

IMPACT ANALYSIS OF CHANGES IN HUMAN RESOURCE CAPITAL ON ECONOMIC DEVELOPMENT – FROM GRAVELY UNDERDEVELOPED TO HIGHLY DEVELOPED SOCIETIES

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Abstract

This research encompasses 177 countries around the world with the data on human resource variables for the year 2005. The countries have been put into four groups: gravely underdeveloped, developing, developed, and highly developed. The research has looked into the variables Human Development Index, population, population over 65 years of age, primary education enrolment, investment into secondary education, investment into tertiary education, investment into research and development, Gender-Related Development Index and productivity increase, and analyzed how they influence the economic growth rate. This means that the impact of changes in the observed variables is analyzed, i.e. how they influence the standard of living and level of development in countries of the world. The main hypothesis is that investing in people, i.e. in primary, secondary and tertiary education will bring long-term positive effects on social growth and development, thus contributing to the level of development and overall standard of living. Another hypothesis is that, depending on the development level, human capital and education will exert different influence on GDP per capita, which indicates that a number of economic variables play a major role on the effects of education.

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Keywords: primary education, secondary education, tertiary education, human resource capital, economic development, development level

1. Introductory considerations

Research of impact analysis of changes in human resource capital on economic development – from gravely underdeveloped to highly developed societies – has been divided in three parts. The first part provides a brief theoretical overview of literature on impact of education on human capital development published in the country and abroad. The second part covers the research methodology and explains data used in research and analysis by countries

around the world. The third part provides analysis and interpretation of results of conducted research, showing impact changes of human capital development on economic development and gross domestic product (GDP) per capita of the observed countries of the world. The aim of this research is to test the hypothesis that investing in people, i.e. investing in primary, secondary and tertiary education will bring long-term positive and significant effects on social growth and development, thus contributing to the level of development and overall standard of living. Another hypothesis is that, depending on the development level, human capital and education will exert different influence on GDP per capita, which indicates that a number of economic variables play a major role on the effects of education.

2. Theoretical overview of education impact on human capital development

Many scientists think that successful companies and societies in the 21st century will be those that will be the most successful in revealing, storing and applying what their people know. In order to be successful in knowledge management and creation of added value, it is necessary to create suitable conditions in an organization, i.e. society itself. In other words, this means that knowledge intensive organizations or self-learning organizations, i.e. self-learning society have to be developed.

Learning Organization or Knowledge Organization or Knowledge Society (Armstrong;2001,89) is an organization or a society in which people at all levels, individually or collectively, continuously increase their knowledge in order to achieve results they desire. Emphasis is, of course, on people and development of their capacities to overcome changes by changing their knowledge, skills, attitudes, habits, values, etc., that is, on their ability to learn. The future of learning societies will depend only on the ability of individuals and teams to learn and to increase their creativity, innovation and knowledge all the time.

Dynamic development of organization learning theory results in appearance of different learning schools: systematic (authors were, among others, Beer, Senge, Sterman, Sutton), organizational (author Argyris) and strategic (authors Burgelman and Sayles). Also, according to Huczynski and Buchanan (Senge;2000,218), in the concept of organizational learning it is possible to recognize two different learning models: the one based on behaviourism, referring to creation of procedural knowledge (the ability to practice a certain skill without understanding the complex cause-and-effect relationship), and the cognitive one, which is closer to creation of declarative knowledge (understanding the concept which does not necessarily have the practical application). On the other hand, according to the psychologist Kingsland (Senge;2000,237), learning is a combination of cognitive, affective and

behavioural activities through which a learning person at the same time thinks, feels and acts.

Organizations, like individuals, can use different levels of learning: from accidental (reflex, spontaneous, unconscious, incidental) to educated (conscious, inductive, calibrating, integral). Although certain forms of learning may appear spontaneously (for example, reflexes), the practice of the most successful organizations and societies of today indicates the importance of the planned and conscious attitude toward the learning process. According to Pedlar and associates (Aronson et al.;2005,118), the key characteristics of a learning society are: learning and participatory approach to formulation of strategies, which includes regular planning, application and monitoring, reporting on the achieved, organizational structure facilitating changes and development, openness to environment that ensures utilization of opportunities, and inter-organizational learning and internal climate which emphasizes learning and development.

Peter Senge (Senge;2000,268) lists the five main disciplines in building of a learning organization or society: personal mastery, recognizing mental models, building shared vision, team learning and systems thinking. Personal mastery is the discipline of continually clarifying and deepening our personal vision, of focusing our energies, of developing patience, and of seeing reality objectively. Simply put, organization or a society cannot learn until all their members start to learn and apply the concept of life-long or generative learning. Further, mental models are deeply ingrained assumptions, generalizations, or even pictures and/or images that influence how we understand the world and how we take action, and these are wrong with the most of the people. According to Argyris (Davey;2003,19), with mental models most of the people practice defence behaviour due to fear, which is actually a barrier to individual and organizational learning. Argyris thinks that human behaviour emerges from “a scale of conclusions” which consists of human observations, theories and assumptions created by individuals, beliefs they acquire and actions they take, and since human mental models have mistakes, individuals very often behave inappropriately. As a methodology for elimination of mistakes in human mental models, Argyris suggests harmonization of what is thought with what is said (“left – hand column and right – hand column” techniques). Building a shared vision refers to the capacity to hold a shared picture of the future we seek to create. The shared vision of a society can and must be built only of individual visions of its members. Team learning is vital, because it’s the teams, not individuals, who are the key learning units in a modern organization or society. When teams really learn, not only they achieve exceptional results, but also individual members develop faster than they would otherwise develop, while in situations when teams cannot learn, an organization or a society also cannot learn. Finally, systems thinking is a group of knowledge and methods which are

developed in order to provide an insight in how to change them. Systems thinking is the fifth discipline, it integrates the other disciplines, and it is easier to develop it with people of younger age.

An important feature of a learning organization is that investing in new knowledge becomes a way of behaving in which everyone is a knowledge worker and so everyone can compare their knowledge with the knowledge of their competitors and see whether it is shrinking or growing (Benchmarking). The concept of a learning organization is, without any doubt, becoming a philosophy with growing presence in modern societies, from large multinational companies to the smallest organizations, and this large emphasis on organization learning is caused by ever faster and more frequent changes in today's economy. Of course, creating such a society is not easy at all; therefore Learning Labs are more often applied. Learning Labs provide accounts of real situations where teams learn how to learn together through simulation games, where they find mistakes from which they learn, in order not to make them in future.

It results from all of the above stated that the future of development of business organizations, states or societies will depend on capacities of individuals, teams, departments, facilities or total corporations or institutions and their desire to learn and to increase their knowledge throughout their life and working life. Therefore states and societies have no choice but to finally start making larger investments into people, creation of new knowledge and development of learning organizations and a learning society, which are the main prerequisites for survival and success under ever tougher competitive conditions. The concept of developing education, an education system, a learning organization and a learning society is becoming a new imperative for every business entity and every society in the period ahead of us, in which only those companies and societies that will have the necessary knowledge will have the crucial role on the market, i.e. faster and higher economic growth.

3. Data collection and methodology

The base of research conducted in this paper comprises data collected on statistical variables of Human Development Index, population, population over 65 years of age, primary education enrolment, investment into secondary education, investment into tertiary education, investment into research and development, Gender-Related Development Index and productivity increase¹⁹ for 177 countries of the world for the period from 1975 to 2005, with

¹⁹ Calculation method for all of the stated statistical variables and the list of observed countries in the world are explained and stated in detail on <http://unstats.un.org/unsd/>

projections for the year 2015, where the year 2005 has been taken as the basic year for the needs of this research.²⁰

4. Research results analysis

The research presented in this paper is based on analysis of data obtained by calculating linear regression equation, linear correlation coefficients and multiple linear correlations, and available data have been processed and analyzed with application of SPSS statistical programme package.

Impact changes of human capital variables on GDP per capita in countries of the world have been observed on the grounds of different development levels of the countries of the world for the year 2005, and according to the previous arbitrary division by the authors of this paper into gravely underdeveloped countries, (GDP per capita under \$1 000), underdeveloped countries (GDP per capita ranges from \$1 000 to \$5 000), developed countries (GDP per capita ranges from \$5 000 to 20 000) and highly developed countries (GDP per capita exceeds \$20 000).

4.1. Impact analysis of human capital on economic development

Variable	Gravely underdeveloped countries	Underdeveloped countries	Developed countries	Highly developed countries
Human Development Index	0,71	0,77	0,85	0,82
Population	- 0,61	- 0,66	- 0,69	- 0,72
Population over 65 years of age	- 0,53	0,45	0,52	0,56
Primary education enrolment	0,59	0,54	0,51	0,48
Investment into secondary education	- 0,62	0,51	0,56	- 0,52
Investment into tertiary education	0,51	0,73	0,91	0,85

²⁰ Official statistical data of United Nations, cited according to <http://hdr.undp.org/>

Investment into research and development	0,37	0,43	0,57	0,84
Gender Related Development Index	0,42	0,46	0,45	0,51
Productivity increase	0,49	0,54	0,71	0,86

Table 1. Overview of linear correlation coefficients of the observed variables and their impact on GDP per capita of analyzed countries of the world according to the division from gravely underdeveloped to highly developed countries of the world.

Positive impact of the Human Development Index variable grows along with the growth of development level of a country, with a slightly decreased impact in highly developed countries, i.e. human capital has a slightly weaker impact on economic development after a country achieves a certain high development level.

Negative impact of the population variable grows as the development level of a certain country grows, i.e. higher level of standard of living - the lesser population a country has, easier and faster it achieves the higher level of GDP per capita.

The population over 65 years of age variable has a negative impact in gravely underdeveloped countries, while its impact is positive and grows as the country achieves higher development level, which points to the growing contribution of retired people to economic development as the wealth of a country grows.

The enrolment into primary education variable has a positive trend with the falling tendency as the standard of living grows, which indicates a positive, but still decreasing impact of primary education as development level of a society grows.

The investment into secondary education variable has a negative impact in gravely underdeveloped and highly developed countries, while its positive impact in underdeveloped and developed countries reveals the inability of the poorest countries to ensure development and contribution of educated people with secondary education. Even in highly developed countries of the world it reveals insufficiencies of secondary education and the need for higher education needed for a more serious social and economic development.

The investment into tertiary education variable has a trend of a positive impact, independently of a development level of a country, which clearly indicates the importance of university and life-long education for development of a society and economic progress.

For the investment into research and development variable, a positive impact increases from gravely underdeveloped toward highly developed countries, so that the impact in highly developed countries would become incomparably and significantly larger than in countries with the lower standard of living, which shows that the impact of science and research as well as innovative and creative projects is becoming prominent.

The Gender Related Development Index variable has a trend of a positive impact, independently of the standard of living in the countries of the world, which indicates the importance of even development of both genders in every society.

The productivity increase variable shows a growing positive impact as development level of the countries increases, which indicates that the significance of a human factor in work and work processes grows along with economic development.

5. Research results synthesis

Research results indicate a presence of a positive pattern of human capital development impact on economic development of the countries of the world, and they also indicate different movement tendencies of human capital development impact, if we observe countries of the world from gravely underdeveloped to highly developed, i.e. according to their economic development.

The research has proved that the main research hypothesis is positive, i.e. that investing in people, that is, investing in primary, secondary and tertiary education will bring long-term positive and significant effects on social growth and development, thus contributing to the level of development of a certain country and overall standard of living. Another hypothesis has also been confirmed, stating that, depending on the development level, human capital and education will exert different influence on GDP per capita, which indicates that a number of economic variables play a major role on the effects of education.

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