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**IMPORTANCE OF TRIPLE (QUADRUPLE) HELIX CONCEPT FOR
REGIONAL DEVELOPMENT – CASE STUDY: FACULTY OF
ECONOMICS IN OSIJEK**

**ZNAČAJ TRIPLE (QUADRUPLE) HELIX KONCEPTA SURADNJE ZA
RAZVOJ REGIJE – PRIMJER EKONOMSKOG FAKULTETA U
OSIJEKU**

ABSTRACT

The conception of Triple Helix concept happened during the 1990s, with a purpose of encouraging cooperation between three institutional domains (university – industry – government), thus contributing to productivity of a knowledge-based society, where the role of innovations was crucial for creating economic growth and maintaining it. Facing with global economic issues and changes, the risk and challenges of a growing, insecure and complex environment, a need arose for a new role and function of universities. Instead of the traditional role of teaching, the emphasis has been put on universities as socially responsible subjects in social and economic development of every country. Adapting to market needs, J. J. Strossmayer University in Osijek is developing programs and participating in projects which are in demand, thus contributing to both the economy and society as a whole.

One of those projects is project A.C.T.I.V.E. – Activity and Creativity Through Ideas and Ventures = Employment, started by Faculty of Economics in Osijek in cooperation with Center for Entrepreneurship, Osijek and Croatian Employers' Association, Osijek Regional Office, BIOS d.o.o. - business incubator in Osijek, four high schools, Osijek-Baranja County and Croatian Employment Institute, Osijek Regional Office, with the main goal of this project being to improve prerequisites for employability and self-employability of young people in

Slavonia and Baranja, especially college and high school graduates as well as inexperienced unemployed people.

The goal of this paper is to highlight the significance of Triple Helix concept in the process of transformation into a knowledge-based society, with a goal of increasing competitiveness, productivity and employment, and together with that ensuring a stable and sustainable economic growth.

Keywords: *Triple Helix concept, innovations, cooperation between sectors, project A.C.T.I.V.E., job market, sustainable development*

SAŽETAK

Idejni začetak koncepta Triple helix nastao je 1990-ih godina sa svrhom poticanja suradnje između tri institucionalne sfere (sveučilište-industrija-vlada) doprinoseći tako produktivnosti društva utemeljenog na znanju, pri čemu je uloga inovacija ključna u stvaranju ekonomskog rasta i održavanju istoga. Suočavajući se sa problemima globalne ekonomije te promjenama, rizikom i izazovima rastućeg, nesigurnog i složenog okruženja, pojavila se potreba za novom ulogom sveučilišta. Umjesto tradicionalne uloge podučavanja, sve više ističe se uloga sveučilišta kao društveno odgovornog subjekta u društvenom i ekonomskom razvoju svake zemlje. Prilagođavajući se potrebama tržišta, Sveučilište J.J. Strossmayera u Osijeku, Ekonomski fakultet u Osijeku razvija programe i sudjeluje u provedbi projekata za kojima postoji potreba doprinoseći tako razvoju ekonomije i društva u cjelini. Jedan od takvih projekata je i projek A.C.T.I.V.E. – Activity and Creativity Through Ideas And Ventures = Employment kojim Ekonomski fakultet u Osijeku u suradnji sa Centrom za poduzetništvo, Osijek; Hrvatskom udrugom poslodavaca, Regionalnim uredom u Osijeku; Poduzetničkim inkubatorom BIOS d.o.o., Osijek; četiri srednje škole, Osječko-baranjskom županijom i Hrvatskim zavodom za zapošljavanje, Područnim uredom u Osijeku ima za cilj poboljšati preduvjete za zapošljivost i samozapošljavanje mladih ljudi u Slavoniji i Baranji, posebno studenata i učenika kao i nezaposlenih osoba bez radnog iskustva.

Cilj ovog rada je ukazati na važnost koncepta Triple helix u procesu transformacije prema društvu znanja s konačnim ciljem povećanja konkurentnosti, produktivnosti i zapošljavanja, a sukladno tome, ostvarenja stabilnoga i održivoga ekonomskog rasta.

Ključne riječi: *koncept Triple Helix, inovacije, međusektorska suradnja, projekt A.C.T.I.V.E., tržište rada, održivi razvoj*

1. Introduction

The Triple Helix concept was set up in 1990s, in a time when high politics encouraged a narrow cooperation between universities and industry, all for the greater good. The concept was found as a result of long-term study of the relationship between universities and industry, made by Henry Etzkowitz, and Loet Leydesdorff's interest in evolutionary model in which communications between several different and independent domains overlap. Etzkowitz and Leydesdorff published their first paper in 1995, titled "The Triple helix - University-Industry-Government Relations: A Laboratory for Knowledge-Based Economic Development." According to Etzkowitz (2002), Triple Helix represents a spiral model of innovations reflecting trilateral relationship within the capitalization of knowledge. Ranga and Etzkowitz (2013) define the Triple Helix concept (in relation to the system theory) as a set of:

- components (institutional domains of university – industry – government)

- relationship between the components (cooperation and conflicts, management, interchangeability and networking)
- functions (knowledge, innovations, consensus).

In last 20 years Triple Helix developed into a widely accepted conceptual framework which brings together knowledge, consensus and innovations of three (or four) major social factors: university - government - industry (and civil society) and provide better cradle for social and economic development (Etzkowitz & Leydesdorff, 2000).

Dr. Alan Paic (2014), acting Head of Investment Compact for South East Europe, OECD, defines the Triple Helix concept in this manner: *“It's a model which derives from a traditional role of three main factors of the innovative system: science, which creates new knowledge, economy which transforms this knowledge into products and services, and of course the government, which is responsible for the legislative and infrastructural part. However, these roles are shifting nowadays: the university can create a spin-off enterprise and thus become an “entrepreneurial university”, the government can finance an innovation and become a financier, whereas a company can invest in new knowledge. This, therefore, represents the manner in which the dynamics of Triple Helix is created.”*²¹⁰

The Triple Helix concept is based on these three elements²¹¹:

- the role of the university regarding the innovations – universities, along with research and development institutions which create technological innovations, work together with the industry and the government, thus contributing to the knowledge-based productivity of the society,
- cooperative relationships between three institutional domains (university – industry – government) – whose interaction contributes to the innovative policy, which is crucial for creation of economic growth, and its management,
- assuming roles – besides carrying out their usual roles, each of these institutional domains should assume and carry out the roles of the other two, thus contributing to directing its innovative potential into creation of new innovations.

According to the Triple Helix concept, universities, industry and government equally contribute to attracting innovations in a knowledge-based society (Etzkowitz et al, 2007).

The unique feature of this concept is deepening of relationship (isolated, bilateral, trilateral and multilateral) between the three institutional domains – university, industry, government. At the beginning, the circulation of knowledge between the three institutional domains of Triple Helix was conducted individually, and later, during the process of capitalization of knowledge, these connections would become more complex and intense, and in the end they would represent a set of complex organizational connections between mutually overlapping domains, thus gradually diminishing the boundaries that separate them. Each institutional domain increasingly assume the role of another – in a way that universities take up some entrepreneurial characteristics and found their own companies, while the companies develop some academic characteristics, exchanging knowledge between themselves and training and developing their employees internally.²¹² The Triple Helix concept thus becomes an instrument of influencing public opinion that is creating awareness of the importance of

²¹⁰ <http://www.vecernji.hr/gospodarstvo/konkurentnost-treba-graditi-pojednostavljenjem-propisa-i-ulaganjem-u-inovacije-934850> (accessed on 24 April 2014)

²¹¹ Paraphrased <http://tha2014.org/concept> & http://www.techmonitor.net/tm/images/7/7d/07jan_feb_sf1.pdf (accessed on 30 April 2014)

²¹² Paraphrased <http://tha2014.org/concept> (accessed on 1 May 2014)

knowledge and the role of universities and other research and development institutions in relation with the economy.

Although the Triple Helix concept is not a recent invention, such form of cooperation is still in its early stages of development in Croatia. The importance of this new approach to solving social, economic, ecological and other problems in Croatia reflects in the fact that cooperation is the only sustainable approach to creation of a successful society.

Even though the strategic plan made by the Ministry of Entrepreneurship and Crafts for the period of 2013-2015 sets up a goal of: *“stronger linking and networking of scientific-research institutions with small and medium businesses with the aim of creating synergy between new knowledge and commercial potential, together with the improvement in implementation of Triple Helix concept (relationship between the economy, scientific institutions and the government)”*, it is necessary to create conditions to put such an approach into practice. According to Borožan and Miličević (2009), it is necessary *“to make a change regarding the government’s attitude, whose role is to create a convenient, encouraging, transparent and honest general and entrepreneurial business framework, to initiate active cooperation with business and non-profit sector, academic as well as public sector (to develop a so-called quadruple helix interaction), and also improve quality of its services offered and provided to other sectors (such as education, research and development etc.). The government needs to act as a catalyst and create such a business surrounding which will be encouraging for individuals and businesses to continually improve their efficiency, productivity and performance.”*

It’s been proven in practice that the individual approach to development gives unsatisfactory results, and that successful, productive and innovative society based on hybridization of knowledge can only be achieved by involving as many members of the society as possible into transforming themselves by strengthening the relationship between three institutional domains (university – industry – government).

2. The role of universities in implementation of Triple (Quadruple) Helix cooperation model

The Triple Helix concept is based on a fact that the innovativeness and economic development in a knowledge-based society are reflected in a significant role of university and hybridization of universities/industry/government in generating new institutional and social framework for production, transfer and implementation of knowledge (Ranga and Etzkowitz, 2013). The role of universities in a knowledge-based society is multiplex. The first and foremost is participation in social and economic development – together with the existent role of teaching and research – comparable with a second academic revolution (Etzkowitz, 2003). The second role relates to a continuing ability of universities to “produce” students carrying new ideas, skills and entrepreneurial talent, the base values in a knowledge-based society. The third one is tied to the ability of generating technology, thus changing the role of university – from a traditional source of human resources to a source of creating and transferring technology. *“Institutions of higher education are assuming ever larger role in innovations process. Even though the main institutions responsible for building modern society were industry and the government, in a knowledge-based society, the academic institutions need to take the leading role. The reason for that is quite simple – the circulation of young and creative generation of people. The Triple Helix concept recognizes the potential of institutions of higher education and encourages them to assume a more important role, not just in*

education and research, but also in creating new values – education of future entrepreneurs, setting up of business incubators, founding new companies etc. The government together with the business sector need to accept this new division of power and by that make this cooperation more effective and efficient.”²¹³, said prof. Etzkowitz.

Facing with global economic issues and changes, the risk and challenges of a growing, insecure and complex environment, a need arose for a new role and function of universities. Instead of the traditional role of teaching, the emphasis has been put on universities as socially responsible subjects in social and economic development of every country. According to Hughes (2007), young people today are faced with inexhaustible source of opportunities and choices on one, and changes, risk and challenges of a growing, insecure and complex environment on the other side. Since people are the main source and carriers of ideas, information, knowledge and skills, motivation and diversity of education opportunities are a key factor in the process of creating intellectual capital. Intellectual capital is the strategic basis of a modern society and economy.

Unlike Wesheimers (2008) assertions that most educational institutions do not understand their role in creating “good citizens”, Faculty of Economics in Osijek surely recognized its part and contribution to economic development as well as the fact that the academic education alone is not enough. Adapting to market needs, Faculty of Economics in Osijek is developing programs which are in demand with a goal of increasing competitiveness, productivity and employment, and together with that ensuring a stable and sustainable economic growth, thus contributing to both the economy and society as a whole, and to the fact “*that universities are capable of recognizing the changes and developments in their community and actively taking part in the development of culture where socially responsible behavior of all members of the society is the very basis of their existence.*” (Perić, 2012)

3. Triple (Quadruple) Helix cooperation model presented through project A.C.T.I.V.E., by Faculty of Economics in Osijek

In February 2014, Faculty of Economics in Osijek started the implementation of project A.C.T.I.V.E. - *Activity and Creativity Through Ideas and Ventures = Employment* in Osijek-Baranja County, where more than 50% of its area is classified as an Area of Special State Concern. Osijek-Baranja County belongs to one of the lagging-behind regions in Croatia, with registered unemployment rate of 33.3% in March 2014, which represents a 10.7% share in total number of unemployed persons in Croatia.²¹⁴ Besides that, this project has a goal of solving some other burning issues existing in Osijek-Baranja County, such as²¹⁵:

- lack of communication and soft skills among young people (presentation skills, communication skills, preparing personal presentations etc.),
- insufficient level of education in the field of entrepreneurship,
- employers rarely hire young people with no work experience,
- insufficient informing of target groups concerning available jobs, possibilities for involvement in the work of civil society organizations, possibilities of involvement in periodical jobs, various forms of education,

²¹³ <http://www.vern.hr/novosti/zacetnik-triple-helix-koncepta-prof.-henry-etzkowitz-odrzao-predavanje-na-vernu> (accessed on 1 May 2014)

²¹⁴ Croatian Employment Service, Regional Office Osijek: *Radna snaga Osječko baranjska županija*, March 2014

²¹⁵ Project A.C.T.I.V.E. – Local employment development initiatives Grant application form, 2012. Project A.C.T.I.V.E is co-financed from EU funds under the tender "Local employment development initiatives."

- insufficient counselling of target groups concerning a proactive approach to the labor market.

Therefore, the main goal of this project is to improve prerequisites for employability and self-employability of young people in Slavonia and Baranja, especially college and high school graduates as well as inexperienced unemployed people, while the specific goals of the project are: a) to contribute to increase in employment and self-employment of young people in Slavonia and Baranja, through informing, counseling and education about the pro-active approach to job market and self-employment, encouragement and development of entrepreneurial skills and b) to create prerequisites for continuous assistance to young people – college and high school graduates in Osijek-Baranja County as well unemployed young people with no work experience with a goal of motivating, strengthening and assisting startup of new enterprises within the Student Incubator – business incubator for young people.

In order to achieve these goals, several activities will be carried out within this project: educational activities for students of J. J. Strossmayer University in Osijek, educational activities for students in four high schools, debate club involving college and high school students and unemployed persons, “Best business idea” contest for young people, fair and presentation of best new business ideas, startup and equipment of Student Incubator – business incubator for young people, mentoring and counseling of young people willing to start up their own business or find a job, monthly business forums involving entrepreneurs and members of target groups, linking employers’ databases with databases of target groups, and various dissemination and PR activities.

Primary results of project implementation include:

- increased competence and “soft” skills of college and high school students and inexperienced unemployed persons, their inclusion in job market, increased level of self-employment and motivation;
- encouragement of debaters and strengthening of their stance toward finding arguments and insights into contemporary topics;
- stimulation of development of creative ideas within the target groups as well as their capability to elaborate, stimulation of young people’s motivation;
- presented ideas and better exposure of best and most creative ideas;
- higher level of employment and self-employment and increased awareness among young people;
- young people are informed and advised enough to start up their own businesses, find and reach potential employers as well as self-employ;
- new business networks involving employers and target groups are created;
- easier networking and identifying new employment opportunities.

Participants in this Quadruple Helix cooperation concept include:

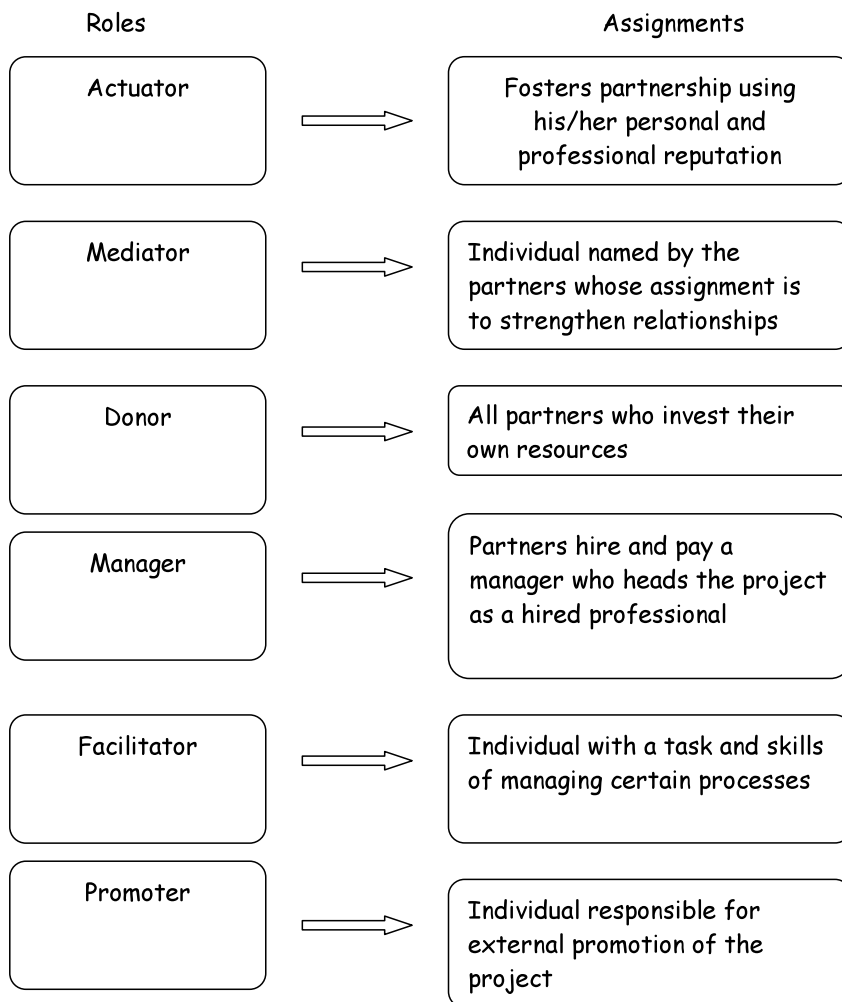
- Josip Juraj Strossmayer University in Osijek, Faculty of Economics in Osijek (university),
- BIOS d.o.o. - business incubator in Osijek, various entrepreneurs (industry),
- Osijek-Baranja County and Croatian Employment Institute, Osijek Regional Office (government),
- Center for Entrepreneurship, Osijek and Croatian Employers’ Association, Osijek Regional Office (public sector)

Project partners include four high schools: *Davor Milas* commercial school in Osijek, Vocational school in Osijek, Hospitality school in Osijek and 2nd High school in Beli

Manastir, which, besides participating in implementation of scheduled activities, co-finance the project.

According to EU standards, cooperative partnership is identified as one of key prerequisites of sustainable regional development, whereas in Croatia it is still a fairly new model of cooperation. The very term “partnership” has this meaning, according to Economic Thesaurus: “Partnership or cooperative, civil rights association, contractual obligation by which parties involved vow to associate their work and/or property, partially or in whole, with a purpose of achieving some common goal, without creating a new subject.” While defining the roles of participants in Quadro Helix cooperation concept, it is important to highlight various roles that one can assume within a cooperative partnership (Picture 1).

Picture 1. Roles and assignment of participants in cooperative partnership



Source: Group of authors: *Vodič kroz međusektorsku suradnju*, Udruga Slap, Osijek, 2003.

Each participant's role within the Quadruple Helix model in project A.C.T.I.V.E. is described below.

For the Faculty of Economics in Osijek, project A.C.T.I.V.E. – *Activity and Creativity Through Ideas and Ventures = Employment* represents a continuance of activities which have a goal to increase the number of participants in entrepreneurship education in schools and universities, improve the image of entrepreneurs in the society and the attractiveness of entrepreneurship as a career choice, as well as fostering creativity and innovation in education

and training. By leading the project, the Faculty is responsible for the entire implementation of the project, as well as for co-financing activities and salaries of members of the project team.

The role of BIOS d.o.o., business incubator, Osijek, the representative of business/industry sector, is to provide space for startup and equipment of Student Incubator – business incubator for young people, and also to contribute to the project via its experts who can use their knowledge and experience to help implement project's scheduled activities. Besides that, entrepreneurs can perform as guest speakers in educational workshops and, with practical examples, transfer their knowledge and experience in startup and management of business to participants. Project also specifies implementation of monthly business forums where members of target groups (college and high school students and inexperienced unemployed persons) will have a chance to present themselves to potential employers and investors. Also, representatives of small and medium businesses are expected to participate in "Best business idea" fair, where workshop participants will present their business ideas to entrepreneurs, investors and business angels.

Associated partners - Croatian Employment Institute, Osijek Regional Office and Osijek-Baranja County have a significant role in the promotion and dissemination of the project. In addition to the media, informing the unemployed about educations and other project activities will be carried out through employment counsellors who are in direct contact with the unemployed and the organization of info workshops in Croatian Employment Institute regional offices. Osijek-Baranja County will contribute to the promotion and dissemination of project activities through various county activities.

Representatives of public sector - Center for Entrepreneurship, Osijek and Croatian Employers' Association, Osijek Regional Office have a task of creating business networks between members of target groups and employers, and providing technical assistance for implementation of scheduled activities within the project.

4. Conclusion

The Triple Helix concept explains the connection between the three institutional domains (university – industry – government) that is the way in which they should cooperate to make sure that the educational system accommodates demands of the job market and to encourage innovational policy which ensures sustainable economic growth and development.

Although the Triple Helix concept is not a recent invention, such form of cooperation is still in its early stages of development in Croatia. The importance of this new approach to solving social, economic, ecological and other problems in Croatia reflects in the fact that cooperation is the only sustainable approach to creation of a successful society. In accordance with that, Faculty of Economics in Osijek, as an integral element of J. J. Strossmayer University in Osijek, continues its work on pro-active approach to the market, with a goal of achieving sustainable regional development.

Even though the strategic plan made by the Ministry of Entrepreneurship and Crafts for the period of 2013-2015 recognizes implementation of Triple Helix concept as its main goal, it is necessary to create conditions to put such an approach into practice. The government needs to help create a convenient, encouraging, transparent and honest general and entrepreneurial business framework, which will encourage individuals and businesses, as well as universities to continually improve their efficiency, productivity and performance.

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