

<sup>4</sup> General objectives ('targets') are focused on EU average values, while each Member State had also specified national targets, based on the level of economic development, etc.

<sup>5</sup> Of course, the problems and challenges caused by the COVID-19 crisis also need to be taken into account.

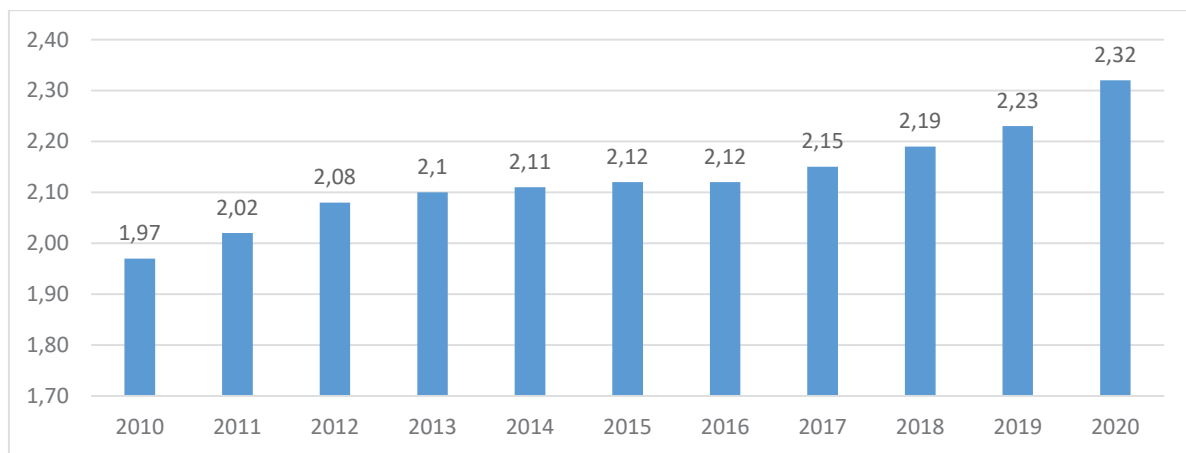
need to achieve environmental policy goals at the same time. Thus, quality and systematic implementation of this concept in the EU should be the key lever within the process of achieving economic progress, the recovery from recent crisis and international competitiveness, as well. Nevertheless, one has to bare in mind that each country is faced with different challenges in its path to sustainable development and it has to seek a sustainable foundation for its future prosperity and its sustainable management of resources (Haller et al., 2020).

#### 4. Analysis of key sustainable development indicators of the EU

This section presents key sustainable development indicators in the EU during the period 2010 to 2020.

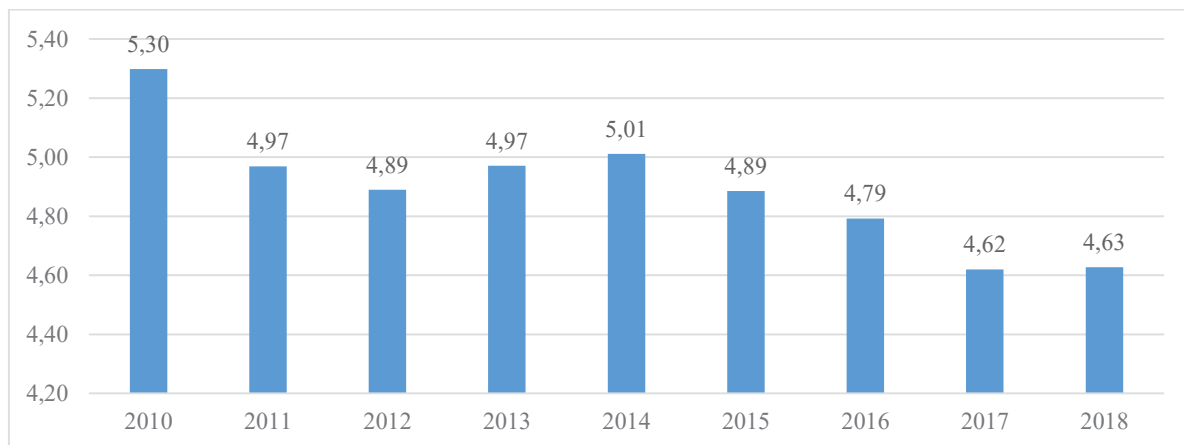
Figure 1 indicates increased investments in research and development throughout the period. Which amounted to 2.32% of GDP in 2020. This is still below the target foreseen by the Europe 2020 Strategy. Furthermore, according to the Eurostat (1) (2022), the EU is still lagging behind key global competitors regarding the trends of scientific and research activities, making this one of the priorities in the course of the upcoming period.

**Figure 1:** Investments in research and development in the EU during the 2010-2020 period (% of GDP)



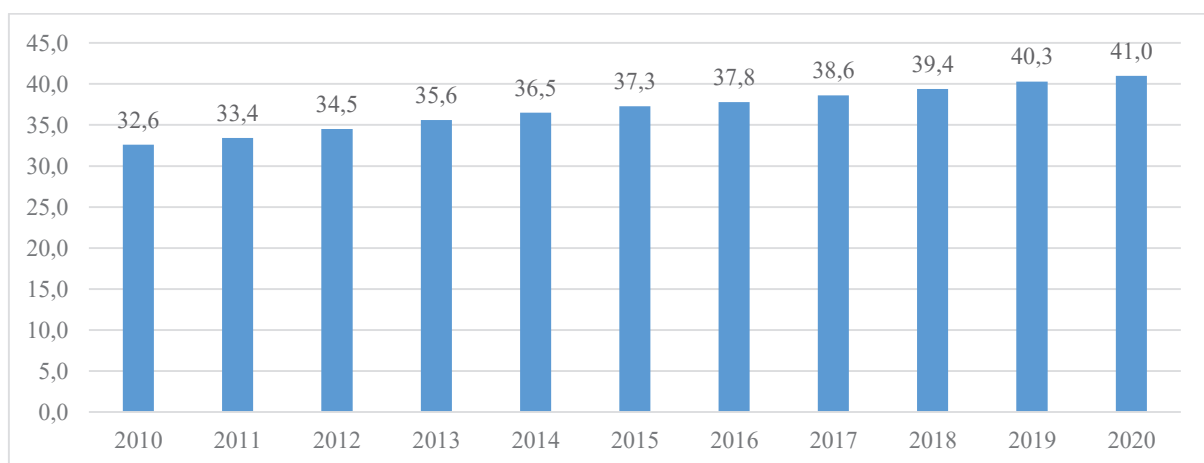
*Source: developed by authors based on Eurostat (1) (2022)*

Figure 2 suggests modestly changing investment trends in EU education during the observed period, with an overall drop from 5.3% in 2010 to 4.63% of GDP in 2018. The negative trend was offset during the period 2012-2014 with a promising reversion of the trend, however during the period 2014-2018 public investments stalled during the economic recovery.

**Figure 2:** Public investment in education in the EU during the 2010-2018 period (% of GDP)

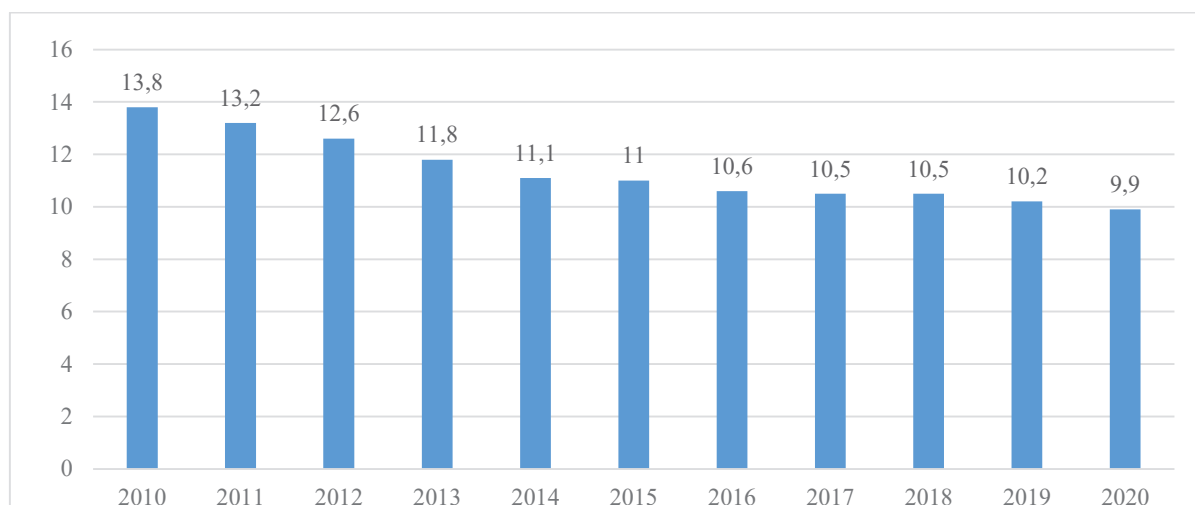
Source: developed by authors based on World Bank, 2022

Although public investment in education decreased, the EU recorded a continuous increase in the population aged 30-34 with completed some form of tertiary education. Recent data (Figure 3) suggests an increase from 32.6% in 2010 up to 41% in 2020, which certainly represents a positive foundation for further progress and recovery of the European economy. Also, it helps to achieve the goals of sustainable development within its social component.

**Figure 3:** Population of 30-34 years with completed tertiary education in the EU during the 2010-2020 period (%)

Source: developed by authors based on Eurostat (2) (2022)

The final indicator directly connected to education, shown in Figure 4, suggests that the EU reduces continuously the level of early-school leavers, with a level of 9.9% in 2020; thus fully achieving the goals defined by the EUROPE 2020 strategy.

**Figure 4:** Early school leavers aged 18-24 in the EU during the 2010-2020 period (%)

Source: developed by authors based on Eurostat (3) (2022)

Education and research trends presented in previous charts have been reflecting the performances of the European economy, which can be observed in Table 1. The economic stability was largely compromised and shaken during the last couple of years, especially in 2020, when the European economy has slowed down due to the COVID-19 pandemic. The data indicates that the EU economy increased during the 2010-2020 period by an average of 0.9% per year. If 2020 is excluded, because of the COVID-19 crisis, growth actually averages 1.59% per year.

**Table 1:** European Economy Performance during the 2010-2020 period

Year	GDP growth rate (%)	Employment (population 20-64, %)	Unemployment (population 20-64, %)	People at risk of poverty and social exclusion (%)	High tech export (% of total export)
2010	2.20	67.8	7.2	23.9	16.1
2011	1.80	67.9	7.3	24.5	15.4
2012	-0.70	67.7	8.1	24.9	15.7
2013	0.00	67.5	8.5	24.6	15.3
2014	1.60	68.3	8.2	24.5	15.6
2015	2.30	69.1	7.6	23.8	17.0
2016	2.00	70.2	6.9	23.7	17.8
2017	2.80	71.4	6.2	22.5	17.8
2018	2.10	72.4	5.6	21.6	17.9
2019	1.80	73.2	5.2	20.9	n/a
2020	-5.90	72.5	5.4	22	n/a

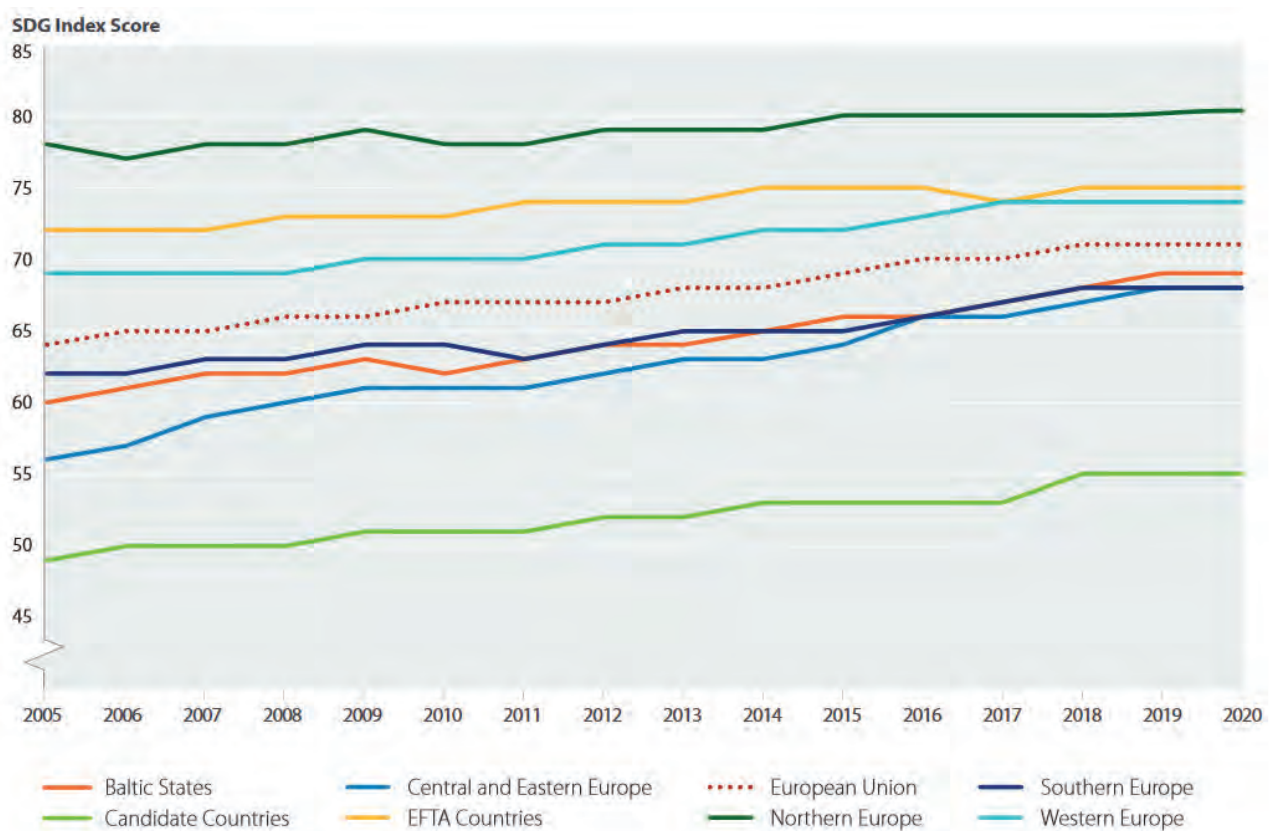
Source: Developed by authors based on Eurostat (4-8) (2022)

During the analysed period, the EU has continuously increased the level of employment of the population aged 20-64, with a level of 73.2% in 2019, which was the culmination of the period. Of course, in 2020, a decrease in total employment was recorded. Since 2013, the EU's level of unemployment rates of the population aged 20-64 has been continually reduced and the lowest level of 5.2% has been reached in 2019. Due to the pandemic, the positive trend was reversed in 2020, but not drastically. Apart from positive trends on the labour market, since 2013 the EU has recorded a reduction in the share of the population at-risk-of-poverty and social exclusion,



Basically, besides the included Candidate Countries, weakest scores are achieved by EU members from Central and Eastern Europe, as well as from Southern Europe and the Baltics. The regional diversity, through a dynamic process can be observed with Illustration 2, which indicates actually that the greatest progress, or improvement in the analysed period (2005-2020) was achieved by countries of those three ('weakest') regions of the EU, according to the overall SDG Index. They managed to reduce the lag toward North Europe and Western Europe, but still have to invest more effort to catch-up. Assessed Candidate Countries, however, did not manage to reduce the gap, although some improvement has been achieved. This might be expected, while bearing in mind their economic and social situation and the European integration process performances so far.

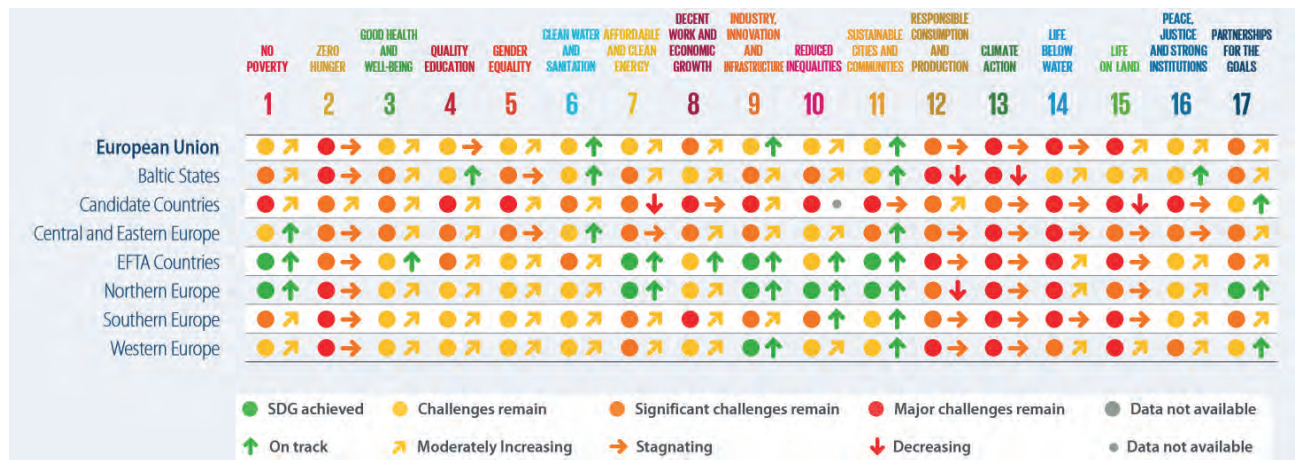
**Illustration 2:** Successful achievement of Sustainable Development Goals by groups of European countries



Source: Retrieved from Lafortune et al., 2021, pp. VI

Successfulness of achieving particular SDGs in the assessed European regions is shown on Illustration 3. As expected, most goals are successfully accomplished by Northern Europe and EFTA countries, while major challenges are dominant in Candidate Countries. However, the biggest challenges for the whole Europe are: Climate Action; Life below Water; Life and Land; Zero Hunger and Responsible Consumption and Production. More successful SDGs include: Industry, Innovation and Infrastructure; Sustainable Cities and Communities; Clean Water and Sanitation; No Poverty; Affordable and Clean Energy.

**Illustration 3:** Successful achievement of Sustainable Development Goals by groups of European countries and priorities in 2020



Source: Retrieved from Lafortune et al., 2021, pp. VII

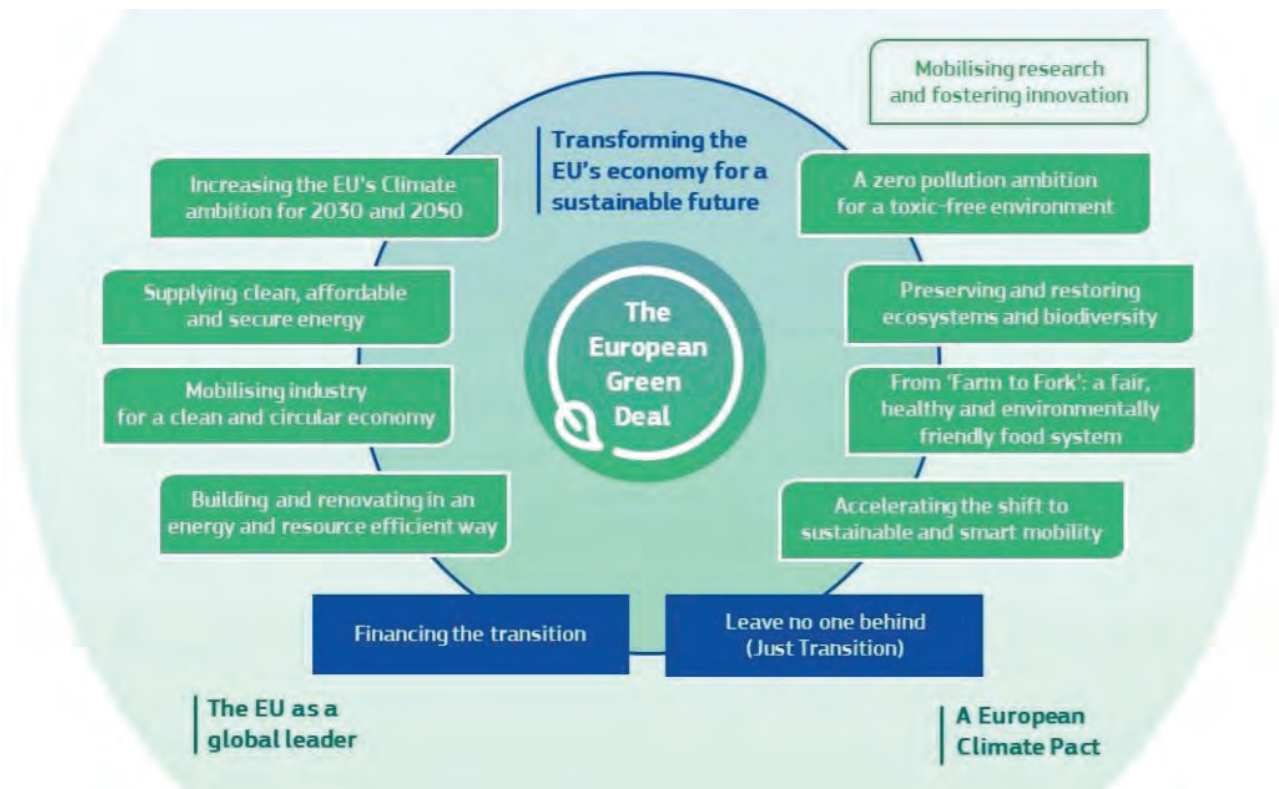
The analysis of SDGs performance in the EU gave expected results. Northern and Western European countries are traditionally more oriented towards the achievement of environmental goals and their implementation in order to achieve economic growth. These countries have adequate and more abundant financial, infrastructural and human resources needed to ensure the transition to a green and circular economy. On the other hand, the most disadvantaged countries are the Candidate Countries for full membership in the EU, which still must ensure better conditions for a green transition and generally create a dynamic framework for structural changes.

### 5. Key challenges, tools and perspectives of sustainable development implementation in the EU

Besides the European strategic goals for 2030, further achievement of sustainable development in the EU is largely conditioned by the implementation of the goals of the European Green Deal. The Deal was determined in 2019, with the aim to achieve a modern, resource efficient and competitive European economy by 2050. The plan is also oriented towards achieving specific goals, which include the complete elimination of net greenhouse gas emissions and ensuring economic growth independently of the use of energy by 2050, while respecting the entire European population and all regions (European Commission, (1) 2021). The schematic presentation of the European Green Deal, shown with Illustration 4, suggests a very ambitious programme, involving the interaction of eight defined key objectives. All of them should ultimately make the EU a global leader and ensure further progress towards the European green transition of the economy.



### Illustration 4: European Green Deal



Source: European Commission, 2019

Although ambitious, the implementation and achievement of the SDGs at the EU level will continue to face a number of challenges in the future. In addition to the ‘traditional’ challenges, which include the entire process of globalization, technological change, population aging and energy dependence, a significant weight since 2020 is represented by the COVID-19 pandemic, which disrupted planned activities and changed the direction of European development. Additionally, the challenges of implementing the SDGs will arise from the new multiannual budget perspective(s) and the availability of financial resources for those who depend from it the most. Relevant contemporary challenges are explained in the following segments.

The European Environment Agency (2022) synthesized key challenges for the achievement of sustainability emphasizing the ‘drivers of change’.<sup>6</sup> These key challenges are divided into six clusters: (1) A growing, urbanizing and migrating global population; (2) Climate change and environmental degradation worldwide; (3) Increasing scarcity of and global competition for resources; (4) Accelerating technological change and convergence; (5) Power shifts in the global economy and geopolitical landscape and (6) Diversifying values, lifestyles and governance approaches.

Achieving sustainable development in the EU is largely related to the common budget perspective for the period 2021 to 2027. The EU's orientation towards achieving the SDGs during this period is comparable to the structure of planned budget expenditures, where most

<sup>6</sup> The drivers of change include: (1) Global megatrends (global, long term trends that are slow to form but have a major impact once in place); (2) European trends (mid to long term trends specific to Europe; not necessarily implying the global scale); (3) Emerging trends (developments that are occurring at a fast pace but are not yet fully established over mid to long term timescales, and therefore not yet well understood); (4) ‘Wild cards’ (imply trends that may seem likely or very unlikely at present but could occur in the future, and, if so, they are likely to bring about disruptive changes).

payments are planned for cohesion goals and natural resources and the environment. This is basically a continuation of efforts started in the previous budget period (Illustration 5).

**Illustration 5:** EU budget structure for the period 2021 - 2027 (allocations per heading; in billions of euros)

	MFF	NGEU	TOTAL
1. Single Market, Innovation and Digital	149.5	11.5	161.0
2. Cohesion, Resilience and Values	426.7	776.5	1 203.2
3. Natural Resources and Environment	401.0	18.9	419.9
4. Migration and Border Management	25.7	-	25.7
5. Security and Defence	14.9	-	14.9
6. Neighbourhood and the World	110.6	-	110.6
7. European Public Administration	82.5	-	82.5
<b>TOTAL</b>	<b>1 210.9</b>	<b>806.9</b>	<b>2 017.8</b>
<b>TOTAL expressed in 2018 prices</b>	<b>1 074.3</b>	<b>750.0</b>	<b>1 824.3</b>

*Source: European Commission (1) (2022)*

An additional part of the European financial framework during the 2021-2027 period (MFF) is the revolutionary 'Next Generation EU' instrument (NGEU), created in the context of ensuring recovery from the COVID-19 crisis. Some 806.9 billion euros are earmarked to achieve the objectives of this instrument regarding the goal of a green, digital, healthy, strong and equal European economy (European Union (2), 2022).

In addition to key thematic areas, the priorities of sustainable development will be achieved through the interaction of numerous thematic programmes and initiatives. The first of them is the InvestEU programme, which aims to stimulate the recovery of the European economy from the COVID-19 crisis and contribute to achieving the goals of sustainable development. The main focus will be on supporting businesses and focusing on the European Green Deal, the digital transition and ensuring resilience (European Union (1), 2022). Furthermore, the creation of quality research infrastructure, innovation development and ensuring conditions for quality research in the fields of health, resilience and green and digital transition will be achieved through the HORIZON EUROPE programme, i.e. the Framework Programme for Research and Innovation during the 2021-2027 period (OBZOR EUROPA, 2022). Additionally, the new Erasmus+ programme is closely related, and it should enable the continuation of activities aimed at promoting mobility, research and knowledge transfer of young people (European Commission (2) (2022)). The implementation of projects related to nature, waters and climate change mitigation, aimed for the improvement of the quality of life in the EU, should be funded under the LIFE program, i.e. the EU's financial instrument for the environment and climate action (European Commission (3) (2022)). These programmes and initiatives point to the extreme diversity of the implementation of SDGs in the EU, which requires the simultaneous achievement of smart and sustainable growth priorities; already defined as part of the EUROPA 2020 strategy.

Achieving sustainable development requires the inclusion of social components, which implies assistance in cases of crises, natural disasters and other adverse events that may threaten the survival and further progress of the population and EU Member States. Therefore, the RescEU programme provides for the protection of people from disasters, the management of risks arising from emergencies and ensuring resilience at the EU level (European Commission, 2020). In the context of the COVID-19 crisis, the EU has developed another new programme – REACT-EU; ensuring increased resilience of EU Member States, in order to achieve a green, digital and sustainable recovery of the European economy. With regard to the EU's global impact, the Neighbourhood, Development and International Cooperation Instrument should become the EU's main tool for contributing to poverty eradication and promoting sustainable development, prosperity, peace and stability worldwide (European Commission (4)) (2022). Finally, the European Commission introduces a taxonomy, which is an instrument that *"introduces clear performance criteria to identify those economic activities that significantly contribute to the objectives of the Green Deal"*. So therefore, more specifically, green bonds are gradually being introduced, which represent *"long-term debt securities with a fixed yield, but also on the condition that the funds obtained from them must be invested in projects with positive environmental or climate effects"* (European Commission (2) (2021). Green innovation is also encouraged, as they enhance the acquisition of knowledge and induce green product innovations (Fang and Sheng, 2021).

Given the numerous and diverse priorities, activities and measures in the EU regarding the achievement of sustainable development, the question of an appropriate scenario arises. The first scenario could imply a comprehensive EU strategy, in which all Member States would make decisions together. Specific objectives would be adopted at the Union level and the comprehensive strategy would be implemented by the European Commission, the European Parliament and the Council, in accordance with the co-decision procedure. This would ensure coordination between Member States and speed up the achievement of specific targets. However, it is necessary to take into account the need to adapt the implementation of objectives to the specifics of individual countries. In another scenario, the Commission would continue to include the SDGs in all relevant Union policies, but Member States would have no obligation to act. Member States would report annually and the Commission would present results at the international level. The benefits of this approach would be reflected in faster decision-making at national level, while the Union could focus on strategic priorities. On the other hand, the downsides would make it difficult to coordinate policies, with the risk of significant differences between Member States. The third scenario would put more emphasis on external action, as the European Union is already at the forefront of sustainable development. This scenario would help the rest of the world to follow the European example, while the EU would also improve the overall well-being of Member States. External policies would be adapted to partner countries, while internal adjustments would be limited. The importance of the European defence, space, security and migration policy would increase. The advantage of this approach would come from helping the countries most in need and achieving the goals of sustainable development without complex strategies and adjustments among Member States. The negative sides would potentially be manifested in the possible stagnation and non-exploitation of the full potential of the leading position in the field of sustainable development (European Commission, 2021).

## 6. Conclusion

Sustainable development is a concept that has been closely implemented in key European development strategies and policies over the past two decades, and as such, it is the foundation for achieving European economic growth and competitiveness. Despite this, and a growing

interest from economic theorists and practitioners, the definition of 'sustainable development' is still being discussed and consolidated. The most commonly used approach defines sustainable development as achieving economic growth and competitiveness while encouraging employment and social progress, as well as achieving environmental goals and reducing risks.

Available data indicates that the EU has laid the foundations for smart, sustainable and inclusive growth during the observed period, as positive developments are distinct for a wide range of key indicators describing sustainable development. However, differentiating certain European regions, significant differences are clear in respect to their implementation of Sustainable Development Goals. As expected, the best results were achieved by Northern and Western countries, while the level of achievement is the weakest in the EU Candidate Countries. This situation represents a significant challenge in the context of their future EU accession, contribution to growth and development, and the process of convergence and cohesion. However, taking the whole Europe into consideration, implementation of the sustainable development concept faces significant challenges, manifested through the effects of globalization, questionable funding frameworks and governance repercussions, as well as the challenges associated with the COVID-19 pandemic. Hereupon, the EU and its Member States developed a wide range of instruments, specifically designed to address the challenges and crisis. However, Europe's ultimate success in this area will largely depend on the coherence and coordination of key policies and its readiness to define and implement quality and effective structural reforms that will enable the transition to a green and digital economy.

The contribution of the paper arises from the presentation of crucial theoretical aspects of sustainable development, as a concept and a goal, and the research of the topic itself, which brings a concise overview of key challenges and perspectives for the European process of implementation of the Sustainable Development Goals. Future research should focus on quantifying the impacts of the implementation of the sustainable development concept, especially regarding those closely related to the essential performances of the European economy. More detailed analysis of the sustainable development achievements in all EU Member States, and other European countries, would accentuate key advantages and limitations of the process, more specific for certain levels of economic, social and environmental development, and thus create the foundations for the formation of future development strategies and adequate instruments for particular countries or regions.

## REFERENCES

Boromisa, A.M., Samardžija, V. (2009): *Hrvatska i Lisabonska strategija: približavanje ciljevima?*, in Vedriš, M., Dujšin, U. (2009): *Ideje o ekonomskoj politici: Ekonomska politika u Republici Hrvatskoj*, University of Zagreb, Faculty of Law, Zagreb.

Črnjar, M., Črnjar, K. (2009): *Menadžment održivog razvoja, Ekonomija-ekologija-zaštita okoliša*, University of Rijeka, Faculty of Tourism and Hospitality Management, Rijeka.

European Commission (2010): *EUROPE 2020 - A European strategy for smart, sustainable and inclusive growth*, <https://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf>, (accessed 20 January 2022)

European Commission (2019): *The European Green Deal*, [https://eur-lex.europa.eu/resource.html?uri=cellar:b828d165-1c22-11ea-8c1f-01aa75ed71a1.0002.02/DOC\\_1&format=PDF](https://eur-lex.europa.eu/resource.html?uri=cellar:b828d165-1c22-11ea-8c1f-01aa75ed71a1.0002.02/DOC_1&format=PDF) , (accessed 20 January 2022)

European Commission (2020): *RescEU: A new development for the UCPM*, <https://www.ironore.eu/wp-content/uploads/2020/09/RescEU-for-IRONORE-2020.pdf> , (accessed 20 January 2022)

European Commission (1) (2021): *A Sustainable Europe by 2030*, [https://ec.europa.eu/info/publications/reflection-paper-towards-sustainable-europe-2030\\_en](https://ec.europa.eu/info/publications/reflection-paper-towards-sustainable-europe-2030_en) , (accessed 20 January 2022)

European Commission (2) (2021): *Taksonomija EU-a, korporativno izyješćivanje o održivosti, preferencije u pogledu održivosti i fiducijarne obveze: usmjeravanje financiranja radi ostvarivanja Europskog zelenog plana*, <https://eur-lex.europa.eu/legal-content/HR/TXT/PDF/?uri=CELEX:52021DC0188&from=LV> , (accessed 20 January 2022)

European Commission (1) (2022): *Headings: spending categories*, [https://ec.europa.eu/info/strategy/eu-budget/long-term-eu-budget/2021-2027/spending/headings\\_en#heading-3-natural-resources-and-environment](https://ec.europa.eu/info/strategy/eu-budget/long-term-eu-budget/2021-2027/spending/headings_en#heading-3-natural-resources-and-environment) , (accessed 20 January 2022)

European Commission (2) (2022): *Erasmus+ EU programme for education, training, youth and sport*, <https://erasmus-plus.ec.europa.eu/> , (accessed 25 January 2022)

European Commission (3) (2022): *LIFE Programme*, [https://cinea.ec.europa.eu/life\\_hr](https://cinea.ec.europa.eu/life_hr) , (accessed 25 January 2022)

European Commission (4) (2022) *Globalna Europa: Instrument za susjedstvo, razvoj i međunarodnu suradnju*, [https://ec.europa.eu/info/funding-tenders/find-funding/eu-funding-programmes/global-europe-neighbourhood-development-and-international-cooperation-instrument\\_hr](https://ec.europa.eu/info/funding-tenders/find-funding/eu-funding-programmes/global-europe-neighbourhood-development-and-international-cooperation-instrument_hr) , (accessed 25 January 2022)

European Environment Agency (2022): *Drivers of change: challenges and opportunities for sustainability in Europe*, <https://www.eea.europa.eu/themes/sustainability-transitions/drivers-of-change> , (accessed 25 January 2022)

Eurostat (1) (2022): *GERD by sector of performance*, [https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=rd\\_e\\_gerdtot&lang=en](https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=rd_e_gerdtot&lang=en) , (accessed 25 January 2022)

Eurostat (2) (2022): *Population aged 30-34 with tertiary educational attainment level by sex*, [https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=yth\\_educ\\_020&lang=en](https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=yth_educ_020&lang=en) , (accessed 25 January 2022)

Eurostat (3)(2022): *Early leavers from education and training by sex*, [https://ec.europa.eu/eurostat/databrowser/view/sdg\\_04\\_10/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/sdg_04_10/default/table?lang=en) , (accessed 25 January 2022)

Eurostat (4)(2022): *Real GDP growth rate – volume*, <https://ec.europa.eu/eurostat/databrowser/view/tec00115/default/table?lang=en> , (accessed 25 January 2022)

- Eurostat (5) (2022): *Employment and activity by sex and age - annual data*, [https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=lfsi\\_emp\\_a&lang=en](https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=lfsi_emp_a&lang=en) , (accessed 25 January 2022)
- Eurostat (6) (2022): *Unemployment by sex and age - annual data*, [https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=une\\_rt\\_a&lang=en](https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=une_rt_a&lang=en) , (accessed 27 January 2022)
- Eurostat (7) (2022): *People at risk of poverty or social exclusion*, [https://ec.europa.eu/eurostat/databrowser/view/t2020\\_50/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/t2020_50/default/table?lang=en) , (accessed 27 January 2022)
- Eurostat (8) (2022): *High-tech exports - Exports of high technology products as a share of total exports*, [http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=htec\\_si\\_exp4&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=htec_si_exp4&lang=en) , (accessed 27 January 2022)
- Eurostat (9) (2022): *National expenditure on environmental protection by institutional sector*, [https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env\\_ac\\_epneis&lang=en](https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env_ac_epneis&lang=en) , (accessed 27 January 2022)
- European Union (1) (2022): *InvestEU*, available on: [https://europa.eu/investeu/home\\_hr](https://europa.eu/investeu/home_hr), (accessed 27 January 2022)
- European Union (2) (2022): *NextGenerationEU - Make it Real*, [https://europa.eu/next-generation-eu/index\\_en](https://europa.eu/next-generation-eu/index_en) , (accessed 27 January 2022)
- Fang, L.; Sheng, Z. (2021): *Policy orientation, knowledge dynamic ability and green innovation: A mediation model based on China provincial panel data*, Proceedings of Rijeka Faculty of Economics, 39(1), pp. 9-37. <https://doi.org/10.18045/zbefri.2021.1.9>
- Haller, A., et al. (2020): *Medium-term forecast of European economic sustainable growth using Markov chains*, Proceedings of Rijeka Faculty of Economics, 38(2), pp. 585-618. <https://doi.org/10.18045/zbefri.2020.2.585>
- Kandžija, V., Cvečić, I. (2010): *Ekonomika i politika Europske unije*, University of Rijeka, Faculty of Economics and Business, Rijeka.
- Kandžija, V., Cvečić, I. (2008): *Makrosustav Europske unije*, University of Rijeka, Faculty of Economics and Business, Rijeka.
- Korošec, L., Smolčić Jurdana, D. (2013): *Politika zaštite okoliša - integralni dio koncepcije održivog razvitka Europske unije*, Ekonomski pregled, Vol. 64, No. 26, pp. 605-629.
- Lafortune, G, Cortés, Puch M, Mosnier, A, Fuller, G, Diaz, M, Riccaboni, A, Kloke-Lesch, A, Zachariadis, T, Carli, E, Oger, A (2021) *Europe Sustainable Development Report 2021: Transforming the European Union to achieve the Sustainable Development Goals*, <https://s3.amazonaws.com/sustainabledevelopment.report/2021/Europe+Sustainable+Development+Report+2021.pdf>, (accessed 23 January 2022)
- OBZOR EUROPA (2022): *OBZOR EUROPA hrvatski portal okvirnog programa EU za istraživanja i inovacije*, <https://www.obzoreuropa.hr/> , accessed 23 January 2022)
- Pavić-Rogošić, L. (2010): *Održivi razvoj*, [https://www.odraz.hr/wp-content/uploads/2020/10/odrzivi\\_razvoj.pdf](https://www.odraz.hr/wp-content/uploads/2020/10/odrzivi_razvoj.pdf) , (accessed 23 January 2020)

Petak, Z. (2012): *Europeizacija hrvatskih javnih politika*, in Grubiša, D., Beširević, N., Špehar, H. (2012): *Politički sustav Europske unije i europeizacija hrvatske politike*. University of Zagreb, Faculty of Political Science/ Center for European studies, Zagreb

Tomljanović, M. (2017): *Ulaganje u istraživanje i razvoj – čimbenik prilagodbe zemalja Zapadnoga Balkana gospodarstvu EU/Investments in research and development – a factor of adjustment of Western Balkan Countries to EU economy*, University of Rijeka, Faculty of Economics and Business, Rijeka.

Tomljanović, Marko (2020): *Razvojne strategije i budućnost EU*, *Ekonomski misao i praksa-Economic thought and practice*, Vol. 29, No. 1, pp. 269-288.

United Nations World Commission on Environment and Development (1987): *Report of the World Commission on Environment and Development Our Common Future*, [https://www.are.admin.ch/dam/are/en/dokumente/nachhaltige\\_entwicklung/dokumente/bericht/our\\_common\\_futurebrundtlandreport1987.pdf.download.pdf/our\\_common\\_futurebrundtlandreport1987.pdf](https://www.are.admin.ch/dam/are/en/dokumente/nachhaltige_entwicklung/dokumente/bericht/our_common_futurebrundtlandreport1987.pdf.download.pdf/our_common_futurebrundtlandreport1987.pdf), (accessed 23 January 2022)

United Nations, (2022): *THE 17 GOALS*, <https://sdgs.un.org/goals>, (accessed 20 January 2022)

World Bank (2022): *Government expenditure on education, total (% of GDP)*, <https://data.worldbank.org/indicator/SE.XPD.TOTL.GD.ZS>, (accessed 23 January 2022)

*A scientific paper*

**Danijela Vakanjac, mag.oec., lecturer**

Virovitica University of Applied Sciences, Department of Economics

E-mail address: danijela.vakanjac@vuv.hr

**Monika Uher**

Virovitica University of Applied Sciences, student

E-mail address: uher.monika@gmail.com

**Mladena Bedeković, Ph. D., Senior lecturer**

Virovitica University of Applied Sciences, Department of Economics

E-mail address: mladena.bedekovic@vuv.hr

## **THE MAASTRICHT CRITERIA - INTRODUCTION OF THE EURO IN THE REPUBLIC OF CROATIA**

### **ABSTRACT**

*Based on statistical data, the aim of this paper is to examine and consider nominal convergence criteria (also known as Maastricht criteria) which the Republic of Croatia was obligated to fulfil by signing Treaty on European Union, and to analyse whether and to what extent these criteria have been met. Maastricht criteria are a contemporary topic of significant importance for all citizens of the Republic of Croatia. Although majority of Croatian population are not aware of the intricacies behind this process, it is very important for fiscal and monetary policy creators. The significance of this process is reflected in the fact that the decision on joining Economic and Monetary Union is changing the everyday life of Croatian citizens. The Croatian official currency 'kuna' will no longer be in circulation, with the euro becoming the new official currency, which brings many advantages and disadvantages. The paper defines the concept of Economic and Monetary Union with the planned phases within which the project was realized, after which the basic characteristics of the Maastricht criteria are presented. Each criterion is presented theoretically with its relation to the Republic of Croatia on the basis of statistical data which determined the meeting of the criteria. The last part presents reflections of various authors on the euro area, as well as different theses on the effects of the introduction of euro for the Republic of Croatia. This paper provides a summary of a historical overview of the origin of EMU with its criteria to be met and an insight into a current situation of criteria fulfilment by the Republic of Croatia. Also, it contributes to raising the general awareness of citizens about the issue of introduction of the euro and it enables understanding the possible effects that the current situation brings to the Croatian economy.*

**Key words:** *Maastricht criteria, convergence criteria, introduction of the euro.*

### **1. Introduction**

One of the current topics that concerns not only the scientific and economic community, but also the general public, is the introduction of the euro as the official means of payment in the Republic of Croatia. Croatia has been a member of the European Union since 1 July 2013. By



signing the Maastricht Treaty, it committed itself to membership in the Economic and Monetary Union (EMU), which implies the obligation to introduce the euro as the official currency in the Republic of Croatia. All Member States that joined the European Union after 1992 have been barred from the opt-out clause (exemption from the introduction of the euro), so all new members must introduce the euro.

For the euro to become the official means of payment, the Maastricht criteria need to be met. They determine four areas of nominal convergence, namely: price stability, sound public finances, exchange rate stability and long-term interest rates. The aim of this paper is to review the fulfilment of these criteria on the example of the Republic of Croatia with concrete data for individual macroeconomic variables in a multi-year period. The euro is a controversial topic because economists have divided opinions on its strengths and weaknesses within Europe's large geographic market.

In the paper, the theoretical framework of Economic and Monetary Union (EMU) is defined, which is needed for understanding the purpose of the Maastricht criteria, after which the stages through which EMU was realized are presented. After that, the Maastricht criteria are theoretically clarified, on the basis of which the data for the Republic of Croatia are analysed, in order to explicate the satisfaction of each individual criterion. Finally, the paper presents some of the views on the introduction of the euro as the official currency in Croatia, and the euro area and its impact on the Republic of Croatia.

## **2. Economic and Monetary Union of the European Union (EMU)**

Economic and Monetary Union (EMU) is a project created by the European Union to harmonize the economic and monetary policies of all member states, with the main goal of such an organization being the creation of a single monetary area where the euro is the common currency.<sup>1</sup> There is no central economic governance in EMU, and the responsibility is shared by the Member States and the various EU institutions.<sup>2</sup> The euro was adopted as the official currency by all the initial members of the EU, except for the United Kingdom and Denmark, which withdrew from the adoption of the euro. After Brexit vote in June 2016 the central bank of the UK helped the country not to recede with the set of monetary instruments and measures (Trifonova, 2019). The UK subsequently left the EMU in 2020 following a Brexit referendum.<sup>3</sup> Hitherto, the euro has been adopted by 19 countries. Croatia, Romania and Bulgaria wish to introduce the euro as their official currency, while the remaining five countries do not. Denmark has no legal obligation to join the euro area (exemption clause), and Sweden, Hungary, the Czech Republic and Poland, although legally obliged to adopt the euro, have decided to postpone the process indefinitely, citing the cost of losing monetary sovereignty as a key economic argument (Lakić, 2021). The process of introduction of the euro as an official currency of a country is a result of a long lasting preparation with many demands and criteria that need to be met, in order to enable the country to integrate into the European market and abandon the national monetary policy (Kordić et al., 2021).

The historical beginnings of EMU date back to the early 1970s when European leaders set a new goal of European integration – EMU, with the ultimate goal to achieve full liberalization

---

<sup>1</sup> Ekonomska i monetarna unija, <https://enciklopedija.hr/natuknica.aspx?ID=69898> (accessed 17 July 2021)

<sup>2</sup> Povijest ekonomske i monetarne unije, <https://www.europarl.europa.eu/factsheets/hr/sheet/79/povijest-ekonomske-i-monetarne-unije> (accessed 17 July 2021)

<sup>3</sup> European Economic and Monetary Union – EMU, <https://www.investopedia.com/terms/e/emu.asp> (17 July 2021)

of movement of capital, full convertibility of member states' currencies and irrevocable fixation of exchange rates.<sup>4</sup> The creation of EMU was re-initiated in 1988, when it was agreed that it would be realized in three interconnected stages (Vizjak and Vuković, 2001). Some of the activities are the abolition of restrictions on movement of capital between member states, the establishment of the European Monetary Institute, the establishment of the European Central Bank, the regulation of central banks, the introduction of the euro, the Stability and Growth Pact, etc.<sup>5</sup>

The first stage of EMU was realised within the institutional framework of the then European Economic Community (EEC). However, for the needs of the second and third stages, the solution was found in the revision of the Treaty on the European Economic Community. This was achieved in February 1992 with the signing of the Treaty on European Union in the Dutch city of Maastricht. Due to the place of signing, the treaty is recognisably called the Maastricht Treaty. Among other things, it set the conditions that member states must meet to participate in the third stage of EMU, i.e. the criteria for the introduction of a single common currency - the euro (Curavić et al., 2005). The treaty was signed by 12 countries (Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain and the United Kingdom) and it officially entered into force on 1 November 1993.<sup>6</sup> All countries that joined the EU after 1992 had to sign the Maastricht Treaty, thus committing themselves to the introduction of the euro, without the option of an opt-out clause (exemption from the introduction of the euro) (Curavić et al., 2005). However, the Maastricht Treaty or any other EU legislative does not prescribe specific timeline for adopting euro (Dentons, 2020). Thus, it is possible to delay the introduction of the euro so that the state does not access the exchange rate mechanism (ERM II). But, Ćorić and Deskar-Škrbić (2017) pointed out how ERM II serves as an important policy credibility anchor and also, how the entrance into ERM II phase can motivate a state to pursue policies in a manner of fasten euro adoption. Also, Čehulić and Hrbić (2019) pointed out how the example of the introduction of the euro in other countries had the positive effects in short-term with a slightly negative effect of costs increases, while long-term effects are more difficult to predict since it depends on a future economic development of the country.

### 3. Maastricht Criteria

In order to join the Eurozone, each member state of the EU must meet the convergence criteria (Maastricht criteria). According to Marić (2015), two types of convergence are distinguished, namely the nominal and the real one. Nominal is prescribed by the Maastricht Treaty and includes fiscal and monetary convergence. Nominal convergence represents the formal conditions for joining the euro area. Real convergence is not a condition, but it is very important for the candidate country because it refers to the real state of the economy. Real convergence seeks to achieve economic development equivalent to the average of EU member states. Some of the indicators used to monitor real convergence are GDP per capita, unemployment rate, purchasing power parity, real exchange rate, average wage level, price indices, etc. By observing real convergence, real benefits and costs of entry to the EMU can be recognised.

---

<sup>4</sup> Povijest ekonomske i monetarne unije, <https://www.europarl.europa.eu/factsheets/hr/sheet/79/povijest-ekonomske-i-monetarne-unije> (accessed 17 July 2021)

<sup>5</sup> Ekonomska i monetarna unija, <https://www.ecb.europa.eu/ecb/history/emu/html/index.hr.html> (accessed 18 July 2021)

<sup>6</sup> Pet činjenica koje trebate znati o Ugovoru iz Maastrichta, [https://www.ecb.europa.eu/explainers/tell-me-more/html/25\\_years\\_maastricht.hr.html](https://www.ecb.europa.eu/explainers/tell-me-more/html/25_years_maastricht.hr.html) (accessed 1 September 2021)

Kesner-Škreb (2006) categorises the Maastricht criteria into four areas, with the area of public finance having two sub-areas:

1. Price stability
2. Public finance
  - a. General government budget deficit
  - b. General government debt
3. Exchange rate
4. Long-term interest rate

In the continuation of the paper, each criterion is theoretically presented, and concrete data on the movements of individual economic variables in a multi-year period are presented on the example of the Republic of Croatia.

### 3.1. Price Stability Criterion

Article 140 (1), first indent, of the Treaty on the Functioning of the EU is related to the criterion of price stability. It states that the Member State must have a sustainable level of price stability. The criterion of the average annual inflation rate is also specified, which states that inflation must not exceed 1.5% in relation to the three best performing Member States in terms of price stability. Inflation is measured by the CPI, i.e. the consumer price index.<sup>7</sup>

In the economic literature, inflation is described as an increase in the general price level or, equivalently, a decrease in the value of money (Benić, 2016). Often, the main goal of a country's monetary policy is price stability, a term that denotes a state in which the price level is neither rising nor falling (Borožan, 2019).

Economists and scientists do not share unanimous views on determining which inflation rate is optimal for the economy of a single country. According to a study by Kryvtsov and Mendes (2015), most central banks take a value of around 2% as a monetary policy target and thus also a desirable inflation rate. The 2% target has gradually gained credibility as it is considered to be a stable and achievable target. However, some economists state that inflation should be higher than 2%. Benić (2016) states that it is important to carefully consider the transition and long-term costs associated with higher inflation, where positive inflation growth is desirable, while lower values or even deflation can have severe consequences for the economy. For example, with the growth of prices, the profit of a company grows, and accordingly also its investments. If prices continued to fall, buyers and producers would delay buying in hope of lower prices in the future, resulting in a downturn in the economy because there would be no investments and consumption.

Inflation rate ( $\pi$ ) is calculated according to the following formula:

$$\pi = \frac{P_t - P_{t-1}}{P_{t-1}}$$

where  $P_t$  indicates the price level in the current year, and  $P_{t-1}$  indicates the price level in the previous year. To see the relationship with the base year, the symbol  $P_{t-1}$  will indicate the base year (Borožan, 2019).

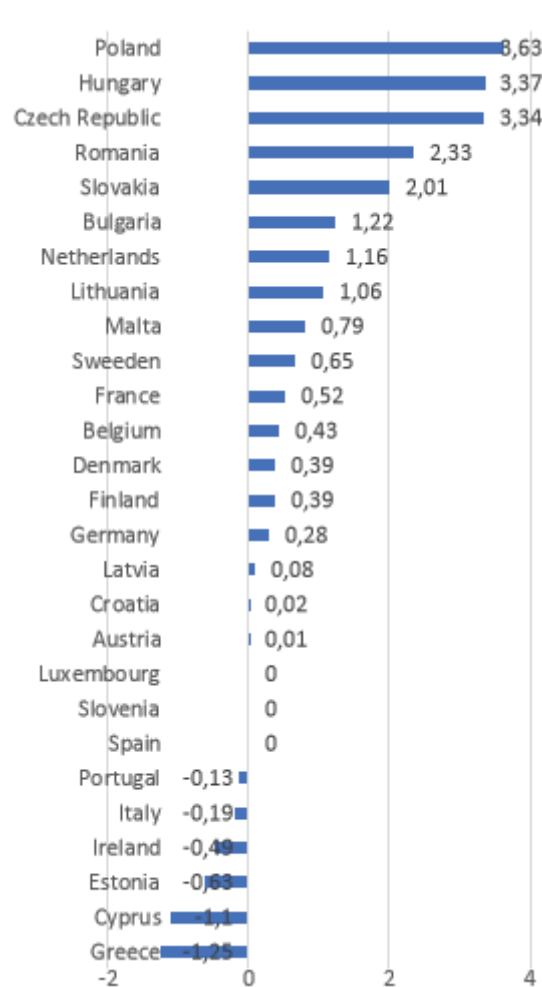
---

<sup>7</sup> Konvergencijski kriteriji, <https://www.ecb.europa.eu/ecb/orga/escb/html/convergence-criteria.hr.html> (accessed 26 July 2021)

Consumer price index (CPI) is an economic indicator which examines the weighted average price of a basket of consumer goods and services, such as transportation, food, clothing, and medical care. It is calculated by taking into account changes in prices for each item in a predetermined basket of goods used by the reference urban household of that country<sup>8</sup> “The consumer price index can have different purposes and serve to measure inflation, preserve value in contracts with index clauses (e.g. for indexation of wages in collective agreements, indexation of pensions, etc.), comparison of domestic price movements between certain economic sectors, as a basis for deflation of certain categories of national accounts and other statistical series, and is used for analytical purposes”<sup>9</sup>. The CPI has been calculated in Croatia since January 2004.

Graph 1 shows the movements of the average annual inflation rate calculated on the basis of the data of the harmonised index of consumer prices. The CPI is presented in relation to the base period of 2015 (2015 = 100). The graph depicts the calculated values of the CPI change rate for 2020, compared to 2019.

**Graph 1:** The average annual inflation rate in the EU in 2020



Source: Authors, according to Eurostat – Harmonised index of consumer prices (HICP), [https://ec.europa.eu/eurostat/databrowser/view/prc\\_hicp\\_aind/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/prc_hicp_aind/default/table?lang=en) (accessed 14 August 2021)

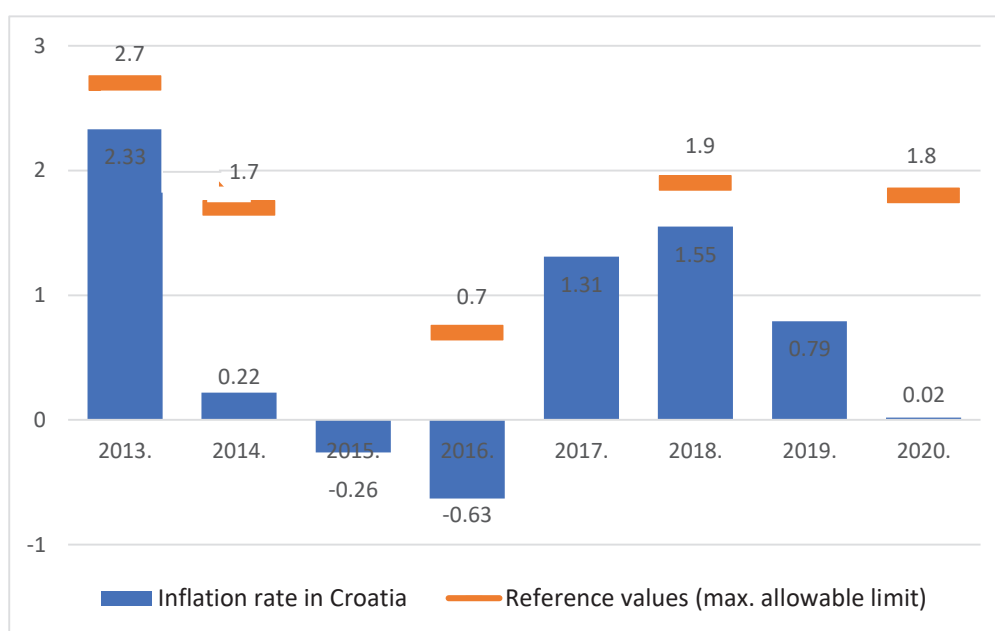
<sup>8</sup> Consumer price index, <https://www.investopedia.com/terms/c/consumerpriceindex.asp> (accessed 31 July 2021)

<sup>9</sup> Indeksi potrošačkih cijena u prosincu 2020., [https://www.dzs.hr/Hrv\\_Eng/publication/2020/13-01-01\\_12\\_2020.htm](https://www.dzs.hr/Hrv_Eng/publication/2020/13-01-01_12_2020.htm) (accessed 31 July 2021)

Most countries recorded low inflation rates in 2020. Exceptions were Poland, Hungary and the Czech Republic, which had inflation higher than 3%. On the other hand, five EU member states faced deflation in 2020. Among those, Greece had the largest deflation of -1.25%.

Graph 2 shows the movements of the average annual inflation rate in the Republic of Croatia for the period from 2013 to 2020. The base year is 2015. The benchmarks are shown for 2013, 2014, 2016, 2018 and 2020 because the Convergence Report is published every two years. Due to a special request from Latvia, an additional report was prepared in 2013, so 2013 is an exception to the regular schedule for publishing reports.

**Graph 2:** Inflation rate trends in the Republic of Croatia



Source: Authors, according to Eurostat – Harmonised index of consumer prices (HICP), [https://ec.europa.eu/eurostat/databrowser/view/prc\\_hicp\\_aind/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/prc_hicp_aind/default/table?lang=en) (accessed 14 August 2021)

The graph clearly shows that inflation in Croatia has been stable since 2014 and ranges between -1% and 2% in the reference period. The reference values have not been exceeded in the last seven years since Croatia became a member of the EU. According to the presented data, Croatia meets the Maastricht criterion of price stability.

### 3.2. Public Finance Criterion

Kesner-Škreb (1998) states that public finance is one of the oldest economic branches. In order to rule successfully, politicians sought expert advice on various economic issues related to public administration such as taxes, financing of the military and the like. There is a common belief that public and private sectors cannot function without each other, i.e. both are stakeholders in the economy where they are connected and interdependent. The public finance sector serves to guide, correct and complement the functioning of market mechanisms, and the goal of public finance is to find the optimal solution in the sphere of public revenue and expenditure.

There are three types of budget in the Republic of Croatia - state, central and general. The state budget consists of revenue and expenditure of budget users such as the Government, the

Croatian Parliament, state agencies, etc. The central budget encompasses the state budget and the budget of extra-budgetary funds, such as HZMO (Croatian Pension Insurance Institute), HZZ (Croatian Employment Service), HZZO (Croatian Health Insurance Fund) etc., while the general government budget includes all three levels of the budget. It is worth mentioning that the central and general budgets are consolidated budgets. The word 'consolidated' in this case refers to the fact that mutual transactions between the budgets of local and regional self-government units, extra-budgetary funds and the state budget have been annulled (Borožan, 2019).

The Maastricht criteria distinguish between two categories of public finance criteria that need to be met. These are the general government budget deficit and general government debt (public debt), which are presented in more detail below.

### 3.2.1. General government budget deficit

The budget deficit arises when the state has expenditure which is higher than its revenue. If the state has a budget deficit, it has to be financed in some way. The most common form of financing is borrowing. It includes the sale of treasury bills, bonds on the domestic and foreign markets and raising loans (Bićanić and Deskar-Škrbić, 2018). Economists consider borrowing to be the most favourable option because it does not affect or result in the smallest increase in prices (Borožan, 2019). According to Bićanić and Deskar-Škrbić (2018), there are five ways to finance the budget deficit:

1. Borrowing (government issues bonds or takes out a loan)
2. Monetisation (the central bank gives a loan to the state) - a highly undesirable form that often leads to hyperinflation. In Croatia, monetisation of the budget is prohibited.
3. Sale of state property - assets are long-term, while the deficit is short-term, therefore privatisation must be part of the strategy of state property management. In Croatia, state property is often sold to cover debts urgently, which is unacceptable (for example, a hotel is sold to pay debt to doctors)
4. Non-payment of bills and extension of payment deadlines - since the market economy is based on orderly payment of debts and compliance with contracts, the government sets a bad example for others
5. Inflation profit (central bank profit is transferred to the budget).

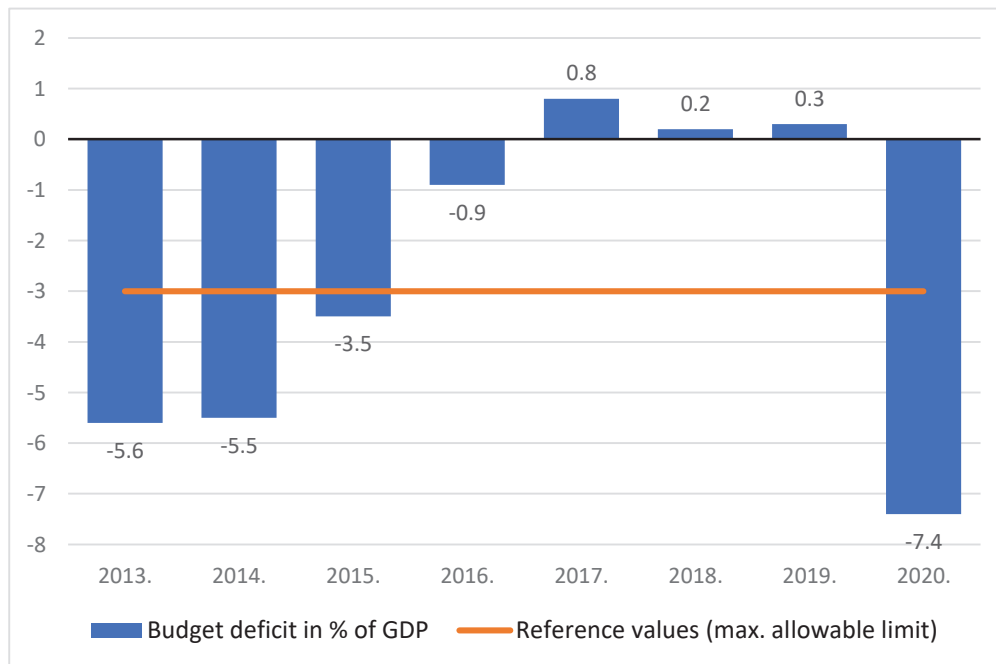
Hoxha and Kryeziu (2021) examined the impact of the fiscal deficit on the economic growth of Eurozone member states. When it comes to policy recommendations for the euro area countries that were the subject of the study, it is worth noting that, although the fiscal deficit is in most cases good for economic growth, the level of the deficit should be controlled by governments. In the long-term period, high deficits can harm economic growth and create imbalances in other macroeconomic variables. The occurrence of anomalies with a permanent deficit above the permissible limits, especially in the long term, can have major consequences for the countries that are the subject of this study. When the impact of the COVID-19 pandemic is added to the equation, the situation in these countries becomes even more complicated.

According to Šonje (2019), the general government budget deficit criterion stipulates that the ratio of budget deficit to nominal GDP must not exceed 3% for the previous year, and also, this ratio must be continued in the European Commission's projections for the next two years.

If the stated limit is exceeded, the criterion is still met if there has been a constant and significant reduction in the ratio in previous years or if exceptional circumstances of a temporary character, such as a major economic downturn, have occurred. In case of non-compliance with the criteria, the Council initiates the excessive budget deficit procedure.

Graph 3 depicts the general government deficit as a percentage of GDP for the Republic of Croatia in the period 2013-2020. The horizontal red line shows a value of -3% below which the ratio must not fall in order to meet the stated criterion.

**Graph 3:** General government budget deficit (% of GDP) in the Republic of Croatia



Source: Authors, according to Eurostat - General government deficit (-) and surplus (+), <https://ec.europa.eu/eurostat/databrowser/view/teina200/default/table?lang=en> (accessed 14 August 2021)

In the first three years of membership in the EU, Croatia did not meet this criterion, while after 2015 it achieved a significant reduction in the general government budget deficit, while in 2017, 2018 and 2019 it achieved a surplus. However, due to the COVID-19 crisis, in 2020 government spending was increased, so there was a decline of -7.4%. Given that this crisis is an exceptional circumstance of a temporary character, it can be considered that Croatia still meets this criterion.

### 3.2.2. General government debt (public debt)

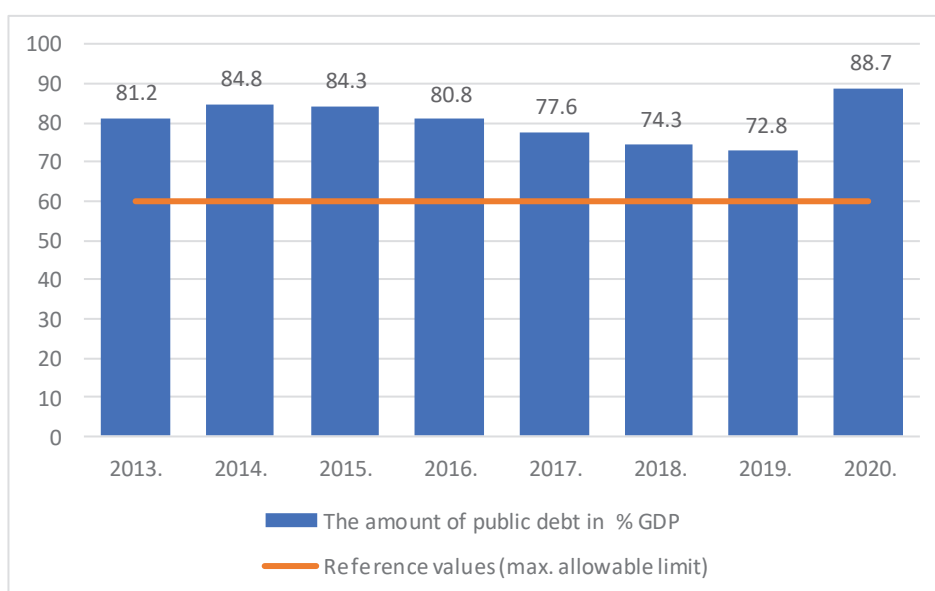
Government (public) debt is the amount that the government has borrowed in order to finance budget deficits. The cause of public debt can be a contraction in business activities or poor macroeconomic or fiscal policy. High public debt does not necessarily mean that a country's economy is collapsing, but rising debt indicates that economic growth will decelerate significantly (Borozan, 2019). General government debt is presented in accordance with the

European System of National and Regional Accounts of 2010 and veritably represents “gross nominal consolidated debt excluding accrued unpaid interest”.<sup>10</sup>

The general government debt criterion prescribes a limit on the size of public debt where it is defined that debt must not exceed 60% of the value expressed as a percentage of nominal GDP. If in previous years the ratio exceeded the threshold, it is necessary to approach the level of 60% at a satisfactory defined speed (Šonje, 2019). This exception was more clearly defined in 2011 when it was determined that the rate of reduction must be 1/20 of the difference in the medium term (three years). "For example, if in 2017 the difference was 22 percentage points, then the debt in 2018 would have to be reduced by 1.1 percentage points" (Bićanić and Deskar-Škrbić, 2018, 106).

Graph 4 presents the share of public debt as a percentage of GDP for the Republic of Croatia in the period from 2013-2020. Croatia has never met the 60% requirement.

**Graph 4:** Public debt (% of GDP) in the Republic of Croatia



Source: Authors, according to Eurostat - General government gross debt, <https://ec.europa.eu/eurostat/web/products-datasets/-/tipsgo10> (accessed 14 August 2021)

Since 2014, the share of public debt has been declining towards the 60% reference value. As with the general government budget deficit, in 2020, due to the COVID-19 crisis, public debt increased dramatically to as much as 88.7%. With the exception of 2020, and if the exception to the criterion is taken into account, it can be said that the Croatia meets this criterion because in previous years there was a clear tendency of public debt reduction.

### 3.3. Exchange Rate Criterion

The exchange rate can be defined as the price of one currency against another. Considering such an analogy, economists distinguish two types of quotations. The directly quoted exchange rate is the price of foreign currency in domestic currency (e.g. 1€ = 7.5kn), while

<sup>10</sup> Dug opće države, <https://www.hnb.hr/statistika/statisticki-podaci/opca-drzava/dug-opce-drzave> (accessed 13 July 2021)



the indirectly quoted exchange rate represents the price of domestic currency in foreign currency (e.g. 1kn = 0.13333€). The exchange rate and its changes affect many components of the national economy such as imports and exports, relative prices, development dynamics, competitiveness, redistribution of national income, etc. (Lovrinović, 2015).

Under the Maastricht Treaty, the exchange rate criterion stipulates that a Member State must not devalue the central parity of its euro-denominated currency. The period of observation for this criterion is during the length of stay of a member state in the ERM II currency arrangement, i.e. two years before the introduction of the euro, provided that there are no serious tensions in the foreign exchange market (Šonje, 2019). The permissible fluctuation band between the euro and the domestic currency is a maximum of  $\pm 15\%$ .<sup>11</sup>

In order to apply for accession, Croatia had to take 19 measures in six areas, including "further strengthening of banking supervision by establishing close cooperation with the ECB, upgrading the macroprudential framework, strengthening the anti-money laundering framework, improving collection, drafting and dissemination of statistical data, improving public sector governance, and reducing administrative and financial burdens".<sup>12</sup> On July 10, 2021, the Croatian kuna entered the ERM II exchange rate mechanism, when the central parity of the Croatian kuna was determined at the level of: 1 euro = 7.53450 kuna.<sup>13</sup> Therefore, during the stay in ERM II, the Croatian kuna must not exceed the lower limit of 6.40432 and the upper limit of HRK 8.66467 for 1 euro, which should not represent a problem since the exchange rate regime in Croatia was managed and fluctuating, where the CNB managed the kuna against the euro, so in the previous period the exchange rate was stable.

### 3.4. Long-term interest rate criterion

The long-term interest rate criterion stipulates that the average nominal long-term interest rate must not exceed 2% in relation to the three Member States that have achieved the best value in terms of price stability. Interest rates are viewed on the basis of long-term government bonds with a maturity of 10 years.<sup>14</sup>

Graph 5 depicts the movement of the average nominal long-term interest rate on government bonds of the Republic of Croatia for the period from 2013 to 2020. The benchmarks are shown for 2013, 2014, 2016, 2018 and 2020 as the Convergence Report is published every two years. 2013 is an exception to the regular publication schedule due to a special request from Latvia.

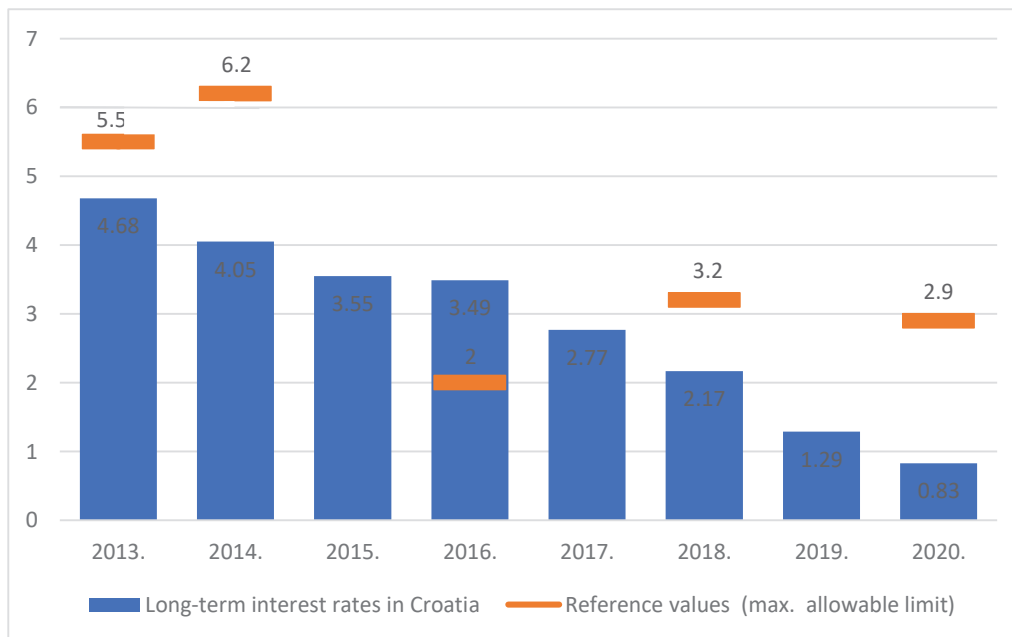
---

<sup>11</sup> ERM II – the EU's Exchange Rate Mechanism, [https://ec.europa.eu/info/business-economy-euro/euro-area/introducing-euro/adoption-fixed-euro-conversion-rate/erm-ii-eus-exchange-rate-mechanism\\_en](https://ec.europa.eu/info/business-economy-euro/euro-area/introducing-euro/adoption-fixed-euro-conversion-rate/erm-ii-eus-exchange-rate-mechanism_en) (accessed 27 August 2021)

<sup>12</sup> Što je bilo potrebno poduzeti da Hrvatska uđe u ERM II i koliko dugo se očekuje da će Hrvatska provesti u tom mehanizmu do uvođenja eura?, <https://euro.hnb.hr/-/sto-je-bilo-potrebno-poduzeti-da-hrvatska-u-e-u-erm-ii-i-koliko-dugo-se-ocekuje-da-ce-hrvatska-provesti-u-tom-mehanizmu-do-uvo-enja-eura-> (accessed 14 August 2021)

<sup>13</sup> Prijevod priopćenja o ulasku Hrvatske u ERM II, <https://www.hnb.hr/-/communique-on-croatia> (accessed 14 August 2021)

<sup>14</sup> Konvergencijski kriteriji, <https://www.ecb.europa.eu/ecb/orga/escb/html/convergence-criteria.hr.html> (accessed 14 August 2021)

**Graph 5:** Long-term interest rate in the Republic of Croatia

Source: Authors, according to Eurostat - EMU convergence criterion series, [https://ec.europa.eu/eurostat/databrowser/view/irt\\_lt\\_mcby\\_a/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/irt_lt_mcby_a/default/table?lang=en) (accessed 14 August 2021)

The graph shows the trend of decreasing of long-term interest rate in the Republic of Croatia over a multi-year period. Based on the available data, the Republic of Croatia exceeded the reference value in 2016, while in other years it was within the prescribed limits. In conclusion, it can be said that Croatia meets the Maastricht criterion of long-term interest rate.

#### 4. The euro as the official currency

The euro is the monetary unit and currency of the EU. There are many advantages, as well as many disadvantages for an individual country which gives up its national currency and introduces the euro as the only official currency in its country. In addition to the above mentioned, there are many advocates, as well as many opponents of the introduction of the euro as the official currency of each country. Alongside economists, who argue their reasons "for" and "against" the introduction of the euro, citizens also have their opinion on this topic, since they are directly affected by the process of introduction of the euro. Among others, the Britannica website lists arguments "for" and "against" the introduction of the euro.<sup>15</sup> At the time of the creation of the euro in the 1990s, proponents of the euro believed that a common European currency could improve trade relations by eliminating the exchange rate (eliminating currency risk) and reducing prices. Contrarily, the loss of national sovereignty and identity were cited as arguments against the euro. Despite the above mentioned, 11 countries officially joined the EMU in 1998 where the euro was introduced as a non-cash monetary unit in 1999, and banknotes and coins appeared in the participating countries on 1 January 2002. After 28 February 2002, the euro became the single currency of the 12 EU Member States, and their national currencies ceased to be legal tender. The euro is represented by the € symbol, and today the euro is used as the official currency by 19 EU member states.

<sup>15</sup> Euro, <https://www.britannica.com/topic/euro> (accessed 15 August 2021)

#### 4.1. The Eurozone

The Eurozone, officially known as the euro area, is a geographical and economic region made up of all European Union countries which have fully adopted the euro as their national currency, and is home to approximately 340 million people. In 1992, the Maastricht Treaty paved the way for the creation of a common economic and monetary union consisting of a central banking system, a common currency and a common economic region, the Eurozone.<sup>16</sup>

One of the biggest advantages of the introduction of the euro is the elimination of currency risk. Mursa (2014) explains that continuous exchange rate fluctuations between two or more currencies increase uncertainty and risk for foreign exchange companies and discourage the transfer of goods and services across national borders. Therefore, the elimination of currency risk increases trade between Eurozone members, but also trade with the rest of the world. It should be mentioned that empirical research on the impact of the introduction of the euro on trade has brought varying results, depending on the chosen research methodology, so consequently there are many conclusions about the positive, negligible and negative relationship. Obringer (2002) states that due to reduced exchange rate risk, the euro encourages lower interest rates. In the past, additional interest was charged to cover exchange rate risk. In favour of eliminating currency risk, Beattie (2021) adds that travel is facilitated by eliminating the need to exchange money (transaction costs). The third argument for the benefits of introducing the euro is price transparency. Obringer (2002) states that with cross-border price equalisation, companies have to be more competitive. Prices still vary, but consumers are able to spot a good or bad offer more easily. It is also important to mention the stability of the financial market. To a greater extent, stock exchanges can list each financial instrument in euros rather than in the denominations of each country. This has further implications in promoting trade with fewer restrictions at international level, as well as strengthening European financial markets.

According to Stiglitz (2017), the Eurozone is a project which is doomed to failure. Furthermore, the author explains that although the EU provided hope through political and economic integration, it made a fatal mistake in 1992 when it decided to unite Europe by creating a single currency, i.e. to connect member states by creating a monetary union. He explains that good monetary policy does not guarantee prosperity, and a bad one brings recessions and crises. It has been proven for numerous times throughout history that currency pegging (fixing one currency to another) is in correlation with recessions and crises. The most famous example of such practice is the gold standard where the currencies of larger countries could be converted into gold at a fixed exchange rate (Babić, 2009). With the gold standard, inflation, growth and the financial system are less stable, and when things go wrong in one part of the world, trouble will spread faster and transfer completely to others, which would actually mean that re-creating the gold standard leads to colossal mistakes.<sup>17</sup> Despite the historical facts, the EU has decided to be linked to one currency - a system as rigid as in the age of the gold standard.

Robert Mundell, economist, a Nobel Prize winner in the field of Economics for his paper "A Theory of Optimal Currency Areas"<sup>18</sup>, defines the conditions needed for multiple countries to

---

<sup>16</sup> Eurozone, <https://www.investopedia.com/terms/e/eurozone.asp> (accessed 27 August 2021)

<sup>17</sup> Why a gold standard is a very bad idea, <https://www.moneyandbanking.com/commentary/2016/12/14/why-a-gold-standard-is-a-very-bad-idea> (accessed 11 August 2021)

<sup>18</sup> Robert Mundell Facts, <https://www.nobelprize.org/prizes/economic-sciences/1999/mundell/facts/> (accessed 27 August 2021)

share the same currency: high labour force mobility across the region, mobility of capital and flexibility of prices and wages, currency risk sharing or fiscal mechanism for risk sharing between countries, and similar business cycles.<sup>19</sup> The basic premise is that countries must be similar enough to unite in a currency area, whereas the Eurozone consists of 19 member states which are too different to be functioning under the same monetary and fiscal policy. During the creation of the euro, most member states were aware of these differences and that there was no institutional framework in the community to ensure that different economies shared the same currency. Stiglitz (2017) states that the differences between countries were immense from the very beginning (where Portugal had 57% of German GDP per capita, and the later associated Latvia had 31%, compared to Germany). The European Union had hoped that the countries would get closer and more similar, but in many cases this did not happen. For example, Portugal had only 48% of Germany's GDP per capita in 2015, which means that the countries have become even more distant from each other.

The interest rate and the exchange rate are the two most important tools for maintaining full employment, and the creation of an area with a common currency takes those tools away from the state. A practical example of this could be Greece. Namely, if it had not been in the Eurozone during the crisis, its central bank could have devalued its currency. Consequently, tourists would visit Greece realizing that it was cheaper and thus increase the country's revenue, which would in turn lead to a rapid recovery of the economy. However, the European Central Bank raised interest rates in 2011, thus further "burying" Greece. Orphanides (2014) states that the Eurozone crisis was essentially a political crisis, when, in the absence of federal government, uncooperative behaviour increased the cost of the crisis and led to an unbalanced and divided occurrence of these costs. The author further explains how the European institutions were weak and incapable of defending European principles and the proper functioning of the euro.

Lang and Schadner (2021) highlight that the current situation with the Eurozone is very poor. They describe the situation in Europe as highly complicated, given that a number of urgent monetary policy measures implemented during the 2007-2012 financial and European debt crisis, such as negative interest rates and the central bank bond purchase program, are still in place. In particular, bond-buying programs were once again intensified during the Coronavirus crisis. Monetary union is in a new trilemma - supporting the free mobility of capital and stabilising monetary union are compatible only until there is no reduction, or there is a very limited reduction in expansionary monetary policy. The consequences of the COVID-19 crisis in the European area have not been resolved to date and have once again revealed various shortcomings in the construction of the euro, as national fiscal policies had not built enough tampons in the past. Therefore, the ECB's monetary policy and emergency measures are one of the main instruments of public support during the COVID-19 crisis. Following the debt crisis, Eurozone countries agreed on a banking union with a joint supervisor to sever ties between banks and their sovereigns. Addressing the trilemma requires further progress in reducing and sharing risks in the euro area, such as creating a common deposit guarantee scheme and reducing banks' exposure to domestic government bonds. Such progress may not be enough for national fiscal and monetary policies to alleviate the current COVID-19 crisis. Therefore, the introduction of a common fiscal stabilisation capacity is needed to strengthen the euro area in the event of a recession, both at state and euro area levels. Combining fiscal stabilisation capacity with a gradual reduction in asset purchase

---

<sup>19</sup> Optimal currency area, <https://www.investopedia.com/terms/o/optimal-currency-area.asp> (accessed 12 August 2021)

programmes could give the ECB room to break free of the trilemma described and help it emerge from the COVID-19 crisis without compromising the euro.

#### 4.2. Introduction of the euro in the Republic of Croatia

The euro as the official currency in Croatia has been the subject of much debate. There are varying opinions on whether Croatia should adopt the euro. Joining the Eurozone may bring a number of benefits, but also a number of costs. The Croatian authorities are united in a positive response to the introduction of the euro, and Croatia is currently in the last stage of the introduction of the euro - ERM II, which it entered on 10 July 2021, and where it must spend a minimum of 2.5 years. Therefore, the introduction of the euro in the Republic of Croatia is not questionable, but it is only a question of the exact date when it will come into effect since the Republic of Croatia committed to it by joining the EU. Given the fulfilment of the Maastricht criteria so far, Croatia is expected to join the Eurozone on 1 January 2023.<sup>20</sup>

In 2018, the Government of the Republic of Croatia and the CNB developed a Eurostrategy in which the benefits and costs of the introduction of the euro were assessed, which is shown in Table 2.

**Table 2:** Eurostrategy – benefits and costs of the introduction of the euro

BENEFITS	COSTS
Elimination of the currency risk	Loss of independent monetary policy
Reduction of the risk of currency and balance of payments crises	Risk of excessive capital inflows and macroeconomic imbalances
Access to ESM	Participation in stabilisation mechanisms - ESM
Lower interest rates	One-time inflation risk upon conversion
Share in euro area emission profit	Conversion costs
Lower transaction costs	Transactions with the ECB
Positive effect on trade and investment	

*Source: Šonje (2019)*

From the above table, it can be discerned that the benefits are not much greater than the costs. However, it is not the quantity that matters, but the size of the impact of each segment. If the benefits are taken into account, great importance is given to currency risk, low to emission profit, and the rest is given a medium importance. In terms of costs, CNB analysts estimated that the importance of each cost item is small, except for participation in stabilisation mechanisms, which is deemed to be of medium importance.

According to Šonje (2019), there are two further arguments in favour of the benefits that he believes are not listed in the Eurostrategy. The first is the surplus of the CNB's foreign exchange reserves (according to Eurosystem rules, the CNB will continue to manage these assets, creating space for the CNB's non-monetary operations), and secondly, Croatia will have a 1/21 vote of governor on the ECB's Governing Council (almost 5%), which is six times more than the share according to the normalised capital key (about 0.8%).

It can be summarised that the Republic of Croatia meets the nominal convergence criteria, while real convergence would give an exact perception of the readiness to introduce the euro.

<sup>20</sup> Smjernice za prilagodbu gospodarstva u procesu zamjene hrvatske kune eurom, [https://euro.hnb.hr/documents/2070751/2104255/h-smjernice-zamjena-hrvatske-kune-eurom\\_sijecanj-2022.pdf/41a06aed-f094-7d7e-d5e4-fbdf5c8f4584](https://euro.hnb.hr/documents/2070751/2104255/h-smjernice-zamjena-hrvatske-kune-eurom_sijecanj-2022.pdf/41a06aed-f094-7d7e-d5e4-fbdf5c8f4584) (accessed 16 February 2022)

Given that Croatia is below the standard average compared to European countries, real convergence would better describe the country's readiness to enter such a system. This could cost much more than the CNB's analysis predicts. Admittedly, the EU has brought some benefits to the national economy, but compared to other member states, they have made multiple profit. The euro as a currency has its advantages and disadvantages. As previously mentioned in the paper, there are great differences between European countries which could present a problem for harmonious association and joint creation. Political tensions are constantly present, and the largest and economically strongest countries can set conditions that suit their economies, which are achieved at the expense of small countries.

## 5. Conclusion

Economic and Monetary Union project arose from the European Union's desire to bring countries in Europe closer together. The concept of EMU is based on the idea that the creation of a monetary union would unite the member states using a common currency - the euro. Today it comprises 19 members, and Croatia is in the last phase (ERM II) after which it will become the 20th member of the eurozone.

The Maastricht criteria derive from the Treaty on European Union. With its signature in 2013, the Republic of Croatia automatically accepted the introduction of the euro. The Maastricht criteria represent nominal convergence, and are achieved in four areas: price stability, public finances, exchange rates and long-term interest rates. Croatia satisfies the criterion of price stability (because inflation is within the prescribed limits), the criterion of budget deficit (except in 2020 which will not affect the decision because the extraordinary circumstances are temporary), public debt criterion is exceeded, but in line with the exception rule, Croatia has shown a clear debt reduction, except for 2020, which is again an extraordinary circumstance of a temporary nature, and the criterion of long-term interest rates (within the prescribed limits). The only criterion that is not formally met is the exchange rate criterion, which refers to the timeframe spent in ERM II phase, so the introduction of the euro is expected on 1 January 2023.

Opinions on the euro as the official currency are divided. The Eurozone has arisen out of a genuine desire to unite Europe. However, Europe is culturally and politically truly diverse, making it difficult to achieve an optimal currency area. Monetary union is a very complicated system, and although it may operate in very similar countries, in most cases it may be an inflexible system as it offers a fixed exchange rate and centralized interest rate decision-making, which is not the most appropriate option for individual economies. Croatia's economy is below the EU average, and therefore real convergence analysis would be more appropriate and would provide more important information than nominal convergence analysis.

The scientific contribution of this paper is in its systematized presentation of Maastricht criteria and its thorough analysis on the example of the Republic of Croatia. Also, it contributes to raising the general awareness of citizens about the issue of introduction of the euro and it enables understanding the possible effects that the current situation brings to the Croatian economy.

## REFERENCES

- Babić, M. (2009): *Ekonomija – uvod u analizu i politiku*, Novi informator, Zagreb
- Beattie, A. (2021): *Pros and Cons of the Euro*, <https://www.investopedia.com/ask/answers/09/euro-introduction-debut.asp> (accessed 2 September 2021)
- Benić, Đ. (2016): *Makroekonomija*, Školska knjiga, Zagreb
- Bićanić, I., Deskar-Škrbić, M. (2018): *Makroekonomika I za ekonomiste i neekonomiste s hrvatskim primjerima*, Arhivanalitika, Zagreb
- Borozan, Đ. (2019): *Makroekonomija*, Sveučilište Josipa Jurja Strossmayera u Osijeku, Ekonomski fakultet u Osijeku, Osijek
- Consumer price index, <https://www.investopedia.com/terms/c/consumerpriceindex.asp> (accessed 31 July 2021)
- Curavić, I., Faulend, M., Lončarek, D., Šabić, A. (2005): *Kriteriji Europske unije s posebnim naglaskom na ekonomske kriterije konvergencije – Gdje je Hrvatska?*, <https://www.hnb.hr/documents/20182/121261/p-019.pdf/0f164688-47f7-4951-816d-c227238207a0> (accessed 18 July 2021)
- Čehulić, Z., Hrbić, R. (2019): *Utjecaj usvajanja eura na hrvatsko gospodarstvo: što se može naučiti od drugih zemalja?* Notitia-časopis za ekonomske, poslovne i društvene teme, Vol. 5 No. 1, pp. 73-89
- Ćorić, T., Deskar-Škrbić, M. (2017): *Croatian path towards the ERM 2: why, when and what can we learn from our peers?* Ekonomski pregled, Vol. 68, No. 6, pp. 611-637
- Dentons (2020): *Bulgaria and Croatia join the EU's ERM II and establish close-cooperation with the Banking Union*, <https://www.dentons.com/en/insights/articles/2020/july/27/bulgaria-and-croatia-join-the-eu-s-erm-ii-and-establish-close-cooperation-with-the-banking-union> (accessed 13 April 2022)
- Dug opće države, <https://www.hnb.hr/statistika/statisticki-podaci/opca-drzava/dug-opce-drzave> (accessed 13 July 2021)
- Ekonomska i monetarna unija, <https://enciklopedija.hr/natuknica.aspx?ID=69898> (accessed 17 July 2021)
- Ekonomska i monetarna unija, <https://www.ecb.europa.eu/ecb/history/emu/html/index.hr.html> (accessed 18 July 2021)
- ERM II – the EU's Exchange Rate Mechanism, [https://ec.europa.eu/info/business-economy-euro/euro-area/introducing-euro/adoption-fixed-euro-conversion-rate/erm-ii-eus-exchange-rate-mechanism\\_en](https://ec.europa.eu/info/business-economy-euro/euro-area/introducing-euro/adoption-fixed-euro-conversion-rate/erm-ii-eus-exchange-rate-mechanism_en) (accessed 27 August 2021)
- Euro, <https://www.britannica.com/topic/euro> (accessed 15 August 2021)
- European Economic and Monetary Union – EMU, <https://www.investopedia.com/terms/e/emu.asp> (accessed 17 July 2021)
- Eurostat - EMU convergence criterion series, [https://ec.europa.eu/eurostat/databrowser/view/irt\\_lt\\_mcby\\_a/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/irt_lt_mcby_a/default/table?lang=en) (accessed 14 August 2021)
- Eurostat - General government deficit (-) and surplus (+), <https://ec.europa.eu/eurostat/databrowser/view/teina200/default/table?lang=en> (accessed 14 August 2021)
- Eurostat - General government gross debt, <https://ec.europa.eu/eurostat/web/products-datasets/-/tipsgo10> (accessed 14 August 2021)
- Eurostat – Harmonised index of consumer prices (HICP), [https://ec.europa.eu/eurostat/databrowser/view/prc\\_hicp\\_a/and/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/prc_hicp_a/and/default/table?lang=en) (accessed 14 August 2021)
- Eurozone, <https://www.investopedia.com/terms/e/eurozone.asp> (accessed 27 August 2021)

- Hoxha, E., Kryeziu, N. (2021): *Fiscal Deficit and its Effects on Economic Growth: Empirical evidence*, International Journal of Finance & Banking Studies, Vol. 10 No.1
- Indeksi potrošačkih cijena u prosincu 2020., [https://www.dzs.hr/Hrv\\_Eng/publication/2020/13-01-01\\_12\\_2020.htm](https://www.dzs.hr/Hrv_Eng/publication/2020/13-01-01_12_2020.htm) (accessed 31 July 2021)
- Kesner-Škreb, M. (1998): *Javne financije*, Institut za javne financije, <https://www.ijf.hr/hr/korisne-informacije/pojmovnik-javnih-financija/15/javne-financije/43/javne-financije/327/> (accessed 27 August 2021)
- Kesner-Škreb, M. (2006): *Kriteriji konvergencije, Financijska teorija i praksa*, Vol. 30, No. 4, pp. 407-408
- Konvergencijski kriteriji, <https://www.ecb.europa.eu/ecb/orga/escb/html/convergence-criteria.hr.html> (accessed 26 July 2021)
- Kordić, G., Bošnjak, M., Bilas, V. (2021): *Membership in ERM 2 – a Literature Review of Croatian and Bulgarian Perspective*, in: Tenth International Scientific Symposium "Region, Entrepreneurship, Development", Proceedings, Josip Juraj Strossmayer University of Osijek, Faculty of Economics in Osijek, June, 2021, pp. 134-147
- Kryvtsov, O., Mendes, R. R. (2015): *The optimal level of the inflation target: A selective review of the literature and outstanding issues*, Bank of Canada Discussion Paper, No. 2015-8, Bank of Canada, Ottawa, <https://www.econstor.eu/handle/10419/129691> (accessed 29 July 2021)
- Lakić, T. (2021): *Zašto Švedska, Češka, Mađarska i Poljska uporno odbijaju uvesti euro?*, <https://www.poslovnih.hr/europska-unija/zasto-svedska-ceska-madarska-i-poljska-uporno-odbijaju-vesti-euro-4291708> (accessed 17 July 2021)
- Lang, S., Schadner, W. (2021): *The trilemma of expansionary monetary policy in the Euro area during the COVID-19 crisis*, <https://www.sciencedirect.com/science/article/pii/S154461232100129X> (accessed 28 August 2021)
- Lovrinović, I. (2015): *Globalne financije*, Accent, Zagreb
- Marić, Ž. (2015): *Mastrihtski kriteriji konvergencije s posebnim osvrtom na Bosnu i Hercegovinu*, Mostariensia: časopis za društvene i humanističke znanosti, Vol. 19, No. 2, pp. 127-150
- Mursa, G. (2014): *Euro – Advantages and Disadvantages*, CES Working Papers, Vol. 6, No. 3, pp. 60-67
- Optimal currency area, <https://www.investopedia.com/terms/o/optimal-currency-area.asp> (accessed 12 August 2021)
- Obringer, L. A. (2002): *How the Euro Works*, <https://money.howstuffworks.com/euro10.htm> (accessed 2 September 2021)
- Orphanides, A. (2014): *The Euro Area Crisis: Politics over Economics*, [https://dspace.mit.edu/bitstream/handle/1721.1/103314/11293\\_2014\\_9419\\_ReferencePDF.pdf?sequence=1&isAllowed=y](https://dspace.mit.edu/bitstream/handle/1721.1/103314/11293_2014_9419_ReferencePDF.pdf?sequence=1&isAllowed=y) (accessed 2 September 2021)
- Pet činjenica koje trebate znati o Ugovoru iz Maastrichta, [https://www.ecb.europa.eu/explainers/tell-me-more/html/25\\_years\\_maastricht.hr.html](https://www.ecb.europa.eu/explainers/tell-me-more/html/25_years_maastricht.hr.html) (accessed 1 September 2021)
- Povijest ekonomske i monetarne unije, <https://www.europarl.europa.eu/factsheets/hr/sheet/79/povijest-ekonomske-i-monetarne-unije> (accessed 17 July 2021)
- Prijevod priopćenja o ulasku Hrvatske u ERM II, <https://www.hnb.hr/-/communique-on-croatia> (accessed 14 August 2021)
- Robert Mundell Facts, <https://www.nobelprize.org/prizes/economic-sciences/1999/mundell/facts/> (accessed 27 August 2021)



Smjernice za prilagodbu gospodarstva u procesu zamjene hrvatske kune eurom (2022). RH, Ministarstvo gospodarstva i održivog razvoja, Koordinacijski odbor za prilagodbu gospodarstva i zaštitu potrošača. [https://euro.hnb.hr/documents/2070751/2104255/h-smjernice-zamjena-hrvatske-kune-eurom\\_sijecanj-2022.pdf/41a06aed-f094-7d7e-d5e4-fbdf5c8f4584](https://euro.hnb.hr/documents/2070751/2104255/h-smjernice-zamjena-hrvatske-kune-eurom_sijecanj-2022.pdf/41a06aed-f094-7d7e-d5e4-fbdf5c8f4584) (accessed 16 February 2022)

Stiglitz, J.E. (2017): *Euro – kako zajednička valuta prijeti budućnosti Europe*, Profil Knjiga, Zagreb

Šonje, V. (2019): *Euro u Hrvatskoj: za i protiv*, Arhivanalitika, Zagreb

Što je bilo potrebno poduzeti da Hrvatska uđe u ERM II i koliko dugo se očekuje da će Hrvatska provesti u tom mehanizmu do uvođenja eura?, <https://euro.hnb.hr/-/sto-je-bilo-potrebno-poduzeti-da-hrvatska-u-e-u-erm-ii-i-koliko-dugo-se-ocekuje-da-ce-hrvatska-provesti-u-tom-mehanizmu-do-uvo-enja-eura-> (accessed 14 August 2021)

Trifonova, S. (2019): *The New Monetary Policy Toolkit of the Bank of England in Response to the Global Financial Crisis and the Euro Area Debt Crisis*, in: Eighth International Scientific Symposium "Economy of eastern Croatia – vision and growth", Proceedings, Josip Juraj Strossmayer University of Osijek, Faculty of Economics in Osijek, May 30-31, 2019, pp. 520-533

Vizjak, A., Vuković, I. (2001): *Europska monetarna unija - retrospektiva, trenutno stanje i perspektiva*, Ekonomska misao i praksa, Vol. 10, No. 2, pp. 303-324

Why a gold standard is a very bad idea, <https://www.moneyandbanking.com/commentary/2016/12/14/why-a-gold-standard-is-a-very-bad-idea> (accessed 11 August 2021)

*A scientific paper*

**Aleksandra Vasilj, Ph. D., Full Professor**

J. J. Strossmayer University of Osijek, Faculty of Law Osijek

E-mail address: avasilj@pravos.hr

**Biljana Činčurak Erceg, Ph. D., Associate Professor**

J. J. Strossmayer University of Osijek, Faculty of Law Osijek

E-mail address: bcincura@pravos.hr

## THROUGH CHANGES TO LEGISLATION TO MODERN URBAN MOBILITY<sup>1</sup>

### ABSTRACT

*All major cities in the world face the same challenges: improving mobility while reducing congestion on the roads, reducing the number of traffic accidents, and neutralising the negative impact of traffic on the environment. The European Commission has published data showing that the costs caused by congestion inside and outside the city amount to nearly 100 billion euros a year.*

*These traffic jams were most often the cause of delays and pollution. According to the European Commission, one-third of fatal accidents occur in urban areas.*

*The paper deals with and critically reviews the implementation the strategic documents for sustainable mobility issued by the European Commission. Cities in EU Member States have the opportunity to co-finance urban transport development projects through the European Regional Development Fund and the Cohesion Fund. The city of Osijek has used the funds of a pilot project under the European Union I-SharE LIFE program, an innovative solution for sharing electric vehicles in small and medium-sized urban areas. Thus, the city of Osijek has become a model within the said project for the development of shared electric vehicles and consequently for the reduction of environmental pollution.*

*In order to introduce modern transport trends in urban traffic, it was necessary to adapt legislation. The Road Transport Act of the Republic of Croatia introduces significant innovations that enable the introduction of modern mobility trends in urban transport. However, some legal issues are still unresolved, and the legislator has not yet adequately solved all problematic issues on this topic. Therefore, we will analyse changes in Croatian regulations and compare them with the provisions of international conventions and European regulations. At the end of the paper, solutions for legal regulations are proposed for better, safer, more environmentally friendly, and modern urban mobility.*

**Key words:** *urban mobility, adapting legislation, Croatian legislation, environmental protection, transport development.*

---

<sup>1</sup> This paper is a product of work that has been fully supported by the Faculty of Law Osijek, Josip Juraj Strossmayer University of Osijek, under the project No. IP-PRAVOS-5 “Challenges and threats of modern transport and new legal solutions”.

## 1. Introduction

Urban mobility and environmentally efficient mobility are a key problem of the modern world. Mankind's aspiration to gain as much income as possible, increase the production of goods and economic efficiency, and increase the transport of passengers and goods, has caused many harmful consequences.

The rapid development of urbanisation has largely nullified the solutions that met the needs of urban transport and its normative regulation. On the other hand, public transport in cities did not follow the urban boom, but always lagged behind, so various palliative solutions were found. This troubled situation has made it imperative for analysts working on urban transport issues to do something radical in this regard. For urban transport systems to be sustainable, they must meet certain conditions, i.e. accessibility, availability to users, integration of different modes of transport, environmental friendliness, efficiency, safety, cost-effectiveness, punctuality and speed. Therefore, the main objective of this paper is to raise the level of thinking about the burning issue of urban mobility, with the aim of improving this important municipal issue. All major cities in the world face the same challenge of improving mobility, while reducing road congestion and the number of traffic accidents, and neutralising the negative impact of traffic on the environment as much as possible. States and local governments are making significant efforts to find solutions to this burning issue. In today's world, digital technology offers solutions to modernise public transport in order to achieve the given goal.

The need for mobility is growing extremely fast around the world, causing traffic-related problems, especially in major cities. Thus, transport causes traffic jams, accelerates climate change and generally affects air quality in cities. Nevertheless, the use of public transport contributes significantly to meeting the need for mobility in an environmentally friendly way. The European Commission is making efforts to improve urban transport systems by adopting a number of (non-binding) documents as well as funding projects to improve urban mobility, but its role is still limited. The task and responsibility for organising urban mobility lies with the Member States, local governments and urban decision-makers. Therefore, they all need to change and improve their legal norms, which would be an incentive to achieve the goal of sustainable urban mobility. To support this, the European Commission should establish measures to control the funding received, with well-defined plans and tasks set out in strategic documents of states and local self-government units and cities.

The paper deals with the concept of the city, the regulations applicable to cities and the problems of urban mobility in the European Union and the Republic of Croatia. Since the problems of urban transport are most often associated with cities, in this paper we will deal with the problems of transport in cities. Since the problem of pollution in cities is related to environmental pollution, sustainable transport is also presented in this paper. Possible solutions to the problems in cities include the use of public transport, as well as modern forms of transport such as bike sharing and car sharing. In addition, vehicles that use alternative energy sources are more environmentally friendly. Furthermore, the city of Osijek is mentioned as an example of good practice, which has in recent years implemented several projects to modernise urban transport. The development of traffic in cities is accompanied by changes in legislation, and the paper analyses the main provisions of the relevant regulations. The paper points out deficient and illogical solutions of the regulations and gives recommendations for their amendments.

## 2. The concept of the city

The city has always been at the centre of scientific interest and has been studied continuously for a long time, due to the importance of the city in the general development of society. This breadth of the theoretical approach has led to a number of different definitions of the concept of the city, and a large number of authors have addressed both the definition of the concept and various related problems (e.g. Pavić, 2001; Vasilj, 2006; Habeš, 2008; Dakić, 1999). However, it is difficult to find a single and acceptable definition of the term “city”. Almost every state has its own definition of a city, and the governments of smaller or predominantly rural states declare some settlements to be cities simply because of their size or function. The definition of a city can vary within a country over a long period of time. We distinguish a variety of elements that determine the concept of a city. These include legal elements, quantitative-demographic elements, functional elements, economic elements, and others. Medium-sized cities are those with 100,000 or more inhabitants, small cities are those with less than 100,000 inhabitants, and large cities are those with 300,000 or more inhabitants (Vasilj, 2006, 11).

The term “urban area” is generally used as a synonym for “city”, but the two terms are not the same. All cities are urban areas, but not every urban area is a city. “Urban” is a statistical concept defined by the government of a country. Vasilj explains that the city is much more than a large number of people living close to each other; it is a complex, political, economic and social entity. Cities around the world symbolise the identity and political power of their nation. Cities are also centres of economic production, religion, education and culture (Vasilj, 2006, 7-8).

Europe is one of the most urbanised regions in the world. 70.9% of the population lives in urban areas (European Commission, Eurostat, 2020). Therefore, “the Organisation for Economic Co-operation and Development (OECD) and the European Commission have jointly developed a methodology to define a functional urban area (FUA) consistently across countries. Using population density and commuting flows as key information, an FUA consists of a densely populated city and its surrounding area (a commuting zone) whose workforce is significantly integrated into the city” (European Platform on Sustainable Urban Mobility Plans, 2019, 53). They distinguish between an urban centre, a city and a commuting zone. An urban centre consists of units with a density of at least 1,500 inhabitants per km<sup>2</sup>. A city is part of an urban centre if at least 50% of the residents live in that unit (European Platform on Sustainable Urban Mobility Plans, 2019, 53).

### 2.1. Legislation on cities in the Republic of Croatia and traffic regulation

The structure of cities in the Republic of Croatia is regulated by the Local and Regional Self-Government Act (Official Gazette of the Republic of Croatia, Nos. 33/01, 60/01, 129/05, 109/07, 125/08, 36/09, 36/09, 150/11, 144/12, 19/13, 137/15, 123/17, 98/19, 144/20). According to Article 5, “a city is a local self-government unit in which the seat of a county is located, as well as any other place with more than 10,000 inhabitants that constitutes an urban, historical, natural, economic and social unit. As a local self-government unit, a city may also include suburbs, which, together with an urban settlement, form an economic and social whole and are connected to it by daily migration and everyday needs of the inhabitants of local importance” (Official Gazette of the Republic of Croatia, Nos. 33/01, 60/01, 129/05, 109/07, 125/08, 36/09, 36/09, 150/11, 144/12, 19/13, 137/15, 123/17, 98/19, 144/20). If there are special reasons (historical, economic and geo-traffic), a place that does not meet the conditions of the above definition may also be designated as a city. According to Article 19a, “large cities are

local self-government units that are also economic, financial, cultural, health, transport and scientific development centres in the wider area and have more than 35,000 inhabitants” (Official Gazette of the Republic of Croatia, Nos. 33/01, 60/01, 129/05, 109/07, 125/08, 36/09, 36/09, 150/11, 144/12, 19/13, 137/15, 123/17, 98/19, 144/20). The tasks performed by cities and large cities within their jurisdiction include spatial and urban planning, public utilities, protection and improvement of the environment, traffic within their territory, etc.

Traffic in cities is regulated within the framework of public utilities. The legal framework relevant to public utilities is legally reflected in a number of laws and regulations enacted on the basis of the Constitution. The Constitution of the Republic of Croatia (Official Gazette of the Republic of Croatia, Nos. 56/90, 135/97, 08/98, 113/00, 124/00, 28/01, 41/01, 55/01, 76/10, 85/10, 05/14 – consolidated text, Article 128(1)) establishes the right of citizens to local (regional) self-government as one of the basic principles, and declares that these units perform tasks that meet the needs of citizens, which include public utilities, protection and improvement of the environment (Article 129a, paragraph (1) of the Constitution) and transport and transportation infrastructure (Article 129a, paragraph (2) of the Constitution). As the analysis of the laws relevant to the topic of this paper is beyond the scope, we list the most important ones: Local and Regional Self-Government Act (Official Gazette of the Republic of Croatia, Nos. 33/01, 60/01, 129/05, 109/07, 125/08, 36/09, 36/09, 150/11, 144/12, 19/13, 137/15, 123/17, 98/19, 144/20), Act on the Financing of Local and Regional Self-Government Units (Official Gazette of the Republic of Croatia, Nos. 127/17, 138/20), Act on the Territories of Counties, Cities and Municipalities in the Republic of Croatia (Official Gazette of the Republic of Croatia, Nos. 86/06, 125/06, 16/07, 95/08, 46/10, 145/10, 37/13, 44/13, 45/13, 110/15), Utilities Act (Official Gazette of the Republic of Croatia, Nos. 68/18, 110/18, 32/20), Roads Act (Official Gazette of the Republic of Croatia, Nos. 84/11, 22/13, 54/13, 148/13, 92/14, 110/19, 144/21), Road Traffic Safety Act (Official Gazette of the Republic of Croatia, Nos. 67/08, 48/10, 74/11, 80/13, 158/13, 92/14, 64/15, 108/17, 70/19, 42/20).

It should also be noted that the Republic of Croatia is a signatory to the European Charter of Local Self-Government, albeit with certain restrictions, so this Charter will have an impact on the solution of the supply system in the Republic of Croatia (European Charter of Local Self-Government, Official Gazette of the Republic of Croatia – International Agreements, No. 14/97).

It is important to note that according to Article 8 of the Utilities Act, public utility services are provided “as a public service and the services provided within the scope of this activity are of general interest”, that public utility services are provided “under the most acceptable conditions for the life and health of public utility service end users and the most acceptable conditions for space, environment, cultural goods and sustainable development” (Official Gazette of the Republic of Croatia, Nos. 68/18, 110/18, 32/20, Article 16). The Utilities Act distinguishes between public utilities, which ensure the construction and/or maintenance of municipal infrastructure in working condition, and public utilities that provide individual end users with services necessary for daily life and work in the local self-government unit (Official Gazette of the Republic of Croatia, Nos. 68/18, 110/18, 32/20, Article 21), and according to Article 25(1)(4), public passenger transport services belong to the latter. Public passenger transport is public passenger transport on roads within the zones established by local self-government units in their territory (Official Gazette of the Republic of Croatia, Nos. 68/18, 110/18, 32/20, Article 25(4)).

Public transport is carried out by making the vehicle available to the public on a permanent basis and against payment, and is regulated by the provisions of civil and transport law (Vasilj et al. 2016, 26).

### **3. Problems of urban mobility in the European Union and the Republic of Croatia**

Urban mobility faces major challenges that will be difficult to address at European Union level. The European Commission's directives that try to solve and regulate urban transport problems are only partially implemented in many countries. Many EU Member States and EU cities have not developed sustainable urban mobility plans (SUMP). One of the reasons for this is certainly that adoption of the plans is not a prerequisite for receiving substantial financial support.

The importance and usefulness of well-planned and sustainable urban mobility is illustrated by a few data from the European Parliament resolution on sustainable urban mobility (European Parliament, 2015). The resolution states that 82% of EU citizens are expected to live in urban areas, that urban mobility still relies heavily on the use of fossil-fuel vehicles, that 38% and 55% of all accidents occur in urban areas and on interurban roads, respectively, that victims are most often cyclists and other unprotected road users, that accidents are associated with high traffic density and speed, and that urban transport is responsible for up to 25% of all CO<sub>2</sub> emissions and about 70% of all emissions in urban areas (European Parliament, 2015). Similarly, "urban mobility faces many challenges, among which traffic congestion is one of the most difficult" (European Court of Auditors, 2020, 6). According to some sources, these social costs are estimated at 270 billion euros per year at European Union level (European Court of Auditors, 2020, 6).

Transport also has a negative impact on air quality. No less than 96% of EU citizens living in urban areas are exposed to such levels of air pollutants classified as harmful to health by the World Health Organisation (WHO) (European Court of Auditors, 2020, 7). The assessment of air quality and pollutant concentration and type, and the evaluation of critical levels are defined in the European Parliament Directive on ambient air quality and cleaner air for Europe (European Parliament and Council, 2008).

Considering the major problems that urban mobility poses for the inhabitants of these areas, the European Commission has prepared a series of documents and recommendations for urban mobility, among which we would like to highlight the following. In 2009, an initial framework was established for the adoption of a series of urban mobility action packages (the Action Plan on urban mobility, European Commission, 2009). The White paper "Roadmap to a Single European Transport Area - Towards a competitive and resource efficient transport system" (European Commission, 2011) was adopted by the European Commission in 2011. This was followed in 2013 by the Urban Mobility Package, Communication from the Commission "Together towards competitive and resource-efficient urban mobility" (European Commission, 2013). In 2017, the European Commission published the Communication "An agenda for a socially fair transition towards clean, competitive and connected mobility for all" (European Commission, 2017). The European Green Deal was adopted in 2019 (European Commission, 2019). The Communication "The New EU Urban Mobility Framework" was adopted in December 2021, which aims to make urban mobility environmentally friendly, energy efficient, smarter and healthier (European Commission, 2021).

As for the Republic of Croatia, in 2017, the Ministry of the Sea, Transport and Infrastructure adopted the Transport Development Strategy of the Republic of Croatia for the period 2017-

2030, and two annexes, the aim of which is “to achieve an efficient and sustainable transport system on the territory of the Republic of Croatia”. The Transport Development Strategy of the Republic of Croatia considers the mobility of citizens through the use of public transport and individual mobility. The focus is on public passenger transport and emission-free modes of transport. It is noted that public transport is not integrated in the Republic of Croatia (Republic of Croatia: Ministry of the Sea, Transport and Infrastructure, 2017, 42). The Strategy focuses on the new process of transport development planning in the Republic of Croatia. It emphasises that one of the main problems in finding a solution to urban mobility challenges is the lack of public transport data (Republic of Croatia: Ministry of the Sea, Transport and Infrastructure, 2017a, 76).

According to the Strategy, besides regions, cities are the main drivers of transport demand. Annex II to the Strategy contains a SWOT analysis of urban, suburban and regional public mobility with strengths, opportunities, weaknesses and threats to help identify what needs to be improved and reformed for more favourable urban transport. For example, insufficient harmonisation of legal regulations and lack of coordination between different modes of transport are presented as weaknesses, while environmentally friendly public transport, sustainable development and energy efficiency are indicated as strengths (Republic of Croatia: Ministry of the Sea, Transport and Infrastructure, 2017b, 98). The main priorities for public urban, suburban and regional mobility are integrated transport systems, increasing the share of public transport, and increasing sustainability. We hope that this Strategy will enable us to modernise roads to facilitate mobility for cars, bicycles and pedestrians. Over the years, a number of roads have already been built, modernised and retrofitted, and it remains to be seen what we can expect by 2030.

As mentioned earlier, sustainable urban mobility plans (SUMP) have been adopted at EU level, based on the Action Plan on urban mobility, as well as an addendum to the 2012 Action Plan. The goal of the SUMP is to improve accessibility and provide high-quality, sustainable mobility for the entire functional urban area (Vasilj, Višnjić, 2021, 483). Based on these plans, cities adopt their own sustainable mobility plans, the so-called sustainable urban mobility plans - planning for people (Vasilj, Višnjić, 2021, 484). The Republic of Croatia is one of the countries where there is not yet a specific law regulating sustainable urban mobility, which means that sustainable urban mobility projects are still in their infancy. In 2021, the Government of the Republic of Croatia adopted the National Recovery and Resilience Plan 2021-2026, which aims to develop a methodology for sustainable urban mobility plans (SUMP), or more precisely, a national framework for the development and implementation of SUMP (Government of the Republic of Croatia, 2021, 258). The plan indicates that the Government is committed to cleaner, safer, and more sustainable public transport in Croatia.

#### **4. From a smart city to smart urban mobility**

Today, more than 50% of the world’s population lives in cities, and cities are increasingly relying on smart solutions. Urban governance requires the application of technology and innovation-oriented disciplines, and innovation studies have been linked to urban governance to develop approaches that can make cities smarter (Meijer et al., 2015, 393).

There are several definitions of a smart city in the literature, of which the following two are the most commonly used (Paliaga et al., 2018, 566):

1. "A smart city is a city well performing in a forward-looking way in these six characteristics, built on the 'smart' combination of endowments and activities of self-decisive, independent and aware citizens." (Giffinger, 2007, 11); and
2. A smart city is "when investments in human and social capital and traditional (transport) and modern (ICT) communication infrastructure fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance." (Caragliu et al. 2009, 50).

The dimensions of a smart city are as follows: smart people, smart economy, smart transport (good local and international connectivity and accessibility, access to information and communication technologies (ICT), infrastructure, sustainable transport systems, a high level of transport safety), smart environment (an attractive natural pollution-free environment, natural resources, protected natural areas), smart housing and smart governance (Gupta, et al. 2017). As mentioned earlier, transport is one of the dimensions of a smart city, so in this context we refer to 'smart transport'.

#### 4.1. Smart transport

Because of its indispensable function for the economy and society as a whole, transport is one of the basic requirements for production and consumption. In a broader sense, transport includes the movement of goods, money or capital, etc. In a narrower sense, transport means the transfer or movement of people, goods, information, energy, etc. from one place to another (Čavrak, 2002, 9).

Smart transport means good local and international connectivity, a sustainable transport system, a high level of transport safety, and the like. Smart transport is a concept in which travel time is optimised with the help of information and communication technologies, resulting in various benefits, such as the reduced use of space, fewer accidents and fewer emissions, and, of course, less congestion.

The term smart transport thus refers to the way in which different modes of transport are used, in addition to or instead of a fossil-fuel powered vehicle. This concept can take many forms, and include, for example, car sharing, public transport, and cycling (Brčić et al. 2018, 1602). Smart mobility is based on the principles of efficiency, flexibility, safety, and the overall integration of the transportation system. The need for such smart mobility arose from severe traffic jams and all other traffic-related effects. The concept of smart mobility is becoming more and more popular. The number of people living in cities is growing and so is the impact on the environment and climate change. Therefore, maintaining successful urban mobility is becoming an increasingly challenging task. Nowadays, most cities have the need to create a sustainable transport system, which is the basis for improving the urban environment. Indeed, the excessive private use of cars has negative consequences for cities, i.e. there are negative impacts on the environment, traffic congestion, delays, etc.

"Road transport is one of the main causes of air pollution and greenhouse gas emissions. For example, it is the largest source of nitrogen oxide emissions (NO and NO<sub>2</sub>) and the second largest source of carbon monoxide and particulate matter emissions. Urban areas are the source of 23% of transport-related CO<sub>2</sub> emissions. In addition to air pollution and CO<sub>2</sub> emissions, traffic is also responsible for noise pollution." (Europski revizorski sud, 2020, 7).



In our opinion, in order to achieve an optimal solution and switch to environmentally friendly modes of transport, it is necessary to combine private and public transport and use different environmentally friendly modes of transport.

## **5. Modern trends and modes of transport in cities and their legal regulation**

The introduction of cars in urban traffic leads to an accelerated development of both the city itself and urban traffic. Urban traffic problems arise precisely from the excessive accumulation of cars in the city centre, and each city tries to solve this problem in its own way. Despite their many advantages, private cars are largely responsible for many environmental problems. The most commonly cited measure to solve urban mobility problems is to reduce the use of cars and use public transport, walk, cycle, use scooters, etc. Public transport should be safe, accessible, but also environmentally friendly. The available alternative modes of transport will also affect public transport and its quality. Modern urban transport tries to solve the problems of congestion, lack of space, traffic accidents, but also environmental problems (especially air pollution and noise), and one possible solution refers to new modes of transport.

Car sharing, bike sharing and e-scooter sharing are services that aim to reduce the number of private cars in order to minimise the environmental impact in cities. However, it is important to keep in mind that while certain means of transport are considered environmentally friendly (e.g. electric vehicles), certain segments (e.g. lithium-ion batteries, scrap tyres, etc.) are not necessarily better for the environment. Similarly, changes in legislation, measures and infrastructural barriers may discourage users from using them.

Despite the widespread use of all these modes of transport, we would like to stress that their legal regulation in the Republic of Croatia is generally not satisfactory. For example, electric scooters, as a relatively new means of transport, are not legally regulated. The 2018 amendments to the Road Transport Act (Official Gazette, No. 41/2018) introduced significant illogicalities regarding the form of transport contracts, and both public transport and taxi transport, which is increasingly used as a form of urban transport, are insufficiently regulated. We will discuss the main points below.

### **5.1. E-scooters**

Since the advent of electric scooters, they have become extremely popular and widely used. “The wide success that e-scooters have experienced can be traced back to major advantages that they offer, like low buying price and maintenance cost and the ease with which they can be driven and parked” (D’Andreagiovanni et al., 2022, 441). The use of electric scooters as a mode of transport has multiple advantages but it is not sufficiently regulated by law. The problem of inadequate legislation is present all over the world, as well as various difficulties faced by the cities flooded with e-scooters. Fearnley states that “cities are implementing all kinds of responses, including temporary (or outright) bans, bylaws, licensing schemes and other regulations in order to tackle problems and advance services” (Fearnley, 2020, 171). However, the primary regulation should be at the state level.

It is not uncommon for legislation to fail to follow technological advances and the emergence of new means of transport. Their use in practice often causes difficulties, and legal gaps make it difficult to resolve conflict situations and problems related to traffic safety and protection of road users. The most frequently mentioned in recent years were electric scooters, which have flooded city streets worldwide and whose use is not regulated by law. The use of scooters is

comparatively regulated in very different ways (for examples, see Croatian Parliament, 2021, p. 2).

Riding an electric scooter is also not regulated in the Republic of Croatia. In November 2021, amendments to the Road Traffic Safety Act were proposed (Croatian Parliament, 2021, p. 1), which also highlight the emergence of various electrically powered vehicles that cannot be subsumed under other vehicle categories without additional standardisation. It should be emphasised that drivers of such vehicles are currently not liable for driving such vehicles on the road. Moreover, a person using an electric scooter, electric unicycle or Segway is considered a pedestrian and is not allowed to move on the road, i.e. pedestrians must use sidewalks. It can be concluded that the existing legislation is not satisfactory and the participation of such vehicles in traffic must be regulated by law. To this end, an electric scooter, electric unicycle or Segway are to be defined in the amendments to the Road Traffic Safety Act, and the administrative rules and conditions to be met by the drivers of these vehicles are to be given in detail, as well as traffic areas in which they are allowed to move. The aforementioned means of transport would fall under the term personal transportation vehicle. According to the definition from the proposed amendments to the Road Traffic Safety Act, a personal transportation vehicle is “a vehicle that is not classified in any vehicle category in accordance with special regulations, with no seat, whose engine cylinder capacity does not exceed 25 cm<sup>3</sup> or whose electric motor power is not greater than 0.6 kW, and which cannot develop a speed above 25 km/h on a straight road, or whose maximum design speed does not exceed 25 km/h (a self-balancing vehicle, a motorised or electric unicycle, a motorised or electric scooter, and the like).” In addition, drivers of personal transportation vehicles are required to use a cycle lane or a cycle track in the direction of travel. If a cycle lane or a cycle track does not exist, drivers of personal transportation vehicles may drive their vehicles in pedestrian-only zones and traffic-calming zones, provided that they take into account safety of other traffic participants. If they cannot drive their vehicles on cycle lanes or tracks, or in pedestrian-only zones and traffic-calming zones, personal transportation vehicles can move on sections of county, local and unclassified roads, where the maximum speed is limited to 50 km/h or less, and where this is allowed by an appropriate traffic sign, as close to the right edge of the road as possible.

As the adoption of the amendments to the Road Traffic Safety Act is in progress and changes to the proposed text are still possible, we will see what the final solution and regulation of personal transportation vehicles will be. It should be borne in mind that “the chief external cost of e-scooters is traffic safety and accidents” and that “there is little doubt that the accident risk is considerably higher for e-scooters than for bicycles” (Fearnley, 2020, 173), and in that sense one should be careful when adopting legal rules that will regulate riding of e-scooters. Fearnley states, and we agree with him, that “while traffic rules certainly regulate riding behaviour, regulation must include education of users, clarification of rules, incentivising of adherence to rules and enforcement” (Fearnley, 2020, 175).

## **5.2. Taxi transport and the form of passenger transport contracts**

As Zelenika notes, taxi transport is a special form of public road transport that acts as a logistical support for urban public transport (Zelenika, 2001, 265). According to Article 31 of the Road Transport Act (Official Gazette, Nos. 41/2018, 98/2019, 30/2021, 89/2021), taxi transport is a type of public passenger transport in domestic road transport. The 2018 amendments to the Road Transport Act related to taxi transport have resulted in some positive changes. Namely, the amendments to the Road Traffic Act allow customers to order and pay for taxi transport services via mobile applications. In addition, some changes have been introduced regarding

driver responsibilities, vehicle conditions, and obtaining a licence to provide taxi services that will not only contribute to traffic safety and strengthen legal security, but also facilitate business. This has resulted in a clearer legal regime and harmonisation of regulations for all taxi drivers.

However, these amendments to the Road Transport Act have also led to some changes that are not appropriate and will cause many problems in transport. The Road Transport Act also contains provisions on road transport contracts. These amendments make road transport contracts formal, as opposed to the previously generally accepted solution, according to which such contracts were informal. Article 97(3) stipulates that road transport contracts must be concluded in writing, kept at the premises of the contracting parties and made available to the road traffic inspector upon request (Official Gazette, Nos. 41/2018, 98/2019, 30/2021, 89/2021). In this way, a transport contract in Croatian law is no longer informal in its form, as is common in both international conventions (the Convention on the contract for the international carriage of passengers and luggage by road (CVR) of 1973 and the Convention on the Contract for the International Carriage of Goods by Road (CMR)) and comparative law, but it becomes formal. This means that a road transport contract that has not been concluded in writing is null. Even according to the Civil Obligations Act (Official Gazette of the Republic of Croatia, Nos. 35/05, 41/08, 125/11, 78/15, 29/18), transport contracts are informal.

According to Vasilj, Činčurak Erceg and Vudrić, “in practice, there will certainly be many problems, especially in public transport, where transport contracts are concluded informally by buying a ticket that is already printed as a standard form, or in 'classic' taxi transport, where contracts are also concluded informally by entering the vehicle” (Vasilj, et al. 2021, 8). This raises further issues with carrier liability, as the carrier is non-contractually liable if the contract is null. Thus, the carrier has unlimited, rather than limited, liability for the full amount of damages. In the literature (Vasilj et al. 2021, 16), it has already been warned that this legal solution, which requires a written passenger transport contract, is not sufficiently presented to the public or professionals, and that it is necessary to warn both carriers and transport users about it. The provisions on road transport contracts, including taxi transport, are not adequate and urgently need to be changed. The transport contract is traditionally, but also in comparative law, informal, and the amendments to the Road Transport Act must certainly go in this direction.

### **5.3. Cycling and bike sharing**

To alleviate the problems resulting from the use of private cars, cities have added bike-sharing services to their transportation networks. Bicycles have enormous potential in the urban transportation system as they are economical, healthy and environmentally friendly. The introduction of bike-sharing systems, which are being implemented in some cities, will also contribute to increased bicycle use. As Shaheen, Guzman and Zhang (2012, 2) stated, “the ultimate goal of bike sharing is to expand and integrate cycling into transportation systems so that it can more readily become a daily transportation mode”. Bike-sharing schemes are provided by local governments or private operators (Finck and Ranchordás, 2016, 1321). “Most of the European states do not have a required regulatory framework for cycling and bike sharing, and programmes and policies to promote safe and suitable cycling are usually carried out at the municipal level” (Činčurak Erceg, Erceg, Dotlić, 2018, 446).

The Transport Development Strategy of the Republic of Croatia 2017-2030 (Republic of Croatia: Ministry of the Sea, Transport and Infrastructure, 2017, 52) states that in order to solve

the problem of urban transport, it is necessary to increase the share of public and non-motorised transport (pedestrians and cyclists) in the structure of the transport system. In addition to, there is also the potential for the development of a special cycling system (infrastructure and bicycles), especially in relation to e-mobility (Republic of Croatia: Ministry of the Sea, Transport and Infrastructure, 2017, 54). Appropriate cycling infrastructure is necessary to make the use of bicycles safer and to attract more people.

The Pan-European Master Plan for Cycling Promotion was adopted on 18 May 2021. It was developed under the umbrella of the Transport, Health and Environment pan-European Programme, which was coordinated by WHO/Europe and the United Nations Economic Commission for Europe, and it covers 54 countries, including all EU Member States. The main goal of the Cycling Master Plan is “to significantly increase cycling in every country to contribute to the overall target of doubling cycling in the region as a whole by 2030. To that end, the plan says that all countries by then will have to develop and implement a national cycling policy“ (European Cyclists’ Federation, 2021). In January 2022, the European Cyclists’ Federation (ECF) released a report, “The state of national cycling strategies in Europe (2021)”, which gives an overview of national cycling strategies, noting that “the most typical measures pursued in national cycling strategies are the promotion of intermodality, legal changes to highway codes and the development of a national cycle route network.“ Of the 47 countries analysed, 13 currently have a national cycling strategy and 19 countries, including the Republic of Croatia, located mainly in Eastern Europe have never had a national cycling strategy and are not yet in the process of developing one (European Cyclists’ Federation, 2022). In this context, we propose the urgent adoption of appropriate cycling-related regulations and the improvement of cycling infrastructure. This will improve the conditions for integrating cycling with public transport, thus reducing traffic congestion, poor air quality and noise in urban areas.

#### **5.4. Car sharing**

Car sharing, a vehicle sharing model, is used as a form of urban transport. This model is presented as an environmentally friendly, sustainable and economical form of transport. According to Nijland and van Meerkerk, car sharing can take place a) between business-to-consumer organisations, where vehicles are being owned by an organisation, and b) ‘peer-to-peer’ car sharing organisations, where private individuals offer their own cars for rent on online platforms (Nijland, van Meerkerk, 2017, 84). These authors emphasise that “car sharing usually leads to a reduction in vehicle kilometres travelled (VKT) and a reduction in car ownership” (Nijland, van Meerkerk, 2017, 85), which consequently also leads to a reduction in CO<sub>2</sub> emissions. Prettenhaler and Steininger stress that car-sharing organisations fill a gap in passenger transport and that car-sharing is created as a form of transport, where car use complements other modes of transport, especially public transport, but also walking, cycling, taxi and rental car trips (Prettenhaler; Steininger 1999, 445, 446).

Car sharing as a mode of transport will reduce congestion and environmental pollution and should therefore definitely be promoted. The Transport Development Strategy of the Republic of Croatia 2017-2030 states that providing competitive options for the use of passenger cars (taking into account the potential of car sharing services and other forms of shared mobility) is important to achieve the objectives of the Strategy and ensure a sustainable transport system (Republic of Croatia: Ministry of the Sea, Transport and Infrastructure, 2017, 207).

This model works through the conclusion of a contract between a service provider and a user. As an example of one such contractual relationship we can mention a ‘Shared transport service

contract (electric cars - car sharing)' concluded between Gradski prijevoz putnika d.o.o., a municipal public transport company from the city of Osijek, and a service user. This contract regulates car-sharing (Gradski prijevoz putnika d.o.o., 2020b), and it is supplemented by the Ordinance on the shared transport service (Gradski prijevoz putnika d.o.o., 2020a).

## **6. Urban mobility and integrated transport using the example of the city of Osijek**

The European Union made it possible for cities in the Member States to co-finance urban transport development projects through the European Regional Development Fund and the Cohesion Fund. The city of Osijek has used the funds of a pilot project within the European Union's I-SharE LIFE programme "Shared and electric transport in small and medium urban areas". The goal of the project was "to test five electric car sharing service models, including integration with the public transport and railway service to verify transport effectiveness, environmental and economic sustainability in medium-small sized urban contexts and in specific areas of use". (Melchioni, 2020, 4). For this purpose, 5 different electric car sharing solutions were tested in 4 cities in Italy (Bergamo, Como, Bollate and Busto Arsizio) and 1 in Croatia (Osijek).

The main transport problems identified in Osijek are the lack of connectivity between less densely populated areas of Osijek urban agglomeration and the city of Osijek, the lack of integration between different transport modes, and the lack of mobility services adjusted to students and vulnerable groups (Benković, 2020, 5). The goals of the project were to develop a transport system that integrates green and sustainable travel options for Osijek urban agglomeration, renew the bus and tram fleets and infrastructure and modernise management systems for process optimisation and cost-efficient travel. The promotion of sustainable mobility includes a bike-sharing scheme, e-scooter sharing and e-car sharing (Melchioni, 2021, 7). As stated in project description, "the environmental objectives are, in terms of pollutants, a reduction in about 800 kg/y in NOX, 900 kg/y in CO and 84 kg/y in PM10 and, in terms of GHG, a reduction of about 270 t/y CO<sub>2</sub>-e" (I-SharE LIFE, 2018). To test the service, the city of Osijek received 8 electric cars, which have been available to citizens since December 2020 (City of Osijek, 2020).

In addition to public electric cars, bicycles (electric and regular) (City of Osijek, 2021) as well as electric scooters are available to citizens. All these services are available through mobile applications. It is usability of these means of transport through applications that will contribute to their use.

The ultimate goal of the City Administration is the integration of public vehicles into the public transport system, i.e. that users of the Gradski prijevoz putnika d.o.o. (GPP) company can choose whether to use buses, trams, electric cars, bicycles or scooters, without buying more than just one ticket. In this context, in 2018, the city of Osijek started to introduce integrated transport between GPP and HŽ Passenger Transport, i.e. Croatian Railways – a company that performs public national and international passenger rail transport, by signing the Agreement on long-term partnership for the development of integrated passenger transport in the city of Osijek and Osijek-Baranja County (Osijek, 2018). Such transport is "aimed at connecting tram, bus and rail transport in order to create added value for passengers and increase the quality of service through better ticket prices and harmonised timetables, which will increase population mobility to improve the quality of life" (City of Osijek, 2018).

The development and future of public transport in urban areas will move towards integrated, intermodal transport. Unique access to public transport, where citizens can use more than one means of transport (e.g. tram, shared bicycles and train) using only one ticket or one mobile application, will certainly facilitate transport for the end user. According to the Transport Development Strategy of the Republic of Croatia 2017-2030, “Public transport in the Republic of Croatia is currently not integrated, as there are no coordinated timetables or single tickets for different modes of transport. Intermodal terminals that allow transfer from one mode to another, do not exist or are extremely rare.” (Republic of Croatia: Ministry of the Sea, Transport and Infrastructure, 2017, 51).

As we have seen, within the framework of the said project, the city of Osijek has become a model for the development of shared electric vehicles and consequently for the reduction of environmental pollution. We hope that these forms will achieve good results in practice and serve as an example of good practice. The implementation of the car sharing model with electric vehicles will improve mobility in the region and the quality of the ecosystem by reducing the number of conventional individual vehicles. If we look at the objectives of a sustainable transport development policy, for which Zelenika and Nikolić state that “a sustainable transport development policy should be aimed at achieving an effective balance between the different types of transport, establishing an appropriate balance between their comparative and competitive advantages, increasing energy efficiency in transport and traffic systems, reducing harmful gas emissions, developing intelligent transport and traffic systems, solving the problem of distance between the centre and the periphery, improving the environment and attractiveness of the location, and developing new transport and distribution systems” (Zelenika, Nikolić, 2003, 142), we can say that the city of Osijek contributes to the achievement of sustainable transport development.

## 7. Conclusion

The organisation and quality of urban transport planning are the basis of the economic and any other progress of cities, so comprehensive reforms are needed. European directives and packages of measures for urban mobility lead to the fact that the plans for sustainable urban mobility have not achieved the goals set. Cities and urban areas are not implementing and developing plans of consistent quality. Although governments have made efforts to increase the use of public transport to address pollution and congestion in cities, the impact has not been felt. Member States are not developing long-term national plans for sustainable urban mobility. We believe that the Member States should establish national plans that include well-defined measures to achieve their goals. These measures should include precise regulatory, financial, educational and organisational objectives. In the future, public transport reforms in the Republic of Croatia must be guided by the EU public transport reforms. The implementation of European plans for sustainable mobility should definitely be explored, and some examples of good practice should also be applied in the Republic of Croatia.

In large cities around the world, there are various modes of transport, including personal transporters. However, the infrastructure and organisation of transport in cities very often do not meet the modern needs of people. In this context, local authorities, that is, transport policy makers, must take into account the needs of users when they design policies for these modes of transport and when they develop infrastructure and organise transport in their areas.

It is necessary to inform and sensitise citizens to the importance of protecting the environment and reducing the burden of individual transport in cities. In order to make public transport more

attractive compared to individual transport, various benefits can be introduced. At the same time, the prices of these services and their organisation must be designed to meet and adapt to the needs of users. We must not forget the vulnerable groups of public transport users - people with reduced mobility and people with disabilities, who should also have access to public transport.

E-scooters, bike sharing and car sharing are the modes of transport mentioned as the most effective alternative to personal cars. They also provide an accessible transport alternative in areas not connected by other modes of transport. Since existing laws need to be changed, a more detailed analysis of comparative legal regulations is needed. As the amendments to the existing legislation will be needed, it is necessary to make a more detailed analysis of comparative legal regulations.

The changes in Croatian legislation have brought some positive progress in transport regulation. However, there are still legal gaps and insufficient regulations that prevent further development of urban transport. Nevertheless, we have seen from the example of the city of Osijek that local government units can make positive progress in the development of urban transport.

## REFERENCES

Act on the Financing of Local and Regional Self-Government Units (Zakon o financiranju jedinica lokalne i područne (regionalne) samouprave), Official Gazette of the Republic of Croatia, Nos. 127/17, 138/20.

Act on the Territories of Counties, Cities and Municipalities in the Republic of Croatia (Zakon o područjima županija, gradova i općina u Republici Hrvatskoj), Official Gazette of the Republic of Croatia, Nos. 86/06, 125/06, 16/07, 95/08, 46/10, 145/10, 37/13, 44/13, 45/13, 110/15).

Benković, V. (2020): *Presentation of urban mobility in the Osijek Urban Agglomeration and the contribution of the I-Share Life project*, [http://www.i-sharelife.eu/wp-content/uploads/2020/12/BENKOVIC-DYVOLVE\\_2020\\_workshop\\_Croazia\\_I\\_share\\_life.pdf](http://www.i-sharelife.eu/wp-content/uploads/2020/12/BENKOVIC-DYVOLVE_2020_workshop_Croazia_I_share_life.pdf), (accessed 20 February 2022).

Brčić, D., Slavuj, M., Šojat, D., Jurak, J. (2018): *The Role of Smart Mobility in Smart Cities*, in: Proceedings of the International Conference on Road and Rail Infrastructure CETRA, pp. 1601-1606. <https://cetra.grad.hr/ocs/index.php/cetra5/cetra2018/paper/viewFile/812/745>, (accessed 18 February 2022).

Caragliu, A., Del Bo, C., Nijkamp, P. (2009): *Smart cities in Europe*, 3rd Central European Conference in Regional Science – CERS, [https://www.researchgate.net/publication/46433693\\_Smart\\_Cities\\_in\\_Europe](https://www.researchgate.net/publication/46433693_Smart_Cities_in_Europe), (accessed 18 February 2022).

Čavrak, V. (2002): *Ekonomika prometa*, Škola za cestovni promet, Zagreb.

Činčurak Erceg, B., Erceg, A., Dotlić, P. (2018): *Franchising in Transport Law – Bike Sharing as Business Model of Urban Transport Development*, in: Seventh International

Scientific Symposium - Economy of Eastern Croatia - Vision and Growth, Book of Proceedings, Faculty of Economics in Osijek, Osijek, Croatia, May 24-26, 2018, pp. 442-450.

City of Osijek, (2018): *Uvođenje integriranog prijevoza putnika na osječkom području*, <https://www.osijek.hr/uvodenje-integriranog-prijevoza-putnika-na-osjeckom-podrucju/>, (accessed 20 February 2022).

City of Osijek, (2020): *I-SharE LIFE Inovativna rješenja za dijeljenje električnih putovanja u malim i srednjim urbanim područjima*, <https://www.osijek.hr/i-share-life-inovativna-rjesenja-za-dijeljenje-elektricnih-putovanja-u-malim-i-srednjim-urbanim-podrucjima/>, (accessed 20 February 2022).

City of Osijek, (2021): *Osječani jedini u Hrvatskoj mogu birati između javnih električnih automobila i bicikala*, <https://www.osijek.hr/osjecani-jedini-u-hrvatskoj-mogu-birati-izmedu-javnih-elektricnih-automobila-i-bicikala/>, (accessed 20 February 2022).

Civil Obligations Act (Zakon o obveznim odnosima), Official Gazette of the Republic of Croatia, Nos. 35/05, 41/08, 125/11, 78/15, 29/18, 126/21.

Constitution of the Republic of Croatia (Ustav Republike Hrvatske), Official Gazette of the Republic of Croatia, Nos. 56/90, 135/97, 08/98, 113/00, 124/00, 28/01, 41/01, 55/01, 76/10, 85/10, 05/14 – consolidated text.

Convention on the Contract for the International Carriage of Goods by Road (CMR), United Nations, Treaty Series, vol. 399, p. 189. <https://treaties.un.org/doc/Publication/UNTS/Volume%20399/v399.pdf>, Accessed 12 April 2021.

Convention on the contract for the international carriage of passengers and luggage by road (CVR), United Nations, Treaty Series, vol. 1774, p. 109., <https://treaties.un.org/doc/Publication/UNTS/Volume%201774/v1774.pdf>, Accessed 12 April 2021.

Croatian Parliament (2021): *Prijedlog zakona o izmjenama i dopunama Zakona o sigurnosti prometa na cestama*, [https://www.sabor.hr/sites/default/files/uploads/sabor/2021-11-11/164901/PZE\\_214.pdf](https://www.sabor.hr/sites/default/files/uploads/sabor/2021-11-11/164901/PZE_214.pdf).

D'Andreagiovanni, F., Nardin, A., Carrese, S. (2022): *An Analysis of the Service Coverage and Regulation of E-Scooter Sharing in Rome (Italy)*, Transportation Research Procedia, Volume 60, pp. 440-447.

Dakić, S. (1999): *Razvojni odnos metropola – srednji gradovi u Hrvatskoj*, in: Rogić, I. and Salaj M., eds.: *Srednji gradovi u hrvatskoj urabanizaciji*, Institut društvenih znanosti Ivo Pilar, Zagreb, pp. 181-201.

European Charter of Local Self-Government (Europska povelja o lokalnoj samoupravi), Official Gazette of the Republic of Croatia – International Agreements, No. 14/97.

European Commission (2017): *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee*



*of the Regions, Europe on the move: An agenda for a socially fair transition towards clean, competitive and connected mobility for all*, COM(2017) 283 final.

European Commission, (2009): *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Action Plan on Urban Mobility*, COM(2009) 490 final.

European Commission, (2011): *White Paper: Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system*, COM(2011) 144 final.

European Commission, (2013): *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Together towards competitive and resource-efficient urban mobility*, COM(2013) 913 final.

European Commission, (2019): *Communication from the Commission, The European Green Deal*, COM(2019) 640 final.

European Commission, (2021): *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, The New EU Urban Mobility Framework*, COM(2021) 811 final

European Commission, Eurostat (2020): *Urban and rural living in the EU*, <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/edn-20200207-1>, (accessed 19 February 2022).

European Court of Auditors (2020): *Tematsko izvješće, Održiva gradska mobilnost u EU-u: pravi napredak nije moguć bez predanosti država članica*, <https://op.europa.eu/webpub/eca/special-reports/urban-mobility-6-2020/hr/>, (accessed 27 February 2022).

European Cyclists' Federation (ECF), (2021): *Historic milestone: 54 countries adopt the Pan-European Master Plan for Cycling Promotion*, <https://ecf.com/news-and-events/news/historic-milestone-54-countries-adopt-pan-european-master-plan-cycling>, (accessed 25 February 2022).

European Cyclists' Federation (ECF), (2022): *New report, The state of national cycling strategies in Europe (2021)*, <https://ecf.com/civicrm/ mailing/view?id=5168&reset=1>, (accessed 25 February 2022).

European Parliament (2015): *Održiva gradska mobilnost, Rezolucija Europskog parlamenta od 2. prosinca 2015. o održivoj gradskoj mobilnosti (2014/2242(INI))*.

European Parliament and Council (2008): *Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe*, OJ L 152, pp. 1-44.

European Platform on Sustainable Urban Mobility Plans (2019): *Smjernice za razvoj i primjenu Planova održive urbane mobilnosti*, Rupprecht Consult - Forschung & Beratung

GmbH, ed., [https://www.eltis.org/sites/default/files/croatian\\_sump\\_guidelines.pdf](https://www.eltis.org/sites/default/files/croatian_sump_guidelines.pdf), (accessed 19 February 2022).

Fearnley, N. (2020): *Micromobility – Regulatory Challenges and Opportunities*, in Paulsson, A. and Sørensen, C. H., eds.: *Shaping Smart Mobility Futures: Governance and Policy Instruments in times of Sustainability Transitions*, Emerald Publishing Limited, Bingley, pp. 169-186.

Finck, M.; Ranchordás, S. (2016): *Sharing and the City*, *Vanderbilt Journal of Transnational Law*, Vol. 49, No. 5, pp. 1299-1369.

Giffinger, R., Fertner, C., Kramar, H., Kalasek, R., Pichler-Milanovic, N., Meijers, E. (2007): *Smart Cities - Ranking of European medium-sized cities*, [https://curis.ku.dk/ws/files/37640170/smart\\_cities\\_final\\_report.pdf](https://curis.ku.dk/ws/files/37640170/smart_cities_final_report.pdf), (accessed 18 February 2022).

Government of the Republic of Croatia (2021): *Nacionalni plan oporavka i otpornosti 2021.-2026.*, <https://planoporavka.gov.hr/UserDocsImages/dokumenti/Plan%20oporavka%20i%20otporno sti%2C%20srpanj%202021..pdf?vel=13435491>, (accessed 28 February 2022).

Gradski prijevoz putnika d.o.o. (2020 a): *Pravilnik o usluzi dijeljenog prijevoza*, <https://gpp-osijek.com/wp-content/uploads/2020/09/pravilnik-o-usluzi-dijeljenog-prijevoza-i-GDPR-01092020.pdf>, (accessed 26 February 2022).

Gradski prijevoz putnika d.o.o. (2020 b): *Ugovor o usluzi dijeljenog prijevoza*, <https://gpp-osijek.com/wp-content/uploads/2020/09/ugovor-o-usluzi-autodijeljenog-prijevoza-01092020.pdf>, (accessed 26 February 2022).

Gupta, S., Mustafa, S. Z., Kumar, H. (2017): *Smart People for Smart Cities: A Behavioral Framework for Personality and Roles* in Kumar K. A., eds.: *Advances in Smart cities: Smarter People, Governance, and Solutions*, Champamn and Hall/CRC, London, 2017, pp. 23-30. [https://www.researchgate.net/publication/319466257\\_3\\_Smart\\_People\\_for\\_Smart\\_Cities\\_A\\_Behavioral\\_Framework\\_for\\_Personality\\_and\\_Roles\\_Smarter\\_People\\_Governance\\_and\\_Solutions](https://www.researchgate.net/publication/319466257_3_Smart_People_for_Smart_Cities_A_Behavioral_Framework_for_Personality_and_Roles_Smarter_People_Governance_and_Solutions), (accessed 18 February 2022).

Habeš, I. (2008): *Status glavnih gradova*, *Hrvatska i komparativna javna uprava*, Vol. 8, No. 3, pp. 587-629.

*I-SharE LIFE* (2018): *Expected results*, <http://www.i-sharelife.eu/hr/ocekivani-rezultati/> (accessed 20 February 2022).

Local and Regional Self-Government Act (Zakon o lokalnoj i područnoj (regionalnoj) samoupravi), *Official Gazette of the Republic of Croatia*, Nos. 33/01, 60/01, 129/05, 109/07, 125/08, 36/09, 36/09, 150/11, 144/12, 19/13, 137/15, 123/17, 98/19, 144/20.

Meijer A., Bolivar M. P. R. (2015): *Governing the smart city: a review of the literature on smart urban governance*, *International Review of Administrative Sciences*, Vol. 82, No. 2, pp. 392–408.

Melchioni, A. (2020): *I-SharE LIFE” Project: New Electric Car Sharing Solutions & Intermodality*, [http://www.i-sharelife.eu/wp-content/uploads/2020/12/FNM\\_Melchioni\\_workshop\\_Croazia\\_I\\_share\\_life.pdf](http://www.i-sharelife.eu/wp-content/uploads/2020/12/FNM_Melchioni_workshop_Croazia_I_share_life.pdf), (accessed 20 February 2022).

Melchioni, A. (2021): *Stakeholders’ Value Chain and Regulatory Framework*, [http://www.i-sharelife.eu/wp-content/uploads/2021/07/09.2021\\_06\\_23\\_MELCHIONI\\_FNM\\_Final-dissemination-Event.pdf](http://www.i-sharelife.eu/wp-content/uploads/2021/07/09.2021_06_23_MELCHIONI_FNM_Final-dissemination-Event.pdf), (accessed 20 February 2022).

Nijland, H., van Meerkerk, J. (2017): *Mobility and environmental impacts of car sharing in the Netherlands*, *Environmental Innovation and Societal Transitions*, 23, pp. 84-91.

Paliaga, M., Oliva, E. (2018): *Trendovi u primjeni koncepta pametnih gradova*, *Ekonomski misao i praksa*, Vol. 27, No. 2, pp. 565-583.

Pavić, Ž. (2001): *Od antičkog do globalnog grada*, Pravni fakultet Sveučilišta u Zagrebu.

Prettenthaler, F. E., Steininger, K. W. (1999): *Analysis, From ownership to service use lifestyle: the potential of car sharing*, *Ecological Economics*, 28, pp. 443–453.

Republic of Croatia: Ministry of the Sea, Transport and Infrastructure (2017): *The Transport Development Strategy of the Republic of Croatia (2017-2030)*, <https://mmpi.gov.hr/UserDocsImages/arhiva/MMPI%20Strategija%20prometnog%20razvoja%20RH%202017.-2030.-final.pdf>, (accessed 25 February 2022).

Republic of Croatia: Ministry of the Sea, Transport and Infrastructure, (2017a): *Annex I*, [https://mmpi.gov.hr/UserDocsImages/arhiva/Strategija\\_prometnog\\_razvoja\\_RH\\_Dodatak\\_I.\\_VRH-studeni.pdf](https://mmpi.gov.hr/UserDocsImages/arhiva/Strategija_prometnog_razvoja_RH_Dodatak_I._VRH-studeni.pdf) (accessed 28 February 2022).

Republic of Croatia: Ministry of the Sea, Transport and Infrastructure, (2017b): *Annex II*, [https://mmpi.gov.hr/UserDocsImages/arhiva/Strategija\\_prometnog\\_razvoja\\_RH\\_Dodatak\\_II.\\_VRH-studeni.pdf](https://mmpi.gov.hr/UserDocsImages/arhiva/Strategija_prometnog_razvoja_RH_Dodatak_II._VRH-studeni.pdf) (accessed 28 February 2022).

Road Traffic Safety Act (Zakon o sigurnosti prometa na cestama), Official Gazette of the Republic of Croatia, Nos. 67/08, 48/10, 74/11, 80/13, 158/13, 92/14, 64/15, 108/17, 70/19, 42/20.

Road Transport Act (Zakon o prijevozu u cestovnom prometu), Official Gazette, Nos. 41/2018, 98/2019, 30/2021, 89/2021.

Roads Act (Zakon o cestama), Official Gazette of the Republic of Croatia, Nos. 84/11, 22/13, 54/13, 148/13, 92/14, 110/19, 144/21.

Shaheen, S., Guzman, S., Zhang, H. (2010): *Bike sharing in Europe, the Americas, and Asia: Past, Present, and Future*, *Research Record: Journal of the Transportation Research Board*, Vol. 1, No. 2143, pp. 159-167.

Utilities Act (Zakon o komunalnom gospodarstvu), Official Gazette of the Republic of Croatia, Nos. 68/18, 110/18, 32/20.

Vasilj, A. (2006): *Grad i promet*, vlastita naklada, Osijek.

Vasilj, A., Činčurak Erceg, B. (2016): *Prometno pravo i osiguranje*, Sveučilište Josipa Jurja Strossmayera u Osijeku, Pravni fakultet Osijek, Osijek.

Vasilj, A., Činčurak Erceg, B., Vudrić, S. (2021): *Legal (non)compliance of taxi transport in the Republic of Croatia with modern international and European solutions*, Perspectives of Law and Public Administration, Vol. 10, Issue 2, pp. 5-18.

Vasilj, A., Višnjić, M. (2021): *Nužnost modernizacije i reforme javnog prometa u svrhu održivog razvitka*, in 11th International Conference: Development of public administration, College of Applied Sciences "Lavoslav Ružička" in Vukovar, June 16-17, 2021. Vukovar, pp. 478-487.

Zelenika, R. (2001): *Prometni sustavi: tehnologija – organizacija – ekonomika – logistika – menadžment*, Ekonomski fakultet u Rijeci, Rijeka.

Zelenika, R., Nikolić, G. (2003): *Multimodalna ekologija – čimbenika djelotvornog uključivanja Hrvatske u europski prometni sustav*, Naše more, Vol. 50, No. 3-4, pp. 137-144.

*A scientific paper*

**Vesna Vašiček, Ph. D. Full Professor**

University of Zagreb, Faculty of Economics and Business

E-mail address: vvasicek@efzg.hr

**Martina Dragija Kostić, Ph. D. Associate Professor**

University of Zagreb, Faculty of Economics and Business

E-mail address: mdragija@efzg.hr

**Ivana Pajković, M. Econ.**

University of Zagreb, Faculty of Economics and Business

E-mail address: ipajkovic@efzg.hr

## **EDUCATION OF PUBLIC ACCOUNTANTS IN CROATIA IN THE CONTEXT OF REFORM PROCESSES IN THE PUBLIC SECTOR**

### ***ABSTRACT***

*The need for more efficient public management as well as possibility of comparing performance results between EU members is constantly growing up. Aforementioned implicate the improvement of financial disclosures of public sector entities. Therefore, there is a need for harmonized reporting among EU Member State. The focus is also put on the development of European Public Sector Accounting Standards based on accrual. Mentioned requirements have great impact on the public sector accountants because they are responsible for financial reporting to external stakeholders and preparation of information for decision making process. Some of important preconditions, to answer on mentioned requirements as well as to enable the successful implementation of public sector reforms, are accounting education and training of public sector accountants.*

*Therefore, the aim of this paper is to research knowledge and education of accountants in the area of public sector accounting in Croatia in the context of growing requirements for information needed for efficient public management. Research in this paper was conducted using a questionnaire emailed to public sector accountants in Croatia. In order to analyse the results descriptive statistics was used. The preliminary results show that formal education is not enough for position of public sector accountant because of insufficient specific knowledge from the field of public sector accounting and changes as well as amendments to university programs and lifelong learning are required.*

**Key words:** *public sector entities, education, reforms, public sector accounting.*

### **1. Introduction**

Over the past few decades the global financial crises that have affected the world as well as numerous disasters (earthquakes, fires, floods, diseases) have also significantly impacted public sector. As an answer to aforementioned, public sector entities were pushed to increase governments accountability and transparency by enhancing public sector, particularly in the area of public financial management. Public financial management reform usually implies

moving towards accrual based accounting and implementation of performance management system (Lapsley, 1999, Sutcliffe, 2003, Khan & Mayes, 2009, Nistor et al., 2009, Liguori et al., 2012). Therefore, moving towards full accrual accounting is rising across governments and it is expected that number of countries that apply accrual basis of accounting will double in the next few years, followed with the implementation of IPSAS. Due to aforementioned, in the last few years, there has been a lot of comparative researches in different countries to examine the comparative situations in public sector accounting (Christiaens et al., 2010, 2015, PwC 2013, 2015, Moretti, 2016, Vašiček & Roje, 2019, IFAC, 2018, 2021). The IFAC survey (2021) shows that the number of countries that apply the full accrual accounting principle in the reporting system is growing, and it is projected that by 2025 the number of countries that will report on an accrual basis will be higher than 50%. In 2025, 73% of jurisdictions forecast to report on accrual will make use of IPSAS, also that there will be an overall greater percentage of direct and indirect IPSAS implementation globally. This trend is projected to continue, so that by 2030, 81% of the jurisdictions reporting on accrual are projected to be making use of IPSAS (IFAC, 2021). As a harmonized accounting and financial reporting system is being pursued at the global level through the development of IPSAS, and at the European level through the development of EPSAS, it is clear that the need for additional education of public accountants will be growing.

Although the implementation of full accrual accounting is happening in many countries, there are 3 basic differences observed in the implementation process so far: a) content, b) period of implementation and c) the way of implementation of accrual accounting (some countries began with changes on local level while some countries started with changes on central level). This is a reason why financial accounting systems in public sector are still very much divergent around the world (Christiaens et al., 2010).

The introduction of accrual elements and IPSAS/EPSAS into such dynamic and complex public sector environment will require significant training and additional education of accountants about new concepts, systems, and accounting methods (IMF, 2016). It is therefore not surprising that education in public sector accounting is receiving a great deal of attention from academia and professionals (Egenolf & Willis, 1983), and especially in the last thirty years or so. This training also needs to extend to the users of financial statements including ministers and senior officials in the Ministry of Finance, parliamentarians, civil society and the supreme audit institution.

Therefore, the aim of this paper is to research education level of accountants in the area of public sector accounting in Croatia in the context of growing requirements for information needed due to ongoing reform processes. Research in this paper was conducted using a questionnaire emailed to public sector accountants in Croatia in June and July, 2021. In order to analyse the results descriptive statistics was used.

The paper is divided into five sections. After a brief introduction, the literature review is presented, followed by presenting main characteristics of education in the public sector accounting in Croatia. In the empirical part of the paper the results of conducted empirical research are presented, followed with the research questions, the methodology, and data sample. The last section refers to conclusion remarks and future research potentials.

## 2. Literature review

In the last thirty years many countries implemented reforms in public sector, including changes in public sector accounting to improve the efficiency and responsibility of government services (Carlin, 2005). Changes in public sector accounting referred in transition from cash accounting basis to accrual accounting basis. Studies have demonstrated that reforms in public sector accounting are depending on different cultural factors as well as accounting tradition (Pina & Torres, 2003, Manes Rossi et al., 2016). The publication by PwC (2013) showed that survey respondents identified the lack of trained staff as the main challenge in the process of transition to accrual accounting. Also, IMF (2016) highlighted that besides political support and technical leadership that are important prerequisites for the reform, the introduction of accrual elements into government accounts will require significant training of preparers of the financial statements in new concepts and accounting methods.

Researchers started to discuss about problem in education in field of public sector accounting long ago, and identified disproportion between the growing complexity of government accounting and courses provided by higher education institutions (Fox, 1977). Researching the scope of education in the field of public sector accounting in USA, Egenolf and Willis (1983) stated that accredited schools recognized the need and intended to offer more courses related to public sector accounting. In the other study, Egenolf and Nordhauser (1985) showed that financial statements by local and state entities were not in accordance with prescribed standards, because of lack of trained and educated employees in public sector accounting. Henry (2005) identified that lack of financial resources, narrow interest of the faculty and lack of student interest for public sector accounting courses have been the main causes for neglecting the field of public sector accounting in curricula.

It is noticeable that papers in 70s and 80s were mostly related to education in the field of public sector accounting in USA. Since 2000, researches about curriculum and identifying needs and challenges in government accounting education outside USA have been emerged (Cordery, 2013, Haji & Nagdee, 2016, Sari, 2018, Ahmed, 2019 Huy, 2019). Ahmed (2019) pointed out that well-educated accounting students will be beneficial for public and private organizations. Ahmed as well pointed out the gap between education and practice in government accounting. Huy (2019) emphasized that changes happened in public sector accounting in Vietnam and need for well-educated students in this area is growing. Although significant resources have been invested in the education, actual training is still limited. Research in the New Zealand showed that education in the field of accounting was focused on private sector, while education in field of public sector accounting was neglected (Cordery, 2013).

Public sector accounting and public financial management have been received a great deal of attention from academia and professionals in the last years in Europe (Reichard, 2016, Adam et al., 2019, Thom, 2019). The sovereign debt crisis in Europe as well as requests for harmonized reporting system and implementation of IPSAS and development of EPSAS stimulated growing interest for education in the field of public sector accounting.

Adam et al. (2019) analysed if higher education institutions in EU member states were aware of the importance of reforms in public sector accounting and the need to prepare students to become experts in that field. Also, authors researched if higher education institutions provided or will provide education on IPSAS or EPSAS. The research was conducted in 4 countries (Italy, Portugal, Spain and Germany). Results showed that higher education institutions were giving limited space to public sector accounting, and curricula was oriented to national

standards and courses were rarely focused on IPSAS. The research showed that although public administrations in Europe have been invited to innovate accounting systems and adopt International or European accounting standards, there was little attention paid to the need of educating qualified staff.

European Commission (2016) highlighted that implementation of accrual basis as well as European Public Sector Accounting Standards implies changes in culture and mind-sets. The development of EPSAS will have impact on the labour market considering skills and expertise in public accounting, auditing and finance and will require high investment in skills, education and training of public sector accountants with expertise in EPSAS. Their recommendation is that higher education institutions should develop the programs to retrain existing staff and educating new accountants. European Commission concluded that higher education institutions should develop academic modules for education on EPSAS with specific focus on accruals-based, and in particular IPSAS-based, public sector accounting and financial reporting.

IASEB (2019) emphasized that public sector finances have become complex and public confidence in governments to manage public sector is affected and expectations for the accountancy profession have increased. As accountants are a cornerstone of governance, they need to be trained to support sound financial management.

Heiling (2020) in his paper reflect on education in the field of public sector accounting from viewpoint by a practitioner, and suggested that is time to rethink about design of education on higher education institutions. Because of reasons that public sector accounting has become complex, Heiling (2020) suggested that is necessary to create a full study program in the field of public sector accounting at master level to cover the requirements in practice and prepare students i.e. future employees for the challenges and reforms that will be required in public sector.

Previous conducted researches showed that education in the field of public sector accounting in higher education institutions is limited and students i.e. future accountants should attend postgraduate programs, seminars and training that are provided by a limited number of universities and professional organizations.

### **3. Current state of Croatian education in the field of public sector accounting**

Government accounting is one of the key elements for government business because it provides information in financial statements that are crucial in making decision process for different categories of stakeholders. Therefore, government accounting is technically complex and there are requests for special studies, training and experience on highly intellectual and professional level (Beights, 1954).

Higher education institutions should provide required knowledge and skills to fit out students for position of public sector accountants in nearly future. Although civil servants can empower their knowledge through trainings, higher education institutions play the key role to provide the basic knowledge to students (Thom, 2019). Besides formal shapes of knowledge, during the professional career is necessary to empower knowledge through lifelong learning (Reichard, 2016) attending different programs of trainings.

Profession of public sector accountants in Croatia is not certificated or regulated. Public sector accountants have not regulated or uniform employment conditions nor description of job position. Besides mentioned, regulated conditions of continuing educations after employment that will empower skills of employees do not exist.

As demand for reform in public sector is growing, is expected that Croatia as member of European Union in near future should apply harmonized system of financial reporting based on EPSAS standards. Moreover, there is a request to fit out students i.e. future accountants to



confront with growing challenges in the public sector accounting. Therefore, this part of paper presents the education system in the field of public sector accounting in Croatia.

Reforms in higher education started in 2001 when Croatia joined the Bologna Process which enable that higher education in Croatia became part of European Higher Education Area. Courses related to public sector accounting are mostly offered as elective courses on public faculties of economics throughout Croatia, on programmes of accounting and auditing. Faculties of economics are oriented on private sector on undergraduate and graduate studies, while limited attention have been paid to the public sector in curricula.

**Table 1:** Study programmes and courses related to public sector accounting on public Universities in Croatia

University	Study Programme	Course	Degree
University of Zagreb (Faculty of Economics and Business)	Accounting and auditing	Compulsory course: Non-profit accounting	Integrated university study
		Accounting for Non-profit organizations	University specialist postgraduate study
		Public Sector Accounting	University specialist postgraduate study
		Financial Reporting for Non-profit Organizations	University specialist postgraduate study
J.J. Strossmayer University of Osijek (Faculty of Economics)	Financial Management	Accounting for Budgetary and Non-profit Organizations	Graduate university study
University of Split (Faculty of Economics, Business and Tourism)	Management; Accounting and Auditing	Compulsory course: Accounting for Governmental Entities	Graduate professional study
		Elective course: Accounting for Non-profit Organizations	Undergraduate university study
	Accounting and auditing	Accounting for Non-profit Organizations	University specialist postgraduate study

University	Study Programme	Course	Degree
		Accounting for Budgetary and Non-profit Organizations	University specialist postgraduate study
<b>University of Rijeka (Faculty of Economics and Business)</b>	Finance	Elective course: Accounting for Budgetary and Non-profit Organizations	Graduate university study
		Financial Management and Controlling in Public Sector	University specialist postgraduate study
		Management Accounting in Public Sector	University specialist postgraduate study
		Accounting for Budgetary and Non-profit Organizations	University specialist postgraduate study
<b>Juraj Dobrila University of Pula (Faculty of Economics and Tourism "Dr. Mijo Mirković")</b>	Financial Management	Elective course: Accounting for Budgetary and Non-profit Organizations	Graduate university study

*Source: Authors*

In the table above are presented study programmes and courses connected with public sector accounting on public Universities in Croatia. Learning goals and outcomes of presented courses are similar and on Undergraduate and Graduate studies are focused on teaching about institutional and professional framework of accounting, budget classifications, chart of accounts and accounting rules, interpretation of financial statements and annual reports of budgetary users, application of the chart of accounts. On Postgraduate studies besides mentioned learning outcomes, there exist some specific outcomes like teaching about international framework of Public Sector Accounting with highlights on IPSAS and EPSAS, dual reporting system, budget and financial reports, Croatian taxation regulation and effects on budgetary and non-profit organizations, accounting information for internal users with emphasis on performance measurement and cost management.

From all aforementioned is possible to conclude that study programs are adjusted to national budgetary and accounting standards, and courses related to public sector accounting are rarely focused on full accrual basis, IPSAS or EPSAS. Courses are focused on process of preparation of financial data, rather than their usage. As before the Bologna Process courses related to public sector accounting did not exist it is possible to conclude that there is improvement in formal education. Although the improvement is evident, the question is if formal education is adequate for job position of public sector accountant and if there exist the need to innovate study programs.

#### 4. Research methodology and results

In Croatia prescribed accounting basis is modified accounting basis with elements of accrual and cash basis. Because of the fact that Croatia has been the EU member state since 2013, requirements for harmonized reporting based on accrual basis and implementation of IPSAS or EPSAS exist. As it is expected that reform in public sector will start, it is necessary to ensure preconditions for successful implementation of reform. Studies show that reforms in public sector takes many years because of obstacles and challenges that cannot be overcome without strong drivers. Main challenges and obstacles of public sector accounting reforms are weak political support, poor implementation planning, ICT limitation, limited budgets but also lack of staff to implement reforms, resistance to change and lack of expertise (World Bank, 2021). As previous researches showed that education of public sector accountants is key for successful implementation of reforms and preparation of financial statements important for making decision process, the goal of this paper was to investigate opinion of public sector accountants in Croatia about formal education and to determine whether there were requirements for additional education.

In accordance with the above, the primary goal of this paper was to provide answers on the following research questions:

*RQ1: Is the knowledge from formal education sufficient for position of public sector accountant and whether reforms in the education are needed?*

*RQ2: Are Universities recognized as sufficient providers of additional education in the context of lifelong learning?*

*RQ3: Is the perception of knowledge in the field of budgetary accounting among respondents at a high level?*

Our research was conducted using a questionnaire emailed to public sector accountants in Croatia. The questionnaire contained mostly closed-ended questions. Non-probability sampling method was used i.e. quota sampling which means that questionnaires were sent out in June-July 2021 by email to the 350 public sector accountants. The response rate for the questionnaire in Croatia was 22,28%. In order to analyse results, descriptive statistics was used.

At the beginning, respondents were asked to provide general information about their personal background (sex, age, education, experience, place of employment). Then the respondents were asked to express their opinion about formal education, perception of their knowledge in field of public sector accounting. At the end, they were asked about trainings, if the position require participation on trainings and which shape of trainings they consume.

The opinions of respondents about education in public sector accounting depends, among other things, on their personal characteristics such as education, time spent in particular positions, age and other factors. In this direction, we examined the personal characteristics of public accountants and the results are presented in Table 2.

**Table 2:** Personal characteristics of public sector accountants

<b>1. Sex</b>		<b>2. Age</b>	
Male	14%	20 - 30	2%
Female	86%	31 - 40	31%
		41 - 50	35%
		51 -60	24%
		Older than 61	8%
<b>3. Education</b>		<b>4. Field of education</b>	
High school	21%	Economics - accounting	43%
Bachelor degree	10%	Economics	53%
Master degree	56%	Law	3%
PhD	12%	Other	1%
<b>5. Place of employment</b>		<b>6. Internship</b>	
State level	37%	to 10 years	38%
Regional level	13%	to 20 years	30%
Local level	50%	More than 21	32%

Source: Authors

Major respondents were women (86%) and 2/3 of respondents were aged between 31 and 50. 30% of respondents had been in their job position between 10 and 20 years, while 32% of respondents had been in their job position more than 21 years. Comparing age and internship it is noticeable the continuity of work on position of public sector accountant. More than 2/3 of respondents had a university degree. As expected, more than 96% of respondents had education in area of economy. 68,75% of respondents that had finished high school were aged 51 and older. That was expected and is related to earlier employments when was not obligate employment of staff with faculty diplomas. Half of respondents had worked on local level (city or municipality), 1/3 on state level while 13% on regional level (counties). 96% respondents had worked on position of accountant, while 55% respondents had been on managerial position. The first research question was addressed in order to evaluate if the knowledge from formal education is sufficient for position of public sector accountant and whether reforms in the education are needed. Respondents were asked to express their level of agreement on sufficiency of formal education for position of public sector accountant based on a Likert scale from 1 (strongly disagree) to 5 (strongly agree). The results are presented in Table 3.

**Table 3:** Statements about formal education

Statements	Average	SD	Median	Mode
<i>Knowledge provided from formal education are/were not enough for job on current position</i>	3,78	1	4	3
<i>Accountants receive insufficient specific knowledge in the field of budgetary accounting</i>	3,68	1,05	4	3

Statements	Average	SD	Median	Mode
<i>Knowledge provided from formal education are/were not enough for job on current position</i>	3,78	1	4	3
<i>Modifications of university programs are a necessary part of the future changes in the field of budgetary accounting</i>	4,24	0,98	5	5
<i>Knowledge of accounting for private sector is not sufficient for quality work in PSA</i>	4,08	0,88	4	5

Source: Authors

Results showed that 50% and more respondents agree that knowledge provided from formal education were not enough for job on current position, while 50% and less respondents disagree with that statement. On statement that modifications of university programs are a necessary part of the future changes in the field of budgetary accounting, mode or the value that appears most frequently is 5 which means that respondents were strongly agree with that statement. Also, more than 50% respondents were agreed that knowledge of accounting for private sector is not sufficient for quality work in public sector accounting as well as that accountants receive insufficient specific knowledge in the field of budgetary accounting. Respondents were asked if during the formal education listened courses related to budgetary accounting and 85% gave negative answer. 15% respondents that had listened courses related to budgetary accounting were asked to write the name of the course and only 7 respondents answered on this question from whom just 2 respondents listened course budgetary accounting, while other were listened courses that contained part related to budgetary accounting. This is in line with the above i.e. before the Bologna Process, courses related to budgetary accounting did not exist, and this field was studied within other courses. The findings are also consistent with Cordery (2013) who pointed out that courses related to private sector accounting were crowding out importance of studying public sector accounting. As answer on the first research question the conclusion is that knowledge provided from formal education are not enough for position of public sector accountant and innovations of university programs are necessary and that is in line with previous studies (Egenolf & Willis, 1983, Adam et al., 2019, Heiling, 2020).

The second addressed research question focused on the additional education in the context of lifelong learning. Respondents were asked to answer if training for job position of public sector accountants are required. All respondents gave positive answer, of which 51% were regularly trained while 49% periodically. Respondents were asked to choose training methods that used, based on the Likert scale from 1 (do not use at all) to 5 (use very much).

**Table 4:** Training methods

Methods	Average	SD	Median	Mode
<i>Independent study of literature and legal framework</i>	4,42	0,78	5	5
<i>Asking inquiries and studying the announcements of the competent state bodies</i>	3,67	1,06	4	3

Methods	Average	SD	Median	Mode
<i>Participation in seminars and other forms of education</i>	3,65	0,92	3,5	3
<i>Asking inquiries to consulting companies</i>	3,21	1,18	3	3
<i>Additional education at higher education institutions</i>	1,42	0,84	1	1
<i>Consultation with colleagues</i>	4,31	0,84	5	5

Source: Authors

Table 4. show that most frequent training methods was independent study of literature and legal framework. Also, they often were asking inquiries and studying the announcements of the competent state bodies or consulted with colleagues and consulting companies and participated in seminars and other forms of education. The least used method was additional education at higher education institutions. That stems from the fact that higher education institutions are not recognized as place of additional education. Besides postgraduate professional studies on some faculties, higher education institutions do not offer professional trainings and seminars what is in line with study of Daniels et al. (2007) who concluded that about government themes including budgetary accounting were debated just on advanced courses, but with limited time available and at a small number of universities. Research results are also in line with Jafi and Youssef (2021) who concluded that students who wanted to work on job position of public sector accountants should attend additional shapes of education like postgraduate studies, trainings and seminar that are organized by limited number of universities, standard setters and professional bodies. As an answer to second research question we can conclude that constant training is required for the position of public sector accountant. But in Croatia neither higher education institutions nor policy makers have understood the importance of the position of public sector accountant and there are no additional courses and trainings at higher education institutions, besides postgraduate studies on some universities.

The third research question was addressed in order to evaluate if perception of knowledge in the field of budgetary accounting among respondents were at high level.

Considering that respondents pointed out that formal education was not enough for job position, we wanted to see perception of their knowledge of budgetary accounting. Respondents were asked to evaluate the next statement on Likert scale from 1 (strongly disagree) to 5 (strongly agree): "I think my knowledge of budgetary accountings at a very high level." 59% respondents answered that they agree with that statement, while 17% answered strongly agree. 23% respondents neither agree neither disagree with statement, while just 1% answered that their knowledge of budgetary accounting was not at high level. Average was 3,92 which points to a conclusion that perception of their knowledge of budgetary accounting is at high level. Respondents who answered that strongly agree with statement were experts in the field of economy, from whom 30% were specialist in accounting. Also, 10 respondents had graduate or undergraduate diploma, 2 respondents had PhD, and just one respondent finished high school, and was aged between 51 and 60 and was more than 20 year on current job position. Other respondents had to 10 years of internship (53%) i.e. to 20 years of internship (38%) and were mostly aged between 41 and 50 years.

From respondents who perceived their knowledge with grade 3 (neither agree neither disagree), 58% had graduate or undergraduate diplomas, 29% finished high school and 11% had PhD. Also, 35% of respondents were aged between 31 and 40 years, 17% between 41 and 50 and 41% between 51 and 60. 52% respondents had to 10 years of internship, 17% to 20 years and 29% more than 20 years.

Respondents who agree with the statement and perceived their knowledge with grade 4, 51% are specialist in the field of accounting. Also, 29% had up to 10 years of internship, 31% to 20 years of internship and 35% more than 20 years. 1/3 were aged between 31 and 40, 1/3 between 41 and 50, while 24% between 51 and 60 years. 22% respondents finished high school, 8% had PhD and other had graduate or undergraduate diplomas.

Although the formal education is not enough for job position of public sector accountant, and there is lack of additional shapes of education, it is possible to conclude that public sector accountants perceived their knowledge form budgetary accounting relatively high that is result of many years of continuous work and experience on that position.

## 5. Concluding remarks

Reforms are inevitable part of public sector due to constant need for more efficient public management. Currently attention is put on the implementation of IPSAS/ EPSAS based on accrual basis as well as development of integrated reporting system as a quality source of financial and non-financial information.

One of very important precondition for successful implementation of different reporting processes into such dynamic and complex public sector environment are educated public accountants that can answer on growing requirements for quality and timely information. Therefore, researchers have started to discuss about problems in education in the field of public sector accounting and have highlighted the lack of well-educated and trained employees in the area of public sector accounting. Also, recent research (Adam et al., 2019.) investigated if higher education institutions provide or will provide education on IPSAS/ EPSAS and research results showed that there is a limited space to public sector accounting in this area and that there is a need for innovating existing system of education with special focus on accruals and IPSAS. Current study programs in Croatia are adjusted to national budgetary and accounting standards, and courses related to public sector accounting are rarely focused on full accrual basis, IPSAS or EPSAS. Courses are focused on process of preparation of financial data, rather than their usage.

In this paper we have researched the level of education for public sector accountants in Croatia by using a questionnaire that was send in June and July 2021. The main aim of the paper was to investigate opinion of public sector accountants in Croatia about formal education and to determine whether there are requirements for additional education. Through the first research questions we have investigated the formal education in Croatia and general conclusion is that knowledge provided from formal education is not enough for position of public sector accountant. Moreover, in the second research question the focus is put on the additional education in the context of lifelong learning and as an answer we can conclude that constant training is required for the position of public sector accountant. But in Croatia neither higher education institutions nor policy makers have understood the importance of the position of public sector accountant and there are no additional courses and trainings at higher education institutions, besides postgraduate studies on some universities. The third research question was

addressed in order to evaluate if perception of knowledge in the field of budgetary accounting among respondents were at high level. Based on conducted empirical research, it is possible to conclude that public sector accountants perceived their knowledge form budgetary accounting relatively high that is result of many years of continuous work and experience on that position. Our study has a few limitations. Using the questionnaire as the only way to investigate education of public accountants in Croatia is the first limitation. The application of a questionnaire by email implies that responses are based on the opinions of the respondents on the statement about formal education and trainings. Also, responses are based on the perception of their assessment of budget accounting knowledge, while their actual use cannot be fully verified. Despite these limitations, our study contributes to the academic literature about the need for more educated public accountants in the context of the ongoing reform processes.

### Acknowledgement

This work has been fully supported by the “Research Cooperability “Program of the Croatian Science Foundation funded by the European Union from the European Social Fund under the Operational Programme Efficient Human Resources 2014-2020.



### REFERENCES

- Adam, B., Brusca, I., Caperchione, E., Heiling, J., Jorge, S. & Manes Rossi, F. (2019): *Are higher education institutions in Europe preparing students for IPSAS?*, International Journal of Public Sector Management, Vol. 33, No. 2/3, pp. 363-378.
- Ahmed, E.I. (2019): *Bridging the gap between governmental accounting education and practice*, Accounting, Vol. 5, No. 1, pp. 21-30.
- Beights, D.M. (1954): *Opportunities for a Career in Governmental Accounting*, The Accounting Review, Vol. 29, No. 4, pp. 614-619.
- Carlin, M. T. (2005): *Debating the impact of accrual accounting and reporting in the public sector*, Financial Accountability & Management, Vol. 21, No. 3, pp. 309-336.
- Christiaens, J., Reyniers, B. & Rolle, C. (2010): *Impact of IPSAS on reforming governmental financial information systems: a comparative study*, International Review of Administrative Science, Vol. 76, No. 3, pp. 537-554.
- Christiaens, J., Vanhee, C., Manes-Rossi, F., Aversano, N. & van Cauwenberge P. (2015): *The effect of IPSAS on reforming governmental financial reporting: an international comparison*, International Review of Administrative Science, Vol. 81, No. 1, pp. 158-177.
- Cordery, C. (2013): *Does public services accounting belong in the curriculum?*, Pacific Accounting Review, Vol. 25, No. 1, pp. 101-116.
- Daniels, B.W., Gupta, R.D. & Pridgen, A.K. (2007): *Faculty perspectives on governmental and non-profit accounting topics*, The Accounting Educators' Journal, Vol. 17, pp. 1-12.
- Egenolf, R. & Willis, G.W.K. (1983): *Status of Public Sector Accounting Education*, Journal of Accounting Education, Vol. 1, No. 1, pp. 63-69.



- Egenolf, R. & Nordhauser, F. (1985): ***Public Sector Accounting in the Public Administration Curriculum***, Journal of Accounting Education, Vol. 3, No. 1, pp. 123-130.
- European Commission (2016): ***Academic modules on accruals-based public sector accounting in the EU***, available at: <https://circabc.europa.eu/sd/a/9c260d1e-c0f9-44c8-9624-3ac170dd26bf/Academic%20modules%20on%20accrual-based%20public%20sector%20accounting%20in%20the%20EU.pdf> (accessed 15 February 2022)
- Fox, J. (1977): ***Education for Governmental Accountants***, The Government Accountants Journal, Vol. 26, No. 3, pp. 44-52.
- Haji, M.A. & Nagdee, Z. (2016): ***Public Sector Accounting in the Education Syllabi of Leading Chartered Accountant Professional Bodies: A Comparative Study***, Risk governance & control: financial markets & institutions, Vol. 6, No. 2, pp. 21-27.
- Heiling, J. (2020): ***Time to rethink public sector accounting education? A practitioner's perspective***, Journal of Public Budgeting, Accounting & Financial Management, Vol. 32, No. 3, pp. 505-509.
- Henry, B.K. (2005): ***A survey of governmental accounting education studies***, Journal of Public Budgeting, Accounting & Financial Management, Vol. 17, No. 2, pp. 166-179.
- Huy, P.Q. (2019): ***Training in Major of Public Sector Accounting: Evaluation the Demand for Higher Education by an Empirical Survey***, TEST Engineering & Management, Vol. 81, pp. 2640-2649.
- International Accounting Education Standards Board (2019): ***A Growing Demand for Public Sector Accounting Education***, available at: <https://www.ifac.org/system/files/publications/files/IAESB-Perspectives-Series-Rania-Mardini.pdf> (accessed 20 February 2022)
- International Federation of Accounts (2018): ***International Public Sector Financial Accountability Index – 2018 status report***, available at: <https://www.ifac.org/knowledge-gateway/supporting-international-standards/publications/international-public-sector-financial-accountability-index-2018-status-report> (accessed 20 February 2022)
- International Federation of Accounts (2021): ***International Public Sector Financial Accountability Index – 2021 status report***, available at: <https://www.ifac.org/knowledge-gateway/supporting-international-standards/discussion/international-public-sector-financial-accountability-index-2020> (accessed 20 February 2022)
- International Monetary Fund (2016): ***Implementing Accrual Accounting in the Public Sector***, available at: <https://www.imf.org/external/pubs/ft/tnm/2016/tnm1606.pdf> (accessed 15 February 2022)
- Jafi, H. & Youssef, S. (2021): ***Public sector accounting education and training as supportive mechanisms of the ongoing accrual-based accounting reforms***, Technium Social Sciences Journal, Vol. 25, pp. 1-8.
- Khan, A. & Mayes, S. (2009): ***Transition to Accrual Accounting***, Technical Note, International Monetary Fund, Fiscal Affairs Department, available at: <http://www.imfbookstore.org/> (accessed 18 December 2021)

- Lapsley, I. (1999): *Accounting and the New Public Management: Instruments of substantive efficiency for rationalizing modernity?* Financial Accountability & Management, Vol. 15, No. 3/4, pp. 201-207.
- Liguori, M., Sicilia, M. & Steccolini, I. (2012): *Some like it non-financial... Politicians' and managers' view on the importance of accounting information*, Public management review, Vol. 14, No. 7, pp. 903-922.
- Manes Rossi, F., Cohen, S., Caperchione E. & Brusca, I. (2016): *Harmonizing public sector accounting in Europe: thinking out of the box*, Public, Money & Management, Vol. 36, No. 3, pp. 189-196.
- Moretti, D. (2016): *Accrual practices and reform experiences in OECD countries - Results of the 2016 OECD Accruals Survey*, OECD Journal on Budgeting, Vol. 16, No. 1, pp. 9-28.
- Nistor, C. S., Deaconu, A. & Severin, A. (2009): *Stability and Coherence in Transition, a Wish That Can Be Accomplished? The Accounting System of Romanian Public Institutions*, Journal of International Business and Economics, Vol. 9, No. 2, pp. 106-124.
- Pina, V. & Torres, L. (2003): *Reshaping public sector accounting: An international comparative view*, Canadian Journal of Administrative Sciences, Vol. 20, No. 4, pp. 334-350.
- PWC (2013): *Towards a new era in government accounting and reporting, global survey on accounting and reporting by central governments*, available at: <https://www.pwc.com/gx/en/psrc/publications/assets/pwc-global--ipsas-survey-government-accounting-and-reporting-pdf.pdf> (accessed 18 December 2021)
- PWC (2015): *Towards a new era in government accounting and reporting*, available at: <https://www.pwc.com/my/en/publications/towards-a-new-era-in-government-accounting-and-reporting.html> (accessed 18 December 2021)
- Reichard, C. (2016): *Academic executive programs in public administration and management: Some variety across Europe*, Teaching Public Administration, Vol. 35, No. 1, pp. 126-138.
- Sari, F.V., Afriyenti, M. & Arza, I.F. (2018): *Needs and Challenges in Government Accounting Education*, Advances in Economics, Business and Management Research, Vol. 64, pp. 43-50.
- Sutcliffe, P. (2003): *The Standards Programme of IFAC's Public Sector Committee*, Public Money & Management, Vol. 23, No. 1, pp. 29-36.
- Thom, M. (2019): *Teaching public financial management: An integrated approach to a critical subject*, Teaching Public Administration, Vol. 37, No. 1, pp. 92-106.
- Vašiček, V. & Roje, G. (Eds.) (2019): *Public Sector Accounting, Auditing and Control in South Eastern Europe*, Cham, Palgrave Macmillan
- World Bank (2021): *Drivers of Public Sector Accounting Reforms*, available at: <https://cfr.worldbank.org/publications/pulsar-drivers-public-sector-accounting-reforms> (accessed 15 January 2022)

*A scientific paper*

**Tihomir Vranešević, Ph. D., Full Professor**

University of Zagreb, Faculty of Economics and Business

E-mail address: tvranesevic@efzg.hr

**Miroslav Mandić, Ph. D., Associate Professor**

University of Zagreb, Faculty of Economics and Business

E-mail address: mmandic1@net.efzg.hr

**Mijo Renić, Ph. D.**

PROAgentura

E-mail address: renic.mijo@gmail.com

**TESTING THE MODEL OF THE CONNECTION BETWEEN  
PERCEIVED SERVICE QUALITY, CUSTOMER SATISFACTION,  
CUSTOMER LOYALTY AND CUSTOMIZATION**

***ABSTRACT***

*Aim of this paper was to test the model of the connection between perceived service quality, customer satisfaction, customer loyalty and customization. The model in this study was tested using the multivariate PLS-SEM method. Based on the secondary sources research, a questionnaire was formed, pretested and conducted on 633 respondents. The results show that the perceived quality of service has the strongest influence on customer satisfaction ( $f^2 = 0.526$ ), followed by perceived service quality on the perception of customization ( $f^2 = 0.501$ ), while the impact of customization perception on customer loyalty is very weak ( $f^2 = 0.012$ ). In addition to the above indicators, we used the redundancy indicator (Stone - Geisser  $Q^2$ ) in the form of "Cross - Validate Redundancy" to assess the structural model. The results show that the values of this indicator are positive for all three dependent variables, which means that the predictive abilities of the model are very good. According to the results, it can be concluded that customer satisfaction has significant predictive importance for customer loyalty ( $q^2 = 0.066$ ), that perceived service quality has moderate predictive importance for customer loyalty ( $q^2 = 0.014$ ), while the perception of customization has low predictive importance for customer loyalty ( $q^2 = 0.007$ ). Also, it can be concluded that mediator variables partially mediate the relationships between variables.*

**Key words:** *perceived service quality, customer satisfaction, customer loyalty, customization.*

**1. Introduction**

The aim of this paper was to test the model of the connection between perceived service quality, customer satisfaction, customer loyalty and customization.

The main driver of an economy characterized by market relations is exchange. The presumption of exchange arises when there are at least two parties and each has some possible value for the other. When two parties can negotiate, explain their wishes and attitudes and deliver the desired products or provide a service, an exchange can take place and such an exchange is considered fair.

In the purchase process, the customer will choose from the offered alternatives the product and service that he or she believes will be of the highest value. In order for a company to deliver the highest value, it needs to be aware of how the customer perceives the value of the offer, which features affect the customer's perception and which benefits are the most important to him or her. If the company does not understand how the customer estimates the value of the product or service, differences in the perception of the company and the customer will occur. In that case, there will be a gap between what the company thinks the customer values and the value the customer really perceives.

In addition to the difference in the perception of the company and the customer, it is important to analyze the emergence of the gap between different forms of value. In most markets, supply is far greater than demand, which requires companies to put customers at the center of their business.

In a hypercompetitive business environment, with an increasing number of well-informed and rational customers faced with a multitude of choices, companies need and must focus their activities on customers. Among various offers of competitors in the market, the rational customer chooses the one that he or she estimates is the best for him or her, which will lead to greater satisfaction and which will bring him or her greater value.

Looking at the missions and visions of most companies in the market it is possible to notice that the customer-centric approach stands out. At the same time, it is clear that a significant number of customers do not feel that they are at the centre of the company's activities. When comparing the offers of products and services of different companies, customers take into account the perceived value in order to compare the alternatives in the market.

Companies want to meet customer needs and build long-term customer relationships in order to turn them into loyal customers. In building long-term customer relationships, companies should take into account that customer needs, desires and requirements are not constant. On the contrary, they change over time and are influenced by various factors, which leads to the need for continuous research. The previously mentioned concepts are related to perceived quality, satisfaction, loyalty, and customization, which is why this paper is designed to test a model that links those concepts together.

## **2. Theoretical background**

In marketing theory and practice, customer satisfaction is one of the most researched concepts, as experts consider it key to the success of a company's business. Despite the fact that many authors studied this concept, there is still no agreement in the literature on its definition and terminological inconsistency is noticeable. Many definitions of customer satisfaction are based on a comparison of the customer's perception and expectations through his or her contact with products, services and/or the company. Thai (2015) defines customer satisfaction as a customer's assessment of a product or service in terms of whether that product or service has met the customer's needs and expectations. According to Vranešević et al. (2018) there are several theories that explain satisfaction. The equity theory indicates that satisfaction occurs when the parties to an exchange feel equitably treated (thus, satisfied), if in their minds, the ratio of their outcomes to inputs is fair – such as cost, time and effort. The feature theory indicates that the outcome of a purchase is viewed in terms of success or failure and the result is a feature of either internal factors (e.g. knowledge of purchasing power or effort) or external factors (e.g. difficulties in the purchasing process, impact of effort of

others, such as suggestions of sales staff, to certain products or services, or simply luck). According to the performance theory, customer satisfaction is directly related to the performance characteristics of products or services that can be determined objectively. The disconfirmation theory is the most dominant theory according to which customers form expectations about the performance of product features before buying. After purchase and application, a level of actual performance emerges that compares to expectations, in terms of better-than or worse-than. Judgment resulting from this comparison is marked by dissatisfaction if the product is worse than expected, satisfaction if the product is better than expected, or simply by confirmation if the product is in line with expectations.

Customer satisfaction is a key concept in modern marketing practice, which emphasizes the importance of satisfied customers because satisfied customers increase the company's profits. Marušić and Vranešević (2001, 485) interpret user satisfaction in two ways; as a result of a specific transaction and cumulatively as the sum of all previous transactions that the user has had with a product, service or company. If an individual transaction is taken into account, satisfaction will be viewed as an estimate after the purchase, while the cumulative satisfaction includes the selection and purchase of the product and the experience arising from its use. Vranešević (2000, 83) shows satisfaction through three states – enthusiasm, satisfaction and dissatisfaction. According to the same author, the customer can reach any of the above three levels, but every company should strive to achieve the highest level, the level of enthusiasm. Performance that will exceed customer expectations will create high satisfaction or enthusiasm, performance equal to the expected will result in customer satisfaction, performance worse than expected will create customer dissatisfaction.

One of the company's goals is a high level of customer satisfaction, since the customer can at any time decide on another product/service that can potentially provide him with greater satisfaction. A high level of satisfaction and positively met expectations can develop a sensibility towards the company, which can lead to higher customer loyalty. As already mentioned, satisfaction is primarily achieved by delivering the expected value and meeting the needs and desires of users. Customer satisfaction is the driver that affects the re-purchase of a particular product/service. Customer satisfaction is a key factor in retaining them, which is why a significant number of companies systematically measure customer satisfaction. Very satisfied customers usually remain loyal or buy more products, speak positively about the company and its products, pay less attention to competitors' brands and show less price sensitivity, and provide the company with ideas related to products and services. It is cheaper to satisfy such customers than new ones because the business is well-established.

Perceived customer value, satisfaction and loyalty are the main determinants of a successful company-customer relationship. Building strong and close relationships with customers over time ensures that customers remain loyal to the company even when they have an opportunity to switch to competitors. Positive experience with repeat purchases is the basis of product or service preferences. If the customer's experience with the product or service is better, i.e. the more satisfied the customer is, the greater the intention to repeat the purchase (Vranešević et al., 2018, 49). However, the relationship between customer satisfaction and loyalty is not proportional.

Oliver (1999) defines customer loyalty as an attachment and commitment to buy again in the future, that is, to regularly buy the product or service he or she wants, regardless of marketing and other influences that could affect his or her behavior. Indicators of customer loyalty to Kotler and Keller (2006) are repeat purchases (loyalty to product purchase); retention

(resistance to a negative impact of a company) and recommendations (giving reference to others regarding products and services). Customer loyalty is considered an effective way to assess a company's progress. Furthermore, most companies' marketing processes rely on gaining loyalty through the process of developing, retaining, and improving relationships with potential customers (Dick and Basu, 1994). Marketing costs are ultimately reduced by increasing the loyal customer base, and by helping to gain new customers and increase market share. Therefore, marketing analysts promote the concept of customer loyalty as well as its importance for achieving profitability goals. There is ample evidence in the existing literature to clarify the seriousness of customer loyalty in gaining trust and commitment. Also, customer loyalty is unlikely to allow switching to other brands because of competition strategies such as lower prices or special promotions. Loyalty factors have proven to be very useful in the past as they reduce marketing costs, and a positive customer reference helps a company in many ways (Cheema, 2017). Despite the large number of loyalty studies, most research in the last three decades examines customer loyalty from two perspectives: behavioral loyalty and attitudinal loyalty. Behavioral loyalty refers to the frequency of repurchases. Attitudinal loyalty refers to the psychological commitment a customer makes when making a purchase, such as purchase intentions and recommendation intentions without necessarily considering actual buying behavior (Nam et al., 2011). Attitudinal loyalty (Nasir, 2015) refers to attitudes such as beliefs, feelings and intentions to buy. It also expresses the psychological attachment and advocacy of company views. Behavioral loyalty reflects customer buying behavior. It is considered the willingness of the customer to buy the product and continue the relationship with the company.

According to Oliver (1999), there are four main phases of loyalty. The first is cognitive loyalty, i.e. loyalty based on information such as price and characteristics; the second is affective loyalty and it refers to an affection or attitude developed on the basis of previous satisfactory experience with a product brand; third, conative loyalty, refers to a deep purchasing commitment, the customer shows "good intentions"; and the last, loyalty to action, refers to turning a customer's intentions into action, i.e., purchasing. Commitment, trust, satisfaction, and loyalty incentives are positively related to customer loyalty, but they are expected to have different effects on loyalty through attitudes and through consumer behavior. Loyalty through attitudes stems from consumer positive evaluations of the seller based on previous experiences (Watson, et al., 2015). In contrast, loyalty that results from behavior is the result of situations and habits and does not have to include a strong component of attitudes. Commitment, i.e. the desire to maintain a valuable relationship, trust, which means reliability in the integrity of the seller, and satisfaction, which means the difference between previous expectations and the actual experience, contribute to a positive customer experience. Commitment and trust in customers create a feeling that they are part of a pleasant relationship, not ordinary transactions, while satisfaction provides a comparative basis (previous expectations versus actual experience) based on which attitudes are developed. Alternatively, loyalty incentives, such as reward programs, benefits, or favorable treatment, are additional "external lures" designed to encourage repurchase. Customer loyalty can be achieved through identification of customers' needs, management of those needs and their fulfilment (Maiyaki et al., 2011). Simple repeating of customers' behaviour is not enough for them to be considered loyal, but repeated visits should be strengthened by a favourable attitude towards the company (Filip, Constantinescu, 2007). Loyalty is also determined by customers' perception, through comparison of the current service provider with the substitute service provider and the costs that will be incurred by terminating the existing relationship. Even when dissatisfied, the customer can keep long-term relationships to avoid the costs of switching to another service provider (White et al., 2007), because when customers have

increased switching costs, their retention or loyalty depends not only on their satisfaction but also on the barriers imposed on their exit (Schoefer, Diamantopoulos, 2008). Attracting new customers is five times more expensive than maintaining current relationships with existing customers. Also, loyal customers will always give others positive comments and recommendations about the company. Companies can maximize the level of profitability by providing safe and correct products and services to loyal customers (Mellory, Barnett, 2000). According to results of numerous studies published in the relationship marketing literature, a loyal customer can bring many benefits to an organization, contributing to improving the growth rate and increasing the degree of security or organizational stability (Filip, Anghel, 2009). Measuring customer loyalty to companies is a great challenge, which is why companies are often subject to defining loyalty as the number of purchases made or a continuous pattern of buying behaviour. Also, directly asking the customer whether they are 'loyal' does not give realistic results as customers will often say they are loyal to a number of service providers. Measuring customer loyalty means measuring attitudes as well as behaviours that we know make up the concept of loyalty. For example, some of the important attitudes and behaviours expected of a loyal customer include (Nyarko, et al., 2016): the likelihood of recommending products and services to others, the likelihood of continuing to buy products and services, at least on the same or greater level, the belief that products and services bought are superior to others on offer, a loyal customer does not look for alternative service providers, and if a problem does occur, he or she gives the company a chance to solve it without creating problems and without using it as grounds for compromising the relationship. According to Bloemer and Kasper (1995), loyalty means repeating a purchase where there was no obligation between the buyer and the seller. There are three prominent factors that affect consumer loyalty (Gustafsson et. al., 2005): overall customer satisfaction, affective commitment, and calculative commitment. Duffy (2003) states the advantages of loyal customers: savings, recommendations, complaints instead of defectors, migration through distribution channels, brand awareness, greater awareness of brand assets, "turn left rather than right". De Wulf et al. (2001) define loyalty as the value of consumption and purchasing frequency a consumer generates with a company, while Sheth and Mittal (1999) speak of customer loyalty as customer commitment to a brand, store, or suppliers, based on a very positive attitude we can see with consistent repeat purchases. Uncles, Dowling & Hammond (2003) advocate the absence of a single definition of loyalty and point out three approaches to defining loyalty: loyalty is primarily an attitude that sometimes leads to a strong connection with the brand, loyalty is expressed in patterns of behaviour, i.e. as a recurring pattern of past purchases, loyalty is a purchase moderated by certain characteristics of the customer and the circumstances he finds himself in. Loyalty resulting from attitudes is based on the customer's positive evaluations of the seller or service provider based on previous experiences (Watson, et al., 2015). Wijaya (2005) distinguishes four types of loyalty based on customers' attitudes and behaviours: true loyalty, which implies the customer has a strong connection to a company/brand and often purchases/visits again; false/inert loyalty, in which the customer often purchases/visits, but has no emotional connection with the company/brand; hidden loyalty, where the level of emotional connection of the customer with the company/brand is high, but purchases/visits occur rarely; no/low loyalty, i.e. no emotional connection with the company/brand and no repeat purchases/visits.

Nyarko et al. (2016) state expectations from a loyal customer; the likelihood of recommending products and services to others, the likelihood of continuing to buy products and services, at least on the same or greater level, the belief that products and services bought are superior to others on offer, a loyal customer does not look for alternative service providers, and if a problem does occur, he or she gives the company a chance to solve it

without creating problems and without using it as grounds for compromising the relationship. Service quality is usually defined as the customer's impression of the relative superiority/inferiority of the service provider. Parasuraman et al. (1985) state that the following elements have a key impact on service quality; reliability, friendliness, competence, accessibility, kindness, communication, confidentiality, security, understanding of customers and tangible elements. Parasuraman et al. (1988) presented SERVQUAL as a scale developed to assess service quality. Service quality was defined as the degree and direction of deviation between the customer perception and expectations of service. SERVQUAL requires respondents to answer questions about their expectations and their perceptions. The scale breaks down the notion of service quality into 22 items consisting of five constructs. These are tangible things (physical facilities, equipment, appearance of staff, etc.), reliability (ability to perform service reliably and accurately), responsiveness (willingness to help and respond to customer needs), security (ability of staff to build trust) and compassion (the extent to which individualized service is carefully provided).

Peters and Waterman (1982) state that the most successful companies are excellent in basic settings, i.e. that they insist on top quality. The customer's experience of quality is not the same. For some customers, the technical quality of the product is the most important. While for some other customers the actual quality is much more complex. In the context of the service sector, service quality is recognized as the degree of difference between customer's expectations and his or her perception of service received (Thai, 2015).

When it comes to perception, in general, it can be said that "perception is an active process of organizing, integrating and interpreting sensory information, which allows us to know and recognize the meaning of objects, phenomena and events in our environment" (Petz, 2003, 104). Based on the definition above, the emphasis should be on interpretation, as it is the customer's interpretation of reality, because the received stimuli give meaning based on the customer's memory, prior knowledge, expectations, attitudes, motives and other customer experiences. This clearly indicates that the perception of the same product by different customers is not the same. For Otara (2011, 22) each customer selects, organizes and interprets information obtained by his or her senses and inner consciousness in a different way. Therefore, there is no objective perception, each customer has a unique framework that includes various factors influencing his or her behavior. Values, beliefs and attitudes of the customer are important factors influencing the process of perception. Ultimately, the amount of energy consumed by the customer in the implementation of tasks is directly related to his or her perception of the importance of these tasks. Expectations, clearly, play an important role in a customer's quality assessment. Quality is affected by a number of factors. It is a dynamic category. Based on previous experience, through the advice of friends and associates and marketing communication, customers form their expectations.

Quality is confirmed in the market according to the expectations of customers and the only judge of quality is the customer (Vranešević, et al., 2018, 149). Therefore, observing quality in any other way than perceived by the customer carries the risk of market failure. Dudin et al. (2017) in the context of quality state the importance of understanding Deming's PDCA circle (plan, do, check, act). The right approach to quality should be through understanding the value for customers and it is necessary to emphasize again that quality must be experienced by the customer. Thus, market-perceived quality and expected quality should be understood as well as the ratio of expected and perceived benefits (Vranešević, et al., 2018, 155). In this context, the focus should be on value as a broader concept of quality, because customers in assessing the expected value and experiencing the actual value take some additional elements



on the value and cost side. Perceived benefits are the customer's subjective experience of the benefits he or she receives from the use of a particular product or service. Each product or service has a unique set of benefits for each customer. Not all benefits delivered are important to customers as different customers seek different benefits depending on their perception and current situation.

Zao et al. (2020) cites customization as one of the key elements in a company's activities, due to difficulties that the customer has in finding what he or she needs and that despite the increasing variety of products there is still a great need for customization of products and services. There is an increasing demand for personalized products and services that companies offer to adapt to individual needs and wishes of the customer (Aichner and Coletti, 2013). Day by day, the scale is rising more and more, in certain activities sales staff address the service user with a name or remember which product/service he or she enjoyed. In order to be able to customize products and services it is necessary to have great customer knowledge as well as customer understanding. Understanding customers is an important factor in helping companies show their loyal customers that they really care about their best interests. Understanding customers in groups or companies is used to select services, products, experiences or innovations and to meet their wishes and needs. Knowledge and understanding of the conditions, factors and reasons for customer behavior ensures the company's competitiveness in the market. Customers favor companies that offer a wider range of products/services, that know their preferences, and that offer a positive buying experience. Multiple variants for each product or service can bring benefits to the company, however the optimal level should be kept so that too many choices do not result in "choice overload", which can lead to termination of cooperation. The goal is to achieve the ideal balance between a lot of choices and no choices at all. Namely, Pine et al. (1993) points out that users do not want too many choices, instead they want concrete choices and specifically when and how they want it. Thus, companies that understand and customize products and services in accordance with the wishes of their customers have a better chance of success in the market. Technology plays a key role in the application of customization (Pine, et al., 1993; Rishi et al., 2021). Madhavaram et al. (2021) points out that intellectual capital is crucial for customization, which only in combination with customer knowledge, appropriate technology, structural and cognitive capital, common goals and values, and constant exchange of information with customers can give appropriate results. Bardakci and Whitelock (2003) thus cite the importance of learning relationships as one of the tools that will reinforce the benefits of customization.

### **3. Methodology**

The proposed model is adapted from the works of Coelho and Henseler (2012), Santourudis and Trivellas (2010), and Meesala and Paul (2018). Statements used in the measurement of variables are taken from previous papers: variables perceived service quality, customer satisfaction and customer loyalty from the work of Giovanis, et al. (2015), and the customization from the works of Bart et al. (2005), and Nguyen and Simkin (2013).

Each variable in the model was measured by the Likert scale of five degrees, where the first degree meant "strongly agree" and the fifth "strongly disagree". Based on the search of secondary sources, a questionnaire was formed and pre-tested. The questionnaire consisted of 26 questions. A non-probability, convenience, sample was used in the study, and the final sample size was 633 respondents. According to the findings of Barclay et al. (1995) the sample is large enough to make the model consistent. Out of a total of 633 respondents,

54.66% women and 45.34% men participated in the survey. Of all the respondents, the most numerous are between the ages of 31 and 40 (25.12%), followed by 41-50 years (23.70%), and 51-60 years (23.06%). Majority of respondents graduated from college or university (65.55%), and high school (33.02%). Regarding the structure of households, the most numerous are those with two members (25.91%), followed by four members (24.96%), three members (24.33%), singles (11.37%), with total monthly household income of HRK 5,001-10,000 (31.12%), HRK 10,001-15,000 (26.22%), HRK 15,001-20,000 (17.70%), and more than HRK 20,000 (16.75%), etc.

The model in this study was tested using the multivariate PLS-SEM method. This method does not require normal distribution, it is suitable for models with reflective and formative indicators and achieving sufficiently accurate results with a small sample (Hair et al., 2017, 19-25). PLS-SEM is a process consisting of several steps. The measurement or the external model is evaluated first, followed by the internal or structural model. Assessment of the measurement model includes assessment of the reliability and validity of the model. Structural model assessment refers to the assessment of the quality of relationships between variables, which includes examining the predictive capabilities of models and relationships between variables (Hair et al., 2017, 191). SmartPLS 3.0 software package by Ringle et al. (2015) was used to evaluate the model.

#### 4. Results

The assessment of the measurement model consists of checking the internal consistency, convergent and discriminant validity of the variables. The internal consistency check includes an estimate of the variables consisting of the composite reliability and the Cronbach's alpha coefficient.

**Table 1:** Results of measurement model evaluation

Variable	Indicator	External load factor	Average	Composite reliability	Cronbach alpha
Perceived service quality	KU1	0.802	0.690	0.917	0.887
	KU2	0.864			
	KU3	0.827			
	KU4	0.828			
	KU5	0.830			
Customer loyalty	LK1	0.866	0.773	0.931	0.902
	LK2	0.881			
	LK3	0.912			
	LK4	0.856			
Customization	RK1	0.800	0.590	0.851	0.768
	RK2	0.835			
	RK3	0.756			
	RK4	0.671			
Customer satisfaction	ZK1	0.876	0.684	0.896	0.845

Variable	Indicator	External load factor	AVE	Composite reliability	Cronbach alfa
	ZK2	0.881			
	ZK3	0.790			
	ZK4	0.753			

Source: Authors' research

It can be seen from Table 1 that the values for Cronbach's alpha are above the limit value of 0.7 and range from 0.768 to 0.902, which indicates a high level of reliability in measuring latent variables. The composite reliability values for all latent variables are above the critical value of 0.7, which ranges from 0.851 to 0.931, indicating a high degree of internal consistency or reliability (Hair et al., 2017, 112). Convergent validity is measured through outer loadings and average variance extracted (AVE). The external load factors are higher than the critical value of 0.500, which shows their reliability (Hulland, 1999, 198). The values of the average variance extracted (AVE) are above the critical value of 0.5 (Bagozzi and Yi, 1988), and it can be concluded that the convergent validity of the variables is appropriate.

The analysis of the external or measurement model was continued by assessing discriminant validity by comparing cross-loads, Fornell-Larcker criteria, or Heterotrait-Monotrait (HTMT) correlation ratios (Hair et al., 2017, 118).

**Table 2:** Discriminatory validity indicators by comparison of cross-loads

	Perceived service quality	Customer loyalty	Customization	Customer satisfaction
<b>KU1</b>	0.802	0.475	0.518	0.637
<b>KU2</b>	0.864	0.446	0.522	0.620
<b>KU3</b>	0.827	0.412	0.449	0.600
<b>KU4</b>	0.828	0.400	0.433	0.573
<b>KU5</b>	0.830	0.461	0.467	0.611
<b>LK1</b>	0.438	0.866	0.381	0.490
<b>LK2</b>	0.418	0.881	0.370	0.469
<b>LK3</b>	0.475	0.912	0.413	0.536
<b>LK4</b>	0.521	0.856	0.439	0.575
<b>RK1</b>	0.533	0.432	0.800	0.537
<b>RK2</b>	0.446	0.322	0.835	0.510
<b>RK3</b>	0.443	0.352	0.756	0.455
<b>RK4</b>	0.320	0.280	0.671	0.383

	Perceived service quality	Customer loyalty	Customization	Customer satisfaction
<b>ZK1</b>	0.665	0.498	0.543	0.876
<b>ZK2</b>	0.680	0.571	0.549	0.881
<b>ZK3</b>	0.521	0.417	0.471	0.790
<b>ZK4</b>	0.543	0.460	0.483	0.753

Source: Authors' research

The results in Table 2 show that the load values of the indicators for a certain variable are higher than the load values with other variables, which confirms the discriminant validity analyzed by this criterion.

**Table 3:** Fornell-Larcker criterion

Variable	Perceived service quality	Customer loyalty	Customization	Customer satisfaction
<b>Perceived service quality</b>	0.830			
<b>Customer loyalty</b>	0.530	0.879		
<b>Customization</b>	0.578	0.459	0.768	
<b>Customer satisfaction</b>	0.734	0.593	0.620	0.827

Source: Authors' research

Analyzing results in Table 3, it can be concluded that there is a discriminant validity measured among the variables because the values on the diagonal are greater than the correlation of each variable with other variables in the model.

**Table 4:** HTMT correlation ratio

Variable	Perceived service quality	Customer loyalty	Customization	Customer satisfaction
<b>Perceived service quality</b>				
<b>Customer loyalty</b>	0.587			
<b>Customization</b>	0.684	0.539		
<b>Customer satisfaction</b>	0.841	0.670	0.760	

Source: Authors' research

Discriminant validity was also confirmed by the analysis of the results in Table 4 in which the HTMT values of the correlation ratio are less than the 0.90 cut-off value (Henseler et al., 2015).

The assessment of the structural or internal model began with a check of the variance inflation factor (VIF).

**Table 5:** Inflation variance factor (VIF)

<b>Relationship between variables</b>	<b>VIF</b>
Perceived service quality -> Customer loyalty	2.291
Perceived service quality -> Customization	1.000
Perceived service quality -> Customer satisfaction	1.501
Customization -> Customer loyalty	1.716
Customization -> Customer satisfaction	1.501
Customer satisfaction -> Customer loyalty	2.480

*Source: Authors' research*

Since the values of the variance inflation factor (VIF) are lower than the limit value 5 (from 1,000 to 2,480) there is no problem of multicollinearity.

**Table 6:** Results of bootstrapping analysis

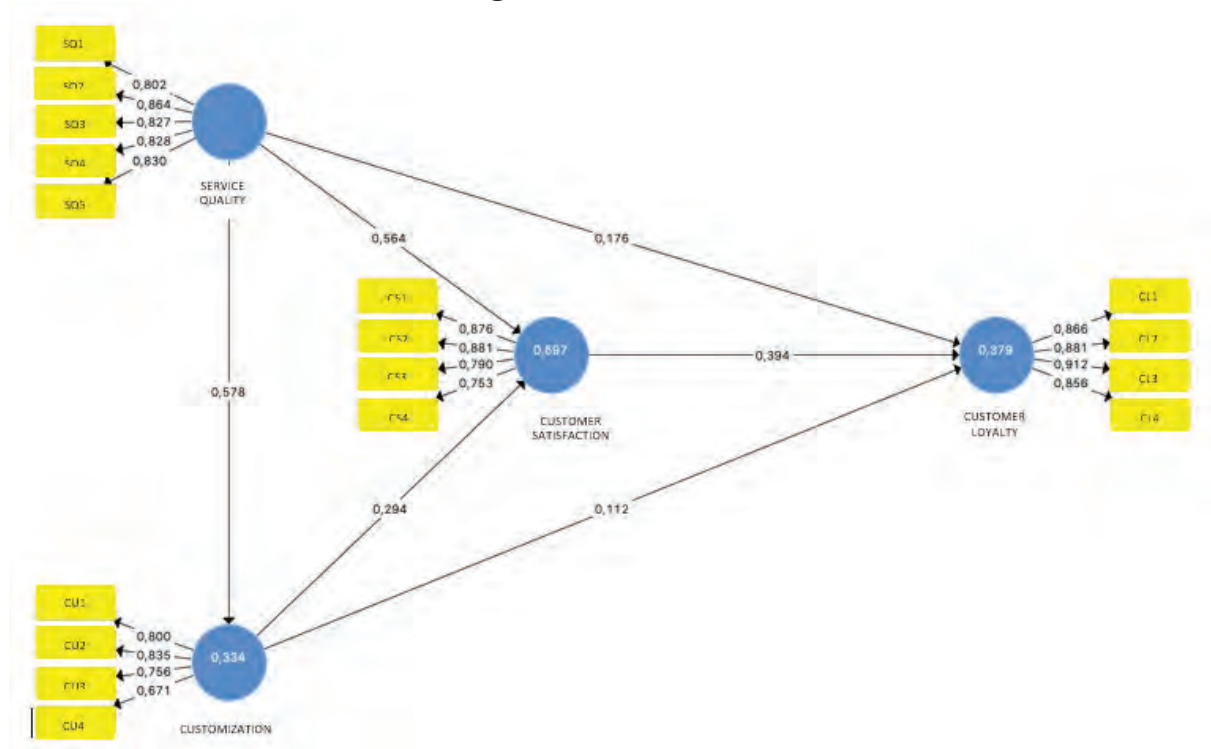
<b>Relationship between variables</b>	<b>Strength of connection between variables (path coefficients)</b>	<b>Standard deviation</b>	<b>t value</b>	<b>p value</b>	<b>95% confidence interval</b>
Perceived service quality -> Customer loyalty	0.176	0.061	2.869	0.004	0.057 – 0.295
Perceived service quality -> Customization	0.578	0.030	19.109	0.000	0.515 – 0.633
Perceived service quality -> Customer satisfaction	0.564	0.042	13.452	0.000	0.472 – 0.637
Customization -> Customer loyalty	0.112	0.045	2.476	0.013	0.016 – 0.196
Customization -> Customer satisfaction	0.294	0.035	8.424	0.000	0.222 – 0.361
Customer satisfaction -> Customer loyalty	0.394	0.068	5.793	0.000	0.259 – 0.520

*Source: Authors' research*

The quality of the model is based on its ability to predict the dependent variable through: strength of the relationship between variables (path-coefficients), coefficient of determination (R<sup>2</sup>), Stone-Geisser coefficient of redundancy (Q<sup>2</sup>), and strength of Cohen's influence f<sup>2</sup> (Hair et al., 2014 ).

As can be seen in Table 6, relationships between the variables are positive, and the perceived service quality has the strongest, most significant impact on the customization ( $\beta = 0.578$ ;  $t = 19.109$ ), and the perceived service quality on customer satisfaction ( $\beta = 0.564$ ;  $t = 13,452$ ), and the weakest influence is perceived by customization on customer loyalty ( $\beta = 0.112$ ;  $t = 2,476$ ).

**Figure 1:** Tested model



Source: Authors' research

The values for the coefficient of determination (R<sup>2</sup>) are shown in Figure 1. and it can be concluded that the model explains 59.7% of the variance of the dependent variable customer satisfaction, 33.4% of the variance of the dependent variable customization and 37.9% of the variance of customer loyalty.

The evaluation of the structural model continued with the evaluation of the impact size of Cohen's f<sup>2</sup> (effect size), which is a measure used to estimate the relative impact of the independent on the dependent variable. Values of 0.02, 0.15, and 0.35 represent a weak, moderate, and significant influence of the independent on the dependent variable (Cohen, 1992).

**Table 7:** Values for Cohen f<sup>2</sup> impact strength

Relationship between variables	f <sup>2</sup>
Perceived service quality -> Customer loyalty	0.022
Perceived service quality -> Customization	0.501

Relationship between variables	f <sup>2</sup>
Perceived service quality -> Customer satisfaction	0.526
Customization -> Customer loyalty	0.012
Customization -> Customer satisfaction	0.143
Customer satisfaction -> Customer loyalty	0.101

Source: Authors' research

From Table 7 it can be concluded that the strongest influence has perceived service quality on customer satisfaction ( $f^2 = 0.526$ ), followed by perceived service quality on customization ( $f^2 = 0.501$ ), while the impact of customization on customer loyalty is very weak ( $f^2 = 0.012$ ).

In addition to the above indicators, the redundancy indicator (Stone - Geisser Q<sup>2</sup>) in the form of "Cross - Validate Redundancy" is used to assess the structural model. If the value for a particular dependent variable is greater than zero, this indicates that the model is relevant in predicting that dependent variable (Geisser, 1974; Stone, 1974).

**Table 8:** Values for Stone-Geisser redundancy coefficient (Q<sup>2</sup>)

Variable	Coefficient Q <sup>2</sup>
Customer loyalty	0.284
Customization	0.191
Customer satisfaction	0.402

Source: Authors' research

The results in Table 8 show that the values of this indicator for all three dependent variables are positive and it can be concluded that the predictive abilities of the model are very good. After calculating the value of the redundancy coefficient Q<sup>2</sup>, the calculation of the impact strength q<sup>2</sup> was started according to the formula:  $q^2 = [Q^2 \text{ (included)} - Q^2 \text{ (excluded)}] / 1 - Q^2 \text{ (included)}$ .

**Table 9:** q<sup>2</sup> values

Independent variable	Dependent variable	Q <sup>2</sup> (included)	Q <sup>2</sup> (excluded)	q <sup>2</sup>
Perceived service quality	Customer loyalty	0.284	0.274	0.014
Customization	Customer loyalty	0.284	0.279	0.007
Customer satisfaction	Customer loyalty	0.284	0.237	0.066

Source: Authors' research

According to the results in Table 9, it can be concluded that customer satisfaction has significant predictive importance for customer loyalty ( $q^2 = 0.066$ ), perceived service quality has moderate predictive importance for customer loyalty ( $q^2 = 0.014$ ), while customization has low predictive importance for customer loyalty ( $q^2 = 0.007$ ).

**Table 10:** Significance of direct and indirect impacts

Relationship between variables	Mediator variable	Direct impact	95% confidence interval of direct impact	t-value	Significance (p <0.05)?	Indirect impact	95% confidence interval of indirect impact	t-value	Significance (p <0.05)?
Perceived service quality -> Customer loyalty	Customer satisfaction	0.176	0.057-0.295	2.869	Yes	0.222	0.157-0.293	6.353	Yes
Perceived service quality -> Customer loyalty	Customization	0.176	0.057-0.295	2.869	Yes	0.065	0.010-0.114	2.477	Yes

Source: Authors' research

According to the results in Table 10, it can be concluded that mediator variables partially mediate the relationships between variables. A higher level of perceived service quality increases their loyalty directly, as well as customer satisfaction and their customization, which leads to greater customer loyalty. Thus, some influences of perceived service quality on customer loyalty are explained through mediator variables: customer satisfaction and customization.

Finally, the Model Fit indicators were analyzed through the SRMR, d\_ULS and d\_G, Chi<sup>2</sup>, NFI and RMS<sub>theta</sub> indicators, which are shown in Table 11.

**Table 11:** Model suitability indicators

Indicator	Value
SRMR	0.066
d_ULS	0.659
d_G	0.279
Chi <sup>2</sup>	1080.584
NFI	0.841
RMS <sub>theta</sub>	0.178

Source: Authors' research

The results in Table 11 for the Standardized Root Mean Residuals (SRMR) indicator are 0.066 and lower than the 0.08 limit value (Hair et al., 2017, 209), which confirms the good suitability of the model.

The values for the indicators d\_ULS and d\_G are above the upper limit of the reliable interval (d\_ULS = 0.243 for 95%, 0.321 for 99%; d\_G = 0.150 for 95%, 0.158 for 99%) and it can be concluded that this model is not suitable if analyzed by this criteria. Namely, Dijkstra and Henseler (2015) state that the upper limit of the reliable interval should have been higher than the limit value of the indicator in order for the mentioned model to be appropriate.



The NFI (Normed Fit Index) indicator has a value of 0.841, and the limit values range from 0 to 1, and a value closer to 1 represents a better fit of the model (Lohmöller, 1989). Thus, the NFI indicator confirms the good suitability of the model. Table 11 shows the value for RMS\_theta of 0.178 is slightly above the 0.12 limit value (Henseler et al., 2014) which indicates that the given criterion is not met.

## **5. Discussion and implications**

The first objective of this research was to investigate the connection between perceived service quality, customer satisfaction, customer loyalty and customization. The results show that the perceived service quality has the strongest impact on customer loyalty, which is also supported by the findings from Santourudis and Trivellas (2010). The impact of perceived service quality on the perception of customization is strong, while the impact of perceived customization on customer loyalty is very weak. On the other hand, contrary to our findings, Coelho and Henseler (2012) have found strong empirical evidence supporting the hypothesis that customization is an important co-creator of customer loyalty. Moreover, their results indicate that customization is an important predictor of customer loyalty.

The second objective was to examine the possible mediation role of customer satisfaction and customization on the service quality and customer loyalty relationship. The results showed that a higher level of perceived service quality increases their loyalty directly, as well as customer satisfaction and their customization, which leads to greater customer loyalty. Thus, some influences of perceived service quality on customer loyalty are explained through mediator variables: customer satisfaction and customization. The results of Santourudis and Trivellas (2010) confirmed the mediation role of customer satisfaction on the service quality and customer loyalty relationship. Almost the same conclusion was reached by Coelho and Henseler (2012) in their study where the effect of customization on customer loyalty depends on the levels of customer satisfaction.

Having in mind the results of the research it is of great importance for managers to understand what the loyalty drivers are. If marketers offer customized services, they will be rewarded with greater customer loyalty. Among other things, the quality of service and customer satisfaction surely play an important role in this direction. Our findings signify that customer satisfaction can be positively affected by service quality. In addition, tactics to increase customer satisfaction must also closely address aspects of service quality relevant to financial issues. Furthermore, our findings help managers decide to change the allocation of resources designed to increase customer satisfaction and loyalty among existing customers.

## **6. Limitations and further research**

This paper provides some guidance for other researchers to conduct and expand their research. For example, the sample, although large, could be larger to achieve greater representation of the population. Also, there is a probability that the relative importance of customer satisfaction, customization and customer loyalty can be different in other markets. For a better insight into the issue, it is necessary to conduct a new study among respondents and explore their satisfaction with each of the dimensions of service quality. Furthermore, to explore customer loyalty a future research could also examine additional concepts that affect loyalty such as trust, customer characteristics or various forms of commitment. The possibility to generalize the results to other countries with different characteristics (e.g.,

different levels of economic development, population) needs to be attested by conducting similar research.

## 7. Conclusion

Customer loyalty is a factor of utmost importance to the company, and it is therefore important that company managers understand the drivers of loyalty. The results of the research indicate that the perceived service quality has a strong impact on customer satisfaction and customization, while customization has a weak impact on customer loyalty. Although customers believe that customization has a positive impact on their loyalty to the company, this impact is not significant. Furthermore, it can be concluded that customer satisfaction has significant predictive importance for customer loyalty, while the customization has low predictive importance for customer loyalty. From all this it can be concluded that a higher level of perceived service quality increases customer loyalty, as well as their satisfaction and customization, which in turn leads to greater customer loyalty. The results of the research confirmed suitability of this model, indicating that it can be a very useful tool, both for researchers and managers, in creating greater customer loyalty. Research has confirmed that the development of customized services has a positive effect on customer loyalty. Marketing decision makers can use this model to compare the impact of their marketing activities.

## REFERENCES

- Aichner, T., Coletti, P. (2013): *Customers' online shopping preferences in mass customization*, Journal of Direct Data and Digital Marketing Practice, Vol. 15, No. 1, pp. 20-35
- Bagozzi, R. P., Yi, Y. (1988): *On the evaluation of structural equation models*, Journal of the Academy of Marketing Science, Vol. 16, No. 1, pp. 74-94, <http://dx.doi.org/10.1007/BF02723327>
- Barclay, D., Higgins, C., Thompson, R. (1995): *The Partial Least Squares (pls) Approach to Casual Modeling: Personal Computer Adoption And Use as an Illustration*, Technology Studies, Special Issue on Research Methodology, Vol. 2, No. 2, pp. 285-309
- Bardakci, A., Whitelock, J. (2003): *Mass-customisation in marketing: the consumer perspective*, Journal of Consumer Marketing, Vol. 20, No. 5, pp. 463-479, <https://doi.org/10.1108/07363760310489689>
- Bart, Y., Shankar, V., Sultan, F., & Urban, G. L. (2005): *Are the drivers and role of online trust the same for all web sites and consumers? A large-scale exploratory empirical study*, Journal of marketing, Vol. 69, No. 4, pp. 133-152, <https://doi.org/10.1509/jmkg.2005.69.4.133>
- Bloemer, J.R., Kasper, H.D.P. (1995): *The complex relationship between consumer satisfaction and brand loyalty*, Journal of Economic Psychology, Vol. 16, No. 2, pp. 311-329, [https://doi.org/10.1016/0167-4870\(95\)00007-B](https://doi.org/10.1016/0167-4870(95)00007-B)

- Dick, A.S., Basu, K. (1994): *Customer loyalty: toward an integrated conceptual framework*, Journal of the Academy of Marketing Science, Vol. 22, No. 2, pp. 99-113
- Dudin, M. N., Smirnova, O. O., Vysotskaya, N. V., Frolova, E. E., & Vilkova, N. G. (2017): *The deming cycle (PDCA) concept as a tool for the transition to the innovative path of the continuous quality improvement in production processes of the agro-industrial sector*, European Research Studies, Vol. 20, No. 2, pp. 283-293
- Cheema, S. (2017): *Customer satisfaction and customer perceived value and its impact on customer loyalty: the mediational role of customer relationship management*, Journal of Internet Banking and Commerce, Vol. 22, No. 8, pp. 1-14
- Coelho, P. S., Henseler, J. (2012): *Creating customer loyalty through service customization*, European Journal of Marketing, Vol. 46, No. 3/4, pp. 331-356, <https://doi.org/10.1108/03090561211202503>
- Cohen J. (1992): *A Power Primer*, Psychological Bulletin, Vol. 112, No. 1, pp. 155 – 159, doi: 10.1037//0033-2909.112.1.155
- De Wulf, K., Odekerken-Schröder, G., Iacobucci, D. (2001): *Investments in Consumer Relationships: A Cross-Country and Cross-Industry Exploration*, Journal of Marketing, Vol. 65, No. 4, pp. 33–50, <https://doi.org/10.1509/jmkg.65.4.33.18386>
- Duffy, D.L. (2003): *Internal and External Factors Which Affect Customer Loyalty*, Journal of Consumer Marketing, Vol. 20, pp. 480-485, <https://doi.org/10.1108/07363760310489715>
- Filip, A., Anghel, L. D. (2007): *The development of the relationship marketing theory*, Analele Universității din Oradea, Vol. 16, pp. 909-912
- Filip, A., Constantinescu, M., (2007): *Customer Retention and Customer Loyalty in the Financial Services Industry: Definitions, Importance and Benefits*, Revista Român de Marketing, Vol. 2, No. 1, pp. 221-237
- Geisser, S. (1974): *A predictive approach to the random effect model*, Biometrika, Vol. 61, No. 1, pp. 101 – 107, <https://doi.org/10.1093/biomet/61.1.101>
- Giovanis, A., Athanasopoulou, P., Tsoukatos, E. (2015): *The role of service fairness in the service quality – relationship quality – customer loyalty chain: an empirical study*, Journal of Service Theory and Practice, Vol. 25, No. 6, pp. 1-36, DOI:10.1108/JSTP-11-2013-0263
- Gustafsson, A., Johnson, M. D., Roos, I. (2005): *The Effects of Customer Satisfaction, Relationship Commitment Dimensions, and Triggers on Customer Retention*, Journal of Marketing, Vol. 69, No. 4, pp. 210–218, <https://doi.org/10.1509/jmkg.2005.69.4.210>
- Hair, J.F., Sarstedt, M., Hopkins, L. and Kuppelwieser, V.G. (2014): *Partial Least Squares Structural Equation Modeling (PLS-SEM): An Emerging Tool in Business Research*, European Business Review, Vol. 26, pp. 106-121, <https://doi.org/10.1108/EBR-10-2013-0128>
- Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M. (2017): *A Primer on Partial Least Squares Structural Equation Modeling*. 2nd Ed., Sage, London, UK

- Henseler, J., Dijkstra, T. K., Sarstedt, M., Ringle, C. M., Diamantopoulos, A., Straub, D. W., Calantone, R. J. (2014): *Common Beliefs and Reality About PLS: Comments on Ronnkko and Evermann (2013)*, Organizational Research Methods, Vol. 17, No. 2, pp. 182-209, <https://doi.org/10.1177/1094428114526928>
- Hulland, J. (1999): *Use of Partial Least Squares (PLS) in Strategic Management Research*, Strategic Management Journal, Vol. 20, No. 2, pp. 195-204, [https://doi.org/10.1002/\(SICI\)1097-0266\(199902\)20:2<195::AID-SMJ13>3.0.CO;2-7](https://doi.org/10.1002/(SICI)1097-0266(199902)20:2<195::AID-SMJ13>3.0.CO;2-7)
- Kotler, P., Keller, K. (2006): *Marketing Management*, Upper Saddle River, New Jersey
- Lohmöller, J.B. (1989): *Latent Variable Path Modeling with Partial Least Squares*, Physica-Verlag, Heidelberg, <https://doi.org/10.1007/978-3-642-52512-4>
- Madhavaram, S., Hunt, S.D., Bicen, P. (2021): *Building customisation capability in B2B marketing: the role of organisational capital*, Journal of Marketing Management, Vol. 37, No. 13-14, pp. 1409-1435, <https://doi.org/10.1080/0267257X.2021.1910858>
- Marušić, M., Vranešević, T. (2001): *Istraživanje tržišta*, Zagreb: Adeco
- McIlroy, A., Barnett, S. (2000): *Building customer relationships: do discount cards work?* Managing Service Quality, Vol. 10, pp. 347-355
- Meesala, A., Paul, J. (2018): *Service quality, consumer satisfaction and loyalty in hospitals: Thinking for the future*, Journal of Retailing and Consumer Services, Vol. 40, pp. 261-269, DOI: 10.1016/j.jretconser.2016.10.011
- Maiyaki, A. A., Mohd Noor, N. Mohd Mokhtar, S. S. (2011): *The Influence of Service Quality of Mobile Phone Service Providers on Customers Satisfaction in Malaysia: Students Feedback Survey*, Journal of Business Management and Accounting, Vol. 1, No. 1, pp. 79-97.
- Nam, J., Ekinci, Y., Whyatt, G. (2011): *Brand equity, brand loyalty and consumer satisfaction*, Annals of Tourism Research, Vol. 38, No. 3, pp. 1009-1030, <https://doi.org/10.1016/j.annals.2011.01.015>
- Nasir, S. (2015): *Customer Relationship Management Strategies in the Digital Era*, Business Science Reference, Hershey
- Nguyen, B., Simkin, L. (2013): *The dark side of CRM: advantaged and disadvantaged customers*, Journal of Consumer Marketing, Vol. 30, No. 1, pp. 17-30, <https://doi.org/10.1108/07363761311290812>
- Nyarko I.K., Agyeman-Duah M.O., Asimah, V., (2016): *Measuring Customer Loyalty Using Retention, Advocacy and Patronage as Key Denominators*, International Journal of Scientific and Research Publications, Vol. 6, No. 2, pp. 375-380
- Oliver, R.L. (1999): *Whence Consumer Loyalty*, Journal of Marketing, Vol. 63, pp. 33-44, <https://doi.org/10.1177/00222429990634s105>

- Otara, A. (2011): *Perception: A Guide for Managers and Leaders*, Journal of Management and Strategy, Vol. 2, No. 3, pp. 21–24, <https://doi.org/10.5430/jms.v2n3p21>
- Pine, B. J., Bart, V., & Boynton, A. C. (1993): *Making mass customization work*, Harvard Business Review, Vol. 71, No. 5, pp. 108–118.
- Parasuraman, A., Zeithaml, V. A., & Berry, L.L. (1985): *Model Service Its Quality and Implications for Future*, Journal of Marketing, Vol. 49, No. 4, pp. 41-50, <https://doi.org/10.2307/1251430>
- Parasuraman, A., Zeithaml, V. A., Berry, L. L. (1988): *SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality*, Journal of Retailing, Business Premium Collection, Vol. 64, No. 1, pp. 12-40
- Peters, T.J. and Waterman, R.H. (1982): *In Search of Excellence: Lessons from America's Best-Run Companies*, Harper & Row, New York.
- Petz, B. (2003): *Uvod u psihologiju: psihologija za nepsihologe*, II. Izdanje, Slap, Zagreb
- Ringle, C. M., Wende, S. & Becker, JM. (2015): *SmartPLS 3. Bönningstedt: SmartPLS*, Retrieved from <http://www.smartpls.com>
- Rishi, A., Patil, C., Prasad V.H.D. (2021): *Factors influencing consumer attitude and perception towards online to offline (O2O) food delivery business in a tier 3 city of India*, Journal of University of Shanghai for Science and Technology, Vol. 23, No. 8, pp. 5-30
- Santouridis, I., Trivellas, P. (2010): *Investigating the impact of service quality and customer satisfaction on customer loyalty in mobile telephony in Greece*, The TQM Journal, Vol. 22, No. 3, pp. 330-343, DOI:10.1108/17542731011035550
- Schoefer, K., Diamantopoulos, A. (2008): *The Role of Emotions in Translating Perceptions of (In)Justice into Postcomplaint Behavioral Responses*, Journal of Service Research, Vol. 11, No. 1, pp. 91–103, <https://doi.org/10.1177/1094670508319091>
- Sheth, J. N., Mittal, B., Newman, B. I. (1999): *Customer behavior: Consumer behavior & beyond*, Fort Worth, TX: Dryden Press
- Stone, M. (1974): *Cross-validatory choice and assessment of statistical predictions*, Journal of the royal statistical society, Series B (Methodological), Vol. 36, No. 2, pp. 111-147, <https://doi.org/10.1111/j.2517-6161.1974.tb00994.x>
- Thai, V. (2015): *Determinants of customer expectations of service: Implications for fostering customer satisfaction*, International Journal of Management and Applied Science, Vol. 1, No. 4, pp. 146–151
- Uncles, M.D., Dowling, G.R., Hammond, K. (2003): *Customer loyalty and customer loyalty programs*, Journal of Consumer Marketing, Vol. 20, pp. 294-316
- Vranešević, T. (2000): *Upravljanje zadovoljstvom klijenata*, Zagreb: Golden marketing

Vranešević, T., Pandža Bajš, I., Mandić, M. (2018): *Upravljanje zadovoljstvom klijenata*, Accent, Zagreb

Watson, G.F., Beck, J.T., Henderson, C.M., & Palmatier, R.W. (2015): *Building, measuring, and profiting from customer loyalty*, Journal of the Academy of Marketing Science, Vol. 43, pp. 790-825 DOI 10.1007/s11747-015-0439-4

White, T. B., Lemon, K. N., & Hogan, J. E. (2007): *Customer retention when the customer's future usage is uncertain. Psychology and Marketing*, Vol. 24, No, 10, pp. 849-870, <https://doi.org/10.1002/mar.20187>

Wijaya, S. (2005): *The Effect of Loyalty Programs on Customer Loyalty in the Hospitality Industry*, Jurnal Manajemen Perhotelan, Vol. 1, No. 1, pp. 24-31

Zhao, J., Xue, F., Khan, S., Khatib, S.F.A. (2020): *Consumer behaviour analysis for business development*, Aggression and violent behaviour, Elsevier, 1873-6335, DOI: 10.1016/j.avb.2021.101591

*A scientific paper*

**Maja Vretenar Cobović, Ph. D., Assistant Professor, Higher education professor**  
University of Slavonski Brod, Department of Social Sciences and Humanities, Department of Economics  
E-mail address: mvcobovic@unisb.hr

**Mirko Cobović, Ph. D., Higher education professor**  
University of Slavonski Brod, Department of Social Sciences and Humanities, Department of Economics  
E-mail address: mcobovic@unisb.hr

**Ivana Miklošević, Ph. D., Lecturer**  
Financial Agency, Našice  
E-mail address: ivana.miklosevic7@gmail.com

## **PERSONAL FINANCE MANAGEMENT - STUDENT POPULATION INVOLVEMENT INTO THE FINANCIAL SYSTEM IN EASTERN CROATIA**

### ***ABSTRACT***

*Financial education represents a set of knowledge in the field of finance that is necessary for making population's short-term and long-term financial decisions. Unfortunately, the insufficient participation of the financially disadvantaged population creates a gap between the needs and demands of certain social groups for the supply of basic financial services. The economic development of an individual country significantly affects the development of its regions and the financial potential of the population in that area. Therefore, insufficient and uneven economic development causes many problems for the population both at the local and personal level. Furthermore, problems are primarily due to the lack of financial income and to the economic lag of Eastern Croatia, which is behind the national average, and especially the lack of this income within the student population. Therefore, financial education is a long-term process whose effects are often not immediately apparent and financial literacy activities need to be continually pursued.*

*The aim of this paper is to research and analyse the level of financial inclusion and financial literacy of the student population in Eastern Croatia, the knowledge of their status in the financial system and the relation to personal finance, which substantially reflects the level of their financial education. The authors use a number of scientific research methods (methods of analysis, comparison, induction, deduction, description and classification, etc.) as well as individual statistical and mathematical methods. The research methodology is based on the survey method through an online survey questionnaire instrument. In the paper, the calculation of correlation values between financial education and personal finances management of respondents for individual variables from the survey questionnaire is presented (number of credit institutions services, the motives for choosing an individual credit institution, care of student population in the management of personal finances, etc.). More specifically, the relationship between the essential elements of the loan, which is important to the respondents, was examined. Pearson's correlation coefficient ( $r$ ) was used to calculate correlation values.*

*Accordingly, the obtained research results show that the level of financial education of the student population in Eastern Croatia is not satisfactory, and that there is a need to improve financial knowledge in this area.*

**Key words:** *financial education, personal finance, financial management, Eastern Croatia, student population.*

## 1. Introduction

Financial literacy is key to making rational financial decisions and a prerequisite for achieving one's own financial well-being. With the increasing complexity of financial products and services, the need for financial education of the population is growing, and one needs to pay special attention to the student population. The occurrence of financial difficulties most often characterizes by a lack of financial knowledge, problems in financial behaviour and attitudes of individuals, but also a neglected attitude towards financial issues. Accordingly, the research in this paper focuses on all the mentioned areas since financial knowledge, skills, attitudes and behaviour unite the notion of financial literacy.

The authors present the results of research related to financial inclusion and personal finance management of the student population in Eastern Croatia. The focus of the research places on the reasons for the entry of the student population into the financial system, the scope of using the services of credit institutions and the motives for choosing an individual credit institution. The basis of financial involvement is the possession of a bank account. The right to hold a bank account, as one of the fundamental rights of every individual at the level of the European Union regulates and recognizes the Directive 2014/92 / EU on the comparability of fees relates to payment accounts, payment account switching and access to payment accounts with basic features. Despite constant technological progress and the development of new technologies in the payment segment, cash payments are still present. Accordingly, in such situations the individual does not participate peripherally or at all in the financial system.

Financial inclusion as a basic starting point for the social participation of each individual becomes increasingly important and closely relates to the financial education of the student population. On the other hand, financial exclusion may be defined as the gap between the needs and demand of certain social groups for the supply of basic financial services (Matić, Serdarušić, Vretenar Cobović, 2013, 504). The problems of financial exclusion primarily arise from the lack of financial income due to the economic lag of Eastern Croatia behind the national average, and especially the lack of this income within the student population.

## 2. Literature review

Financial literacy becomes a current topic and is gaining in importance, while the greatest interest in this topic began with the emergence of the financial crisis in 2008. The aforementioned financial crisis warned of insufficient financial knowledge of individuals and unpreparedness for adequate decision-making in such a situation. Most of the responsibility for the crisis was on financial institutions, but it is important to emphasize the responsibility of the population, which with its ignorance, lack of interest and superficial knowledge of financial products and services contributed to the emergence and consequent spread of the crisis.

Therefore, the importance of financial education and financial literacy is very important today, since the possession of adequate financial knowledge acquired through financial education minimizes the risk of financially unfavorable situations for the individual and the community.



Therefore, the paper presents the calculation of correlations between financial education and personal finance management of respondents for individual variables (number of uses of credit institutions, motive for choosing individual credit institutions, care for personal finance management, etc).

In the scientific and professional literature, the concept of financial literacy is relatively new, as researches have published most articles in the last ten to fifteen years and therefore there is no unambiguous and generally accepted definition of financial literacy.

However, there are some researches and authors who have dealt with financial literacy before. Thus, the authors (Volpe, Chen, Pavlicko, 1996; Chen, Volpe, 1998; Hilgert, Hogarth, Beverley, 2003) used a performance test to assess students' financial literacy, and their measure bases on the percentages of correct answers in the test. The application of factor analysis on multi-choice items individual authors have used (Lusardi, Mitchell, 2007; Rooji, Lusardi, Alessie, 2007) and take into account basic and sophisticated financial literacy.

Nevertheless, many authors interpret the definition of financial literacy differently. Thus, they cited the definition of financial literacy (Mason, Wilson, 2000) as the ability of an individual to adopt, understand, and evaluate relevant information in order to make conscious decisions about the likelihood of financial consequences. In addition, (Barbić, Lučić, 2018) state that financial literacy may define as a combination of acquired financial knowledge and acquired financial skills needed for effective management of financial resources in order to achieve long-term financial security.

With regard to the problem of theoretically determining the definition of financial literacy (Remund, 2010), he identified five basic components that one can use to define financial literacy. These components are: 1. knowledge of financial concepts, 2. ability to communicate about financial concepts, 3. skills of personal financial management, 4. skills of making adequate financial decisions, 5. confidence in planning future financial decisions. Therefore, as he states (Barbić, 2018), financial education implies a process whose purpose is to acquire and improve financial knowledge and financial skills and as such represents the potential for improving financial literacy, and then the financial behavior of individuals.

Research related to the topic of financial literacy has often been related to the analysis of this literacy between individual countries and the analysis of certain groups of the population (those less involved in the financial system, analysis of financial literacy by risk and risk diversification, etc.).

Therefore, the paper researches students' financial literacy in order to determine their involvement in the financial system, the number of credit institutions uses, indebtedness and care for personal finances.

According to research by the authors (Lusardi, Mitchell, 2011), the majority of the population in the developed part of the world is not familiar with the most basic economic concepts needed to make decisions about savings and investments. The authors found low financial literacy of the US population and found that lower information especially associates with people with lower incomes and lower levels of education and is more present with female population. Furthermore, research has shown that measuring financial knowledge through a set of the same questions in different countries indicates a generally low level of financial literacy regardless of the development of financial markets and the way those countries organize the pension system.

Based on previous research, the paper also seeks to determine whether the level of students financial literacy depends on the amount of financial income and the level of education and the type of study they attend.

A comparative analysis of financial literacy in fourteen countries (Atkinson, Messy, 2012) showed that in several countries it is possible to apply the same group of questions on the basis of creating simple indicators of financial literacy. The results showed that there is significant

room for improving financial knowledge in each of the observed countries, even if they belong to the group of developed countries. In all countries, lower values for calculating compound reported interest, and there is a noticeable lack of knowledge on risk diversification. Higher levels of financial literacy show men compared to women, and the results of the research shows that inequality in financial literacy most likely influences those with lower education and lower incomes.

In addition, the authors (Lusardi, Mitchell, 2014) conducted a detailed review of research on the economic aspects of the importance of financial literacy. The survey clearly presents the results of the survey and the comparison of financial literacy in different countries in relation to socio-demographic variables such as gender, age, education, income, employment status, minority affiliation and place of residence. Examples of financial literacy assessments in countries that have experienced inflation as opposed to countries with experience in deflation are presented.

An interesting difference also appears between the respondents' own assessment of financial literacy in relation to actual knowledge.

In their research on financial literacy (Bujan, Cerović, Dukić Samaržija, 2016) in the Republic of Croatia, the authors concluded that the variables like age, level of education and income level significantly affect financial literacy. In addition, (Škreblin Kirbiš, Vehovec, Galić, 2016) conclude that men are generally more financially educated, but that women are better at managing finances. That is precisely the reason why the paper researches whether the level of education and income level of the student population affects financial literacy.

Based on a review of previous research on financial literacy, it is possible to conclude that the largest number of surveys relate to the adult population, while within younger population researchers are more likely to survey high school students than students. Student research often focuses on the use of credit cards and student debt, which is a particular problem among young people in the United States and directly affects the entire economy (Lusardi, Mitchell, Curto, 2009). In addition, the aim of the research is to conclude whether there is a need for greater financial education. For those who have not had the opportunity to encounter financial and economic topics, financial education programs have proven to be a key solution to improve financial knowledge and promote sound personal financial management (Elliot, 2000; Fox, Bartholomae, Lee, 2005; Peng et al., 2007). The authors (Peng et al., 2007) find significant effects of financial courses on financial and investment knowledge in students, but not in high school students, which may indicate that students are more grateful to the public for this type of education, as they are more aware of personal responsibilities for its own financial position. Therefore, the paper seeks to research whether the type of study affects the level of financial literacy, or whether there is a difference between students studying in the field of technical sciences (eg. mechanical engineering students) as opposed to students studying in the social sciences (e.g. students of economics).

In accordance with previous research, the aim of this paper is to investigate and analyze the level of financial literacy of students in Eastern Croatia, knowledge of their status in the financial system and attitude towards personal finance, which significantly reflects the level of their financial education.

In accordance with the subject of research and the goals set, the paper starts from the following hypotheses:

H1: The degree of financial literacy of students significantly depends on the type of study course they attend

H2: Students' work experience affects their financial participation within the financial system and the level of their financial education

H3: Insufficient financial income of the student population in Eastern Croatia significantly affects their participation within the financial system

H4: There is a need for constant improvement of students' financial knowledge in Eastern Croatia

### 3. Research methodology

Having the appropriate financial knowledge acquired through long-term and continuous financial education minimizes the risk of financially unfavorable situations for the individual. In order to minimize the risk of a new financial crisis and avoid the negative consequences that have damaged the world economy, it is necessary to have a satisfactory level of financial literacy of the population. Financial education is a long-term process whose effects are often not immediately visible, so activities related to financial literacy should carry out continuously, with the aim of reaching as many age groups as possible. The reasons for full, increased or partial financial involvement of the student population in Eastern Croatia can be found in the lack of personal income, ie. income of their households, changed circumstances on the income side in a certain time (reduction of total income due to job loss, etc.), weak financial education and knowledge of financial laws, personal attitudes regarding personal finances and so on. All these are activities that indicate the extreme importance of financial education of the population, whose effects significantly facilitate the lives of all citizens, especially those in Eastern Croatia whose economy lags significantly behind the national average.

The research methodology bases on the survey method through the online survey questionnaire instrument. The survey was conducted in January 2022, on a representative sample of 773 respondents. The research covered the area of Eastern Croatia, more precisely in Brod-Posavina, Požega-Slavonia and Osijek-Baranja counties. The research was conducted with the aim of collecting information on the financial potential and financial involvement of the student population in Eastern Croatia, their knowledge of their own status in the financial system and their relationship to personal finance, as well as the level of financial education. The target group of the sample included full-time and part-time students studying in the field of social sciences, economics, technical sciences, mechanical engineering and electrical engineering, and biotechnical sciences, agriculture. The researchers structured survey questionnaire in four parts. The first part of the questionnaire referred to basic data on the sample (gender, age, year of study, study status and place of residence); the second part referred on student participation in the financial system; the third part of the survey referred to the state of current monthly income and current and expected financial obligations of students, while the fourth part referred to questions related to the attitudes of students regarding their personal finances. Individual questions from the survey questionnaire were grouped according to specific target groups in order to see if there are certain differences in financial literacy between the analyzed groups. The paper presents the calculation of correlations between financial education and personal finance management of respondents for individual variables from the questionnaire (number of credit institutions uses, motive for choosing individual credit institutions, care for personal finance management, etc.). In addition, the relationship between the essential elements of credit in borrowing examined what was important to respondents (student population).

The Pearson correlation coefficient ( $r$ ) was used to calculate the correlation values. The famous English mathematician Karl Person was the first to explain the correlation coefficient in 1986 (Hauke and Kossowski, 2011). The Pearson correlation coefficient use variables on an interval scale that are in a linear relationship. The linear relationship of variables one may read from a scatter plot and implies how points follow and scatter around a direction. Sometimes the data may interrelate, but they are not in a linear relationship and then it is not possible to calculate the Pearson correlation coefficient (Dawson and Trapp, 2004).

Pearson's correlation coefficient denotes by a lowercase letter ( $r$ ) and can take values from -1 to +1. The value of the correlation coefficient from 0 to 1 is a positive correlation and indicates

a consistent increase in the values of both data groups. The value of the correlation coefficient from 0 to -1 indicates a negative correlation, ie. a consistent increase in the value of one variable, and a decrease in the value of another variable. When the correlation coefficient has a value of 0, then it indicates the absence of linear correlation, which points to the fact that knowing the values of one variable it is not possible to conclude anything about the values of another variable (Ažman, Frković, Bilić-Zulle, Petrovečki, 2006).

The Statistica software package was used in the processing of all data obtained in the paper.

#### 4. Research and discussion results

The paper presents the results of a research aimed at collecting relevant information on the financial potential of the student population in Eastern Croatia, more precisely in Brod-Posavina, Požega-Slavonia and Osijek-Baranja counties. The gender and study status of the student population shows in Table 1.

**Table 1:** Gender and study status

GENDER / STATUS OF STUDY	Frequency	Percent	Mean	Median	Mode	Std. Deviation	Variance
Male	330	42.69	1.74	2	2	0.455	0.203
Female	443	57.31					
TOTAL	773	100					
Full-time students	472	61.06	1.43	1	1	0.496	0.242
Part-time students	301	38.94					
TOTAL	773	100					

*Source: Authors*

In the total sample of 773 students, researches surveyed 57.31% of women and 42.69% men. In the total number of survey participants, the number of women compared to men increased by 14.62%. According to the study status, the surveyed number of students were 61.06% of full-time students and 38.94% of part-time students. Researchers surveyed students at higher education institutions in Eastern Croatia, and the largest number were in Brod-Posavina County at the University of Slavonski Brod (45.43%). In Osijek-Baranja County, 33.13% of students were from the Josip Juraj Strossmayer University in Osijek, while in Požega-Slavonia County, 24.44% of students were from the Polytechnic of Požega. According to the field of study, 44.48% of students were from the field of social sciences, while 39.13% of students were from the field of technical sciences. In the total sample, researches surveyed the the least students from the field of biotechnical sciences (16.39%) (Table 1). An important factor in assessing the financial potential of the student population is the level of their financial involvement in the banking system. The financial involvement of the student population is observed through their participation and use of bank services shows in Table 2.

**Table 2:** Use of bank services in relation to student study status

<b>USE OF BANK SERVICES / NUMBER OF BANK SERVICES USED</b>	<b>Frequency</b>	<b>Percent</b>	<b>Mean</b>	<b>Median</b>	<b>Mode</b>	<b>Std. Deviation</b>	<b>Variance</b>
Yes, I use bank services	589	76.20	1.07	1	1	0.297	0.085
No, I don't use bank services	184	23.80					
TOTAL	773	100					
<b>FULL-TIME STUDENTS</b>	<b>Frequency</b>	<b>Percent</b>	<b>Mean</b>	<b>Median</b>	<b>Mode</b>	<b>Std. Deviation</b>	<b>Variance</b>
I use one bank service	99	32.67	1.31	1	2	0.545	0.294
I use two bank services	154	50.83					
I use three bank services	38	12.54					
I use more than three bank services	12	3.96					
TOTAL	303	100					
<b>PART-TIME STUDENTS</b>	<b>Frequency</b>	<b>Percent</b>	<b>Mean</b>	<b>Median</b>	<b>Mode</b>	<b>Std. Deviation</b>	<b>Variance</b>
I use one bank service	55	19.23	1.35	1	3	0.666	0.278
I use two bank services	87	30.42					
I use three bank services	111	38.81					
I use more than three bank services	33	11.54					
TOTAL	286	100					

Source: Authors

Analyzing and comparing the data of the surveyed students, it is possible to conclude that students participate to a greater extent within the banking system using certain banking services (76.20% of the sample). Nevertheless, a significant number of students do not participate in the banking system at all (as many as 23.80% of them), which indicates their weaker financial engagement and at the same time inadequate financial literacy. According to the obtained research results, and considering the status of students, part-time students participate significantly within the banking system since they most often use three banking services, while full-time students most often use two banking services. In the total sample of 472 full-time students, 64.19% use individual bank services, while 95.02% of the total number of surveyed part-time students (301 of them) use individual bank services. If we look at the ranking of the use of services, full-time students most often use two banking services, then one service and then three banking services. Part-time students most often use three banking services, then two and finally one banking service. Based on the above, it is possible to conclude that the work experience of students (part-time students who are employed) affects their financial participation within the financial system and the level of their financial education. Full-time students need additional incentives to join the financial system and additional financial education (Table 2). Accordingly, it is possible to confirm hypothesis H2, but also previous research related to this topic where it was found that work experience affects the level of financial literacy.

Table 3 shows the types of banking services used by students when participating in the financial system, ie. the banking system dominant in the Republic of Croatia.

**Table 3:** Types of services used by banks in relation to the students fields of study

<b>STUDENTS IN THE FIELD OF SOCIAL SCIENCES</b>	<b>Frequency</b>	<b>Percent</b>	<b>Mean</b>	<b>Median</b>	<b>Mode</b>	<b>Std. Deviation</b>	<b>Variance</b>
Savings	85	29.21	2.12	2	1	1.088	1.258
Loans	28	9.62					
Payments	38	13.06					
Card business services	43	14.78					
On line services (Internet banking, etc.)	52	17.87					
Investments in investment funds or money market funds	45	15.46					
TOTAL	291	100					
<b>STUDENTS IN THE FIELD OF TECHNICAL SCIENCES</b>	<b>Frequency</b>	<b>Percent</b>	<b>Mean</b>	<b>Median</b>	<b>Mode</b>	<b>Std. Deviation</b>	<b>Variance</b>
Savings	34	14.98	2.23	2	5	1.336	1.661
Loans	35	15.42					
Payments	23	10.14					
Card business services	45	19.82					
On line services (Internet banking, etc.)	78	34.36					
Investments in investment funds or money market funds	12	5.28					
TOTAL	227	100					
<b>STUDENTS IN THE FIELD OF BIOTECHNICAL SCIENCES</b>	<b>Frequency</b>	<b>Percent</b>	<b>Mean</b>	<b>Median</b>	<b>Mode</b>	<b>Std. Deviation</b>	<b>Variance</b>
Savings	10	14.08	2.37	2	4	1.115	1.305
Loans	9	12.68					
Payments	10	14.08					
Card business services	25	35.21					
On line services (Internet banking, etc.)	15	21.13					
Investments in investment funds or money market funds	2	2.82					
TOTAL	71	100					

*Source: Authors*

The most frequently used services of student banks are savings (29.21% of students studying in the field of social sciences most often use this service), online services (34.36% of students studying in the field of technical sciences most often use this service) and card business (35.21% students studying in the field of biotechnical sciences most often use this service).

Analyzing the data in the table, it is possible to conclude that students studying in the field of social sciences, the field of economics equally use payment services, card business and online services. Savings are their most frequently used service, while a significant percentage also use investment and money market services, which is a very encouraging figure in terms of financial literacy of this part of the population.

Students studying in the field of technical and biotechnical sciences most often use online services and card business services, while not as much participation is in other types of services (especially investing in investment and monetary funds).

In addition, it is possible to observe that in the total sample of 589 students who use certain types of banking services, 49.41% are students studying in the field of social sciences, then students in the field of technical sciences with 38.54%, while students in the banking system participate the least biotechnical sciences (12.05%).

Based on the above, it is possible to see that the degree of financial literacy of students significantly depends on the type of study they attend. Students who have had the opportunity to listen to and attend courses related to finance (monetary, public, business, financial management, etc.) participate more often within the financial system and show a higher level of financial literacy compared to students studying in other scientific fields (Table 3).

Accordingly, it is possible to confirm hypothesis H1, the future level of students financial literacy significantly depends on the type of study they attend.

Despite a certain participation of the student population within the financial/banking system, there is still a significant number of students who do not participate at all within the mentioned system (23.80% of them). The reasons for non-participation or non-use of banking services authors presented in Table 4.

**Table 4:** Reasons for not using the banking services in the student population

<b>REASONS FOR NOT USING BANKING SERVICES</b>	<b>Frequency</b>	<b>Percent</b>	<b>Mean</b>	<b>Median</b>	<b>Mode</b>	<b>Std. Deviation</b>	<b>Variance</b>
I don't trust the banking system	15	8.15	3.18	3	5	1.663	2.672
Interest rates on savings are low	17	9.24					
Bank fees are high	22	11.96					
I don't have enough money to save	34	18.48					
I have not been informed about the provision of such services	96	52.17					
TOTAL	184	100					

*Source: Authors*

As the main reasons for non-participation within the banking system, students most often state that they do not have information about the provision of such services, which leads to the conclusion that there is a very low level of their financial literacy and the need to constantly improve their financial knowledge.

Based on this, it is possible to confirm the hypothesis H4 since there is a need for constant improvement of students financial knowledge in Eastern Croatia. Also, based on previous research, it one concludes that financial education programs have proven to be a key solution for improving financial knowledge and promoting sound personal finance management.

In addition, the surveyed students state that they do not have enough money to use some of the banking services (eg savings) and that their bank fees are high. The most common monthly income of students in Eastern Croatia ranges from 1,001.00 to 3,000.00 HRK (38.6%), followed by students with monthly income ranging from 500.00 to 1,000.00 HRK (29.3%). The lowest percentage of students (3.6%) has a monthly income of 5,001.00 to 7,000.00 HRK. They most

often earn their monthly income from their pocket money, ie. the income of their households (parents' income), scholarships and salaries (part-time students).

Based on the above, it is possible to conclude that the insufficient financial income of the student population in Eastern Croatia significantly affects their participation within the financial system (Table 4). Accordingly, it is possible to confirm hypothesis H3. However, in addition to this, numerous previous studies have shown that the level of income of the population significantly affects financial literacy.

A bank account allows us to receive various payments and make payments within the limits of funds and makes it easier for us to make payments, especially when buying goods and/or services online. Having one of the forms of bank account as well as the time of its opening is an important indicator of an individual's financial involvement.

The time when the surveyed students first opened a bank account shows in Table 5.

**Table 5:** Time of opening a bank account

STATUS OF STUDY / TIME OF OPENING AN ACCOUNT			Frequency	Percent	Mean	Median	Mode	Std. Deviation	Variance
Full-time students	Account opening time	When I came of age	68	22.44	2.05	2	2	0.944	0.891
		When I enrolled in college	125	41.25					
		During my studies when I started working through the student service	99	32.67					
		When I got a job	11	3.64					
	TOTAL	303	100						
Part-time students	Account opening time	When I came of age	148	51.75	2.01	2	1	0.789	0.751
		When I enrolled in college	73	25.52					
		During my studies when I started working through the student service	16	5.59					
		When I got a job	49	17.14					
	TOTAL	286	100						

Source: Authors

Based on the data in the table, it one can see that full-time students open bank accounts most often when enrolling, and then during their studies when they start doing some of the work through the student service. Part-time students usually open a bank account when they reach the age of majority. It is interesting that a large percentage of surveyed part-time students (25.52%) open a bank account only after enrollment, and not say during employment, which indicates a slightly lower participation of this part of students within the banking system, but also the likelihood of later employment. business.

Based on the above, it is possible to conclude again that the insufficient financial income of the student population in Eastern Croatia significantly affects their participation within the financial system (Table 5). Accordingly, it is again possible to confirm hypothesis H3.

Table 6 shows the attitude of the student population towards personal finances and the need for credits.



**Table 6:** Raising a bank credit and the attitude towards the personal finances of the student population

RAISING ACREDIT IN BANK	Frequency	Percent	Mean	Median	Mode	Std. Deviation	Variance
Yes	72	9.31	2.50	2	2	2.083	4.339
No	701	90.69					
TOTAL	773	100					
CARING FOR PERSONAL FINANCE	Frequency	Percent	Mean	Median	Mode	Std. Deviation	Variance
Every day	85	11.00	2.00	2	2	1.550	2.403
Sometimes	362	46.83					
Never	326	42.17					
TOTAL	773	100					

Source: Authors

Based on the data in the table, it is possible to see that a small number of students have taken out a bank credit, which is certainly encouraging. One can assume that these are mostly part-time students. In the total sample of 301 part-time students, 23.92% use a bank credit. The results of research related to the care of personal finances show devastating data related to the financial education of the student population. Students most often sometimes worry about their personal finances, while as many as 42.17% of them never worry about it. Based on this, it is again possible to conclude that there is a significant need for constant improvement of financial knowledge of students in Eastern Croatia (Table 6). Accordingly, it is again possible to confirm hypothesis H4.

The correlation or measure of the linear correlation degree between individual essential variables for the conducted research shows in Tables 7 and 8. The tables show the calculation of correlation values between financial education and personal finance management of respondents for individual variables from the questionnaire. More precisely, the relationship between the essential elements of credits while borrowing examined what was important to respondents (student population). Authors used the Pearson correlation coefficient (r) to calculate the correlation values.

**Table 7:** Correlation research variables - financial education/personal finance management of students

The variable	Gender	Status of studying	Residence	Use of bank services	Number of used bank services	Reasons for not using banking services	Monthly income	Type of bank account used	Bank account opening time
Gender	1	0.045*	0.082*	0.064*	0.027*	0.013*	0.102*	0.094*	0.011*
Status of studying	0.045*	1	0.074*	0.176*	0.021*	0.137*	0.157*	0.045*	0.185*
Residence	0.082*	0.074*	1	0.108*	0.029*	0.069*	0.084*	0.080*	0.113*
Use of bank services	0.064*	0.176*	0.108*	1	<b>0.271*</b>	0.140*	0.148*	<b>0.544*</b>	0.036*
Number of used bank services	0.027*	0.021*	0.029*	<b>0.271*</b>	1	0.103*	0.152*	0.050*	0.064*
Reasons for not using banking services	0.013*	0.137*	0.069*	0.140*	0.103*	1	<b>0.407*</b>	0.045*	0.063*
Monthly income	0.102*	0.157*	0.084*	0.148*	0.152*	<b>0.407*</b>	1	0.106*	0.216*

The variable	Gender	Status of studying	Residence	Use of bank services	Number of used bank services	Reasons for not using banking services	Monthly income	Type of bank account used	Bank account opening time
Type of bank account used	0.094*	0.045*	0.080*	<b>0.544*</b>	0.050*	0.045*	0.106*	1	0.147*
Bank account opening time	0.011*	0.185*	0.113*	0.036*	0.064*	0.063*	0.216*	0.147*	1

Source: Authors

\*Correlation is significant at the 0.01 level (2-tailed)

0 < |r| < 0,25 - weak correlation between variables

0,25 < |r| < 0,64 - medium correlation between variables

0,64 < |r| < 1 - strong correlation between variables

Considering the calculation of correlation values between financial education and personal finance management for individual variables, it is possible to conclude that the obtained results indicate the existence of a positive correlation between all researched variables from the questionnaire. However, for most variables there is only a weak strength of correlation, while a strong strength of correlation does not exist for any of the variables. The medium strength of the correlation exists between the following variables (use of bank services and number of used bank services  $r = 0.271$ ; use of bank services and type of used bank account  $r = 0.544$ ; monthly income and reasons for non-use of banking services  $r = 0.407$ ).

The research results obtained in this way indicate that insufficient financial income of the student population in Eastern Croatia significantly affects their participation within the financial system and that there is a need for constant improvement of students' financial knowledge in this area (Table 7).

**Table 8:** Correlation research variables - the importance of certain elements in the indebtedness/preferences of respondents (student population)

The variable	Credit amount	Credit interest rate	Credit repayment period	Credit approval speed	Credit security instruments (collateral)	Credit approval fee	Foreign exchange clause	Credit repayment method
Credit amount	1	<b>0.677*</b>	0.433*	0.465*	<b>0.777*</b>	0.359*	0.336*	0.514*
Credit interest rate	<b>0.677*</b>	1	<b>0.689*</b>	0.609*	0.614*	0.509*	0.618*	0.469*
Credit repayment period	0.433*	<b>0.689*</b>	1	0.597*	0.617*	0.515*	0.476*	0.525*
Credit approval speed	0.465*	0.609*	0.597*	1	0.569*	0.569*	0.436*	0.524*
Credit security instruments (collateral)	<b>0.777*</b>	0.614*	0.617*	0.569*	1	0.414*	0.629*	0.365*
Credit approval fee	0.359*	0.509*	0.515*	0.569*	0.414*	1	0.444*	0.469*
Foreign exchange clause	0.336*	0.618*	0.476*	0.436*	0.629*	0.444*	1	0.569*
Credit repayment method	0.514*	0.469*	0.525*	0.524*	0.365*	0.469*	0.569*	1

Source: Authors

\*Correlation is significant at the 0.01 level (2-tailed)

$0 < |r| < 0,25$  - weak correlation between variables

$0,25 < |r| < 0,64$  - medium correlation between variables

$0,64 < |r| < 1$  - strong correlation between variables

The calculation of correlation values for important creditelements when borrowing in the student population shows the existence of a positive correlation between all researched variables from the survey questionnaire. There is a medium strength of correlation between most of the studied variables, while there are no weak strengths of correlation between the variables. Between the amount of loans and interest rates ( $r = 0.677$ ); interest rates and loan repayment terms ( $r = 0.689$ ) and loan security instruments and loan amounts ( $r = 0.777$ ) there is a strong strength of the correlation.

Based on the obtained research results, authors concluded that despite the need for constant improvement of students' financial knowledge in Eastern Croatia, part of the indebted student population cares to some extent about their personal finances and is able to make rational decisions about debt (Table 8).

Based on the obtained research results related to the level of financial inclusion and financial literacy of the student population in Eastern Croatia, it is possible to see some similarities, but also differences compared to previous research published by previously cited authors. According to previous research, a large percentage of the population, even in the developed world, is unfamiliar with the most basic economic concepts needed to make financial literacy decisions (eg. savings and investments). The level of financial literacy of the student population in Eastern Croatia is certainly not satisfactory and there is a need for constant improvement of financial knowledge of students in this area. The obtained research results show that the level of financial literacy of students significantly depends on the type of study they attend and that students' work experience affects their financial participation within the financial system and the level of their financial education. In addition, lower awareness of financial literacy particularly associates with the student population with lower monthly total incomes. However, it is encouraging that the indebted student population shows relatively good financial literacy in terms of the essential elements of credit. Ultimately, it is possible to conclude that there is a need for improvement of financial knowledge in the Republic of Croatia, and based on previous research in other parts of the European Union and the world, and even the most developed ones.

## 5. Conclusion

Awareness of the importance and quality of financial education aimed at increasing the financial responsibility of the individual is becoming increasingly important. The existence of an increasing number of different financial products and services of credit institutions leads to the need to know the financial laws and increase financial literacy and student population. Precisely because of this, choosing a rational and economically acceptable financial product or service has a long-term impact on an individual's life and financial situation.

The results of the research on the level of financial inclusion and financial literacy of the student population in Eastern Croatia, knowledge of their status in the financial system and attitude towards personal finance, which significantly reflects the level of their financial education indicate the following:

- in the total sample, the majority of the student population participates within the banking system using certain banking services. Nevertheless, a significant number of students do not participate in the banking system at all (as many as 23.80% of them), which indicates their weaker financial engagement and at the same time inadequate financial literacy;

- given the status of students, part-time students participate more significantly within the banking system, given that they most often use three banking services, while full-time students most often use two banking services;
- regarding to student status, part-time students participate more significantly within the banking system, given that they most often use three banking services, while full-time students most often use two banking services;
- the level of financial literacy of students significantly depends on the type of study they attend. Students who have had the opportunity to listen to and attend courses related to finance (monetary, public, business, financial management, etc.) are more likely to participate within the financial system and show a higher level of financial literacy compared to students studying in other scientific fields;
- the main reasons for non-participation of students within the banking system are lack of information about the provision of such services, which leads to the conclusion that there is a very low level of their financial literacy and the need for constant improvement of their financial knowledge;
- insufficient financial income of the student population in Eastern Croatia significantly affects student participation within the financial system;
- concern for the personal finances of the student population shows devastating data related to their financial education. Students sometimes worry about their personal finances, while as many as 42.17% of them never worry about finances;
- it is encouraging that despite the need for constant improvement of students' financial knowledge in Eastern Croatia, part of the indebted student population to some extent cares about their personal finances and is able to make rational decisions about borrowing.

In accordance with the conclusions, it is very important to note that in future research it will be necessary to analyse the level of financial literacy of the student population in other counties in the Republic of Croatia and compare them with the national average. In addition, future research can focus on a more detailed analysis of financial literacy of a certain part of the population (so-called marginal population - especially the unemployed, social assistance beneficiaries, etc.) and compare it with EU member states and the rest of the world.

## REFERENCES

- Atkinson, A., Messy, F. A. (2012): *Measuring Financial Literacy: Results of the OECD/INFE Pilot Study*, in OECD Working Papers on Finance, Insurance and Private Pensions, No. 15, Paris: OECD, pp. 73, <http://dx.doi.org/10.1787/5k9csfs90fr4-en> (accessed 14 January 2022)
- Ažman, J., Frković, V., Bilić-Zulle, L., Petrovečki, and M. (2006): *Correlation and regression*, Acta Medica Croatica, Vol. 60, No. 1, pp. 81-91.
- Barbić, D. (2018): *The role of various financial education sources in creation of financially literate citizens* in: Filipović, J., Brečić, R. (ur.), Financial literacy and socialization of children as consumers, Ekonomski fakultet u Zagrebu, Zagreb, pp. 39-60.
- Barbić, D., Lučić, A. (2018): *Financial literacy and responsible consumption in everyday life*, Narodne novine, Zagreb

- Bujan, I., Cerović, Lj. Dukić Samaržija, N. (2016): *Socio demographic determinants of financial literacy of the citizens of the Republic of Croatia*, Ekonomski pregled, 67 (3), pp. 206-226.
- Chen, H., Volpe, R. P. (1998): *An Analysis of Personal Financial Literacy Among College Students*, Financial Services, Review, Vol. 7, No. 2, pp. 107-128.
- Dawson, B., Trapp. RG. (2004): *Basic and Clinical Biostatistics*, Lange Medical Books / McGraw-Hill, 4th Ed., New York
- Directive 2014/92/EU on the comparability of fees related to payment accounts, payment account switching and access to payment accounts with basic features of 23 July 2014, OJ L 257/214,(accessed 14 January 2022)
- Elliot, J. (2000): *Young and in Debt: A Focus on Prevention*, Credit World, 85 (4), pp. 1-3.
- Fox, J., Bartholomae, S. and Lee, J. (2005): *Building the Case for Financial Education*, The Journal of Consumer Affairs, 39 (1), pp. 195-214.
- Hauke, J., Kossowski, T. (2011):*Comparison of values of Pearson's and Spearman's correlation coefficients on the same sets of data*,Questions Geographicae, Vol. 30, No. 2, pp. 97-93.
- Hilgert, M., Hogarth, J., Beverley, S. (2003): *Household financial managemnt: The connection between knowledge and behavior*, Federal Reserve Bulletin, Vol. 89, No. 7, pp. 309-322.
- Lusardi, A., Mitchell, O. S. (2007): *Financial Literacy and Retirement Planning: New Evidence from the Rand American Life Panel*, MRRC Working Paper, No. 2007-157, pp. 1-33.
- Lusardi, A., Mitchell, O. S., Curto, V. (2009):*Financial Literacy among the Young: Evidence and Implications for Consumer Policy*, NBER Working Paper No. 15352, pp. 1-34.
- Lusardi, A., Mitchell, O. S. (2011): *Financial Literacy around the World: An Overview*, Journal of Pension Economics and Finance, Vol. 10, No. 4, pp. 497-508.
- Lusardi, A., Mitchell, O. S. (2014):*The Economic Importance of Financial Literacy: Theory and Evidence*, Journal of Economic Literature, Vol. 52, No. 1, pp. 5-44.
- Mason, C.L.J., Wilson, R.M.S. (2000): *Conceptualising financial literacy*, Loughborough: Business School, Loughborough University
- Matić, B., Serdarušić, H., Vretenar, M. (2013):*The Impact of Financial Population Education on Managing Personal Finances*, Interdisciplinary Management Research IX, Urban Bacher; Dražen Barković; Karl - Heinz Dernoscheg; Maja Lamza - Maronić; Branko Matić; Norbert Pap; Bodo Runzheimer (ur.), Osijek: Josip Juraj Strossmayer University in Osijek, Faculty of Economics in Osijek, Croatia Postgraduate Studies "Management"; Hochschule Pforzheim University, Osijek, pp. 503-511.
- Peng, T.-C. M., Bartholomae, S., Fox, J. J., Cravener, G. (2007):*The Impact of Personal Finance Education Delivered in High School and College Courses*, Journal of Family and Economic Issues, 28 (2), pp. 265-284.

Remund, D.L. (2010): *Financial Literacy Explicated: The Case for a Clearer Definition in an Increasingly Complex Economy*, The Journal of Consumer Affairs 44 (2), pp.276-295.

Rooij, M., Lusardi, A., Alessie, R. (2007): *Financial Literacy and Stock Market Participation*, NBER Working Paper, No. 13565, pp. 1-46.

Škreblin Kirbiš, I., Vehovec, M., Galić, Z. (2016): *Relationship between financial satisfaction and financial literacy: exploring gender differences*, Društvena istraživanja, 26 (2), pp. 165-185

Volpe, R. P., Chen, H., Pavlicko, J. J. (1996): *Personal investment literacy among college students: A survey*, Financial Practice and Education, Vol. 6, No. 2, pp. 86-94.

*A scientific paper*

**Martina Vukašina, Ph. D.**

Zadar County Development Agency ZADRA NOVA

E-mail address: m.vukasina@gmail.com

**Ines Kersan-Škabić, Ph. D., Full Professor**

Juraj Dobrila University of Pula, Croatia

Faculty of Economics and Tourism “Dr. Mijo Mirković”

E-mail address: ikersan@unipu.hr

## **EUROPEAN STRUCTURAL AND INVESTMENT FUNDS (ESIFs) AND REGIONAL DEVELOPMENT IN CROATIA<sup>i</sup>**

### **ABSTRACT**

*Through its cohesion policy, the EU provides significant funds mainly for convergence regions. Croatia, as the newest EU Member State, and its two NUTS2<sup>ii</sup> regions are lagging behind the average EU development (GDP p.c.). The amount available under European Structural and Investment Funds (ESIFs) for Croatia in the 2007-2013 period was 858 million EUR, and in the 2014-2020 period it was 10.7 billion EUR. The paper aims to find out how the contracted amounts under ESIFs impacted the development of Croatian counties (NUTS3) in the period from 2013 to 2017. Results obtained through a panel data analysis show a very low positive impact of contracted ESIFs on GDP p. c. of Croatian counties. Even though the research is pioneering work faced with certain weaknesses related to data (non-)availability, it can provide certain guidelines on the unexplored aspects of ESIFs' influence.*

**Key words:** *European Structural and Investment Funds (ESIFs), Croatia, NUTS3, regional development.*

### **1. Introduction**

Croatia became an EU member state in 2013, almost 10 years after the other Central and Eastern European countries that were also faced with the process of transformation of their economies after a long period of fostering non-market economic systems. The process of Croatia's accession to the EU lasted 12 years from the signing of the Stabilisation and Association Agreement (in 2001) until its membership into EU. At the moment of joining the EU, Croatia's GDP p.c. was at the level of 61 % of the EU average and in 2020 it reached 64 % (Eurostat, 2021).

As an upper middle-income country and one of the least developed EU member states, Croatia is expected to receive significant funding from the EU budget through the cohesion policy. The EU offered pre-accession assistance through different instruments that covered a set of areas (i.e. agriculture, institutional building, SMEs support, infrastructure, environment, etc. Obtaining the status of a full EU member (on July 1<sup>st</sup>, 2013), enable Croatia to access the ESIFs and the total financial resources available under the Instrument for Pre-Accession Assistance (IPA) and ESIFs in the 2007-2013 period, was EUR 858.28 mil. (European Structural and Investment Funds, 2021a, 2021b) and EUR 10.7 billion in 2014-2020 (European Commission, 2021).

These numbers look promising and represent opportunities for investment and boosting the investment cycles in the national economy. It is necessary to differentiate between the available funds (allocation) and absorption (disbursed funds). These can be very different, and the focus should be on the latter. Another potential issue is the sectorial distribution of the absorbed funds, that is, their real effects on economic growth, employment, export, innovation.

This aim of this research is the examination and quantification of ESIFs' contribution to regional development (measured by GDP p.c.) on Croatian regions. Since the administrative units at the second level (NUTS2) in Croatia are at a very similar level of development, the analysis includes the Croatian regions at the third level (Croatian counties, NUTS3) with very heterogeneous characteristics.

The theoretical background is the fact that ESIFs are a part of the investments and as such they should, together with other forms of investments (foreign direct investments, domestic investments), contribute to economic growth and development (Kersan-Škabić and Tijanić, 2014). In this paper, we consider the total amount of ESIFs, without any specifications according to sector of absorption.

We will employ the panel data analysis covering the 2013-2017 period. In that period, Croatia has absorbed the funds available under IPA, and it also started receiving funds under ESIFs (due to the "n+3" rule)<sup>1</sup>. Based on the information available to the author, there is no specific quantitative research on ESIFs' impact on regional development in Croatia; therefore, our research is in a way pioneering.

The significance of the paper increases in the light of the new financial perspective in the period from 2021 to 2027 during which Croatia can benefit from more than EUR 24 billion (European Structural and Investment Funds, 2021b) under the cohesion policy and additionally through the new instrument Next Generation EU. Croatia has prepared the strategic documents (2030 National Development Strategy and the National Plan for Recovery and Resilience; Government of the Republic of Croatia, 2021) that serve as the basis for absorbing the ESIFs in the present and upcoming period.

The article is structured as follows: part 2 provides the theoretical framework and a review of the literature on the possible impact of ESIFs on regional development, while part 3 includes research followed by the conclusion.

## 2. Literature review

ESIFs cover a wide range of investment areas with the aim of promoting competitiveness, innovation, employment, entrepreneurship, SMEs etc. This is why they are very desirable, especially in the countries that lag behind in terms of their economic development. The expectation of the EU and of the national government is that ESIFs should have a positive impact on regional development, but a precise *ex ante* prediction of their impact could be a very delicate issue for many reasons (such as a different level of success of ESIFs absorption, sectorial distribution, beneficiaries, job creation, etc.). In this regard, we found room for research in the underexploited area of specific quantification of absorbed ESIFs in terms of Croatian counties' development.

The impact of ESIFs on economic growth or development at the regional level can be explained through the lens of economic growth theories. ESIFs are part of public investments, and the traditional approach says that money invested in the regions with limited sources of capital will increase their growth rates and enable a faster convergence towards the stable path (Solow, 1956; Swan, 1956). However, in the long run, due to decreasing capital returns, there will be

---

<sup>1</sup>"n+3" rule indicates total period in which the beneficiaries can disburse funds from ESIFs; i.e. even the financial perspective formally ended at 31 December 2020, the financing of projects is still lasting (till the end of 2023). This is the explanation why the final data about ESIFs will be available after the end of the "n+3" period.



no change in economic growth. Because of this, it is necessary to include the neoclassical growth theory, the endogenous theory and the theory of economic geography (Romer, 1986; Barro, 1990; Aschauer, 1989). The neoclassical theory highlights the impact of technological progress on economic growth, while the endogenous growth theory indicates that new public investments can impact the marginal product of private capital thus promoting accumulation and capital increase in ESIFs recipient regions. None of these theories consider the type (sectors) of public investment. The theory of economic geography (Krugman, 1991; Fujita et al. 1999) can provide explanations of how investments in infrastructure can impact regional competitiveness. The benefits will mainly belong to the advanced regions with a specialized labour market and knowledge, resulting in an agglomeration of activities. Indirectly, through spillover, it will have an impact on profit increase in other regions because of their interrelations (internal trade).

There are many articles addressing the impact of structural funds (or ESIFs) on economic growth, development, convergence, innovation, etc. Some of them deal with the descriptions of ESIFs allocations, possibilities of financing a set of different objectives, analysis of operational programmes, micro-level data (enterprises) etc.

The relevant articles based the analysis on either a group of countries or a specific country. In country-specific case-studies, research was focused usually on Portugal, Greece, Spain or the new EU Member States: the Czech Republic, Lithuania, Poland, Romania that were (or are) main beneficiaries of EU funding. Kehagia (2013) summarizes the most relevant papers that address the impact of structural funds on convergence as well as papers that deal with the prerequisites for an improved exploitation of funds. It would be over-ambitious to go into a detailed elaboration of every article, so we will focus here on the most recent ones and their contribution.

As our research was conducted at NUTS 3 level, we will present the main characteristics of similar research on county-level case studies: data, methodology, and results.

A part of the articles found a positive impact of ESIFs on regional development and/or convergence - Becker, Egger & von Ehrlich (2010); Rodríguez-Pose and Garcilazo (2015); Becker, Egger & von Ehrlich (2018); Bădoiu (2018); Puigcerver-Peñalver (2007) found that Structural Funds have positively influenced the growth process of Objective 1 regions. Hruza et al. (2019) has researched the impact of EU funds on the regional economic growth in Czech Republic. The findings indicate a positive relationship between ESIF and economic growth of NUTS3 regions and also suggests economic convergence among NUTS3 regions of the Czech Republic. The contribution of ESIF to regional economic growth is between 0.91-1.12 p.p. Caldas et al. (2018) analyses the absorption of ESIF in Portugal on municipality level. They found that ESIF in periods 2000–2006 and in 2007–2013 has strong relationship with the investment.

Bouayad-Agha et al. (2013) have evaluated the implication of cohesion policy in the 1980–2005 period on convergence. They found positive impact of investments on economic growth, more specifically they estimated the cumulative effects (long-term elasticity of Structural Funds on the long-term economic growth of beneficiary regions funding is relatively high in the model without spatial effects (0.30) and with spatial effects is 0.7 of recipient regions.

On the other hand, some authors Fagerberg and Verspagen (1996), Mendez (2011, 2013), Bachtler and Gorzelak (2007), Moreno Enguix et al. (2012) through exploring the effectiveness of European structural funds found that - on average – structural funds are ineffective.

**Table 1:** Impact of European Structural and Investment Funds on regional development (or convergence; or growth)

Author	Sample	Time period	Methodology	Results
Soukiazis and Antunes (2004)	30 NUTS 3 regions in Portugal	1991-1999	OLS panel data (fixed effects)	Structural funds have conditional impact on GDP p.c.
Dall'erba (2008)	145 European regions	1989-1999	Cross Exploratory Spatial Data Analysis (ESDA)	Convergence is present but not as a result of EU funds
Puigcerver-Peñalver (2007)	Objective 1 regions	1989-2000	OLS, panel data, fixed effects	B=7.03% (15.27% first fin.perspective) B=9.67% (28.42% first fin.perspective)
Becker, Egger and von Ehrlich (2010)	85 NUTS2 and 1213 NUTS3 regions in Europe	three programming periods—1989–1993, 1994–1999, and 2000–2006	<i>Regression discontinuity analysis</i> (RDD)	0.012-0,017% impact on GDP p.c. growth
Bouayad-Agha et al. (2013)	143 regions	1980–2005	Panel data, generalized method of moments (GMM) estimator	0.013 (Objective 1 regions) 0.017 (Objective 1 regions) Objective 1 regions) The effects of total structural funds are non-significant
Boldrin and Canova (2001)	185 NUTS2 regions	1980-1996	Cross-section regression	0,98
Hruza et al. (2019)	NUTS3 regions in Czech Republic	2004-2015	panel data regression techniques (pooled OLS and FE), and spatial panel data econometric method	Contribution of ESIFs on regional growth 0.91-1.12 p.p.
Sotiriou and Tsiapa (2015)	Greek regions	1994-2006	second-order polynomial regression	The effect of ESIFs on growth in Greek regions is positive but conditional on the level of development of regions.
Czudec et al. (2019)	Polish regions	2004-2015	dynamic panel data	Five observed gaps have been reduced and only the structural gap was not reduced

Source: Authors

If we look at Croatia only, we see that some authors provide the theoretical framework of available ESIFs and connect it to regional policy (development), namely Devčić and Šostar (2015), Puljiz and Maleković (2013), Medić, Hadrović Zekić & Sabljo (2017), Starešinić and Franić (2018), while there is no empirical (quantitative) research on the real impact of contracted/received funds. Kizielewicz and Luković (2013) started with the theoretical framework of the EU cohesion policy and presented a comparison between Poland, through a case-study - a very good example of the utilization of EU funds, and Croatia as a new EU member state at that moment.

Mikulić, Lovrinčević, & Nagyszombaty (2013) found that the pace of convergence at the regional level was lower in comparison to the national level and that the estimated  $\beta$ -convergence parameter is less significant. Barković and Šostar (2013) conducted an analysis based on a survey where they researched the attitudes of experts (69 project consultants) on the significance of EU funding for reducing regional disparities within EU countries. They highlighted the importance of drafting development projects to be better prepared for the absorption of the EU funds.

Kukoč, Škrinjarić, & Juračak (2021) analysed the impact of IPARD on agriculture and rural development in Croatia by employing data on SAPARD and IPARD grants at the micro-level in the 2007–2016 period and implementing the counterfactual impact analysis. They emphasized that “pre-accession programs in Croatia had a positive impact on the beneficiaries’ growth and business performance indicators in both the short- and the mid-term”.

From this overview it is obvious that there is no common conclusion about the impact of ESIFs on regional development, growth or convergence in EU regions. Many authors also indicate the necessary improvement in capacities to better using of the funds. Regarding the articles that focuses on Croatia, it is evident the necessity to evaluate the implication of ESIFs on regional economies.

### 3. Research

#### 3.1. Regional development in Republic of Croatia

Croatia is a small country that count about 4 million people. In the financial perspective 2014-2020, Croatia consisted of two statistical regions on NUTS2 level (Continental Croatia and Adriatic Croatia) and of 20 counties with the City of Zagreb on NUTS3 level. The Croatian counties are characterised with very heterogenous development where from the one side there are City of Zagreb, County of Istria, County of Primorje-Gorski kotar and County of Dubrovnik- Neretva as the most developed regions with the GDP p.c. above the Croatian average, and on the other side there are County of Virovitica-Podravina and County of Slavonski Brod with the GDP p.c. at the 53% of the Croatian average. Regarding the EU average, only City of Zagreb is above EU average and the least developed county (County of Virovitica-Podravina) is at level of 35.5%. The level of development is also associated with the unemployment rates that are higher in less developed regions and the lowest are in City of Zagreb and County of Istria (below 5%). The data about contracted ESIFs amounts are cumulative numbers for the period 2017-2019 as for the moment it is only officially available data on the county level in Croatia. County of Dubrovnik-Neretva contracted the highest relative values of ESIFs, even 5779 EUR p.c., following with County of Lika-Senj 3670 EUR p.c. On the other side County of Istria contracted just 1174 EUR and County of Split-Dalmatia 1253 EUR p.c. The Croatia average is 2006 EUR.

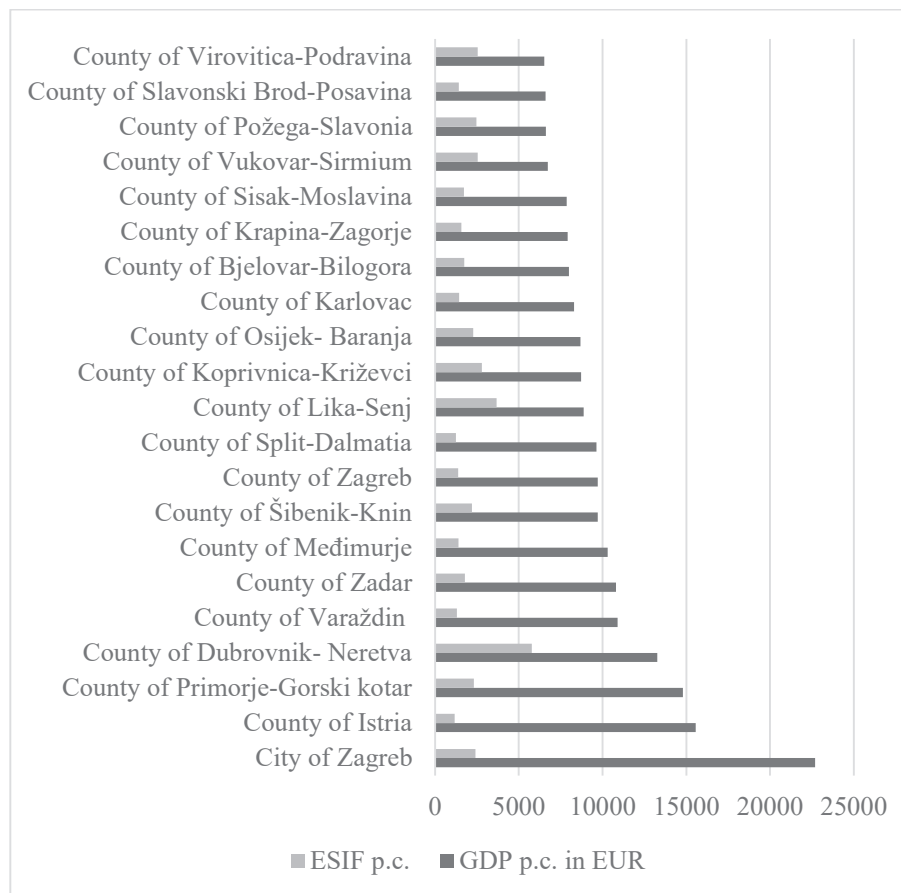
**Table 2:** Regional development indicators in Republic of Croatia in 2018

Counties	Population	GDP p.c. in EUR	GDP p.c. Croatia=100	GDP p.c. EU28=100	Unemployment rate %	ESIFs 2017-2019 in 000 EUR	ESIF p.c. 2017-2019
City of Zagreb	804507	22695	185	123.6	4.7	1945960.11	2410.59
County of Istria	208765	15570	126.9	84.8	4.9	246108.80	1174.33
County of Primorje-Gorski kotar	284239	14797	120.8	80.6	8	652805.79	2308.94

Counties	Population	GDP p.c. in EUR	GDP p.c. Croatia=100	GDP p.c. EU28=100	Unempl. rate %	ESIFs 2017-2019 in 000 EUR	ESIF p.c. 2017-2019
County of Dubrovnik-Neretva	121215	13277	108.2	72.3	13	704014.88	5779.33
County of Varaždin	166829	10899	88.8	59.4	5.1	217856.28	1311.5
County of Zadar	168153	10803	88	58.8	10.7	298479.41	1774.41
County of Međimurje	109921	10302	84	56.1	6.5	153310.48	1403.53
County of Šibenik-Knin	100153	9713	79.2	52.9	15.4	218778.29	2205.2
County of Zagreb	309469	9710	79.1	52.9	8	427990.30	1384.32
County of Split-Dalmatia	448071	9636	78.5	52.5	18.2	561153.98	1253.28
County of Lika-Senj	45184	8878	72.4	48.4	15.8	163780.65	3670.15
County of Koprivnica-Križevci	107711	8711	71	47.5	8.7	297743.69	2799.21
County of Osijek-Baranja	277227	8684	70.8	47.3	21.2	619116.01	2270.54
County of Karlovac	116829	8301	67.7	45.2	13.2	166419.89	1441.06
County of Bjelovar-Bilogora	107909	7986	65.1	43.5	18.3	185201.22	1742.94
County of Krapina-Zagorje	125357	7919	64.5	43.1	8.1	195256.46	1568.11
County of Sisak-Moslavina	148589	7868	64.1	42.9	24.3	250759.77	1718.66
County of Vukovar-Sirmium	154371	6730	54.8	36.7	20.5	384286.57	2545.2
County of Požega-Slavonia	67862	6620	54	36.1	16.5	163868.78	2473.27
County of Slavonski Brod-Posavina	140072	6607	53.8	36	19.9	195859.00	1424.56
County of Virovitica-Podravina	75257	6525	53.2	35.5	23.2	187544.66	2546.74
<b>Republic of Croatia</b>	<b>4105493</b>	<b>12270</b>	<b>100</b>	<b>66.8</b>	<b>8.5</b>	<b>8236295</b>	<b>2006.16</b>

Source: Croatian Bureau of Statistics (2021); Croatian chamber of commerce (2020)

Figure 1. compares the level of development expressed in GDP p.c. with contracted ESIFs per capita. The smallest difference between two indicators appeared in County of Dubrovnik-Neretva, County of Lika-Senj, County of Koprivnica-Križevci- these counties attracted big amounts of ESIFs in relations with their population, while the biggest differences are in most developed regions (City of Zagreb and County of Istria) that contracted relatively smaller amounts per capita. It would be desirable that counties with the lower GDP p.c. have contracted higher amounts of ESIFs, regarding the main aims of ESIFs lie in pushing convergence between regions.

**Figure 1:** GDP p.c. in 2018 and ESIFs p.c. in 2017-2019 in EUR

Values for EISFs are expressed in euros by applying average middle yearly exchange rates.  
 Source: Croatian Bureau of Statistics (2021); Croatian chamber of commerce (2020)

### 3.2. Data and methodology

The hypothesis is that ESIFs had a positive impact on GDP p.c. in NUTS 3 regions in Croatia. The empirical literature on income level convergence (e.g. GDP p.c.), relies almost exclusively on the neoclassical beta convergence model (Barro and Sala-i-Martin, 1991). It predicts that, if countries have the same steady state determinants that converge on common balanced growth, then countries with relatively low initial income rates grow faster than richer countries (Durlauf, Johnson & Temple, 2005, p. 585). The regression equation for regional data can be specified as an extended neoclassical convergence model similar to that of Acemoglu (2009) and Breidenbach, Mitze & Schmidt (2016):

$$\ln(y_{i,t}) = \alpha_i + \sum_{k=1}^K \varphi_{1,k} \ln(x_{i,t,k}) + \delta_t + \mu_{i,t} \quad (1)$$

where the subscript  $i = 1, 21$  denotes the NUTS3 region, and  $t$  denotes the time period of our sample ranging from 2013 to 2017. The dependent variable is the real GDP p.c. (in PPS) of the region at time  $t$  ( $lngdppc$ ).

The variables on the right side of the equation (vector  $x$ ) include: the numbers of patents ( $lnpat$ ) as the measure of regional innovation potential which can be measured also by including variable investments in research and development (%in GDP); however, this kind of variable is not available at the regional (NUTS3) level. Innovation has long been recognized as a key factor in sustainable economic development. Higher participation in trade flows will also influence the GDP, and we included variable openness ( $opennes$ ) as the share of total foreign trade in the GDP. There is a lack of quality data on education such as those proposed at the state

level by De La Fuente and Domenech (2006), Barro and Lee (2001). Therefore, the share of the total population with tertiary education (*Ingrad*) is used as an approximation of the quality of human capital. The model also includes control variables: share of employment in high-tech industries (*HTempl*), employment rates (*empl*) and share of those with tertiary education in the total population (*TerP*).

The most important variable for this analysis is EU contracted ESIFs (*InESIFs*) which are expressed in per capita terms. The reason we included the contracted and not the paid amount from ESIFs is that, at the time of performing the empirical analysis, the data about payments at the NUTS3 level in Croatia were not available. We are aware that allocated and contracted amounts differ from the paid amounts.

As the dataset has a cross-sectional dimension, represented by counties ( $i = 1; \dots; n$ ), and a longitudinal dimension, represented by a time series ( $t = 1; \dots; T$  periods) we will perform a panel data analysis (Hsiao, 2014). Due to the short time series, and thus the small number of observations, only a static analysis was performed.

By using the regional fixed effects, the model removes the effect of those time-invariant characteristics that can lead to parameter bias ( $\alpha_i$ ). These effects control all the differences between regions that do not change over time, so that the estimated coefficients of the fixed-effect model cannot be biased due to time-invariant characteristics. The model also includes time-fixed effects  $\mu_{it}$  to account for the unexpected events over time that may affect the outcome variable (GDP p.c.).

We applied log-linear model where the dependent variable is expressed in log form while some of the independent variables (*HTempl*, *TerP*, *empl*) are expressed as the ration (of other two variables) and they are not logged. Interpretation of parameters is not expressed as percentage change but as change in percentage points.

The sample consists of 21 NUTS regions (counties) in Croatia and covers annual data for the 2013-2017 period. The majority of data was obtained from the Croatian Bureau of Statistics, whereas the data on the number of patents were obtained from the State Intellectual Property Office and on contracted ESIFs from the website of [strukturnifondovi.hr](http://strukturnifondovi.hr). There was a problem with the availability of contracted amounts from ESIFs at the NUTS3 level and the data represented a sum of project values at the county level contracted (for the 2013-2016 period). The values of the project that are implemented in several counties are added to the county that was the project coordinator. Values for 2017 were taken from the website of the Ministry of Regional Development and EU Funds ([mrrfeu.hr](http://mrrfeu.hr)). Regarding the rule “n+3” the final data about reimbursement for the period 2014-2020 will be available after 2023.

#### 4. Results

Due to the short time series, and thus a small number of observations, only a static panel data analysis was performed (as in Hruza et al., 2019; Soukiazis and Antunes, 2004; Puigcerver-Peñalver; 2007). The descriptive statistics, correlation matrix for the included variables and diagnosis tests for the static model are provided in the appendix and here we present the results of the econometric analysis. The provided diagnosis testing (F test, LM test, Hausman test) emphasized that the fixed effect model is the appropriate methodology for this dataset. Due to the potential issue of multicollinearity, six models were evaluated to avoid the simultaneous inclusion of variables that are mutually correlated.

**Table 3:** Impact of ESIFs on regional development of Croatian counties (static analysis)

Model	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable	lngdppc	lngdppc	lngdppc	lngdppc	lngdppc	lngdppc
lnESIFs	0.00919* (0.00473)	0.00997* (0.00484)	0.00972* (0.00512)	0.00952* (0.00535)	0.0102** (0.00460)	0.0100* (0.00484)
lnpat	0.0130* (0.00643)	0.0105* (0.00536)	0.00929* (0.00530)	0.00970* (0.00530)	0.0104* (0.00503)	0.0108** (0.00505)
lngrad	-0.0325 (0.0561)	-0.0559 (0.0703)				
unempl	-0.00312 (0.00230)	-0.00422 (0.00262)	-0.00439 (0.00258)	-0.00410 (0.00261)	-0.00466* (0.00255)	-0.00437 (0.00262)
opennes		-0.146* (0.0729)	-0.141* (0.0755)	-0.140* (0.0734)	-0.152** (0.0721)	-0.151** (0.0704)
empl		1.541** (0.733)	1.453* (0.748)	1.464* (0.770)	1.541** (0.735)	1.551* (0.752)
HTemp				0.587 (1.433)		0.575 (1.304)
TerP					-9.751 (9.471)	-9.730 (9.555)
Constant	11.31*** (0.387)	11.13*** (0.543)	10.76*** (0.256)	10.73*** (0.283)	10.82*** (0.266)	10.79*** (0.288)
Number of observations	89	89	89	89	89	89
R <sup>2</sup>	0.881	0.903	0.901	0.901	0.904	0.905
Number of groups	21	21	21	21	21	21
Time effects	yes	yes	yes	yes	yes	yes

Robust standard errors in parenthesis  
Significance: P<0.01\*\*\*; P<0.05\*\*: P<0.10\*  
Source: Authors

The specification of fixed effects is consistent with Islam (2003) and Abreu, de Groot & Florax (2005) emphasizing that the specification of random effects is not acceptable under the neoclassical growth framework because it implies that individual effects are correlated with some regressors (which are expected to be exogenous). In other words, random effects would thus create biased parameter estimates due to endogeneity. We used Driscoll and Kraay standard errors, considering the possible existence of a residual correlation not only within but also between regions (Hoechle, 2007). In this way, standard errors are robust for general forms of temporal and spatial correlation and heteroskedasticity.

Table 3 presents the results for six models. The basic model (column 1) indicates that an increase in ESIFs contracted funds by 1 % will influence the increase of regional GDP by as little as 0.009 %. The rest of the models show that this variable (ESIFs contracted funds) has the highest impact on the regional GDP in models 5 and 6 (increase of GDP p.c. by 0.01 %; i.e. if the contracted amount from ESIFs increase by 10%, the regional GDP p.c. will increase for 0.1%).

The impact of patent applications (as the measure of innovativeness) has a positive and statistically significant impact on GDP in all models. An increase in patents will increase GDP by 0.01 %. Trade openness has a negative and statistically significant impact on GDP in Croatia that can be explained by the non-competitiveness of the Croatian region on foreign markets where most counties face deficits in trade balance. Increase in openness by 1 p.p. will reduce GDP by 0.15%.

On the other hand, the employment rate has a positive impact on GDP and an increase of 1 p.p. will increase GDP by 1.5 % on average. The share of highly educated people in the overall

employed population does not have a significant impact on GDP p.c. which indirectly indicates that employment of low- and medium-skilled workers impacts GDP growth. That is not surprising because, according to the Croatian Bureau of Statistics, the majority of employed people in the Republic of Croatia are employed in the low and medium technology intensive industries.

The results highlighted that ESIFs have a positive, yet very low impact on GDP p.c. of the Croatian NUTS3 region. To achieve a higher and stronger impact of ESIFs on regional development it is necessary to apply additional efforts to absorb all the available resources from ESIFs as well as to channel them towards entrepreneurs, high-tech industries, innovations (in products, processes) and other sectors that can boost economic growth and consequently development.

## 5. Discussion

As Croatia and Croatian regions are lagging behind in the economic development in comparison with the rest of the EU (only Bulgaria has lower GDP p.c.), the starting point of this research lies in the presumption of positive impact of ESIFs on regional development in Croatia. Croatia surely has available very large amount of ESIFs after its accession in the EU, but its implication mainly depends on the area/sectors/activities where they are invested. We started with presumption of ESIFs as a part of investment, and, as economic theory says, the increase in investments should have positive implication for the increase of GDP. We found very small impact of contracted ESIFs on the regional GDP p.c., i.e. smaller than Bouayad-Agha et al. (2013), Hruza et al. (2019) and Boldrin and Canova (2001) found. With this preliminary, and among first examination, quantitative one, we have highlighted the following:

1. Lack of systematic, aggregative statistics of ESIFs (contracted, payed) on the NUTS3 level in Croatia that enable more concrete and reliable analysis;
2. The expectations of ESIFs are appreciated and these funds will not solve the structural problems of Croatian economy, they just can be complementary sources to boost some changes/transformations;
3. Croatia as the youngest EU member faced many difficulties in disbursement of EU funds, due to the many reasons and Kersan-Škabić and Tijanić (2017) investigated determination of better absorption of EU funds on regional level.

The issues that should be more threatened in the future is direction of ESIFs investments. The sign and intensity of ESIFs impact is depending on the technology diffusion, boosting innovation, entrepreneurship, investments in high-skilled sectors. ESIFs as a part of investment policy will push the convergence forces, but there are other differences between countries (and regions) such as differences in R&D, industrial structure; unemployment that act as diverging factors (Fagerberg and Verspagen, 1996). It indicates the cohesion policy is not independent policy and ESIFs, regardless of their values, can't guarantee that they will boost growth. The cohesion policy should be put in common framework with other national (and EU) policies, such as: industrial policy, innovation policy, technology etc. Puigcerver-Peñalver (2007) on the basis of the obtained results warn on the necessity to improve the design of cohesion policy in the EU to achieve better effectiveness in all EU regions. Also, he suggested that the EU should take into consideration the differences between countries and regions and the international context. Regions have specific structural characteristics and they converge towards different income levels.



## 6. Conclusion

By joining the European Union on 1 July 2013, Croatia was given an excellent possibility of absorbing funds from ESIFs instead of from pre-accession programs and instruments. These represent a source of investment focused on different areas (infrastructure, institutions, reforms, rural development, SMEs support, sustainability, energy, climate change, etc.) and they can be a source of investment complementary to the national (and/or regional) budget.

Our results represent preliminary analysis due to the very limited availability of data of regional distribution (payments or contracted amount) of ESIFs (for the entire financial perspective 2014-2020).

The created models can partially explain the level of development at county level, i.e. the obtained results show that it is possible that there were other variables that impacted the regional development path but these were not included due to their non-availability.

There are few weaknesses of our analysis: we could not use data on amounts paid from ESIFs because such data were not available at county level when we conducted this research. Additionally, there were no available adequate statistical sources about ESIFs at county level so we had to apply very raw data to get the summary amount at county level. The short time period prevented us from employing dynamic econometric models that would be more suitable to examine/determine the function of GDP p.c.

It would be desirable that ESIFs induce indirect effects, so called spillover effects on investment cycles in regions. In that way that can generate higher impact (benefit) by promoting public and private investments. EU priorities in 2019-2024 (priorities of European Commission) are focused to digital economy and green economy while the Resilience and Recover Mechanism aims to mitigate the negative impact of the coronavirus pandemic and put effort to create sustainable and resilient European economies. Among huge amount of available funds €723.8 billion (in current prices) in loans (€385.8 billion) and grants (€338 billion) at the EU level, minimum 37% should be invested in climate investment and reforms and additional minimum of 20% should be invested in digital transition. In that direction, Croatia adopted two strategic documents in 2021: the 2030 National Development Strategy and the National Recovery and Resilience Plan that contain the main guidelines (priorities) on the development of Croatian economy. It is very big opportunity to boost transformation in Croatian economy but also it is a chance for Croatian regions to invest more and to reach spillover effects of EU funds. The imperative for regions is in their modernization and diversification of their economic structure towards high added value sectors. It is necessary to create the preconditions for enterprises (firms) to adopt innovative processes, to cooperate with other enterprises and research institutes, to access risk capital and to internationalize their activities. Only in that way the impact of ESIFs on regional development would be positive, higher and significant.

This analysis represents a good basis (starting point) for further research. The models can be expanded with new data, covering the entire 2014-2020 period. In the future, a greater impact of ESIFs on regional GDP p.c. is expected, and so is the possibility of creating a dynamic econometric model, which will bring about the opportunity to obtain more accurate results of the impact of ESIFs on the regional development of Croatia.

## REFERENCES

- Abreu, M. et al. (2005): *Space and growth: A survey of empirical evidence and methods*, Region et Development, Vol. 23, No. 21, pp. 12–43.
- Acemoglu, D. (2009): *Introduction to modern economic growth*, Princeton University Press, Princeton

- Aschauer, D. A. (1989): *Is Public Infrastructure Productive?* Journal of Monetary Economics, Vol. 23, No. 2, pp. 177-200.
- Bachtler, J., & Gorzelak, G. (2007): *Reforming EU cohesion policy: A reappraisal of the performance of the structural funds*, Policy studies, Vol. 28, No. 4, pp. 309-326.
- Bădoiu, C. M. (2018): *The Impact of Structural Funds on Real Convergence in Eastern Europe*, in: 32<sup>nd</sup> Conference of the International-Business-Information-Management-Association (IBIMA), Sevilla, Spain
- Barković, D. & Šostar, M. (2013): *Structural Funds in The Function Of Reducing Regional Disparities*, Interdisciplinary Management Research, Vol. 9, pp. 825-834.
- Barro, R. J. (1990): *Government Spending in a Simple Model of Endogenous Growth*, Journal of Political Economy, Vol. 98, No. 5, pp. 103-125.
- Barro, R. J. et al. (1991): *Convergence across states and regions*, Brookings papers on Economic activity, Vol. 1, pp. 107-182.
- Barro, R. & Lee, J. W. (2001): *International comparisons of educational attainment*, Journal of Monetary Economics, Vol. 32, No. 3, pp. 363-394.
- Becker, S. O., Egger, P. H. & Von Ehrlich, M. (2010): *Going NUTS: The effect of EU Structural Funds on regional performance*, Journal of Public Economics, Vol. 94, No. 9-10, pp. 578-590.
- Becker, S. O., Egger, P. H., & von Ehrlich, M. (2018): *Effects of EU regional policy: 1989-2013*, Regional Science and Urban Economics, Vol. 69, pp. 143-152.
- Boldrin, M. & Canova, F. (2001): *Inequality and convergence in Europe's regions: reconsidering European regional policies*, Economic policy, Vol. 16, No. 32, pp. 206-253.
- Bouayad-Agha, S., Turpin, N. & Védrine, L. (2013): *Fostering the development of European regions: A spatial dynamic panel data analysis of the impact of cohesion policy*, Regional Studies, Vol. 47, No. 9, pp.1573- 1593.
- Breidenbach, P., Mitze, T. & Schmidt, C. M. (2016): *EU Structural Funds and Regional Income Convergence – A sobering experience*, Ruhr Economic Papers, No. 608.
- Breidenbach, P., Mitze, T. & Schmidt, C. M. (2019): *EU Regional Policy and the Neighbour's Curse: Analyzing the Income Convergence Effects of ESIF Funding in the Presence of Spatial Spillovers*, JCMS: Journal of Common Market Studies, Vol. 57, No. 2, pp. 388-405.
- Caldas, P., Dollery, B. & Marques, R. C. (2018): *European Cohesion Policy impact on development and convergence: a local empirical analysis in Portugal between 2000 and 2014*, European Planning Studies, Vol. 26, No. 6, pp. 1081-1098.
- Croatian Bureau of Statistics (2021): *Gross Domestic Product for Republic of Croatia*, NUTS 2013- 2nd level and counties, 2018, [https://www.dzs.hr/Hrv\\_Eng/publication/2021/12-01-03\\_01\\_2021.htm](https://www.dzs.hr/Hrv_Eng/publication/2021/12-01-03_01_2021.htm), (accessed 29 April 2021)
- Croatian chamber of commerce (2020): *Izvyestaj o iskorištenosti EU fondova po županijama za 2017., 2018. i 2019. godinu* (in Croatian), <https://razvoj.gov.hr/UserDocsImages/Vijesti%20-%20dokumenti/Iskori%C5%A1tenost%20EU%20fondova%20po%20%C5%BEupanijama.pdf>, (accessed 29 April 2021)
- Czudec, A., Kata, R. & Wosiek, M. (2019): *Reducing the development gaps between regions in Poland with the use of European Union funds*, Technological and economic development of economy, Vol. 25, No. 3, pp. 447-471.
- Dall'erba, S. & Le Gallo, J. (2008): *Regional Convergence and the Impact of European Structural Funds over 1989-1999: A Spatial Econometric Analysis*, Papers in regional science, Vol. 87, No. 2, pp. 219-244.
- De La Fuente, A. & Domenech, R. (2006): *Human capital in growth regressions: How much difference does data quality make?*, Journal of the European Economic Association, Vol. 4, No. 1, pp. 1-36.

- Devčić, A. & Šostar, M. (2015): *Regionalni razvoj i fondovi Europske unije: Prilike i izazovi*, Veleučilište u Požegi, Požega
- Durlauf, S. N., Johnson, P. A. & Temple, J. R. (2005): *Growth econometrics*, Handbook of economic growth, Vol. 1, No. A, pp. 555-677.
- European Commission (2021): *Country Data for: Croatia*, <https://cohesiondata.ec.europa.eu/countries/hr/>, (accessed 29 April 2021)
- European structural and investment funds (2021a): *EU funds 2007-2013*, <https://struktturnifondovi.hr/en/eu-fondovi/eu-fondovi-2007-2013/>, (accessed 29 April 2021)
- European Structural and Investment Funds (2021b): *Multiannual Financial Framework 2021-2027 and the EU Recovery Instrument*, <https://struktturnifondovi.hr/en/eu-fondovi/eu-fondovi-2021-2027/visegodisnji-financijski-okvir-2021-2027-i-instrument-eu-za-oporavak>, (accessed 29 April 2021)
- Eurostat (2021): *Main GDP aggregates per capita*, <https://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do>, (accessed 29 April 2021)
- Fagerberg, J. & Verspagen, B. (1996): *Heading for divergence? Regional growth in Europe reconsidered*, JCMS: Journal of Common Market Studies, vol. 34, No. 3, pp. 431-448.
- Fujita, M. et al. (1999): *The spatial economy: Cities, regions, and international trade*, MIT press
- Government of Republic of Croatia (2021): *National plan for recovery and resilience 2021-2026*, <https://planoporavka.gov.hr/>, (Accessed 3 May 2021)
- Government of Republic of Croatia (2021): *National development strategy till 2030*, <https://hrvatska2030.hr/>, (Accessed 3 May 2021)
- Hoechle, D. (2007): *Robust standard errors for panel regressions with cross-sectional dependence*, The stata journal, Vol. 7, No. 3, pp. 281-312.
- Hruza, F., Volcík, S. & Žáček, J. (2019): *The Impact of EU Funds on Regional Economic Growth of the Czech Republic*, Czech Journal of Economics and Finance (Finance a uver), Charles University Prague, Faculty of Social Sciences, Vol. 69, No. 1, pp. 76-94.
- Hsiao, C. (2014): *Analysis of panel data (No. 54)*, Cambridge university press
- Islam, N. (2003): *What have we learnt from the convergence debate?* Journal of economic surveys, Vol. 17, No. 3, pp. 309-362.
- Kehagia, A. (2013): *The impact of EU's Structural and Cohesion funds- A literature review*, The Jean Monnet papers on political economy. The University of the Peloponnese.
- Kersan-Škabić, I. & Tijanić, L. (2014): *The influence of foreign direct investments on regional development in Croatia*, Croatian Economic Survey, Vol. 16, No. 2, pp. 59-90.
- Kersan Škabić, I. & Tijanić, L. (2017): *Regional absorption capacity of EU funds*, Economic research, Vol. 30, No. 1, pp.1192-1208.
- Kizielewicz, J. & Luković, T. (2013): *The effectiveness of the use of the European Union Funds in Poland and Croatia*, <http://www.wseas.us/elibrary/conferences/2013/Dubrovnik/MATREFC/MATREFC-36.pdf> (accessed 2 May 2021)
- Krugman, P. (1991): *Increasing Returns and Economic Geography*, University of Illinois at Urbana-Champaign's Academy for Entrepreneurial Leadership Historical Research Reference in Entrepreneurship, <https://ssrn.com/abstract=1505245>, (accessed 19 November 2020)
- Kukoč, M., Škrinjarić, B. & Juračak, J. (2021): *The impact assessment of the EU pre-accession funds on agriculture and food companies: The Croatian case*, Spanish Journal of Agricultural Research, Vol. 19, No. 3, e0107.
- Medić, M., Hadrović Zekić, B. & Sabljo, V. (2017): *Impact of EU Funds on Regional Development*, In: Bacher, U. et al. (ur.) Interdisciplinary Management Research XIII
- Mendez, C. (2011): *The Lisbonization of EU Cohesion Policy: A successful case of experimentalist governance?* European Planning Studies, Vol. 19, No. 3, pp. 519-537.

- Mendez, C. (2013): *The post-2013 reform of EU cohesion policy and the place-based narrative*, Journal of European Public Policy, Vol. 20, No. 5, pp. 639-659.
- Mikulić, D., Lovrinčević, Ž. & Nagyszombaty, A. G. (2013): *Regional convergence in the European Union, new member states and Croatia*, The South East European Journal of Economics and Business, Vol. 8, No. 1, pp. 9-21.
- Moreno Enguix, M. D. R., Gómez García, J. & Gómez Gallego, J. C. (2012): *An impact analysis of the European structural funds on the variation of the rate of employment and productivity in objective 1 regions*, European Planning Studies, Vol. 20, No. 4, pp. 685-705.
- Puigcerver-Peñalver, M. C. (2007): *The impact of structural funds policy on European regions growth. A theoretical and empirical approach*, The European Journal of Comparative Economics, Vol. 4, No. 2, pp. 179-208.
- Puljiz, J. & Maleković, S. (2013): Current situation and future perspectives of regional policy in Croatia, <https://ssrn.com/abstract=2238654>, (accessed 2 May 2021)
- Rodríguez-Pose, A. & Garcilazo, E. (2015): *Quality of government and the returns of investment: Examining the impact of cohesion expenditure in European regions*, Regional Studies, Vol. 49, No. 8, pp. 1274-1290.
- Romer, P. M. (1986): *Increasing returns and long run growth*, The Journal of Political Economy, Vol. 94, No. 5, pp. 102-1037.
- Solow, R. M. (1956): *A contribution to the theory of economic growth*, The quarterly journal of economics, Vol. 70, No. 1, pp. 65-94.
- Sotiriou, A. & Tsiapa, M. (2015): *The asymmetric influence of structural funds on regional growth in Greece*, Environment and Planning C: Government and Policy, Vol. 33, No. 4, pp. 863-881.
- Soukiazis, E. & Antunes, M. (2004): *The evolution of real disparities in Portugal among the NUTS III regions. An empirical analysis based on the convergence approach*, Estudos Regionais, Vol. 6, pp. 165-179.
- Starešinić, Z. & Franić, M. D. (2018): *Structural and Investment Funds and Their Impact on the Development of the Republic of Croatia*, In: Interdisciplinary Management Research XIV (IMR). Opatija, Croatia, Vol. 14, pp. 1489-1503.
- Swan, T. W. (1956): *Economic growth and capital accumulation*, Economic record, Vol. 32, No. 2, pp. 334-361.

## Appendix

### A1: Descriptive statistics

Variables	Obs	Median	Std. Dev.	Min	Max
GDPpc	105	67994.50	23608.24	42280.00	155541.00
ESIFs	105	1767.35	4089.02	39.05	35441.07
patents	89	14.54	23.43	1.00	99.00
Graduates in employment	105	1573.88	1683.76	298.00	8329.00
Unemployment rate	105	22.06	8.35	6.20	38.10
Employment	105	0.29	0.06	0.21	0.51
High educated people in population	105	0.01	0.00	0.01	0.01
Employment in high-tech industry	105	0.0274966	0.0131322	0.009847	0.0760936
Openness	105	0.5081749	0.2838056	0.0525961	1.248748

Source: Authors

**A2: Correlation matrix**

	lngdppc	lnpat	lngrad	unempl	openness	empl	HTempl	TerP	lnESIFs
lngdppc	1.00								
lnpat	0.51	1.00							
lngrad	0.61	0.80	1.00						
unempl	-0.76	-0.36	-0.32	1.00					
openness	0.13	0.36	0.18	-0.45	1.00				
empl	0.92	0.51	0.60	-0.74	0.35	1.00			
HTempl	0.83	0.63	0.83	-0.53	0.16	0.84	1.00		
TerP	0.52	0.50	0.73	-0.31	-0.04	0.53	0.68	1.00	
lnESIFs	0.13	-0.17	-0.16	-0.27	0.05	0.05	0.03	-0.20	1.00

*Source: Authors*

**A3: Diagnosis tests for static model**

Model	1		2		3		4		5		6	
	Hi-square	p-value	Hi-square	p-value	Hi-square	p-value	Hi-square	p-value	Hi-square	p-value	Hi-square	p-value
Heteroscedacity	181	0.000	3102.48	0.000	1.30E+27	0.000	8.90E+27	0.000	2605.09	0.00000	3.20E+28	0.00000
Autocorrelation	32.307	0.000	27.514	0.000	41.599	0.000	41.298	0.000	28.316	0.00000	28.261	0.00000
F-test (Pooled OLS vs Fixed)	180.31	0.000	70.89	0.000	75.99	0.000	68.79	0.000	77.73	0.00000	69.72	0.00000
LM-test (Random vs Pooled OLS)	107.17	0.000	121.13	0.000	110.92	0.000	120.59	0.000	109.64	0.00000	118.86	0.00000
Hausman (Fixed vs Random)	17.77	0.023	34.59	0.000	18.4	0.031	20.62	0.024	16.97	0.07510	19.55	0.05190

*Source: Authors*

<sup>i</sup> We would like to thank Edvard Orlić, from Sarajevo School of Science and Technology, Bosnia and Herzegovina for his valuable help and suggestions. Also, we thank the anonymous reviewers for their comments.

<sup>ii</sup> In period 2014-2021, Croatia was divided on two statistical NUTS2 regions.

*A scientific paper***Iva Zdrilić**

University of Rijeka, Faculty of Economics and Business

E-mail address: iva.zdrilic@efri.hr

**Danijela Sokolić, Ph. D., Associate Professor**

University of Rijeka, Faculty of Economics and Business

E-mail address: danijela.sokolic@efri.hr

**MIGRATION INTENTIONS OF CROATIAN STUDENTS****ABSTRACT**

*After the 2008 recession, Covid19 pandemics starting in 2020 hit hard on the European labor market. The effects of unfavorable labor market trends strongly affect one of the most sensitive labor market population: European youth. This paper offer insights in students' migration intentions. We use questionnaire to identify the key drivers behind the highly educated young people's intention to migrate upon their graduation as well as the expected work and non-work benefits of living abroad. We present the results of a quantitative study based on 714 responses collected from Croatian higher education students. Factor analysis was carried out to cluster groups of factors relevant for the analysis, followed by regression model to relate the migration incentives and the potential for real migration. According to the results, Croatian university students' aspirations to move internationally are inspired with their urge for professional and personal development in a significant proportion, followed by socio-economic drivers. Contrary to previous research, personal ties with friends and relatives in a destination country didn't prove to be significantly relevant in our model. Understanding students' motivation, aspirations and intentions can prove useful to predict the future demographics, as well as dynamics of the labor market.*

**Key words:** *Migration, Youth, Migration intentions, Higher Education, Brain Drain.*

**1. Introduction**

The initial hit of Covid19 led to an increase in unemployment in the European Union. A year later, in the second half of 2021, economies have adjusted and unemployment rates have declined, although Covid19 restrictions remain in place in many countries. At the beginning of 2022, the unemployment rate was 6.4% (Labour Force Survey, Eurostat).

Looking at country-level statistics, the Czech Republic (2.1%), Poland (2.9%), and Germany (3.2%) have the lowest unemployment rates within the EU-27 (unemployed labor force, 15- to 74-year-olds, December 2021, Eurostat). The highest unemployment rates were reported in Spain (13.0%) and Greece (12.7%), followed by Italy (9%). The group of countries with unemployment rates above the EU27 average also included Sweden, Latvia, France, Finland, and Croatia (7%) (Labour Force survey, Eurostat).

Youth unemployment is even higher than general unemployment. In the EU, the youth unemployment rate decreased from over 18% at the start of the pandemic in 2020 to 14.9% at the beginning of 2022, with the lowest rates recorded in Germany (6.1%) and the Czech

Republic (7.6%), while the highest were reported in Spain (30.6%), Greece (30.5%), and Italy (26.8%) (Labour Force Survey, Eurostat).

In terms of migration statistics, Germany is at the top of the most desirable or welcome destinations in the EU, which was to be expected as Germany has one of the lowest unemployment rates. Interestingly, Spain, France and Italy, the countries with the highest unemployment, follow Germany as the most attractive destination for immigrants. Among the countries with low unemployment, Poland is very attractive to immigrants, while the Czech Republic is less so. Sweden is relatively attractive to immigrants despite its relatively high unemployment rate (Immigration Data, Eurostat).

On the other hand, emigration statistics show similar dynamics. Germany ranks first with the highest emigration figures, followed by France, Spain, and Italy, but also Romania and Poland. In 2020, only Italy and Croatia showed negative net migration rate (the latest data available at Eurostat are from 05-07-2021), and Croatia is the only country with consistently negative net migration rate since 2010, with the peak in 2017 (-7.7%). These migration indicators suggest that macroeconomic indicators such as GDP level, unemployment rate and living standard are not comprehensive enough to draw conclusions about migration dynamics. Western European countries simultaneously attract migrants and lose population through emigration, and the same is true for the CEE countries. Thus, while there is a more obvious relationship between the overall unemployment rate and the youth unemployment rate, the relationship between the (youth) unemployment rate in a country and migration dynamics seems to be much more complex. The aim of this article is to examine the factors that influence the decision of young people to migrate abroad. As part of a study of young people in higher education in Croatia, we examined the migration intentions of undergraduate and graduate students. The paper is organized as follows: In the first part of the paper, we present studies that contribute to the understanding of migration dynamics, both at the macroeconomic and personal levels. We then explain our model, sample, method, and analytical strategy. We conclude by referring to the institutional and socioeconomic environment, as well as the human-capital development factors as the most important determinants for migration intentions of Croatian student population.

## 2. Migrations of youth

In the early 21<sup>st</sup> century, research on the determinants of migration flourished (Belmonte & McMahan, 2019; Williams et al., 2018). It pointed to a wide range of demographic, socioeconomic, institutional, and contextual factors that determine one's decision to migrate abroad (Milasi, 2020). According to studies, young people are more likely to migrate than the rest of the population (Burrone et al., 2018; Belmonte & McMahan, 2019; Migali & Scipioni, 2019). During their transition from child- to adulthood, young people often migrate to search not only for economic opportunity but also for personal freedom or to provide for families as they take on greater adult responsibilities (Belmonte & McMahan, 2019). Available data indicate that migration flows among young migrants (15-29 years) are five times higher than among adults (30-64 years) (Milasi, 2020), suggesting that age is an important indicator of future migrations (Lulle, Janta & Emilsson, 2021).

Because data on actual migrations are limited and often cannot be linked to the personal conditions and drivers of migrations, it is common in the economics literature to study migrations also through migration intentions (Van Mol, 2016; Bakina et al., 2019). Migration intentions and aspirations are also higher among younger generations. More than half of the population under 25 from EU countries is considering and planning to move to another EU member state, mostly to work there (Lulle, Janta & Emilsson, 2021). Youth from Romania, Italy, and Spain have the greatest desire to migrate somewhere within Europe in the next five

years, and many of them have already made plans for such an international move (Lulle, Janta & Emilsson, 2021). These migration intentions are particularly strong in countries that have been hit hardest by the crisis and where youth unemployment is increasing, so a significant brain drain can be expected in the future as well (Ådnanes, 2004; Van Mol, 2016). Although migration intentions do not necessarily lead to actual movements, many studies show that they are an immediate precursor (Mobley et al., 1979) and the best predictor of migration (Griffeth et al., 2000; Van Breukelen et al., 2004). Moreover, these intentions are often driven by the same factors as actual migrations and may therefore be a good predictor of future migration trends. However, even if they fail in the concrete predictions, studying the migration considerations of people who choose to stay in their home country should be as important as studying the migration motivations of people who have already moved (Milasi, 2020).

While the study of adult migration motivations is relatively widespread, less is known about the critical factors that influence the international movements of youth (Belmonte & McMahon, 2019). Existing evidence on the youth population is still quite fragmented, focusing mostly on smaller samples of individual countries or some specific populations (Milasi, 2020). As a result, there are still large gaps in the evidence on the key determinants that influence young people's intentions and actual decisions to move abroad, which calls for a comprehensive investigation. Such a study would not only shed light on young people's migration aspirations and the factors that shape their actual migration behavior, but also contribute to the development of crucial policies and strategies to retain younger generations, as they are the most important source for a country's further development (Bakina et al., 2019).

### **3. Pull and push factors**

The determinants of migration are quite complex and interrelated. Some authors describe them with push and pull models. According to Baruch (1995), when people decide to migrate internationally, they are confronted with two forces acting in opposite directions. One pulls a person to move, while the other pushes them to reject the move. Baruch's push/pull model categorizes these forces into three levels: individual, organizational, and national. The European Commission (2000) report distinguishes the push and pull factors of international migration according to a more general micro and macro level. The micro level covers individual and household background, including demographic and family factors, and socioeconomic characteristics. In addition, the macro level includes contextual or structural aspects of people's environment in both the home and destination countries. Further, environmental aspects are examined at three other levels: the local or community level, the regional level, and the national level (European Commission, 2000). Some other authors argue for distinguishing between conditioning and regulating migration factors (Bakina et al., 2018). The first group includes factors that cannot be directly controlled, such as natural conditions, geographical location, demographic, and ethnic factors. The other group is about factors that can be directly planned and changed, such as the level and quality of human life, including salary, job opportunities, urban infrastructure, etc.

For the purposes of our study and to avoid problems with classification, we considered determinants of youth migration at the macro or environmental level (i.e., national level) as contextual factors, while determinants at the micro level (i.e., individual and household level) are considered as personal factors. Organizational determinants at a mezzo or organizational level were omitted because our sample contains only undergraduate and graduate students with little or no work experience.



#### 4. Contextual factors

Economic researchers have studied the relationship between a country's economic conditions and migration dynamics. They have focused on the overall macroeconomic, labor market, and institutional environment, which has resulted in the economic growth, the unemployment rate, and the wage gap being the best-documented determinants of migration in the economic literature. As expected, economic growth, actual individual consumption (i.e., measures of material well-being in a country), job creation, meritocracy, and upward mobility have shown negative correlations with migrations, especially within the highly educated population (Van Mol, 2016; Milasi, 2020).

In addition, Aslany et al. (2021) emphasize governance and corruption in their comprehensive review of the determinants of migration aspirations, as dissatisfaction with the current political situation in the country and with the level and quality of public services can also increase one's desire to emigrate (Milasi, 2020). Violence and insecurity, social attachment and participation, norms and values, and expected change over time also play an important role in the decision to move elsewhere (Aslany et al., 2021). In its older report from 2000, the European Commission went even further by identifying tenure systems, transportation and communication, kinship ties and inheritance systems, community facilities, regional inequality, and ethnic structures. All of these factors have been highlighted as important economic predictors to explain differences in actual migration intensity across countries and to build models that can successfully predict some future migrations (Bakina et al., 2019).

When observing and focusing only on youth, existing studies were mostly focused on various socioeconomic and labor market factors. For example, available data show that younger generations are mostly affected by unemployment and lack of job and career advancement opportunities in their home country, and accordingly look for better options abroad (Milasi, 2020). However, even if they are quite sure that they want to move abroad to find a decent job and existential security, things do not go that easily. One of the main reasons for this is the non-recognition of formal qualifications acquired through formal education in one's home country. In other words, very often even the diploma from the most prestigious higher education institution in their home country is not recognized in another country. Due to the peculiarities of any human capital (i.e., knowledge, skills, competences, and other attributes embodied in an individual that are relevant to economic activity) acquired in part through the domestic educational system, its transferability to another environment is quite problematic. As a result, migrations often lead to downward rather than upward mobility for migrant workers, which means that the lack of recognition of formal qualifications is one of the biggest barriers to the migration of young people between different states (Lulle, Janta & Emilsson, 2021). Accordingly, in addition to these formal qualifications, job-related factors also play an important role in deciding whether and where to move. In other words, people make their actual migration decisions and choices of preferred destination depending on the specifics of their skills and talents, as well as perceived opportunities in certain geographic differences. For example, some countries, such as the United Kingdom and Germany, are strongly focused on economic gains and competitive advantages and therefore attract better-educated migrants (Aksakal and Schmidt 2021), usually from different technological and scientific fields. On the other hand, Italy and Spain accept less skilled migrants due to their large demand for unskilled labor (Fellini, Guetto, and Reyneri 2018). Regardless of the chosen destination country, however, younger people often focus on the highly diversified labor markets with more job opportunities, higher wages, and developed social infrastructure of larger metropolitan areas (Bakina et al., 2018). Such places enable them to exit insecure and hopeless jobs by offering a

wider range of diverse job opportunities where their acquired skills and formal qualifications are recognized, valued, and welcomed. All of this ultimately contributes to the quality of their current and future lives.

## 5. Personal factors

As mentioned earlier, personal factors primarily reflect demographic and family-related factors, and socioeconomic characteristics. Age, gender, marital status, parenthood and children, household size, family relationships, and urban or rural residents are mostly studied in the demographic and family-related factors domain (Aslany et al., 2021). They appear in almost every analysis of actual and intentional migrations. Most of these analyses show that men are more likely to move compared to women. Although they might respond similarly to poor economic conditions, women's intentions to move are more often constrained by their family and other social ties (Van Mol, 2016). For both men and women, however, aging is negatively related to migration. This is quite clear considering that youth are known to move more frequently. One of the reasons is that they do not have marital ties or children (Milasi, 2021). However, in addition to the family relations and social ties one has in their home country, which can be a barrier to moving abroad (Bakina et al., 2019), relatives and friends living abroad can also be an important driver of migration decisions. Shared relationships with people living abroad enrich the source of information about living and working conditions and therefore significantly influence the movement plans (Milasi, 2020). In addition, the degree of urbanization of the place where a person lives also affects his or her migration aspirations (Van Mol, 2016). However, studies show that young people living in rural areas are more likely to move to urban areas within the same country (i.e., internal migration), while those living in urban areas are much more likely to move abroad.

Socioeconomic characteristics include socioeconomic status, homeownership, employment status, income and other aspects of employment, and parental education (Aslany et al., 2021). As the existing data show, employment status plays the most important role in determining one's decision to leave the home country permanently, while low income seems to be one of the main barriers that prevent youth from turning their desire to migrate into concrete plans (Milasi, 2020). However, low income is also one of the most important indicators of a person's socioeconomic status, which negatively relates to migration intentions and practically closes a vicious circle. In other words, people want to migrate abroad because of the low income they earn in their home country, but because of the same low income and the lack of the starting capital they need to build a life elsewhere, they are often unable to realize their intention. Uninteresting jobs with few opportunities for career advancement and professional self-fulfillment are other well-documented motivators for youth migrations (Bakina et al., 2019). Parents' economic wealth and educational attainment are positively related to youths' educational prospects. Youth whose parents have higher academic standing and usually higher socioeconomic status are expected to aspire to higher education (Rockwell, 2011), and conversely, children whose parents have lower educational attainment tend to have similar educational aspirations (Mortimer, 2014).

Some other personal factors that are usually included in the analysis are educational attainment, social identity, health status, subjective well-being, willingness to take a risk, personality traits, and access to and use of the Internet (Aslany et al., 2021). Existing evidence suggests that highly educated people are more likely to migrate abroad (Ådnanes, 2004; Van Mol, 2016). More specifically, migrants tend to be categorized as those with low levels of education, those with higher education, and students, but all groups are considered a knowledgeable and learning population (Lulle, Janta & Emilsson, 2021). In other words, regardless of their formal educational background, migrants mostly strive for learning, training, and skill acquisition that

takes place in the workplace and through socialization. While migrants with low levels of education tend to seek permanent residence in their chosen destination country, those with higher levels of education prefer to change locations after their first move. This could be partly due to the fact that they are not hindered by insufficient language skills, which is one of the main barriers to moving between countries with different spoken languages (Lulle, Janta & Emilsson, 2021). However, the migration experience itself, which helps them improve various aspects of their human capital, could also be a reason for such migration pattern. This is even more evident as contemporary literature emphasizes the importance of building cognitive and socioemotional skills that are critical for young migrants' employability and personal success. Consequently, the interpersonal skills, self-confidence, social recognition, and various forms of knowledge that result from the interstate migration experience help them gain a competitive advantage in the labor market, especially if they decide to return to their home country (Lulle, Janta & Emilsson, 2021). On the other hand, students show even higher propensity to move abroad than their older peers, as they often go through various mobility programs during their study period. Accordingly, this is consistent with the aforementioned migration pattern, which indicates that those who have experienced some type of mobility are more likely to become repeat migrants (King & Ruiz-Gelices, 2003; Van Mol, 2016).

Subjective well-being is about personal opinions, beliefs, and perceptions that include several variables, such as overall level of life satisfaction, happiness level, experienced well-being, etc. The majority of these variables are negatively correlated with migration intentions, although life satisfaction sometimes shows contradictory results, indicating that both those with the highest and lowest levels of life satisfaction have the highest migration intentions (Aslany et al., 2021). In terms of happiness level, those who feel dissatisfied with various aspects of their lives, including many factors mentioned earlier (e.g., public services, (in)security, social connectedness, etc.), and who believe they could achieve more abroad are, as expected, more likely to realize such a move (Van Mol, 2016). When assessing experienced well-being, people mostly refer to the economic situation in the home country, which again proves that even the different level migration determinants are interrelated and therefore quite complex when studied separately.

In addition to subjective well-being, migration intentions may also be influenced by personality traits. In personality research, the Big Five model is an established set of 5 traits (i.e., extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience) that are commonly used to differentiate personality profiles (Gosling, Rentfrow, & Swann Jr, 2003). While agreeableness, conscientiousness, and emotional stability showed a negative relationship with migration intentions, openness to experience showed the opposite effect, as expected (Tabor et al., 2015). The same is true for people who are more willing to take a risk. Since they are more likely to engage in activities with uncertain outcomes, they are also more likely to engage in financially and emotionally demanding investments such as leaving their home country.

## **6. Data collection and methodology**

Our research on the factors that determine the migration of young people was conducted using a questionnaire distributed to Croatian undergraduate and graduate university students. Of the 714 students surveyed in February 2022, 618 students used the written form of the questionnaire, and 96 students completed the online form.

The first part of the survey consists of general information about the students, their work experience, financial capabilities, and parental education. The average age of the participants was 21.8 years and the majority of them (76.5%) were female students. They were mostly full-

time students (93.1%) of economics and business and attended both undergraduate (66.5%) and graduate (33.5%) study programs. Only 8.3% of them attended the International Business study program, which is held in English, while the rest studied in their native language. The majority of the students have had some work experience (less than one year), mostly in student jobs during the summer season. More than half of them (53.7%) changed their residence during the academic year to live closer to the university. Almost half of the students (45.6%) reported that they have some money on their own, but also rely on their parents/family for financial help. 40.3% of them rely entirely on their family's resources, while only 14.2% earn their own money from student jobs or through scholarships, allowing them to support themselves while studying. Moreover, almost 70% of all students answered that they have enough money to cover their regular monthly expenses. However, only 45% of them said that they can cover some unexpected expenses such as repairing computer or mobile phone damages, while 44.1% even manage to save some money every month. The parents of more than half of the students completed secondary education (i.e., high school: father - 63.9%, mother - 56.5%).

The rest of the questionnaire focused on exploring the students' migration aspirations and factors that might be related to their intentions. One of the questions related to their plans to migrate abroad in the next five years, while the remaining questions focused on identifying factors that might influence migration considerations and international movements. The survey was structured according to the review of migration literature related to youth migrations. In terms of contextual factors related to the labor market, students were asked about job opportunities, salary, working conditions (e.g., working hours, difficulty of work, opportunities for improvement, etc.), and expected respect in the workplace. Regarding the institutional environment, they were asked about the educational system, the social and health care system, the political situation, human and animal rights, corruption, and unethical behavior (e.g., taking advantage of acquaintances for unethical motives). The general economic situation, quality of social life, and awareness of climate change and environmental protection covered the most important socioeconomic factors. In addition, personal relationships/ties shared with others abroad (e.g., partners, family, and friends) represent family-related personal factors that could also influence one's decision to move abroad. Seeking future education abroad, improving personal competences (e.g., learning a new language, acquiring new technical skills, etc.), meeting new people and experiencing new things, and previous experiences living or studying abroad were also some of the personal factors examined for migration intention. All responses were given on a five-point Likert scale, with 1 representing strongly disagree and 5 representing strongly agree with each statement.

The dependent variable used was the categorical variable describing students' intention to move abroad in the next five years. Also, the software IBM SPSS was used to apply various methods of data analysis. Pearson's chi-square test was used to examine the relationship between the dependent variable (i.e., students' migration intentions) and other categorical variables. Exploratory factor analysis (EFA) and principal component analysis (PCA) were used as extraction methods. These analyses are typically used to find the common underlying dimensions within a group of factors (e.g., migration factors at different levels) and to create additional variables that could better explain the dependent variable. Therefore, these additional variables were added to the model predicting students' intention to migrate abroad, which was tested by linear regression analysis.

## 7. Results and discussion

Using the Pearson's chi-square test we have checked for the relationship between students' migration intentions and two other categorical variables: students' living experience abroad (minimum six months) and students' studying experience abroad (minimum one month). Generally, the Pearson's chi-square test is based on the simple idea of comparing the frequencies that are observed in certain categories to the frequencies that might be expected in those categories by chance (Field, 2009, 688). Thus, in other words, we have tested whether there is a difference in migration intention between students who have already experienced living or studying abroad and those who haven't.

The results showed there is a statistically significant difference in students' migration intention based on both their living and studying experience abroad. Those students who have spent a minimum of 6 months living outside of their home country, have stronger intentions to migrate abroad in the next five years ( $\chi^2 = 16,21$ ;  $df = 4$ ;  $p < 0,05$ ). The result showing adjusted residual  $> |1,96|$  is presented in Table 1.

**Table 1:** Crosstabulation - student's migration intentions and living experience abroad

		Intention to migrate abroad in the next 5 years					Total	
		Strongly disagree	Disagree	Neither agree, nor disagree	Agree	Strongly agree		
> 6 months of living experience abroad	NO	Count	246	115	140	47	65	613
		Expected Count	241.3	110.9	136.6	48.8	75.4	613.0
		Adjusted Residual	1.2	1.3	1.0	-.8	-3.8	
	YES	Count	26	10	14	8	20	78
		Expected Count	30.7	14.1	17.4	6.2	9.6	78.0
		Adjusted Residual	-1.2	-1.3	-1.0	.8	3.8	
Total	Count	272	125	154	55	85	691	
	Expected Count	272.0	125.0	154.0	55.0	85.0	691.0	

Source: Authors' calculations

The same applies to those students who have experienced a minimum 1 month of studying at some higher education institution abroad (Table 2). However, in comparison with the living experience abroad, studying experience as a migrating factor shows a slightly weaker relationship with the students' migration intention ( $\chi^2 = 10,83$ ;  $df = 4$ ;  $p < 0,05$ ). The reason for that might be in the given time frame, since we put the longer period (min. 6 months) for living than for studying (min. 1 month) abroad. However, both factors (living and studying abroad) prove what have already been acknowledged in the literature; those who have experienced any kind of migration so far, are more likely to move again (Van Mol, 2016). Thus, by already living and studying away from their home country, these students have already removed some barriers (e.g. fear of the unknown) and gained some skills (e.g. foreign language proficiency) that might consequently boost their future migrations.

**Table 2:** Crosstabulation - student's migration intentions and studying experience abroad

		Intention to migrate abroad in the next 5 years					Total	
		Strongly disagree	Disagree	Neither agree, nor disagree	Agree	Strongly agree		
> 1 month of studying experience abroad	NO	Count	257	117	145	51	72	642
		Expected Count	252.1	116.3	143.3	51.2	79.1	642.0
		Adjusted Residual	1.5	.3	.6	-.1	-3.2	
	YES	Count	14	8	9	4	13	48
		Expected Count	18.9	8.7	10.7	3.8	5.9	48.0
		Adjusted Residual	-1.5	-.3	-.6	.1	3.2	
Total	Count	271	125	154	55	85	690	
	Expected Count	271.0	125.0	154.0	55.0	85.0	690.0	

Source: Authors' calculations

Once the relationships between students' migration intention and two other categorical variables (i.e., living and studying experience abroad) were examined, we tackled the students' perception of the most important factors that determine their decision to move abroad. In other words, we analyzed the data to find the common underlying dimensions within the given contextual and personal factors (Field, 2009, 637). These commonalities would then help us appropriately identify clusters of these factors and eventually build the additional variables which might better explain the dependent variable (i.e. students' future migrations). To do so, we applied the exploratory factor analysis (EFA) as a technique for dimension reduction, and the principal component analysis (PCA) with the orthogonal rotation as a method of extraction and procedure of data screening. The EFA is usually used to estimate and eliminate error or random variance, i.e., the variance that is specific to one measure but not reliably so as the unique variance (Field, 2009, 637). On the other hand, the PCA is a multivariate technique for identifying the linear components of a set of variables (Field, 2009, 1300). It is mainly used to understand the structure of a set of variables, to measure an underlying variable and to reduce a data set to a more manageable size while retaining as much of the original information as possible (Field, 2009, 991). Thus, both the EFA and the PCA were used to reduce the whole set of migrating factors into a smaller number of clusters, which were then converted into the new set of values representing the independent variables in the linear regression.

After the PCA was applied on the whole set of 18 contextual and personal migration factors, Cattell's scree plot pointed toward solution between two and three clusters of these factors, while eigenvalues recommended four. Thus, the whole procedure was repeated. The number of factors was now fixed to three with the orthogonal rotation of the same factors whose correlation was expected.

Kaiser-Meyer-Olkin (KMO) measure of adequacy generally indicates whether the factor analysis yields distinct and reliable factors due to their patterns of correlations, which must be relatively compact. The ideal value is between 0.8 and 1 and the KMO value in our case was 0.93. Bartlett's test of correlation matrix was highly significant ( $p < 0.001$ ), showing that the correlation matrix is different from the identity matrix (i.e., the one that has 1 on its diagonal and 0 on the sides). In other words, these indicators confirmed that the factor analysis was appropriate for our data.

Values from the communalities table are expected to be as high as possible, as they show the amount of each variable's variance that can be explained by maintained items. In other words, higher values indicate that the variables are well explained in the common factor space. Some authors (Larose & Larose, 2015, 104) state that communalities below 0.5 are unacceptable as these items share less than 50% of their variability with others. As already mentioned, we limited our analysis to the three clustered variables (i.e., migrating factors) whose belonging items may be seen in Table 3. These items explained 63.85% of the variability in the given data after the orthogonal rotation and they were reflecting the already known classification of migrating factors from the existing literature. Thus, the clustered variables were interpreted as follows: institutional and socioeconomic environment; human capital development which encompasses enhancement of the individual knowledge, skills, and competences; and personal relationships and social ties.

**Table 3:** Factor analysis results of the scale measuring factors determining students' migration intentions (rotated factor matrix)

	Institutional and socioeconomic environment	Human capital development	Personal relationships and social ties	h2
Better political situation abroad	<b>0.79</b>	0.27		0.70
Unethical behavior in Croatia	<b>0.78</b>			0.62
Corruption in Croatia	<b>0.77</b>			0.60
Better economic situation abroad	<b>0.72</b>	0.43		0.71
Better care for human and animal rights abroad	<b>0.71</b>	0.26	0.16	0.60
Better social and health care abroad	<b>0.71</b>	0.28	0.13	0.59
Greater respect to employees in the workplace abroad	<b>0.70</b>	0.29		0.59
Better working conditions abroad	<b>0.68</b>	0.46		0.68
Increased awareness of climate changes and environmental protection abroad	<b>0.62</b>	0.27	0.16	0.49
More job opportunities abroad	<b>0.62</b>	0.49		0.63
Better social life abroad	<b>0.61</b>	0.42		0.55
Better salary abroad	<b>0.54</b>	0.52	0.12	0.57
Meeting new people and experiencing new things abroad	0.35	<b>0.78</b>		0.73
Continuing with the education abroad		<b>0.75</b>	0.11	0.58
Improving personal competences abroad	0.38	<b>0.74</b>		0.69
More creative and interesting job abroad	0.34	<b>0.73</b>	0.18	0.69
Partner abroad			<b>0.86</b>	0.75
Family and friends abroad	0.13	0.11	<b>0.85</b>	0.74
Eigen value	8.76	1.44	1.30	

*Source: Authors' calculations*

Cronbach's alpha coefficients of reliability for the given variables ranged between 0.68 (personal relationships and social ties) and 0.93 (institutional and socioeconomic environment), which proved our confidence of having a reliable measure. Data were also tested for normality. Normal distribution ranges between -2 and 2 and according to the skewness value that ranged between -0.75 and -0.18 in our case, we might state our data was normally distributed. Furthermore, we used variance inflation index (VIF) that measures how much variance of an estimated regression coefficient is increased due to collinearity to determine the multicollinearity in our example. Values were between 1.05 and 1.86, which was good according to the literature (Hair et al., 1995, 224).

Once the additional variables have been created by the EFA, the model predicting students' migration intentions (dependent variable) could have been built. Besides the three main variables measuring factors that determine one's decision to move abroad, some other variables have also been included in the model as the independent variables. According to the existing studies, gender is one of the demographic characteristics that might significantly affect migration intentions, thus we included it. Age was intentionally omitted, as our participants were from the same generation with no more than 4-year age difference. Language of the study was included as it might reveal an ambition for continuing education abroad or finding a job internationally. Foreign language proficiency and financial possibilities (financial sources,

monthly income, and monthly savings) as theoretically assessed barriers for migrating abroad have also been included in the model as the independent variables. Table 4 presents the descriptive statistics of all the used variables in the model.

**Table 4:** Descriptive statistics of the variables used in the model

	N	Mean	Std. Deviation
Intention to migrate abroad in the next 5 years	709	2.38	1.396
Gender	712	.77	.424
Study language	714	.08	.276
Financial source	713	1.74	.691
Monthly income	711	2.34	1.404
Covering all monthly expenses	713	3.96	1.147
Covering unexpected cost	709	3.22	1.397
Monthly savings	708	3.19	1.379
English language proficiency	714	4.25	.868
German language proficiency	708	1.99	1.047
Italian language proficiency	707	2.09	1.205
Institutional_and_socioeconomic_environment	624	43.8061	10.66381
Human_capital_improvement	704	14.9446	3.78002
Personal_relationships_and_social_ties	708	6.2881	2.30712
Valid N (listwise)	600		

*Source: Authors' calculations*

Accordingly, the linear regression analysis has been applied to the given model. Results indicate that the model significantly explains 29.5% variance of the dependent variable (students' migration intention:  $R=54.3$ ;  $R^2=29.5$ ;  $F_{13,586}=18.85$ ;  $p<0.05$ ). Two of the three variables significantly contributed to determining students' migration intentions: institutional and socioeconomic environment ( $\beta=0.026$ ;  $p<0,05$ ) and human capital development ( $\beta=0.11$ ;  $p<0,05$ ). Since, both of these variables considered the expected environment abroad and self-development possibilities in the destination country, their positive relationship with the dependent variable was expected (Table 5).



**Table 5:** Linear regression coefficients

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.016	.426		-.037	.970
	Gender	-.050	.119	-.015	-.423	.673
	Study language	.746	.189	.145	3.954	<.001
	Financial source	-.089	.075	-.045	-1.192	.234
	Monthly income	.031	.037	.031	.844	.399
	Covering all monthly expenses	-.161	.056	-.132	-2.868	.004
	Covering unexpected cost	.073	.046	.073	1.576	.116
	Monthly savings	-.026	.043	-.026	-.607	.544
	English language proficiency	.052	.064	.031	.806	.420
	German language proficiency	.092	.048	.070	1.938	.053
	Italian language proficiency	-.001	.042	-.001	-.028	.977
	Institutional and socioeconomic environment	.026	.006	.197	4.041	<.001
	Human capital improvement	.111	.018	.305	6.102	<.001
	Personal relationships and social ties	-.037	.022	-.062	-1.669	.096

a. Dependent Variable: Intention to migrate abroad in the next 5 years

Source: Authors' calculations

Among the other variables in the model, only study language and financial possibility to cover monthly expenses proved as significant determinants for understanding one's decision to move abroad. Study language expectedly had a positive relationship with the dependent variable ( $\beta=0.75$ ;  $p<0,05$ ), which implies that those students who have chosen to enroll the study program in English might had prior intention to move abroad (to continue their education) or improving language skills and being exposed to more international environment (by comparing with students from abroad studying in the same program) affected their aspirations and ambitions (higher level of self-esteem and different perspective on competitiveness on foreign labor market). They also have higher English language proficiency, which is important since language is identified as one of the biggest migration barriers. Financial possibilities to cover monthly expenses, on the other hand, showed the negative relationship ( $\beta=-0.16$ ;  $p<0,05$ ) with students' migration intentions. This might be explained by the fact that students of a higher socioeconomic status and higher level of well-being are less interested to move from their comfort zone, or at least are not considering migration abroad while still studying.

## 8. Conclusion

Unemployment, lack of job opportunities, and lack of opportunities for career advancement are well-documented drivers of youth migration in the economic literature. The results of our study also confirm that students who face financial difficulties are more likely to move abroad. In addition, our study extends the list of determinants that highly educated youth consider relevant to their decision to move abroad. First, we address the importance of previous experiences that young people have had living or studying abroad. The results show that students who have lived abroad have a stronger intention to migrate. Consistent with this, the results also show a strong relationship between intentions to migrate and the experience of having spent time at a higher institution abroad while studying.

In addition, students who study in English-language programs also have a stronger intention to migrate internationally. Exposure to different cultures in programs with multinational students, learning about different national systems, and comparing their skills with other young people in the program could boost their confidence to compete in international labor markets. Therefore, previous experiences, overcoming language barriers, and studying with peers from around the world seem to reduce anxiety about uncertainty and lead to personal empowerment in pursuing an international career.

We used exploratory factor analysis and principal component analysis to assess the relevant determinants of highly educated youth migration intentions. We also added some theoretically relevant demographic variables to the model (gender, financial status, etc.). We tested our model with linear regression. Based on statistical analysis, we identified three groups of factors relevant to determining migration intentions: institutional and socioeconomic environment, human capital development, and personal relationships and social ties.

The scope of this paper is limited to case-specific interpretation of some propositions on which the theory of migrations is built in the literature. Empirical contribution of this study is in confronting theoretically deducted factors that represent migration incentives and checking them against the Croatian student population who are in the process of acquiring university degree. Consistent with theoretical expectations, institutional and socioeconomic environment and human capital development contributed significantly to the determination of students' migration intentions. In contrast to previous research, personal relationships and social ties were not found to contribute significantly to students' migration intentions. One possible explanation lies in the population itself: The participants were university students still studying in their home country, and the items in the survey asked about their intentions if they had family or partners abroad, which may not have applied to them at all. These insights could have implications for developing regional and national policies regarding human capital. Limitations of the research related to the proposed model could be observed in variations of the variable decision to migrate, which is only partially assessed with proposed factors. Therefore, further research is needed.

A limitation of this study is that it examines the behavioral intentions of a specific population group, namely university students, and their migration intentions during their studies. Although migration intentions have been shown to be a good predictor of migration behavior, the study should be extended to capture the intentions of highly educated young people who are already in the labor market, as intentions and aspirations change over time.

### **Acknowledgment**

This scientific article was created as a part of the project "MI – jučer, danas, sutra" (UP.04.2.1.06.0018) financially supported by the European Union within the European social fund. The content of the scientific article is the sole responsibility of the project coordinator.

### **REFERENCES**

Ådnanes, M. (2004): *Exit and/or Voice? Youth and Post-Communist Citizenship in Bulgaria*, Political Psychology, Vol. 25, No. 5, pp. 795-815

- Aksakal, M., Schmidt, K. (2021): *The Role of Cultural Capital in Life Transitions among Young Intra-EU Movers in Germany*, Journal of Ethnic and Migration Studies, 47 (8), pp. 1848–1865
- Aslany, M., Carling, J., Mjelva, M. B., Sommerfelt, T. (2021): *Systematic review of determinants of migration aspirations*. QuantMig Project Deliverable D2.2. Southampton: University of Southampton
- Bakina, A. V., Yaremtchuk, S. V., Orlova, O. A., Krasnoperova, Y. V. (2019): *Life Satisfaction and Migration Intention of Youth, Advances in Economics, Business and Management Research*, Proceedings of the International Scientific Conference "Far East Con", Atlantis Press, pp. 698-702
- Baruch, Y. (1995): *Business Globalization – the Human Resource Management Aspect*, Human Systems Management, 14(4), pp. 316
- Belmonte, M., McMahon, S (2019): *Searching for Clarity: Defining and Mapping Youth Migration*, Migration Research Series No. 59, International Organization for Migration, Geneva
- Burrone, S., D’Costa, B., Holmqvist, G. (2018): *Child-Related Concerns and Migration Decisions: Evidence from the Gallup World Poll*, Office of Research - Innocenti Working Paper
- European Commission (2000): *Push and pull factors of international migration. A comparative report*, <https://op.europa.eu/en/publication-detail/-/publication/90913700-dbbb-40b8-8f85-bec0a6e29e83> (accessed 2 March 2022)
- Fellini, I., Guetto, R., Reyneri, E. (2018): *Poor Returns to Origin-Country Education for non-Western Immigrants in Italy: An Analysis of Occupational Status on Arrival and Mobility*, Social Inclusion, 6 (3), pp. 34–47
- Field, A. (2009): *Discovering statistics using SPSS*, SAGE Publications, Ltd., London
- Gosling, S. D., Rentfrow, P. J., Swann Jr, W. B. (2003): *A very brief measure of the Big-Five personality domains*, Journal of Research in Personality, 37(6), pp. 504-528
- Griffeth, R. W., Hom, P. W. and Gaertner, S. (2000). *A Meta-Analysis of Antecedents and Correlates of Employee Turnover: Update, Moderator Tests, and Research Implications for the Next Millennium*, JOURNAL OF MANAGEMENT, 26(3), pp. 26
- Hair, J. F. Jr., Anderson, R. E., Tatham, R. L., Black, W. C. (1995): *Multivariate Data Analysis*, Macmillan, New York
- King, R., Ruiz-Gelices, E. (2003): *International Student Migration and the European ‘Year Abroad’: Effects on European Identity and Subsequent Migration Behaviour*, International Journal of Population Geography. 9, pp. 229-252
- Larose, D. T. & Larose, C. D. (2015): *Data Mining and Predictive Analytics*, John Wiley & Sons, Inc., Hoboken, New Jersey

- Lulle, A., Janta, H. & Emilsson, H. (2021): *Introduction to the Special Issue: European youth migration: human capital outcomes, skills and competences*, Journal of Ethnic and Migration Studies, 47:8, pp. 1725-1739
- Migali, S., Scipioni, M. (2019): *Who's About to Leave? A Global Survey of Aspirations and Intentions to Migrate*, International Migration 57(5), pp. 181-200
- Milasi, S. (2020): *What Drives Youth's Intention to Migrate Abroad? Evidence from International Survey Data*, IZA Journal of Development and Migration 11:12
- Mobley, W. H., Griffeth, R. W., Hand, H. H., Meglino, B. M. (1979): *Review and conceptual analysis of the employee turnover process*, Psychological Bulletin, 86(3), pp. 493–522
- Mortimer, Jeylan T.; Zhang, Lei; Hussemann, Jeanette; Wu, Chen-Yu (2014): *Parental economic hardship and children's achievement orientations*, Longitudinal and Life Course Studies, Volume 5, Issue 2, pp. 105-128.
- Van Breukelen, W., Van der Vlist, R., Steensma, H. (2004): *Voluntary employee turnover: Combining variables from the 'traditional' turnover literature with the theory of planned behavior*, Journal of Organisational Behavior, 25(7), pp. 893–914
- Rockwell, C. (2011): *Factors Affecting Parental Involvement With Children's Education: A Qualitative Study of Parent's Socioeconomic Status, Level of Education, and ParentSchool Relationship*, Perspectives (University of New Hampshire), pp. 94-98.
- Tabor, A. S., Milfont, T. L., Ward, C. (2015): *The migrant personality revisited: Individual differences and international mobility intentions*, New Zealand Journal of Psychology, 44(2), pp. 89-95.
- Van Mol, C. (2016): *Migration aspirations of European youth in times of crisis*, Journal of Youth Studies 19(10), pp. 1303–1320
- Williams, A., M., Jephote, C., Janta, H., Li, G. (2018): *The Migration Intentions of Young Adults in Europe: A Comparative, Multilevel Analysis*, Population, Space and Place 24(1), e2123

*A scientific paper*

**Nikol Žiha, Ph. D., Associate Professor**

J.J. Strossmayer University, Faculty of Law Osijek

E-mail address: nikolz@pravos.hr

**Marko Sukačić, Ph. D., Postdoctoral Researcher**

J.J. Strossmayer University, Faculty of Law Osijek

E-mail address: msukacic@pravos.hr

## **ANCIENT ROOTS OF WINE TRADE IN SLAVONIA AND BARANJA COUNTY – THE LEGAL HISTORIANS APPROACH\***

### **ABSTRACT**

*As a valued good since ancient times, wine has been an object of sales contracts throughout history, particularly within the developed trade regulated by ancient Roman law, as indicated in various legal and non-legal sources. The most peculiar ancient problem concerning the sale of wine was its frequent acidity and mouldiness, especially when the wine was sold in large amounts to professional sellers and for subsequent resale. Such practice confirms that wine was produced in various provinces and transported across the Roman Empire. The contemporary sale of wine represents an important part of the touristic offer of the Slavonia and Baranja region which grants an enormous potential for its development. As opposed to more detailed research into viticulture near the Croatian coast, due a to lack of original sources, the ancient beginnings of the wine trade as an economic activity in this region have been insufficiently explored. The most famous, yet often disputed historical source is visible in Historia Augusta, the late Roman collection of biographies of Roman emperors, where the author in the description of the emperor Marcus Aurelius Probus states that he himself planted chosen vines on Mount Alma near Sirmium in Illyricum (Fruška Gora near Srijemska Mitrovica). The presented source confirms that wine production was conducted in this area in the 3<sup>rd</sup> century AD. Focusing on the most controversial legal implications of wine sales, specifically the allocation of risk for the spoilage of wine, this contribution aims to address the issue of the transportation of wine across the Empire and to discuss the ancient roots of wine production in the Slavonia and Baranja region in order to show its both historical and contemporary importance.*

**Key words:** degustatio, trade, Roman law, Slavonia and Baranja, wine production.

### **1. Introduction**

With a tradition of wine production dating back to Roman times, winemaking in Slavonia and Baranja represents an essential component of the touristic and overall economic development potential of the region. As a former province of Pannonia Inferior, nowadays, it is an integral part of the Roman Emperors' Route and the Danube Wine Route

---

\* This paper is a product of work that has been fully supported by the Faculty of Law Osijek Josip Juraj Strossmayer University of Osijek under the project nr. IP-PRAVOS-17: *Development of the Croatian private law tradition in the context of its integration into the European legal culture.*

(<https://www.coe.int/en/web/cultural-routes/the-roman-emperors-and-danube-wine-route>) placing it amongst twelve other wine regions incorporated into the European network of cultural routes founded with the aim of the promotion and development of cross-border cultural tourism as well as European heritage and cultural identity (Werner, 2022).

In the early days of the Roman conquest of Pannonia, the crucial import of goods to this area, dominantly oil and wine, was certainly from Italy, primarily due to the supply of the army (Casson, 1991, 225-226; Lacković, 2014, 19-20; Mócsy, 2015, 300). Soldiers were entitled to a daily ration of wine and *posca*, a low-quality sharp wine mixed with water and herbs (C. 12,38,1; Vegetius, *De re militari* 3,3). It was for this main reason that it was necessary to establish a local wine production, an undertaking apparently carried out by Emperor Probus at *Alma Mons* (Fruška Gora) north of his birth place, *Sirmium*. Since a comparison of the demand and supply for wheat and wine in the Apennine Peninsula supported the claim that there were not enough goods to supply many large estates (Temin, 2012, 16), it is reasonable to assume that when the provinces, as good customers and former importers of wine, began to produce the wine themselves, they commenced to export the surpluses to their former suppliers.

Due to a lack of original sources and opposed to more detailed research into viticulture near the Croatian coast (Matijašić, 1993, 247-261; Škegro, 1999, 143-173; Kopáčeková, 2014, 75-88), the ancient beginnings of the wine trade as an economic activity in this region have been insufficiently explored. Whether imported or exported, the trade and transport of wine had its challenges, especially considering the possibility of its spoilage, which entailed the issue of risk between the contracting parties and their responsibility for its demise. The aim of this paper is therefore to determine the circumstances in which viticulture developed in this region; pinpoint the routes and challenges of wine transport; and analyse the legal problems of the Roman wine trade in more detail. In order to achieve presented aims, the methods used in this contribution are both archaeological and historical analyses of the existing sources. Thus, the topic of the wine trade in ancient Slavonia and Baranja County is observed from the legal historian point of view.

## 2. The emergence of viticulture in *Pannonia*

The territorial scope of our research area of today's Slavonia and Baranja corresponds geographically from the 1<sup>st</sup> century AD to the part of the Roman province of *Pannonia*. After the division that took place somewhere between 103 and 106 AD, most of its territory was incorporated into *Pannonia Inferior* and only a smaller part into *Pannonia Superior* (Mócsy, 2015, 92sq). From the reorganisation introduced by Diocletian's reforms until the conquest by the Western Goths in the 4<sup>th</sup> century AD, Eastern Slavonia, with most of Baranja and Srijem, was a part of *Pannonia Secunda*. Although the geographical area above Dalmatia, according to Strabo (*Geographica* VII, 317) and Cassius Dio (*Historia Romana* XLIX, 36), was considered too cold and hostile and thus unfavourable for viticulture, after land reclamation in the late 2<sup>nd</sup> and early 3<sup>rd</sup> century, conditions become much more beneficial for wine growing. The debate initiated by Bulat (2002, 46) about the origins of grapevine reception, i.e., whether it was appropriated to this area from the Celts, from domestic wild vines in Dalmatia or even from the east, is still open for debate due to the insufficiency of sources.

An historical source with one of the oldest references to vineyards can be found in *Historia Augusta*, a biography of various Roman emperors from 117 to 284 AD, often disputed regarding its historical value, authorship (six different alleged authors), and date of the production (somewhere in the 4<sup>th</sup> century AD) (Birley, 2006, 19-20). If the mentioned dilemmas are put

aside, since studies have demonstrated that it definitely has (limited) historical value (Langenfeld, 2017, 248-249), this work clearly states that the Roman Emperor Marcus Aurelius Probus (276-282 AD) “granted permission to all the Gauls and the Spaniards and Britons to cultivate vineyards and make wines, and he himself planted chosen vines on Mount Alma near Sirmium in Illyricum, after having had the ground dug up by the hands of the soldiers” (*Historia Augusta* 18,8; *trans. cit.* Magie, 1932, 373). Mount Alma is considered to be the contemporary Fruška Gora near Srijemska Mitrovica in Serbia, with a part of its western side extending into eastern Croatia, Vukovar-Syrmia County. Although *Historia Augusta* is highly disputed, additional historical texts confirm Probus’s plantation of vines and the hypothesis of the rapid development of winemaking during Late Antiquity in this area (*cf.* Parat, 2020, 19-40).

In the settlement of *Antianae*, present-day Popovac in Baranja, inscriptions from the two altars dedicated to the deity *Liber* suggest that this could be one of the primary localities where the Romans were immersed in wine growing in the area of eastern Croatia (Predojević, 2012, 378-392). *Liber* was originally an ancient Italian god of fertility, best known as the protector of wine and viticulture. Most often worshipped under the name *Liber Pater* (Father Liber), this Italian god of vegetation began very early on to be identified with the Hellenic *Dionysus* (*Bacchus*). The most important document dedicated to *Liber Pater* and a testimony to winemaking is the altar commissioned by a certain *Aurelius Constantius* on the occasion of a vine planted at the request of his son *Venantius* on a very large land plot of 400 *arpennes* (CIL III, 03294 = CIL III, 10275).<sup>1</sup> In contemporary measurements, the vineyard area would be around 50 ha, which is substantial even in comparison to today's vineyards on Croatian territory. The peculiarity of this inscription is that it mentions various grape varieties that were certainly brought along with Roman settlers (*Cupenis*, *Terminis*, *Valle(n)sibus*, *Caballiori(s)*), which is a rarity and leaves room for further research (Brunšmid, 1907, 112-113; Bulat, 2002, 47; Brein, 2006, 1-8; Predojević, 2012, 5; Mócsy, 2015, 298). Based on the son’s name, as well as the Gaelic measures of *arpennis*, Predojević (2012, 5) assumes that the origin of *Aurelius Constantius* as a ‘former vineyard procurator’ was *Gallia*. The archaeological site where the inscription was found is located at the north-western end of a chain of hills, Banovo Brdo, that rises about 100 meters above the plain between Beli Manastir and Batina on the Danube. This area of Roman *Aureus Mons* corresponds to the present-day wine region in Baranja, where the stationed Roman troops defended the *Limes* (Pinterović, 1975, 71sq).

An additional dedicatory inscription (CIL III, 3295) of certain Sext(?) to ‘Father Liber’ which is thought to have originated from the same site shows a partially preserved relief portraying the grape harvest (Brunšmid, 1900, 28; Bulat, 2002, 47). The votive monument portrays sculptures of a winegrower, who pours out the wine from a skin bag into a bowl, and his partner with a basket of grapes. It is assumed that the investigated area was a Roman site with *villa rustica* used for agricultural purposes, viticulture in particular (Predojević, 2012, 5). Both archaeological remains support the Pannonian viticulture practice around the 4<sup>th</sup> century AD; nonetheless, they still do not provide enough information on the scope, intensity, and specialization of these manners.

In favour of the emerging viticulture, Mócsy (2015, 299) points out the finds of *Silvanus*, an old Pannonian pre-Roman deity of fertility and agriculture, who is shown holding vinedressers' knives and similar tools used in wine making. It is assumed that a shrine to *Silvanus* existed in Osijek's downtown vineyards since two stelae (CIL III, 3276 and 3277) were excavated on the

<sup>1</sup> CIL III, 03294 = CIL III, 10275: *Deo Lib(ero) Patri / Aur(elius) Cons[ul]us / ex proc(uratore) · inst() qui viribus / suis inseruit / per instantiam Ve/nanti fili(i) sui / vineae ar(e)p(ennes) CCCC / ex his v(itibus) Cupenis / v(itibus) Terminis / v(itibus) Valle(n)sibus / v(itibus) Caballiori(s)*

site (Brunšmid, 1900, 28; Hoffiller, 1912, 5). Furthermore, in Osijek, in the area of the former *Mursa*, the remains of an indispensable tool for wine production, a winepress (*torcolum*) used to extract juice from crushed grapes was found in 1991 but was unfortunately lost during wartime (Bulat, 2002, 48). The production of wine was conducted most probably by active soldiers on their farms along with the help of military facilities and veterans, who often received parcels of fertile land upon discharge from active military service. A great example offers a tombstone displaying the veteran *Avitus* and his wife *Ulpia Apiana* as grape harvesters among the tendrils of the vine found in Osijek (CIL III, 03283).<sup>2</sup> *Titus Aurelius Avitus* served in a military unit (*II Legio Adiutrix*) that had long been stationed in Pannonia (Cambi, 1989; Bulat, 2002, 48).

Due to a lack of finances and expertise, along with an unawareness of its benefits in general, archaeobotanical investigation is rarely carried out during archaeological excavations in Croatia (Reed, 2016, 7–8). Despite being insufficient and sporadic, the analysis of plant macro-remains found in south Pannonia show the existence of grape pips, originating probably from Dalmatia, that can be an indicator of the emerging wine production or at least the import of grapes (Reed and Roguljić, 2020, 52).

Although the data obtained from amphorae usually serves to trace the import of wine, in our case, it can also provide additional information about the period when the local production of wine in Pannonia began to give results. Compared to other utensils used for the transport of liquids like animal leather sacks (*culleus*), *amphorae* are the essential archaeological evidence used for identifying patterns of wine consumption because they are more resistant to decay and it is more likely that they will be preserved. The finds, like the one investigated in *Cibalae* by Nagy and Szakmány (2019, 222), suggest that wine was a luxury good not consumed by the native population and that, due to steady demand, the trade commenced with the presence of the Roman military forces. As *Vegetius* put it (*De re militari* 3,3), the armies are more often destroyed by famine than by the enemy, so the guarantee of a stable supply was crucial. A specific type of *amphorae* (like Dressel 2-4, Lamboglia, Forlimpopoli) which were used for wine transport indicates their import from Italy in the period between the 1<sup>st</sup> and 2<sup>nd</sup> century AD (Reed and Roguljić, 2020, 42). Conclusively, after the excavations of sites, specifically selected as case studies in pursuance of consumption patterns – excepting Italy, which was obviously the main supplier – wine was delivered to Southern Pannonia from Hispania, the islands of Rhodes and Cos, and, on a smaller scale, from Pontus and the northern coast of Asia Minor (Egri, 2007, 44). After the supply chain of the Roman army became more consistent and focused on local production, it is noticeable that the *amphorae* supply dropped substantially by 250–270 AD (Magyar-Hárshegyi, 2016, 434), which leads us to the conclusion that Southern Pannonia had become self-sustaining in terms of wine.

### 3. Import and challenges of wine transportation

Due to insufficient data which would speak in favour of Pannonian viticulture from the 1<sup>st</sup> until the 3<sup>rd</sup> century AD, as established in the previous chapter, we can conclude that grapes, along with wine, were imported to this region as soon as Pannonia was founded in the 1<sup>st</sup> century, and the native production of wine was established only after Probus had drained the wetlands and improved the agriculture in the region (Reed and Roguljić, 2020, 52). It can be assumed that it took some time for the proper amount of wine to be produced in order to meet local needs and eventually to be used for export to the surrounding areas. Sources suggest that even further on,

<sup>2</sup> CIL III, 03283: *T(itus) Aur(elius) Avitus / vet(eranus) leg(ionis) II adi(utricis) / ann(orum) LXXXVI vivos(!) / sibi et Ulpiae / Appianae con/iugi pientissimae / vivi sibi posue/ru[nt]*



in the 4<sup>th</sup> century, there was still a need for import, especially in terms of higher quality products. Namely, *Ambrosius* (*Epistulae* XVIII, 21) informs us about the practice of corn export from Pannonia in exchange for Italian wine.

As with numerous other goods, the distribution of wine began as a state-organised supply of the army in the provinces, but evidence of trade beyond the scope of military logistics refers to an analogue market economy of private traders. Very little is known about the military troops' supply in Pannonia, especially the role of civilians in the production, sale and transport of goods. The involvement of civilians in the supply chain of the army in general at the empire level has not been sufficiently researched (Adams, 1995, 120). This is due to the constant dislocation of the army and the different conditions in various *limes* regions, meaning the military logistics never functioned uniformly, at least not until the *annona militaris* in the 3<sup>rd</sup> century AD (Kehne, 2007, 326 and 330; Rizos, 2015, 298–299). However, the main focus of our research is to analyse the problems in wine sales between private traders. No inscriptions specifically mentioning *vinarii* have been found in the province, but with the aid of archaeological evidence, taking into account *negotiatores* and eminent merchant families, it is possible to make some attempts and delineate this social class that was involved in the sale of wine and transport of amphorae because they themselves were also the main consumers of these products. Magyar-Hárshegyi (2016, 435) states that the descendants of these families often performed a function of *officium consularis*, which were in charge of the provincial military supply and served an administrative role in larger Pannonian communities. Among the consumers of imported wine, members of the provincial upper class and public servants can be suspected as they were the only ones that could afford it (Nagy, Szakmány, Magyar-Hárshegyi, 2018, 219). Less affluent residents probably consumed only regional wines.

The import of wine was carried out in *amphorae*, wooden barrels and *dolia*. While the barrels were usually used for mass exported table wine and army provisions, *amphorae* probably served for quality wine (Egri, 2007, 49). Taking into account the distribution as well as quantity of the *amphora* material, most of them arrived in Pannonia in the army supply containers. According to data from Strabo (*Geographica* V, 1, 8), wooden barrels with wine were transported through *Aquileia* to *Nauportus* (VII, 5, 2) and then further by boats via the Drava and Sava to their final destination in Pannonia. Bezeczky (1996, 336) suspects that the Aquilean merchant families had influence in the military supply, which is very probable because *Aquileia* served as the main intersection in the transport between Italy and the Danube region. This hypothesis may be supported by the five shipwrecks found in the Adriatic which were carrying *dolia* (Jurišić, 2000, 25; Egri, 2007, 49). The transport infrastructure proved to be a very complex system. In order to obtain maximum efficiency with less effort, maritime and river transportation was combined with the existing network of roads (Carreras and De Soto, 2013, 132–133). Considering the lower costs of transport, the Danube, Drava and Sava, along with their tributaries, were used to supply major settlements like *Siscia*, *Mursa* and *Cibalae* as they were in close proximity to them. Reed and Roguljić (2020, 54) present evidence which supports this strong correlation between *amphorae* finds and navigable waterways, although they point out that the road infrastructure had to be made use of to reach every single destination.

Taking into account the perishable nature of wine, its transport obviously had its challenges – even more if we consider that the larger quantities of the imported wine were not of the highest quality, which is confirmed by the fact that the sources constantly mention the testing of wine for acid and mould. For many reasons, the wine that was shipped and sold was not always fermented completely but was rather transported as a semi-product that would become wine when it reached its goal. Since *dolia* were larger containers (up to 1000 litres), they were

sometimes used for sea transport, but it was a custom to pour the semi-produced wine into smaller *amphoris* and/or *urnis* as well (Frier, 1983, 258; Harder, 1975, 22). One of the possible explanations for such practice could be the bad quality of the wines that were produced and their higher risk of spoilage. Smaller containers also meant smaller loss, since the spoilage of one container did not necessarily have to mean the spoilage of others. In addition, there are historical sources indicating *vinarii* had purchased grapes as a raw product on the vine and undertook their own pressing. For instance, Pliny (*Nat. Hist.* XIV,50) and jurist Julian's quote from D. 19,1,25 (*Julianus libro 54 digestorum*) both demonstrate the sold product was often not the wine, but it's raw material (grapes) that was occasionally pressed by the seller before it was handed to the buyer.

The biggest peril of fermentation in such uncontrolled environments was the possibility of acetic fermentation (*acor*) and the mouldy taste of wine (*mucor*). Acetic fermentation occurs because of the presence of aerobic bacteria that oxidise alcohol into acetic acid, which consequently gives the product the odour and the flavour of vinegar (Amerine, 1980, 557–561). This process is irreversible, and the only possible solution is prevention through clean containers and a lack of contact with air throughout the whole production process. The mouldy taste can emerge because of mouldy grapes and the usage of unclean cooperage. It is also impossible to fix wine after it becomes mouldy (Frier, 1983, 259). Thus, both defects occurred mostly because of human error, linked with improper handling and a lack of cleanliness. Historical sources such as Pliny's *Naturalis Historia* (14,131), as well as scientific studies, show that ancient Roman winemakers had a certain knowledge of the prevention of the spoilage of wine, and they used the sulphur dioxide to fumigate *dolia* and *amphoras* in order to destroy potentially harmful yeast cultures and microbes (Kron, 2012, 171). However, from historical evidence it is clear that the wine spoiled often<sup>3</sup>, meaning that the measures were not always applied properly if at all. When the fermented wine reached its destination, typically some of the metropolitan distribution centres, the *vinarii* had sold it to local wine merchants. Consequently, such merchants sold the wine in smaller amounts to urban consumers (Frier, 1983, 258). In other words, the wine was sold at least two times before its arrival to the consumer and was poured into different containers several times. This fact, along with the high risk of the spoilage of wine that was still fermenting during transport, contributed to the emergence of risk management controversies that became one of the main focuses of Roman jurists.

#### 4. Allocation of risk for the spoilage of wine

Taking into account the aforementioned problems in the transport of wine and the high probability of its spoilage, the main legal problem in the sale of this product, encountered also by merchants in this region, was the allocation of the risk between the seller and the buyer in the case of the wine's deterioration. Since the tradition of Roman law, which elaborated in detail on this issue, was incorporated into the contemporary (wine) consumer protection, this chapter will provide an overview of the legal implications in Roman wine sales.

One of the oldest and most detailed descriptions of Roman wine sales can be found in the work *De agri cultura*, written by Marcus Porcius Cato, known as the Cato the Elder (234–149 BC). In the excerpt from *De agri cultura* 148, Cato describes the conditions of wine sales in *doliis* and states that 41 urns had to be delivered to the buyer in *culleo*, the container for liquids made

---

<sup>3</sup> E.g. see legal sources from the Digest: D. 19,2,15,2 (*Ulpianus libro 32 ad edictum*): "...vitia ex ipsa re oriantur...veluti si vinum coacuerit"; D. 18,6,4 pr. (*Ulpianus libro 28 ad Sabinum*): "...periculum acoris et mucoris venditor praestare debet"; D. 18,6,15 (*Gaius libro 2 cottidianarum rerum*) "Si vina...sua natura corrupta fuerint".

of cow's hide that also served as a measure of 525 litres. The seller was obliged to hand over the object of sale without defects caused by incorrectly performed fermentation, which is documented in Cato's claim that only the wine that is neither sour nor musty can be sold. Given the natural processes, it was certainly difficult for the buyer to determine when the specific deterioration of wine quality occurred. In this respect, the buyer's right to *degustatio* proved to be of particular importance. Within three days of contract conclusion, the wine had to be tested and subjected to the decision of an honest man. If the buyer failed to test it within the stipulated time, it was considered that he confirmed its quality. However, if the wine tasting was delayed due to the seller's fault, that same number of days was allocated to the buyer for subsequent testing. Since the final decision should have been made before the 1<sup>st</sup> of January, which represents a typical time in which the wine reaches its full maturity because of the cessation of fermentation (Jakab, 2009, 124–125), the responsibility for the risk of wine decay rested on the seller until the end of December. In case the buyer did not take over the wine before this deadline, considering that it is a generic thing, the seller could fulfil his obligation by measuring it (*mensura*). At the request of the buyer, the wine could be stored until the 1<sup>st</sup> of October the next year, and if the buyer had not taken over the goods by then, the seller would be allowed to pour it out of the containers and make room for the next year's harvest.

The presented text was the focus of legal historians for several decades. Regardless of whether Cato collected the existing formulas and compiled the usual contract form according to the practice of his time or created the formula himself, it is agreed that it represents a standardised sales contract form (*lex venditionis*) from the 2<sup>nd</sup> century BC (Lübtow, 1957, 224–441; Jakab, 2009, 48; Richter, 1978, 135–146; Thielscher, 164, 343–375). Since certain elements are highly in favour of the seller while others are in the favour of the buyer, it seems that this form was created to prevent litigations. For instance, the buyer had the privilege of testing the wine within three days in order to make sure it was not spoiled, while the seller could spill the wine in anticipation of a new harvest in case the buyer does not pick up the goods in due time.

Regarding the object of the contract, the authors had different views of what exactly was meant by "wine"; it could have been one or more containers of one-month-old wine/pressed grapes (Lübtow, 1957, 396; Wolf, 1961, 130), a certain amount of young wine (Harder, 1975, 23), or the entire production stores of the winemaker (Olszak, 1990, 386; Pennitz, 1994, 257). In other words, the word *vinum* had several meanings.

One of the most discussed legal problems emerging from the presented source was the testing of the wine in three days (*in triduo proximo viri boni arbitrato degustato*). Jakab gave a sound explanation of this practice as she claims that the testing became a standard part of wine sale contracts because it was often sold at auctions while it was still in containers in the producer's cellar (Jakab, 2009, 57–58). She continues that the buyer had the opportunity of an additional testing that was done in the moment of *mensura* – decantation of the wine into smaller containers (*ibid*, 216). Jakab claims that there were actually two separate wine tests for the buyer, a claim which she supports with a detailed analysis of all relevant sources in the Digest. Such argumentation lacks direct confirmation in sources, so the theory itself cannot be endorsed or rejected. In addition, Jakab's approach considers the situation that the producers themselves sold the wine to the consumers. In older literature, authors mostly take a different stand. For instance, Frier claims that producers sold the wine to merchants before they sold it to consumers (Frier 1983, 282). If this approach is accepted, it also affects the question of wine testing. Merchants were buying large amounts of wine, while the consumers usually bought smaller amounts for personal usage. Thus, it seems plausible that the testing was included in the first transaction, while the last one, where the buyer was the consumer, did not always include

testing. The same argumentation is present in even older literature as Seckel, Levy and later Zulueta claimed that the testing was implicitly included in the sale of wine in *dolis* and not when it was sold in *amphoras* (Seckel and Levy, 1927, 209; Zulueta, 1945, 58). Slightly different was the sale of wine *per aversionem*, where a lump sum was agreed upon for a whole quantity, as seen in D. 18,6,4,1 (*Ulpianus libro 28 ad Sabinum*).<sup>4</sup> In such agreements, the buyer often bought a large quantity of cheap and often adulterated wine that was mostly used for slaves. Wines bought in prescribed transactions were usually not tested (Zimmerman, 1996, 286, *cf.* Frier, 1983, 280), and thus, they could be sold without being tested as well. Yet, in Ulpian's excerpt, the jurist explicitly states that it is hard to believe that someone would have agreed to buy the wine without the degustation (*difficile autem est, ut quisquam sic emat, ut ne degustet*). Such a strong statement indicates that the testing was so usual that it was probably implicitly agreed upon in the contract, leaving the parties with an option of its exclusion.<sup>5</sup>

One of the most peculiar legal issues regarding the testing of the wine was the question of its limitations. In other words, it is doubtful whether the buyer was in any way restricted in rejecting the tested wine. As it was mentioned earlier, Cato had stated that the testing had to be *arbitrium boni viri* or dependent on the decision of the honest man. Yet, Cato did not explain what such a phrase meant, and the possibilities were thoroughly discussed in the literature. In older literature, Moyle holds that the buyer could not reject the wine arbitrarily, except in the case that the wine proves to be of inferior quality during the *degustatio* (Moyle, 1892, 83). Yet, Moyle had analysed this phrase as part of the *pactum displicentiae*, a similar but essentially different institute of Roman legal tradition (Misera, 1982, 531; Jakab, 2004, 209–210; Pókecz Kovács, 2011, 331). In Watson's approach, the clause was not in favour of either party (Watson, 1965, 98–99). Frier claims that the testing was not to determine whether the buyer personally likes the wine, and as a confirmation, he adds that all sources that deal with the testing are linked with the question of the wine spoilage (Frier, 1983, 281). Jakab holds its stand for the objective, reasonable decision of the buyer (Jakab, 2009, 62).

The above argumentation similarly gives the buyer the option or the right to test the wine. Lübtow, Thielscher and Harder proposed, however, completely opposite hypotheses that the wine had to be tested by a third, impartial person (Lübtow, 1957, 399; Thielscher, 1964, 55; Harder, 1975, 23). Giving the most contrasting argumentation, Yaron claimed that the testing was not objective, since no one wished to buy the wine according to some impartial *vir bonus* but rather according to their own judgement. His addition in the discussion is that there is a possibility that Cato himself added *vir bonus*, since he was both the producer and the seller, and in such a way, he tried to protect his position in the contract (Yaron, 1959, 75). If such a claim is correct, it would mean that Cato limited the buyer's right only to objectively undesired

---

<sup>4</sup> "If a quantity of wine be sold for a lump sum, the vendor is liable only for its safekeeping. It will be apparent from this that if the wine be not sold with a provision for tasting, the vendor has no liability for acidity or mustiness and that all risk is on the purchaser. At the same time, it is hard to believe that anyone would buy wine without a provision that it is to be tasted. Hence, if a period for tasting be fixed, the purchaser may taste when he can and, until he does taste, the risk of sourness and mustiness is on the vendor; for a specified period for tasting redounds to the purchaser's advantage" (*trans. cit.* Watson, 1985, 81).

<sup>5</sup> The risks and perils of contemporary wine production and trade are substantially different from the ancient ones, such that the wine produced today and enjoyed in this region is usually not prone to mouldiness or sourness due to high standards and strict controls of quality, which are conducted by official state bodies (Art. 3 Wine Act). However, the importance of the Roman legal tradition in the European legal culture, as well in wine production and its sale, is confirmed by the existence of wine testing in numerous legal texts. Direct evidence can still be seen in the French Civil Code from 1804 (*Code civil*) that is still in force in contemporary France and whose Roman roots were discussed in the French literature (Olszak, 1990, 361; Mainguy, 2014, 92). Its Art. 1587 explicitly states that in the sale of wine, oils, and other items for which it is customary to taste before buying them, the sale contract itself will not be considered concluded until the buyer has tested and confirmed the object.

features of the wine, but in the process, he had also taken away the right of the buyer to reject the wine based on his own subjective assessment. Similar is the conclusion of Olszak, who states that it is hard to assume that the buyer would agree to such a limitation of his own taste, but adds that Cato had limited such a provision only to sale of wine in large containers and that the test served only to check if the wine had been acetic or mouldy (Olszak, 1990, 372). Lastly, Pennitz offered the explanation that the clause had a meaning of an arbitration conducted by a third, impartial person in the case of a dispute between the seller and the buyer (Pennitz, 1994, 296).

Thus, the testing of wine has puzzled Romanists for a long period of time, and all of them tried to give plausible interpretations with certain confirmations in existing sources. However, they almost unanimously agreed that it served mainly to shift the risk of the wine's spoilage from the seller to the buyer or *vice versa*. The general rule on the risk management of the sale contract of any object was *perfecta emptione periculum ad emptorem respiciet*, originating from the D. 18,6,8 pr. (*Paulus libro 33 ad edictum*)<sup>6</sup>. Jurist Paul connects the question of who bears the risk for the accidental destruction and/or deterioration of sold items to the moment of the perfection of the contract. When the sale is perfect, meaning the object is specified and the price is set, the risk is on the buyer, regardless of which contracting party is in the possession of it (Arangio-Ruiz, 1954, 259; Peters, 1973, 142; Apostolova Maršavelski, 2007, 523). However, if the object of the sale is generic goods such as oil or wine, then the perfection is postponed until the measurement of liquids (*mensura*) and until they have been put aside for the transaction (Ernst, 1982, 34-236; Zimmermann, 1996, 284). Thus, the wine sale contract was usually perfected when the wine had been measured and put aside, not in the moment of the initial agreement between parties. However, it seems that the testing served to change the prescribed rule.

The question of the risk and its connection with wine testing was directly mentioned in the excerpt from the work of the classical jurist Gaius, visible in D. 18,6,16 (*Gaius libro 2 cottidinarum rerum*)<sup>7</sup>. There, Gaius explicitly stated that the risk for the spoilage of wine in *doliis*, before the buyer's appropriation, would be borne by the seller only if he guaranteed its quality. However, if the seller did not give such a warranty, the risk would shift over to the buyer, because he would be responsible for testing the wine and recognizing its deficiencies. This source, without a doubt, confirms that the wine was sold before it was transferred from the *dollis* to smaller containers, and it can be assumed that the producer sold the content to merchants, who resold it further for profit. In addition, the source confirms the possibility of testing conducted by the buyer (or the third person, if some of the theories presented above are accepted). Taking into account the wording and the writing style, the problem with this source which seriously diminishes its authenticity is that it is considered modified by the postclassical interpolations (Haymann, 1920, 109–110; Wolf, 1961, 133). On the other hand, there are also Romanists who either hold this source as a genuine presentation of the legal rules for wine sales in the classical law or that the text was overly criticised in earlier literature (Frier, 1983, 278; Jakab, 2009, 160, 224). If the latter thesis is accepted, then the seller could have been responsible in three ways: for the uncommunicated latent defect, for the formal and informal

---

<sup>6</sup> "It is essential to know when a sale is perfect because we then know who bears the risk in the thing; for once the sale is perfect, risk is on the purchaser. And if the thing sold be identified, what it is, its nature, and quantity, the price be fixed, and the sale be subject to no condition, the sale is perfect. But if it be conditional and the condition not yet satisfied, there is no sale, any more than there would be a stipulation..." (*trans. cit.* Watson, 1985, 82).

<sup>7</sup> "When wine in casks is sold and it goes off before removal by the purchaser, the vendor will be liable to the purchaser, assuming that he vouchsafed its quality; if, though, the vendor said nothing, the purchaser bears the risk because, if he has not tasted the wine or, tasting, injudiciously approves it, he has only himself to blame. Of course, if the vendor knew that the quality would not last until the date for removal and did not warn the purchaser, he will be liable to the purchaser for the latter's interest in being warned" (*trans. cit.* Watson, 1985, 83).

promises on the quality (*dicta promissave*), and for the concealment of a known wine defect. In case the buyer failed to test the wine, all three risks would be borne by him (*emptoris erit periculum*). This formulation basically states that the buyer had to protect himself because of the high risk, and the most efficient way was provided through the institute of *degustatio*.

Previous analysis suggests that there was a great difference between the sale of wine in bigger containers compared to wine sold in smaller amounts. The first legal transaction was concluded between professionals: wine producers, who mostly relied on Cato's (and probably some other) template of *lex venditionis*, as well as wine merchants *vinarii*. Also worth noting is the fact that the jurist Ulpian called the typical wine salesman the *mercator*, which is translated as the trader, the merchant, and especially the wholesale dealer (Lewis and Short, 1879, 1134). In such a situation, where the contract is of a (professional) commercial nature, the testing was so usual and frequent that it became a natural part of the contract (*naturalia negotii*), and the risk of spoilage would be borne by the seller until the testing (Kaser, 1955, 461). The risk would shift to the other contracting party the moment he tested and confirmed the wine. However, in cases where the merchant sold the wine in smaller amounts to the end consumers, the testing was not naturally included, except when it was agreed upon by the parties. In such situations, common rules for the perfection of the wine sale contract applied, namely, the risk was borne by the buyer from the moment of *mensura*. This confirms that the professional sellers of wine had different customs when they traded amongst themselves compared to cases when they traded with end consumers. Although these are dominantly norms of classical law, taking into account that the trade and law were the most comprehensive branches of Roman influence, we have no reason to doubt that the same practices were partially or fully implemented during wine sales between civilians in Pannonia.

## 5. Conclusion

Based on the conducted research, we can conclude that the beginnings of viticulture in present-day Slavonia and Baranja are a direct consequence of the need for the region's economic independence. Intending to secure the supply of military forces and the autonomy of the province, Emperor Probus undertook several measures during the 3<sup>rd</sup> century AD for the purpose of achieving progress in the field of Pannonian agriculture. This included, primarily, drainage of wetlands in order to claim fertile farmland as well as vine planting documented in the *Historia Augusta*.

From the evidence derived from chemical and archaeobotanical analyses of residues which were absorbed into various vessels, we know that wine became a staple commodity in the provincial economy. Trade and law can be considered as the far-ranging arms of Roman influence, so in the process of the romanization of Danube *Limes*, the Romans apparently brought their culinary habits with them as they conquered new territory. As wine was a part of *mensa militaris*, the constant military demand certainly had an impact on civilian consumption. However, we can assume that we are dealing with a substantially narrower social group, mainly consisting of military officers and civil servants, settlers, veterans and members of the local elite who could have afforded the luxury-imported products. Aware of the peculiarities and differences in wine sales between the military and the civilian market, our analysis within this paper was limited to regular sales between civilians and their legal implications.

Since local wines have not always been able to meet the demand in terms of quality or quantity, they have been delivered from various areas, primarily Italy but also from Spain, Greece and Asia Minor for almost the entire period of antiquity. The major peril of wine transportation was

the possibility of its spoilage with the consequence of acid or mould formation (*periculum acoris et mucoris*) due to fermentation in an uncontrolled environment and inadequate handling. The possibility of wine deterioration had legal implications in the allocation of the risk between the contracting parties. Since wine is a generic good, the seller was contractually liable for typical defects that occurred during fermentation for the period up to the wine's measurement (*mensura*) and being put aside to be taken over by the buyer. Evidence suggests that different customs existed depending on whether the contract was concluded between professional merchants themselves or with end consumers. Since professional merchants were trading with large quantities of wine, usually stored in large containers (barrels or *dolia*), due to the potentially higher losses in the case of spoilage, the practice of testing (*degustatio*) was used so frequently that this trade custom became a natural part of the contract (*naturalia negotii*). This means that the risk would be transferred the moment when the buyer tasted and approved the wine. Although composed centuries before, Cato's summary of the usual contractual clauses in wine sales that he recommended to his readers in *De agri cultura* was by no means obsolete. On the other hand, when the merchants sold the wine in smaller quantities to end consumers, the *degustatio* was not typically included in the contract unless the parties had agreed otherwise (*accidentalialia negotii*). In such a case, the consumer would have a certain additional time frame within which he could taste the wine and refuse it if he deemed it to be sour and/or mouldy. Although vague in many respects, Cato's *lex venditionis* also benefited the buyers by giving them the possibility of quantity control via *mensura* and (objective) quality control by means of *degustatio*.

Despite the fact that it cannot be directly endorsed with written sources, it is plausible to consider that degustation was practised also in post-classical Pannonia. After all, the tradition survived the test of time, and it is still in use today, albeit within a different legal framework. Indeed, who does not prefer to taste a wine before buying it?

## REFERENCES

Adams, C. E. P. (1995): *Supplying the Roman Army: "Q. Petr." 245*, Zeitschrift Für Papyrologie Und Epigraphik, Vol. 109, pp. 119–124

Amerine, M.A. (1980): *The Technology of Wine Making*, AVI, Westport, Connecticut

Apostolova Maršavelski, M. (2007): '*Venditor custodiam praestare debet - o prijelazu rizika rei venditae u klasičnom rimskom pravu*' in: Gliha, I. *et al.* eds, Liber amicorum Nikola Gavella - Građansko pravo u razvoju, Pravni fakultet Sveučilišta u Zagrebu, Zagreb pp. 523-548

Arangio-Ruiz, A. (1954): *La compravendita in diritto romano*, Casa Editrice Dott. Eugenio Jovene, seconda edition, Naples

Bezczky, D. (1996): *Amphora Inscriptions - Legionary Supply?*, Britannia, Vol. 27, pp. 329-336

Birley, A. R. (2006): *Rewriting second- and third-century history in late antique Rome: the Historia Augusta*, Classica - Revista Brasileira De Estudos Clássicos, Vol. 19, No. 1, pp. 19-29

- Brein, F. (2006): *Edelreben für den Goldenen Berg (CIL III 10275)*, Forum Archaeologiae. Zeitschrift für klassische Archäologie, Vol. 38, No. 3., <http://farch.net>
- Brunšmid, J. (1900): *Colonia Aelia Mursa*, Vjesnik arheološkog muzeja u Zagrebu, Vol. 4, No. 1, 21-42
- Brunšmid, J. (1907): *Kameni spomenici hrvatskoga narodnoga muzeja u Zagrebu* Vjesnik Arheološkog muzeja u Zagrebu, No. 9, Vol. 1, pp. 82-184
- Bulat, M., (2002): *Tragovi antičkog vinogradarstva i vinarstva u Slavoniji*, Osječki zbornik, Vol. 26, pp. 45-52
- Cambi, N. (1989): *Bilješka uz dvije panonske nadgrobne stele*, Vjesnik Arheološkog muzeja u Zagrebu, Vol. 22, No. 1, pp. 59-76
- Carreras, C. and De Soto, P. (2013): *The Roman transport network: a precedent for the integration of the European mobility*, Historical Methods: A Journal of Quantitative and Interdisciplinary History, Vol. 46, No. 3, pp. 117-133
- Casson, L. (1991): *The ancient mariners: seafarers and sea fighters of the Mediterranean in ancient times*, Princeton University Press, New York
- Dressel, H. (1891): *Corpus Inscriptionum Latinarum, Vol. XV: Inscriptiones Urbis Romae Latinae. Instrumentum domesticum*, George Reimer, Berlin
- Egri, M. (2007): *The use of amphorae for interpreting patterns of consumption*, Theoretical Roman Archaeology Journal 2006, pp.43-58
- Ernst, W. (1982): *Periculum est emptoris*, Zeitschrift der Savigny-Stiftung für Rechtsgeschichte, Romanistische Abteilung, Vol. 99, pp. 216-249
- Frier, B. (1983): *Roman Law and the Wine Trade; The problem of "Vineyard sold as Wine"*, Zeitschrift der Savigny-Stiftung für Rechtsgeschichte: Romanistische Abteilung Vol. 100, pp. 275-295
- Harder, M. (1975): *Weinkauf und Weinprobe im römischen Recht*, in: Lutter, M. et al. eds., Festschrift für Johannes Bärmann zum 70. Geburtstag, C.H. Beck., München, pp. 17-30
- Haymann, F. (1920): *Textkritische Studien zum römischen Obligationenrecht*, Zeitschrift der Savigny-Stiftung für Rechtsgeschichte, Romanistische Abteilung, Vol. 41, pp. 44-186
- Hoffiller, V. (1912): *Novi rimski kameni spomenici u Osijeku*, Vjesnik Arheološkog muzeja u Zagrebu, Vol. 12, No. 1, pp. 1-7
- Jakab, E. (2004): *Periculum und Praxis: Vertragliche Abreden beim Verkauf von Wein*, Zeitschrift der Savigny-Stiftung für Rechtsgeschichte, Romanistische Abteilung, Vol. 121, pp. 189-233



Jakab, E. (2009): *Riskomanagement beim Wienkauf, Periculum und Praxis im Imperium Romanum*, C.H. Beck, München

Jurišić, M. (2000): *Ancient shipwrecks of the Adriatic: maritime transport during the first and second centuries AD*, Archaeopress, Oxford

Kaser, M. (1995): *Das römische Privatrecht I*, Beck, München

Kehne, P. (2007): *War-and peacetime logistics: supplying imperial armies in east and west*, in: Erdkamp, p. (ed.), *A companion to the Roman army*, Blackwell, pp. 323-338

Kopáčková, J. (2014): *Production of Wine and Olive Oil in Roman Histria and Dalmatia in Late Antiquity*, *Studia Hercunia*, Vol. 18, pp. 75-88

Kron, G. (2012): *Food production*, in: Scheidel, W. (ed.), *The Cambridge Companion to the Roman Economy*, University Press, Cambridge

Lacković, F. (2014): *Rimska Mursa*, *Essehist: časopis studenata povijesti i drugih društveno-humanističkih znanosti*, Vol. 6, No. 6, pp. 16-21

Langenfeld, K.A. (2017): *Forging a History: the Inventions and Intellectual Community of the Historia Augusta*, doctoral dissertation, Department of Classical Studies, Duke University

Lewis C.T. and Short, C. (1879): *A Latin Dictionary*, Clarendon Press, Oxford

Lübtow, U. (1957): *Catos leges venditioni et locationi dictae*, *Symbolae Rapheli Taubenschlag* 111, Warsaw

Magie, D. (1932): *The Scriptores Historiae Augustae*, Wiliam Heinemann LTD, London

Magyar-Hárshegyi, P. (2016): *The trade of Pannonia in the light of amphorae (1st–4th century AD)*, *Dissertationes Archaeologicae*, pp. 427-438

Mainguy, D. (2014): *Contrats spéciaux*, 9. edition, Dalloz

Matijašić, R., (1993): *Oil and wine production in Istria and Dalmatia in classical antiquity and the early Middle Ages*, in: Amouretti, M-C., Brun, J.-P. (eds.), *La production du vin et l'huile en Méditerranée*, Actes du Symposium International Aix-en-Provence et Toulon, 20-22 novembre 1991, Ecole française d'Athènes, Athènes, Paris, pp. 247-261

Misera, K. (1982): *Der Kauf auf Probe* in: Temporini, H. and Haase, W. (eds.), *Aufstieg und Niedergang der römischen Welt*, Vol. II, 14, de Gruyter, Berlin, New York, pp. 525-582

Mócsy, A., (2015): *Pannonia and Upper Moesia. A History of the Middle Danube Provinces of the Roman Empire*, Routledge, New York

Moyle, J. B. (1892): *The contract of sale in the Civil Law with references to the Laws of England, Scotland and France*, Clarendon Press, Oxford

Nagy, A. A. and Szakmány, G. (2019): *Amphorae as indicators of trade and diet in Cibalae (Pannonia)*, *ArcheoSciences*, Vol. 2, pp. 211-227

- Nagy, A. A., Szakmány G. and Magyar-Hárshegyi, P. (2018): *Petrographic Analysis of Amphorae from the Eastern Aegean in Pannonia*, in: Japp, S. *et al.* (eds.), *Amphoras in Need of Archaeology and Archaeometry Proceedings of the International Colloquium*, Humboldt-Universität zu Berlin, pp. 127-135
- Olszak, N. (1990): *Emptio ad gustum: La vente a la degustation, de l'antiquite a l'article 1587 du Code Civil*, Tijdschrift voor Rechtsgeschiedenis, Vol. 58, No. 4, pp. 361-388
- Parat, J. (2020): *Antički pisani izvori o vinogradarstvu u južnoj Panoniji*, in: Vrbanus, M. ed., *Vino i vinogradarstvo u povijesti Slavonije, Srijema i Baranje: zbornik radova s međunarodnim sudjelovanjem održanog u Slavonskom Brodu i Erdutu 20-22. rujna 2017.*, Slavonski Brod, Hrvatski institut za povijest - Podružnica za povijest Slavonije, Srijema i Baranje, pp. 19-40
- Pennitz, M. (1994): *Die Gefahrtragung Beim Weinverkauf im Klassischen Römischen Recht*, Tijdschrift voor Rechtsgeschiedenis, Vol. 62, No. 3, pp. 251-296
- Peters, F. (1973): *Die Rücktrittsvorbehalte des Römischen Kaufrechts*, Böhlau, Köln Wien
- Pinterović, D. (1975): *Istraživanje Limesa u Slavoniji i Baranji*, Muzeologija, Vol. 19, pp. 69-82
- Pókecz Kovács, A. (2011): *Rücktrittsvorbehalt und pactum displicentiae (Ulp. D.19.5.20pr.)*, Revue internationale des droits de l'antiquite, Vol. 58, pp. 315-338
- Predojević, Ž. (2012) : *Žrtvenici Liberu iz Popovca*, X. međunarodni kroatistički znanstveni skup, pp. 378-392
- Reed, K. (2016): *Archaeobotany in Croatia: an overview*, Vjesnik Arheološkog muzeja u Zagrebu, Vol. 49, No. 1, pp. 7-28
- Reed, K. and Roguljić, I. (2020): *The Roman Food System in Southern Pannonia (Croatia) From the 1st–4th Century A.D.*, Open Archaeology, Vol. 6, No. 1, pp. 38-62
- Richter, W. (1957): *Gegenständliches Denken, archaisches Ordnen: Untersuchungen zur Unlage von Cato De agri cultura* Winter, Heidelberg
- Rizos, E. (2015): *Remarks on the logistics and infrastructure of the Annona Militaris in Eastern Mediterranean and Aegean areas*, Antiquité tardive, Vol. 23, pp. 287-302
- Seckel, E. and Levy, E. (1927): *Die Gefahrtragung beim Kauf im klassischen römischen Recht*, Zeitschrift der Savigny-Stiftung für Rechtsgeschichte, Romanistische Abteilung, Vol. 47, pp. 117-263
- Škegro, A. (1999): *Gospodarstvo rimske provincije Dalmacije*, Sveučilište u Zagrebu - Hrvatski studiji, Zagreb

- Temin, P. (2012): *The Roman market economy*, Princeton University Press, Princeton & Oxford
- Thielscher, P. (1964): *Des Marcus Cato Belehrung über die Landwirtschaft – M. Catonis de agri cultura*, Duncker & Humblot, Berlin, pp. 343-357
- Watson, A. (1965): *The Law of Obligations in Late Roman Republic*, Oxford, Clarendon Press
- Watson, A. (1985): *The Digest of Justinian 2*, University of Pennsylvania Press, Philadelphia
- Werner, M., *The Roman Emperors Route and Danube Wine Route*, <https://romanemperorsroute.org/#> (accessed 20 February 2022)
- Wolf, J. G. (1961): *Error im römischen Vertragsrecht*, Böhlau, Köln
- Yaron, R. (1959): *Sale of Wine*, in: Daube, D. ed, *Studies in the Roman Law of Sale*, Clarendon Press, Oxford
- Zimmermann, R. (1996): *The Law of Obligations. Roman Foundations of the Civilian tradition*, University Press, Oxford
- Zulueta, F. (1945): *The Roman law of Sale, Introduction and select texts*, University Press, Oxford

SPONSOR:

---



