
Human Capital in the EU Member States from Central-Eastern Europe Region: Labour Market Context in 2022

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Abstract:

Purpose: The purpose of the article is to present the human capital in the Central-Eastern Europe region taking into account the development level of this capital according to specific labour market indicators in the new European Union member states. Moreover, the research intention was to present the complex concept of human capital with reference to the labour market.

Design/Methodology/Approach: The study examines territorial diversification of the human capital in the Central-Eastern Europe region in the context of the individual national labour markets. In the theoretical part of the article, the human capital concept with reference to the labour market conditions were analysed. The research procedure used in the work is based on multidimensional comparative analysis. The empirical verification was conducted using labour market indicators for the new EU member states in 2022. The research was based primarily on data published by Eurostat.

Findings: The article proposes a concept of human capital measuring in the aspect of the labour market. Moreover, the development level of analysed capital in the new EU member states from Central-Eastern Europe region was determined. In addition, attention was paid to the situation on the national labour markets of analysed countries in the post-pandemic perspective.

Practical Implications: The conducted research can be used in the process of human capital shaping in the Central-Eastern Europe region, especially in the aspect of the national and regional labour markets.

Originality/Value: The article presents the results of own desk research. The issue presented has not previously been addressed in discussions published internationally.

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1. Introduction

Human capital is considered to be a key factor of contemporary socio-economic development and economic growth of the countries and regions. The socio-economic development is largely influenced by the use of human capital in the labour market. The processes of convergence and divergence are observed in the Central-Eastern Europe region, especially including new European Union member states. These processes also concern human capital and the labour market.

The aim of the research is to present the human capital in the new EU member states from Central-Eastern Europe region in the labour market context. The tasks of the research include the presentation of human capital concept with reference to the labour market. The next research task is to point out the differences in the human capital utilisation in the Central-Eastern Europe.

The findings contribute to the scientific disciplines, including human capital analysis in the context of the labour markets in the EU member states from Central-Eastern Europe region in the post-pandemic perspective. The novelty of the research is connected with the application of the new concept of the human capital measuring in the aspect of the labour market.

In the article many research methods were applied, including especially critical analysis of the literature on the subject and multidimensional comparative analysis. The research work is based on data published by Eurostat for 2022. In the research the following eleven new EU member countries were taken into account: Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia.

2. Literature Review

Definitions and descriptions of human capital are presented in the literature of the subject. Describing the essence of human capital, Stanisław Ryszard Domański indicates that human capital is a source of ability to work, services, satisfaction and earnings (Domański, 2001). The essence of human capital is associated with the category of value (Jaźwiński, 2008; Thalassinou *et al.*, 2019).

In many approaches, human capital is perceived as the most important factor of socio-economic development, and the European Union counts this capital among its most valuable resources (Jaźwiński, 2007). According to analyses presented under the auspices of the United Nations, human capital in recent decades may have accounted for more than 50% of the world's wealth (Managi, 2018).

Kristina Dahlström and Paul Ekins define human capital as “the health, prosperity and productive potential of individual people. It includes, for example, human physical and mental health, education, motivation and skills. These elements not

only contribute to the building of a happy, healthy society, but also by providing a productive workforce, they offer opportunities for economic development” (Dahlström and Ekins, 2005; Grecu *et al.*, 2024).

Waldemar Florczak proposes the following definition of the human capital: “all the psychophysical characteristics of an individual, such as the acquired capabilities, knowledge, cultural level, socio-economic activity, outlook, etc., that directly or indirectly affect labour productivity” (Florczak, 2007).

According to Aleksy Pocztowski human capital encompasses the whole of features and characteristics embodied in the people (knowledge, skills, health, motivation, values), which have definite value and constitute a source of future income both for a worker, owner of human capital, and for organisation, which uses this capital under specific conditions (Pocztowski, 2007).

Taking into account all the definitions presented, it can be synthetically generalised that human capital consists of intellectual and economic resources in humans (Jaźwiński, 2017). It is worth pointing out that the subject literature also presents definitions in which authors defining human capital mainly limit it to issues of knowledge and education, while leaving aside other important aspects, such as health and context of the labour market. Such an approach can be considered as the narrowest approach to human capital.

Various elements and dimensions of human capital are distinguished. The report on human capital prepared by the Polish Council of Economic and Social Strategy identified two fundamental aspects: narrow and broad (Polish Council, 1998). In the narrow field, human capital is defined as the effect of investment in education and training as embodied in the qualitative characteristics of the social labour resource available in the economy. In the broader approach to investments that make up human capital resources, investments in health, environmental protection and culture are also included.

Great importance can be attributed to distinguishing two dimensions of human capital (Jaźwiński, 2017): the development of human capital and the human capital utilisation. The development of human capital is mainly determined by the processes of investing in that capital. The development level of this capital depends to a large extent on human knowledge and health. The use of human capital depends on various factors, particularly regarding the functioning of the labour market.

When shaping the development of human capital, the consequences of the implemented activities for the policy of using this capital must be taken into account. There are significant interconnections between the development of human capital and the use of this capital, important from the point of view of socio-economic development of the countries and regions.

It should be emphasized that human capital theory explains why educations would lead to higher wages in principle (Deming and Silliman, 2024). Many activities undertaken and implemented as part of shaping the development of human capital directly affect the conditions for using this capital, e.g., activities related to supporting selected fields of teaching (education).

It is worth pointing out that the rational utilisation of human capital in labour market is manifested in a high level and quality of employment and has a positive impact on socio-economic development as well as economic growth (Gross Domestic Product growth). Unsatisfactory use of human capital causes, among others, unemployment and poverty, which may generate or intensify other socio-economic problems.

The individual elements of the labour market determine the human capital utilisation. The basic elements of this market include (Jaźwiński, 2014): labour supply, demand for labour, the price of labour called wage. The rational use of human capital in the national and regional labour markets should result in: a high employment rate, a low unemployment rate, a high labour productivity, a high average salary, a significant share of R&D personnel and researchers in employment.

Efficiency and effects of work depend on several factors (Kabaj, 2005): knowledge, skills and talents of people, motivation to work efficiently and innovate, material working conditions and technical level of machines, devices, means of transport and communication, social working conditions, interpersonal relations, level of work organization and production.

The following main contemporary trends regarding human capital in the context of the labour market can be identified (Deloitte Insights, 2024): human sustainability, moving beyond productivity, the transparency paradox, imagination deficits, the digital playground, workplace microcultures, boundaryless human resources, leadership.

3. Research Methodology

The research procedure applied in the study relies on a multidimensional comparative analysis (Jaźwiński, 2017). This method takes into account several stages (Wyrwa and Jaźwiński, 2024): conceptualization of the research including defining the subject and purpose of the study, identification and selection of indicators, normalization of indicators, construction of the synthetic measures of development level for distinguished group of indicators, linear ordering of examined objects according to the level of measures achieved.

Human capital in the labour market context can be measured using various indicators (measures). Some of them may be useful in the process of analysing and assessing human capital in the territorial dimension, including the

perspective of states (Jaźwiński, 2017). The detailed list of five diagnostic indicators describing the human capital in the EU member states from Central-Eastern Europe region used in the research is presented in Table 1.

Table 1. The list of diagnostic indicators describing the human capital in the EU member states from Central-Eastern Europe region

Indicator number	Symbol	Indicator name	Source
1.	$x_{11}S$	Employment rate	Eurostat
2.	$x_{12}D$	Unemployment rate	Eurostat
3.	$x_{13}S$	Labour productivity	Eurostat
4.	$x_{14}S$	Average salary	Eurostat
5.	$x_{15}S$	Share of R&D personnel and researchers in employment	Eurostat

Source: Author's elaboration.

To determine the level of human capital, a non-standard formula for estimating the value of a synthetic variable (aggregation of variables) can be used (Jaźwiński, 2017) in accordance with the following formula (Bąk, 2015; Jaźwiński, 2017; Wyrwa and Jaźwiński, 2024):

$$q_i = \sum_{j=1}^m w_j z_{ij}$$

where:

q_i – resulting value of the synthetic variable,

w_j – weight of the j -th diagnostic variable,

z_{ij} – normalized value of the j -th variable for the i -th object,

$i = 1, 2 \dots, n$,

m – number of diagnostic variables,

n – number of objects.

In a multidimensional comparative analysis, it is important to transform the diagnostic variables and normalize the values of the variables taken into account in a specific range (Jaźwiński, 2017). Ratio transformation is recommended as one of the norming methods (Panek, 2009). To normalize individual variables, a ratio transformation should be performed according to the ratio formula, which (Kukuła, 2012):

- for stimulants (i.e., variables for which high values are most desirable, in this study most of the variables are stimulants) takes the form:

$$Z_{ij} = \frac{X_{ij}}{X_{ij \max}}$$

where:

x_{ij} – value of the j -th variable for the i -th object (country);

- for destimulants (i.e., variables for which low values are most desirable, in this study only the unemployment rate is the destimulant) takes the form:

$$Z_{ij} = \frac{X_{ij \min}}{X_{ij}}$$

4. Research Results and Discussion

Based on the previously proposed concepts the author of this work conducted research using multidimensional comparative analysis. The table 2 presents the linear ordering of the new EU member states from Central-Eastern Europe region according to the human capital in the labour market aspect for 2022.

Table 2. The linear ordering of the EU member states from Central-Eastern Europe region according to specific labour market indicators in 2022

No.	EU member state	Value of the indicator
1.	Slovenia	0.930125
2.	Czechia	0.926856
3.	Poland	0.807611
4.	Estonia	0.752377
5.	Lithuania	0.743854
6.	Hungary	0.738847
7.	Slovakia	0.679421
8.	Croatia	0.671039
9.	Latvia	0.659968
10.	Bulgaria	0.623579
11.	Romania	0.598363

Source: Author's calculations based on Eurostat data.

Table 2 shows that the EU member states from Central-Eastern Europe region with the highest level of human capital in the labour market aspect are the following countries: Slovenia, Czechia, Poland, while this capital is used the least in the following counties: Latvia, Bulgaria, Romania. Referring to the

position of individual EU member states in this ranking, it can be stated that the above-average third position of Poland was mainly due to the second lowest unemployment rate.

Table 3 presents the list of the new EU member states from the Central and Eastern European region with the best and worst values of individual labour market variables in 2022.

Table 3. *The EU member states from Central-Eastern Europe region with the best and worst diagnostic values in 2022*

Diagnostic features	States with the best diagnostic value	States with the worst diagnostic value
Employment rate	Estonia Czechia Hungary	Bulgaria Croatia Romania
Unemployment rate	Czechia Poland Slovenia	Estonia Latvia Lithuania
Labour productivity	Czechia Slovenia Romania	Hungary Latvia Bulgaria
Average salary	Slovenia Lithuania Estonia	Romania Hungary Bulgaria
Share of R&D personnel and researchers in employment	Slovenia Czechia Hungary	Slovakia Latvia Romania

Source: *Author's calculations based on Eurostat data.*

Two new EU member states from Central-Eastern Europe region: Czechia and Slovenia appears among the best countries four times. On the other hand, Bulgaria, Latvia, and Romania are among the EU member states with the worst values of a given features three times. However, Poland appears among the best countries only one time.

As part of the discussion regarding the results obtained, it is worth referring to the European Human Capital Index, which is a very interesting concept (Ederer, Schuler, Willms, 2007). This index covers four sub-indices, including human capital utilisation and human capital productiveness. On basis of this index a human capital ranking was prepared for twelve states of the Central-Eastern Europe, which covered eleven new EU member states and also Turkey. The first position was taken by Slovenia, the third by Lithuania, and on the next positions the following countries were ranked: Czechia, Estonia, Latvia, Romania, Hungary, Slovakia, Bulgaria, Poland, and Croatia. It is worth noting that Poland ranks higher in the research results for 2022.

5. Conclusions, Proposals, Recommendations

Human capital is a multidimensional category. This capital can be considered in various aspects in the context of the EU member states from Central-Eastern Europe region. One of the very important aspects is the level of human capital utilisation. It should be emphasized that human capital can be comprehensively analysed from the perspective of the labour market.

Analysis of human capital can be conducted on the basis of many indicators. The most important indicators of human capital in terms of the labour market include: employment rate, unemployment rate, labour productivity, average salary, share of R&D personnel and researchers in employment.

The multidimensional comparative analysis is a useful method in determining the level of human capital utilization. There are differences between the EU member states from Central-Eastern Europe region in the human capital in the context of labour market indicators.

Among the new EU countries with the highest level of human capital according to labour market indicators are Slovenia, Czechia, and Poland can be counted. On the other hand, the new EU countries with the worst utilisation of human capital according to the labour market indicators are Latvia, Bulgaria, and Romania.

Human capital shaping in the EU member states from Central-Eastern Europe region should take into account goals and challenges related to improving the use of this capital in the labour market. In the European Union policy and actions, it is worth effectively supporting convergence processes in the field of human capital.

The new EU countries are improving their economic and social standards in many dimensions, including related to human capital and labour market. It is worth analyzing these issues in future research.

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