

Review Paper

Efficiency Management of Human Capital with the Change of the Social and Economic System of Ukraine

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ABSTRACT

The purpose of this article is to examine the dominant effectiveness management of human capital with the change of the social and economic system of the Ukraine. A substantiated comprehensive methodology for evaluating indicators of intensive use of economically active human resources in the regional labour market is given. An analysis of the development of the intellectual component of the human capital of Ukraine was carried out according to macroeconomic indicators. A comparison of the level of efficiency of human capital management in Ukraine and in the EU was made. The gradation of the level of intensity of use of economically active human resources of the Steppe zone of Ukraine by the category "Urban area" and "Rural area", "Educational and qualification level" in relation to the total population of the given territory aged 15-70 was carried out. The forecast level of effective management of human capital between the regions of Ukraine has been determined. A forecast calculation of the relationship between the growth rate of the nominal GDP of Ukraine and the forecast shares of macroeconomic indicators of the development of the intellectual component of human capital management, which characterize the parameters of the distribution of economically active human resources in the regional labour market, was conducted.

HIGHLIGHTS

- The relevance of the study of the specified object of scientific work, namely the management of human capital, is due to the fact that the main component of the socio-economic system of the country is the human resource.

Keywords: Human resources potential, economically active human resources, regional labour market; real sector of the economy, socio-economic aspect

Transformational changes in the world bring about the implementation of new ideas on the reproduction of competitive capabilities of human capital in the real sector of the economy at the level of large and small business entities, as well as the state. Conceptual provisions for the development of human capital, which take into account post-industrial trends in the reproduction of human resources in the social, technological, economic, institutional, managerial and motivational dimensions of the economy, were examined in scientific works by

O.V. Bilka (2016), O. Bilenko (2012), S.V. Hazarian (2012), O.Y. Hulevych (2015), D.P. Melnychuk (2015); the properties of the intellectual component of human capital were studied by such scientists as V.Y. Brych and O.Z. Kolodnytska (2015), V.M. Holovii (2011), A. Karpenko and K. Basenko (2017),

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N.S. Kovtun (2014), L.V. Kozarezenko (2013), who outlined the prospects for the reproduction of the territory, with effective management of human resources. However, the coordinating components of identifying the potential of human resources in the new realities of today, which are the benchmark of their competitive capabilities in those areas of economic activity where they are able to integrate into the environment of the real sector of the country's economy, have not been considered.

The priority of the research is the development of basic tools for the effectiveness of human capital management, which change its level, determine the parameters of the distribution of economically active human resources in the regional labour market and provide competitive opportunities for the real sector of the country's economy.

MATERIALS AND METHODS

The synergistic integrity of human capital management proves the need to use a systemic approach, which is due to a multi-component formation that requires constant research of social regulators of the real sector of the economy (Shevchenko et al. 2010; Sarychev and Yelisieieva, 2014). The general index of the intensity of use of economically active human resources with education is calculated according to the formula (1):

$$K_{el} = \frac{E+U}{S_e} \times 1000 \quad \dots(1)$$

where, K_{el} – general level of education; S_e – the number of people who have an education (from elementary general to complete higher education); E – the number of employees; U – number of unemployed. The intensity of the use of social regulators in relation to different social groups of economically active human resources is measured using special indices, through which it is possible to calculate general indices of the intensity of the use of economically active human resources with education (formula 2, 3):

$$K_{el} = (K_{el}^{SE} + k_{el}^{PSE} + K_{el}^{HE}) \times 1000 \quad \dots(2)$$

$$K_{el} = \left(\frac{E+U}{S_e^{SE}} + \frac{E+U}{S_e^{PSE}} + \frac{E+U}{S_e^{HE}} \right) \times 1000 \quad \dots(3)$$

where, K_{el}^{SE} – is a special index of the intensity of use of economically active human resources with a complete secondary education; k_{el}^{PSE} – a special index of the intensity of use of economically active human resources with vocational and technical education; K_{el}^{HE} – is a special index of the intensity of use of economically active human resources with higher education; $\frac{E+U}{S_e^{SE}}$ – is the number of persons who have complete general secondary education;

$\frac{E+U}{S_e^{PSE}}$ – the number of persons with vocational and technical education; $\frac{E+U}{S_e^{HE}}$ – the number of persons with higher education. For stimulating indicators, the calculation algorithm according to formula (4) is used (Human potential development index, 2021; Countering the Cost-of-Living Crisis, 2022):

$$Y_{ij} = \frac{X_{ij} - X_{j\min}}{X_{j\max} - X_{j\min}} \quad \dots(4)$$

where, Y_{ij} – is the value of the i^{th} indicator in the j^{th} region; $Y_{j\min}$ – minimum value of the i^{th} indicator among j^{th} regions; $X_{j\max}$ – is the maximum value of the i^{th} indicator among j^{th} regions. The following calculation algorithm according to formula (5) is used for destimulating indicators:

$$Y_{ij} = \frac{X_{j\max} - X_{ij}}{X_{j\max} - X_{j\min}} \quad \dots(5)$$

To estimate the index of the intensity of use of economically active human resources, the supply (N^S) and demand (N^D) model on the regional labour market is used to reproduce the competitive opportunities of the real sector of the country's economy, which is a function of the real wage rate of economically active human resources by educational and qualification levels (w_r):

$$N^S = f(w_r), \text{ provided that } \frac{dN^S}{dw_r} \leq 0 \quad \dots(6)$$

$$N^D = f(w_r), \text{ provided that } \frac{dN^D}{dw_r} \leq 0 \quad \dots(7)$$

The supply of economically active human resources

(N^S) is an increasing function of the real wage rate by educational and qualification levels, and the demand for economically active human resources (N^D) is a decreasing function of the real wage rate by educational and qualification levels (w_r). When the wage rate increases, the supply of economically active human resources increases. In the model of general equilibrium, the demand for economically active human resources can be described by the equation (formula 8):

$$N^D = f(Y) \quad \dots(8)$$

RESULTS

The methods of managing the value of human capital the method of direct measurement of human capital, the method of direct capitalization, the method of return on assets and the method of point estimates are identified according to the following parameters: the possibility of quantitative and qualitative measurement of indicators, the possibility of determining and distinguishing the main components of human capital (Kuzminov, 2011; Luste, 2013; Slepukhina, 2014). To forecast the real benefit from human resources in the real sector of the economy at the macro- and meso-level, it is necessary to form analytical tools for human capital management using indirect assessment methods and to coordinate its condition through the level of development of the labour market (Anisimov, 2011). The management action of human resources forces product manufacturers to increase labour productivity at their enterprises by introducing innovations, using new forms of production organization and labour motivation systems (Trusova *et al.* 2022a; Trusova *et al.* 2022b). Improper management of human capital in the real sector of the economy can give rise to a number of problems – poverty, unemployment, inflation, social tension in society (Krentovska, 2009; Brych and Borysiak, 2016). The dynamic rate of development of the intellectual component of human capital in Ukraine for 2017-2021 is ensured by the low level of unemployment, which was on average 9.7%. Accordingly, the share of the potential of human resources with higher education during this period increased from 71.2% to 88.2%. With an increase in

the share of costs for human capital management in commodity production from 10.2% to 14.3%, the share of exports of products of the real sector of the country's economy increased from 50.7% to 57.7%. The level of effective management of the country's human capital was calculated (formula 9):

$$K_{ef}^{HC} = L_{up} \times L_{phr}^{he} \times L_{hse}^{he} \times L_{iaGDP}^{di} \times L_{dhcGDP}^{fi} \times L_{dITGDP}^{fi} \times L_{mhc}^{crse} \times L_{ep}^{rse} \quad \dots(9)$$

where, K_{ef}^{HC} – is the level of effective management of the country's human capital; L_{up} – increase in the unemployment rate of the population; L_{phr}^{he} – growth of the share of the potential of human resources with higher education; L_{hse}^{he} – growth in the share of household expenditures on education; L_{iaGDP}^{di} – growth of the share of the country's domestic investments in intellectual assets to GDP; L_{dhcGDP}^{fi} – growth of the share of foreign investments in the development of the country's human capital to GDP; L_{dITGDP}^{fi} – growth of the share of foreign investments in the development of IT technologies in the real sector of the country's economy to GDP; L_{mhc}^{crse} – growth in the share of costs for human capital management in commodity production of the real sector of the country's economy; L_{ep}^{rse} – growth of the share of exports of products of the real sector of the economy in GDP.

In 2020, the ratio between the highest and lowest level of this indicator in the regions of Ukraine was 1.4 times. In 2021, the share of the GRP of the city of Kyiv in its total volume for the country was 24%, while the share of other regions was less 2% (Countering the Cost-of-Living Crisis, 2022).

According to the Office of the High Commissioner for Refugees of the United Nations (UNHCR), only in the first month and a half of 2022, 11.4 million Ukrainians left their homes. At the beginning of June 2022, 4.82 million refugees from Ukraine were registered in Europe. The more 5.5 million peoples the left the country. In addition, 7.7 million Ukrainian citizens who had to leave their homes are considered internally displaced persons (IDPs) (Project of the Recovery Plan of Ukraine, 2022).

For 2002-2021 in terms of regional-spatial destinations of the Steppe zone (Zaporizhzhia, Kherson and Mykolaiv regions), the specific weight of human capital of the older age group was the lowest compared to other regions of the country and was only 20.1%. At the same time, the majority of able-bodied and active human resources were employed in the field of commodity production – 52%, in the non-production field – 48%. On average, in the pre-war years (2019-2021), the human capital of the Steppe zone by educational and qualification levels had the following structure: full higher education – 31.1% of the total number of economically active human resources, basic higher education – 0.8%, incomplete higher education – 17%, professional and technical education – 27.1%, complete general secondary education – 21%, basic general secondary education – 2.9% and primary general education or no education at all – 0.1%. Europe annually predicts benefits of up to 2% of the European Union’s GDP, or 7% of the human resources currently lacking in Europe on the labour market, of which Ukrainian refugees filled almost 4% in 2021 (Project of the Recovery Plan of Ukraine, 2022; Countering the Cost-of-Living Crisis, 2022). The calculation of the relationship between the growth rate of nominal GDP (Y) for 2023, which characterizes the opportunities of the real sector of the country’s economy on the world market, and the forecast shares of macroeconomic indicators of the development of the intellectual component of human capital management (Fig. 1).

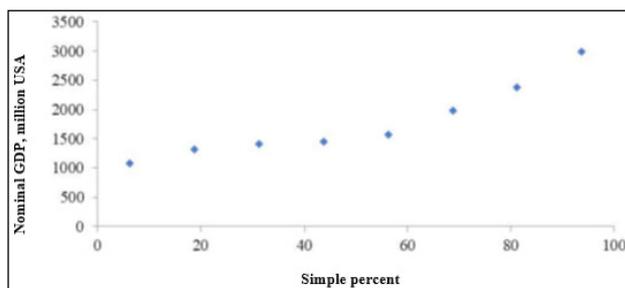


Fig. 1: Normal distribution of Ukraine’s GDP growth rate for 2023

Fig. 1 characterizes the distribution parameters of economically active human resources in the regional labour market was carried out: the share of the potential of human resources with higher education (X_{i1}), the share of the country’s domestic investments in intellectual assets to GDP (X_{i2}), the

share of foreign investments in the development of IT technologies in the real sector of the country’s economy to GDP (X_{i3}), the share of costs for human capital management in commodity production of the real sector of the country’s economy (X_{i4}) the share of exports of products of the real sector of the economy in GDP (X_{i5}). Linear regression will have the following form (Chornodid, 2013):

$$Y_i = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \beta_3 X_{i3} + \beta_4 X_{i4} + \beta_5 X_{i5} + \varepsilon_i \quad \dots(10)$$

where, β – regression parameters (coefficients); x – influencing factors; i – the number of model factors. The regression level of the model has the form:

$$Y = 5346 - 2971X_1 + 32X_2 - 1695X_3 + 43X_4 - 600X_5 \quad \dots(11)$$

The results are as follows: the correlation coefficient ($r=0.9931$), which is within $(-1; 1)$ and indicates a direct, linear relationship; the results of the study show that the variation in the value of GDP by 98.63% (the coefficient of determination $R^2 = 0.9863$) depends on the variation in the value of the development of the intellectual component of human capital management and only by 1.37% on other random variables, including the stochastic component. The most optimistic level of change in the level of the country’s human capital management efficiency in 2023 will be 2.707, in 2024 p – 3.729, with the actual value for 2018-2021 – 2.429. In the absence of proper support for the areas of development of the intellectual component of human capital management in the country, there is a high probability of increasing the loss of “motivated abilities” in potentially active human resources. At the same time, the most pessimistic forecast of the indicator will be equal to 2023 – 1.448, in 2024 – 1.942.

DISCUSSION

In their research, A. Faggian *et al.* (2019) present the concept of managing the strategic development of human capital in modern conditions, which is aimed at creating balanced cause-and-effect relationships between economic growth, the formation and use

of human capital, and human development in the long term. The concept defines the main goals, principles and strategies for the development of human capital, taking into account the positive effects of the introduction of digital technologies in various areas of the national economy and society. It should be added that the maximum use of the positive impact of digital technologies in Ukraine on the formation, reproduction and development of human capital is the main aspect of strategic planning of digitalization processes.

N. Angrist *et al.* (2021) in their work explore the process of assessing national human capital using the human potential index, which includes three indicators: GDP, life expectancy and literacy of the population. The study shows that in addition to national human capital, a systematic approach emphasizes the importance of taking into account individual human capital, considering its cost and efficiency of use, depending on socio-economic affiliation, regardless of the level of human capital under study. P. Guillaumont *et al.* (2019) in research proposes to consider human capital as an economic category that is realized through labor activity. They identify four parameters that can affect the degree of effectiveness of the implementation of human capital and its value at the level of a particular region: total working time, current level of technology, current level of human potential. There may be a more efficient use of existing or the development of new state mechanisms for the accumulation and distribution of human capital in Ukraine.

R.H. Hamilton and W.A. Sodeman (2020) consider the mechanism of human resource management as an integrated set of methods, tools, forms, criteria, functions and levers that are formed and act in accordance with socio-economic laws, reflect the existing system of production relations and are aimed at achieving the economic interests of the subjects of the mechanism. In the formation, use and development of human resources. This study also establishes the need to create compliance standards in the enterprise to improve the effectiveness of human capital management. In their work V. Sima *et al.* (2020) emphasize the need for the transition of the economy to a new stage of development, especially digitalization. However, investment in people requires the improvement of state

mechanisms that will allow for the efficient use of modern socio-economic resources of society and human resources in Ukraine.

CONCLUSION

The post-war crisis in Ukraine is gaining momentum. The state will continue to be a donor of economically active human resources for EU countries. The main recommendation when building a new model of human capital management for Ukraine is the search for social values, characteristics and attributes that should be associated with the brand of the new socio-economic system of the state. The brand of the new socio-economic system will reveal general prospects for the development of the intellectual component of human capital, which will ensure the process of reproduction of the labour market and optimize the gender-age structure of economically active human resources, to provide the competitive opportunities of highly qualified specialists with higher education in the real sector of the economy. It is necessary to balance the development of the transit of economically active human resources between the regions of Ukraine, to restore the tools of demographic recovery in the country, to change social and labour relations in society, which are closely related to national priorities aimed at investment attraction and stimulation of productive business.

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