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THE COMPARATIVE ANALYSIS OF HUMAN RESOURCES DEVELOPMENT: MODERN TENDENCIES AND WAYS OF INCREASING IN TERMS OF FORMING THE INNOVATIVE ECOSYSTEMS

Levchenko Anna

PhD of Economics, Associate Professor. Department of Economics. Management and Commercial Activity. Central Ukrainian National Technical University. (Ukraine)

E-mail: lao18057@gmail.com

ABSTRACT

The purpose of this paper is to conduct a comparative analysis of human resources development in the countries of the world and in Ukraine, taking into account the global competitiveness index, the level of skills of current workforce and labour market development, components of innovation ecosystems such as business dynamism and innovation capability for 45 countries. Also, were analyzed the level of GDP per capita and the average monthly salary for these countries. It was marked out, that in the growth of innovation ecosystems the leading role play personnel professional development and availability in the country of specialists, capable for effective innovative work. At the same time, the increasing of globalization, integration and competition processes in the world leads to raising the demands for knowledge and skills of human resources. In turn, innovative progress should contribute to the economic well-being of the country and its citizens.
Key words: human resources, personnel development, skills, digitalization, innovation, innovation ecosystem, innovation development, competitiveness

INTRODUCTION

The formation of innovative model of economy in the conditions of globalization nowadays is based on a number of contemporary challenges. The spreading of the achievements of the 4-th industrial revolution, advances in the development of information and communication technologies, robotics, biotechnology, nanotechnology, big data technologies leads to the need to review the competitive advantages of the countries. As a result, modern forms and models of cooperation are becoming widespread. To these forms belong innovation ecosystems, "triple helix" model, "quadraple helix" model and other ways of stepping up stakeholder's collaboration. This is why organizational, economic and social aspects of functioning of such forms of the interaction require further scientific research.

Literature review. To various aspects of the formation and functioning of innovation ecosystems are devoted the scientific papers of many domestic and foreign scientists. In particular, foreign experts thoroughly research the issues of mapping, analysis and design of innovation ecosystems [8]; carry out the analysis of the components of the innovation ecosystem, which lead to the structuring of organic and dynamic relationships that a particular organization has with different external organizations, which allows to create innovative products faster [5]; study the role of open innovation as an iterative model with the possibility of creating an ecosystem, based on the specifics of the development of economies of the world in terms of digitization of all spheres of life, characterized by interdependence and integrated cooperation, so added value can be created only through mutual exchange [2]; identify key similarities between natural and socio-technical ecosystems, arguing that the ecosystem concept can be applied to many levels of the digital innovation landscape, linking different actors such as processes, products, services, organizations, industries and communities as they attract resources, including technology, knowledge, create and understand the value of digital innovation [13]; explore the strategic aspects of the collaboration of companies with research institutions in innovation ecosystems, identifying two types of strategies: aimed at gaining specific knowledge for the further development of a particular technology or product (IES, aimed at incremental innovation) and aimed at harnessing the full potential of innovation ecosystems (IES aimed at rather radical innovations) [11]; develop the idea of an "innovation ecosystem", that is a system of interconnected players and processes that together cause innovation to occur, considering innovation in real time and in uncertainty [6]; develop digital monitoring tools, including information on key actors, material flows and ongoing stakeholder collaboration, and recommendations to support the development and management of effective innovation ecosystems, such as the importance of creating an open data exchange culture among key regional innovation actors [10]. Among domestic scholars, Fedulova L. studies peculiarities of functioning and directions of development of regional innovation ecosystems in Ukraine [3]. Bazhal Yu. explores the issues of implementation of the "triple helix" model in the innovation ecosystem of Ukraine [1]. Yermak S. offers a vision of ways to develop the concept of innovation ecosystems in today's economy [15].

At the same time, the issues of development of organizational and economic justification for creation of innovation ecosystems in the conditions of decentralization of economic regulation, determination of strategic priorities of development of countries territories on the basis of smart specializations, creation of territorial innovation centers that would provide constructive cooperation of all key actors remain unresolved.

Purpose of the study. The purpose of this paper is to carry out a comparative analysis of human resources development in the countries of the world in comparison with Ukraine, to offer the main directions of personnel development increasing in Ukraine in terms of forming the innovative ecosystems.
Results. An innovation ecosystem is a set of organizational, structural and functional components (institutions) and their relationships involved in the creation and application of scientific knowledge and technologies that determine the legal, economic, organizational and social conditions of the innovation process and ensure the development of innovation activity at the enterprise level , as well as at the level of the region and the country as a whole, according to the principles of self-organization [4].
The key elements of an innovation ecosystem include: economy, communication, knowledge and experience, coordination, co-design, common values, ethics, ecology, technology transfer and commercialization, internationalization, education and development, communication and promotion, financing of innovation, cooperation, E-platforms [9].
According to the approach of the World Economic Forum, innovation ecosystem includes two components, which describe the business dynamism and innovation capability of each country. In turn, the business dynamism is evaluated by such indicators: administrative requirements (cost of starting a business, time to start a business, insolvency recovery rate, insolvency regulatory framework); entrepreneurial culture (attitudes towards entrepreneurial risk, willingness to delegate authority, growth of innovative companies, companies embracing disruptive ideas). The indicators of innovation capability are: interaction and diversity (diversity of workforce, state of cluster development, international co-inventions, multi-stakeholder collaboration); research and development (scientific publications score, patent applications per million population, R&D expenditures % GDP, research institutions prominence) and commercialization (buyer sophistication, trademark applications per million population) [14].
To the main characteristics of innovation ecosystems can be related the following:
-self-organization (the ability of the system to create "order" without the involvement of external or internal leader when changes happen spontaneously or as a result of local interactions);
-emergency (property of the system to have characteristics, which cannot have its elements separately -cooperation between companies leads to a result they cannot produce alone);
- adaptability (adaptation to changing conditions through internal change);
- co-evolution (the process of mutual change in the course of development interconnected entities) [15];
- interactivity (begin on the principles of network mechanism and network organization of scientific, technological and innovative activities) [4].
Accordingly to the results of rating of the world countries by the Global Competitiveness Index 4.0 in 2019 (Fig. 1), we can mark, that the leaders are Singapore (84.8), United States (83.7), Netherlands (82.4), Switzerland (82.3) and Japan (82.3). At the same time in Ukraine the meaning of Global Competitiveness Index is only 57.0, while in Romania – 64.4, in Poland – 68.9, in Czech Republic – 70.9, etc.

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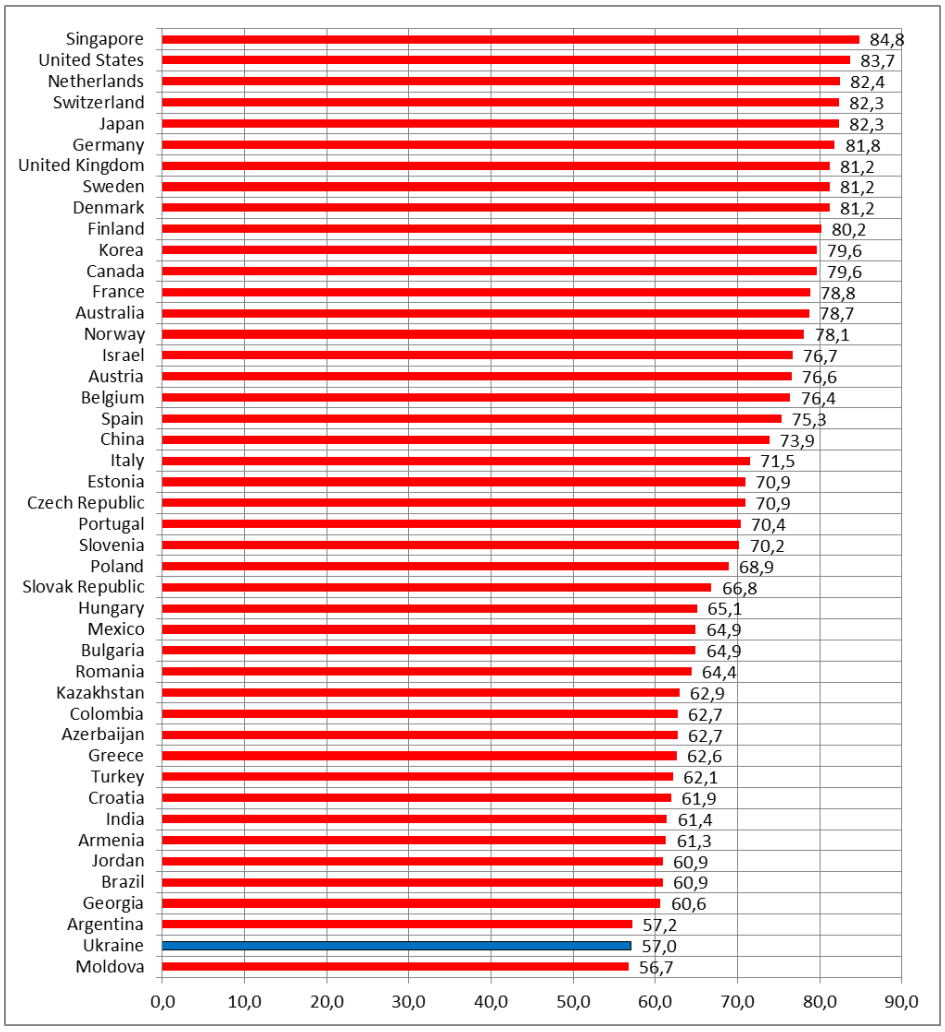

Figure 1. The rating of the world countries by the Global Competitiveness Index 4.0, 2019 (0-100)
Source: formed by the author according to the data of international statistics [14].

The meanings of the level of human resources development and innovation ecosystem state in the world countries in 2019 are presented in the Table 1. As we can see, the differences between the selected 45 countries are quite high. So, the level of the indicator of skills of current workforce, which include extent of staff training, quality of vocational training, skillset of graduates, digital skills among active population and ease of finding skilled employees, is 73.1 – in Singapore, 78.2 – in Switzerland, 75.8 – in Finland, while in Georgia – 40.6, in Croatia – 39.9, in Brazil – 39.4. In Ukraine this indicator occupies an average level – 54.5 in 2019.

Table 1. The level of human resources development and innovation ecosystem state in the world countries, 2019 (0-100)

	Human resources development		*Innovation ecosystem*	
	Skills of current workforce	*Labour market*	*Business dynamism*	*Innovation capability*
Argentina	53,2	51,8	58,3	41,7
Armenia	49,4	66,4	62,5	39,4
Australia	63,5	69,1	75,3	69,5
Austria	67,7	67,2	69,3	74,5
Azerbaijan	61,3	69,4	71,5	38,3

Belgium	65,6	63,8	74,4	71,4
Brazil	39,4	53,5	60,2	48,9
Bulgaria	49,1	64,6	61,9	45,0
Canada	66,2	75,2	76,5	74,0
China	59,4	59,2	66,4	64,8
Colombia	51,7	59,2	64,2	36,4
Croatia	39,9	56,0	54,6	37,8
Czech Republic	54,7	63,3	68,7	56,9
Denmark	71,6	78,2	80,0	76,2
Estonia	60,5	70,2	69,9	52,1
Finland	75,8	71,5	78,1	75,8
France	60,8	62,9	71,4	77,2
Georgia	40,6	65,3	62,2	32,7
Germany	67,6	72,8	79,5	86,8
Greece	49,6	52,7	58,8	45,1
Hungary	43,6	58,6	58,1	47,4
India	52,9	53,9	60,0	50,9
Israel	67,5	71,1	79,6	74,2
Italy	52,7	56,6	65,7	65,5
Japan	61,7	71,5	75,0	78,3
Jordan	57,8	57,7	56,6	38,8
Kazakhstan	50,8	67,8	66,6	32,0
Korea	62,8	62,9	70,5	79,1
Mexico	50,3	55,8	65,8	43,6
Moldova	44,4	61,9	60,1	29,9
Netherlands	72,9	74,9	80,6	76,3
Norway	69,3	73,3	76,9	68,0
Poland	48,5	59,9	62,0	49,7
Portugal	57,4	63,2	69,7	53,7
Romania	44,9	61,6	59,7	42,3
Singapore	73,1	81,2	75,6	75,2
Slovak Republic	48,4	60,7	62,8	46,3
Slovenia	57,7	64,5	70,1	58,2
Spain	56,2	61,1	67,3	64,3
Sweden	69,3	69,4	79,4	79,1
Switzerland	78,2	79,5	71,5	81,2
Turkey	42,7	52,9	58,8	44,5
Ukraine	**54,5**	**61,4**	**57,2**	**40,1**
the United Kingdom	64,6	75,0	77,0	78,2
the United States	71,7	78,0	84,2	84,1

Source: formed by the author according to the data of international statistics [14].

In most of selected countries the overall level of labour market development is higher, than the level of skills of current workforce, and in some of them the difference is significant. That's why we can notify, that the problem of increasing the level of skills of current workforce is very urgent, especially for developing countries (Armenia, Brazil, Bulgaria, Kazakhstan, Moldova, Romania, etc.).

Another important aspect of the competitiveness of the countries is the level of the innovation ecosystem development. From the Table 1 we can see, that in developed countries the meanings of both indicators – business dynamism and innovation capability – are high (United States, United Kingdom, Japan, Sweden, Switzerland, etc.). But in developing countries the main problem is a low level of innovation capability. For example, in Ukraine the level of business dynamism is 57.2, while the level of innovation capability – only 40.1 in 2019. The same situation is observed in Armenia, Azerbaijan, Moldova, Romania and others.

As a result of difference in the conditions of economic and innovative development, it exists a great divergence in the level of GDP per capita (Fig. 2). For example, in Ukraine – it achieves only 2963.5 US$ in 2019, while in Switzerland – 82950.3 US$, so it's variance is nearly 28 times.

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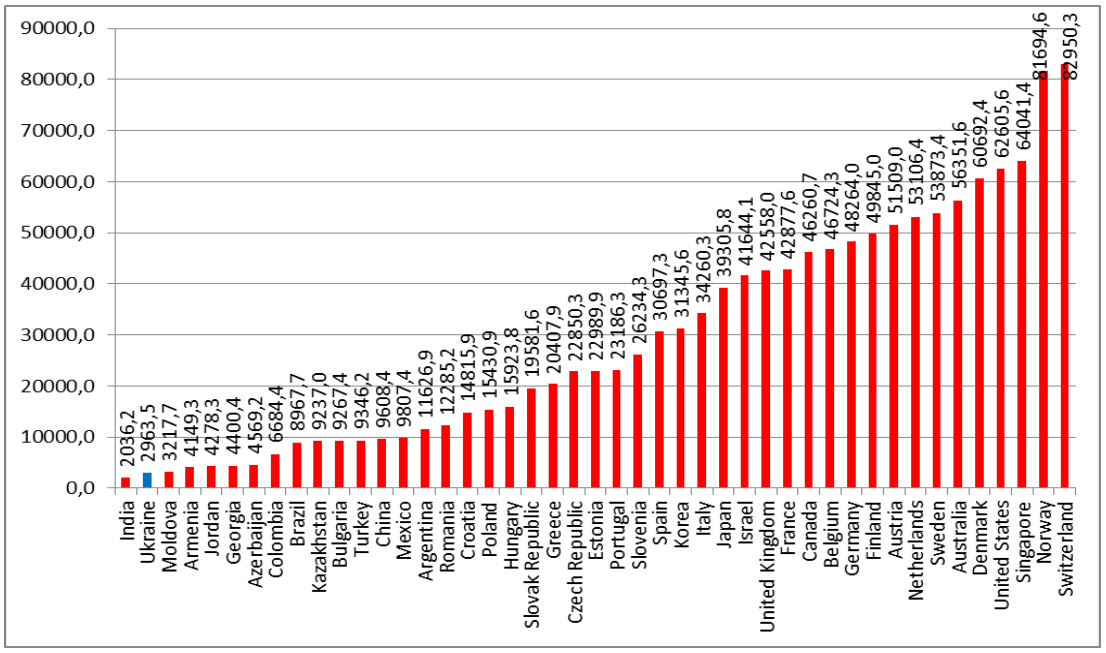

Figure 2. The rating of the world countries by the GDP per capita US$, 2019
Source: formed by the author according to the data of international statistics [14].

Obviously, the average monthly salary in selected countries differs a lot (Fig. 3). The lowest level of the average monthly salary is observed in Ukraine (only 261.2 US$ in 2017), Moldova (302.0 US$), Azerbaijan (307.1 US$), Georgia (398.1 US$), Armenia (404.1 US$), Kazakhstan (462.7 US$). The highest average monthly salary is in Netherlands (4401.6 US$), United States (5046.5 US$), Denmark (5487,1 US$), Norway (5492,0 US$), Switzerland (7351,7 US$). This situation makes a negative influence at the level of productivity of the employed population in developing countries, their interest in professional development, improvement of skills and competences, implementation of innovative ideas and innovations. So, the problem of increasing the efficiency of human resources development needs a complex approach to its solving, including introduction of economic, social and organizational measures, motivation and stimulation of employees to effective innovative work.

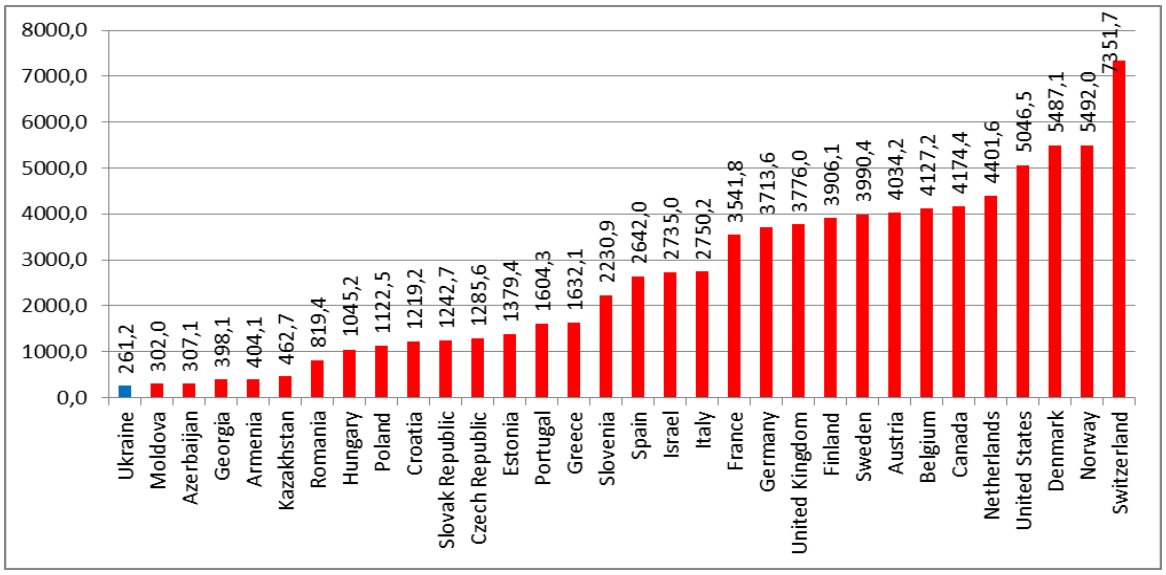

Figure 3. The rating of the world countries by the average monthly salary US$, 2017
Source: formed by the author according to the data of State Statistics Service of Ukraine [12].

In general, the creation and development of innovative ecosystems in Ukraine is hindered by:
- low level of public funding;
- lack of a favorable climate for innovation;
- lack of innovative development programs;
- unwillingness of investors to invest in innovation;
- lack of a developed business environment;
- problems with commercialization of the results [15];
- low level of income and salaries of a great part of population;
- insufficient level of innovation infrastructure development;
- low level of innovative culture, etc.

While determining the prospects for the formation and development of innovative ecosystems, it is advisable to study such components: educational component of training of specialists, professional development of employees, directions of improvement of organizational and regulatory influence in the conditions of decentralization of power and management, financial analysis, audit and information support, tax regulation, personnel support, investment activity, social development, national security [7].

The key ways of personnel development increasing in Ukraine in terms of innovation ecosystem forming, at our opinion, are: the introduction of modern forms, methods and approaches of formal, non-formal and informal learning; raising the level of information and innovation culture of the employers; development of emotional intelligence; widespread use of modern information and communication technologies; using of active and interactive methods of participation in the learning process; paying considerable attention to teamwork, practical orientation of learning; developing the ability to learn and create new knowledge. It's also very important to achieve a balance between economic benefits and the implementation of humanistic approach in human resources management, the purposes of environmental protection.

Conclusions and prospects for further research. According to the results of the comparative analysis of human resources development in the countries of the world and in Ukraine, taking into account the global competitiveness index, the level of skills of current workforce and labour market development, components of innovation ecosystems, we came to the following conclusions. In contradistinction to the developed countries, in Ukraine, as well as in other developing countries, exists a low level of innovation capability, which is one of the most important precondition of innovative ecosystems forming and functioning. Also, very low level of income and salaries negatively influences the level of productivity of the employers and the results of their professional development.

The prospect of further research is to work out a complex approach for increasing the efficiency of human resources development, to find out the ways of development of emotional intelligence, to suggest the main directions of effective collaboration between stakeholders of innovation ecosystems.

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