

[https://doi.org/10.31891/2307-5740-2022-312-6\(2\)-47](https://doi.org/10.31891/2307-5740-2022-312-6(2)-47)

УДК 330.1

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IMPACT OF NATIONAL HUMAN CAPITAL ON POPULATION MIGRATION ACTIVITY

The article evaluates the national human capital as a factor in the migration activity of the population. For the study, data were taken from open international and national databases Ukraine, Republic of Moldova, the Russian Federation, Republic of Belarus, Republic of Poland. The assessment of the value of human capital was carried out using the indicators-based approach. All data were divided into four groups. Two groups characterize the costs of human capital formation (intelligence, knowledge and health). The other two groups characterize the conditions for obtaining income from human capital (implementation of high-quality economic production; quality of life). Based on the collected data, a cluster analysis was carried out. As a result of the study, it was concluded that the factors that characterize the conditions for receiving income from human capital have the greatest influence on migration. The research was carried out until February 24, 2022. Therefore, they can become the basis for studying the migration activity of the population in the new military-economic and political realities.

Keywords: national human capital, migration, cluster analysis.

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ВПЛИВ НАЦІОНАЛЬНОГО ЛЮДСЬКОГО КАПІТАЛУ НА МІГРАЦІЮ НАСЕЛЕННЯ

У статті проведено оцінку національного людського капіталу як фактору міграційної активності населення. Для проведення дослідження використано дані із відкритих міжнародних і національних баз даних України, Республіки Молдова, Російської Федерації, Республіки Беларусь, Республіки Польща. Оцінку вартості людського капіталу проведено за допомогою індикаторного підходу. Всі дані було розбито на чотири групи. Дві групи характеризують витрати на формування людського капіталу (інтелект, знання – перша група, здоров'я – друга). Дві інші групи характеризують умови отримання доходу від людського капіталу (реалізація якісного економічного відтворення, якість життя). На основі зібраних даних було проведено кластерний аналіз. В результаті дослідження зроблено висновок, що найбільший вплив на міграцію мають фактори, які характеризують умови отримання доходу від людського капіталу. Дослідження проведено до 24 лютого 2022 року. Тому вони можуть стати базою для дослідження міграційної активності населення в умовах нових воєнних, економічних і політичних реалій.

Ключові слова: національний людський капітал, міграція, кластерний аналіз.

Statement of the problem in a general form and its connection with important scientific or practical tasks

Migration in a global world has signs of a systemic phenomenon. The intensity of migration is monitored by national statistical services. However, in addition to quantitative assessment of migration, it is important to know the reasons that affect its activity. Thus, in [1], forced migration associated with political events, wars, and natural disasters is studied. Labor migration refers to voluntary migration. Its assessment is based on the analysis of factors of the migration environment [2], [3]. Our study is based on the assumption that migration processes are based on the difference in the cost of human capital in different countries.

Analysis of the latest studies or publication

The methodology for assessing human capital is considered in [4], [7]. Most of the scientific papers on this subject are aimed at analyzing indicators without the use of mathematical tools.

In some papers [8, 9], the K-means cluster procedure was used, but, unlike the presented study, one year or a sample from other countries was chosen for the analysis.

Highlighting previously unresolved parts of the general problem to which the article is devoted

According to the authors, the ratio of the factors of human capital formation with the factors of the possibility of its realization is the driving force of migration processes.

Formulation of the goals of the article

The purpose of the article is to establish the relationship between the level of human capital development and the migratory mobility of the population, to determine the components of the level of human capital development that have the greatest impact on the migratory mobility of the population.

Presentation of the main research material

Work migration is one of the manifestations of globalization. This explains the objective nature of migration processes. Attempts to restrict the migration of the economically active population by administrative means do not bring the expected results. Therefore, it is important to find means for soft regulation of migration processes. It will make possible to predict and correct migration processes and prevent the transformation of migration into emigration.

The decision on labor migration is related to the direct benefits and opportunities costs connected with moving to another country. Direct benefits include higher wages, better working conditions, and gaining professional experience. Opportunity costs include losses associated with leaving the “comfort zone”, which is formed by staying in a familiar economic, social, cultural space. Each potential labor migrant evaluates the state of his own health, labor skills and qualifications, income and living standards. All these components are individual human capital. The sum of individual human capitals within one national economy forms the national human capital of the country. Therefore, in our opinion, the assessment of national human capital will provide information on the readiness of the population for labor migration and can become a tool for its regulation.

The study evaluates the national human capital of Ukraine, Republic of Moldova, the Russian Federation, Republic of Belarus, Republic of Poland. We chose these countries because they are geographically close. In addition, these countries have had the same principles and standards of socialist economic development for a long time. For the last 30 years, these countries have been pursuing a sovereign economic market policy. Therefore, the results of this policy in the field of the formation of national human capital are of interest.

There isn't any single methodology for assessing human capital. There is the cost-based approach, the lifetime income-based approach, the indicators-based approach [1, p. 22-42]. The World bank uses the Human Capital Index to assess human capital. The method of its calculation is proposed in the study “Measuring Human Capital using Global Learning Data” by economists Noam Angrist, Simeon Djankov, Pinelopi Koujianou Goldberg, Harry Patrinos (Table 1). The data in this table are of particular interest, given that in the period from 2016 to 2019, all countries except the Republic of Moldova have a positive migration balance. With a positive migration balance, only the Republic of Poland has an increasing employment index. The Russian Federation has a consistently high employment Index compared to other countries.

Table 1.

Human Capital Index [2, p.41]

country	Ukraine	Republic of Moldova	the Russian Federation	Republic of Belarus	Republic of Poland
place/index	53/0,63	73/0,58	41/0,68	36/0,7	23/0,75

The Ukraine Human Capital Index Is 0.63. This means that while maintaining the state of health, education, the level and lifestyle of the population, the country will produce 63% of potential GDP when children ages 0-4 (Stage 1: No school or work) become the labor force.

The methodological basis of our study is the indicators-based approach. The essence of this method is based on the analysis of statistical data characterizing Human Capital. The disadvantage of this method is the heterogeneity of international statistics, different methodological approaches to the collection and systematization of data. This makes a qualitative comparison impossible. We are confident that these shortcomings will not prevent us from conducting a qualitative analysis, since we have limited our research to a group of countries that have comparable systems of education, healthcare, and a methodology for assessing the well-being of the population. This gives us the opportunity to go beyond educational output indicators. According to the classical definition of Human Capital as a set of knowledge, skills and abilities that a person applies throughout his economically active life, as well as the idea of determining its value, we have collected the following statistics:

intelligence, knowledge: education coverage of young people (18-24 years old), %; graduates of the natural sciences, technical, information areas (together), per 1000 people; coverage of additional education of the adult population (15-74 years old), %; education costs (% GDP);

health: life expectancy (men and women); average age, (men and women); number of medical personnel, (doctors and nursing staff) per 1000 people; health care costs (% of GDP).

implementation of high-quality economic production: GDP per capita, (\$), average salary, (\$); employed persons (thousands of persons); number of people employed in the informatization and communication, (thousands of persons); Doing business index.

field of *quality of life*: index Gini (World Bank estimate); poverty headcount ratio at national poverty lines (% of population), structure of total expenditure, %.

All data are obtained from open sources of national statistics services as well as world statistics. The components of intelligence, knowledge and health determine investment in human capital. There is a problem of allocating funds from education spending that can be considered investment rather than consumption. We tried to solve this problem by highlighting separately data on graduates of natural science, technical and information areas, as well as information on additional education. In the Health component, we did not take into account the number of medical facilities and hospital beds. This indicator depends on the national health system. We paid attention to the number of medical specialists.

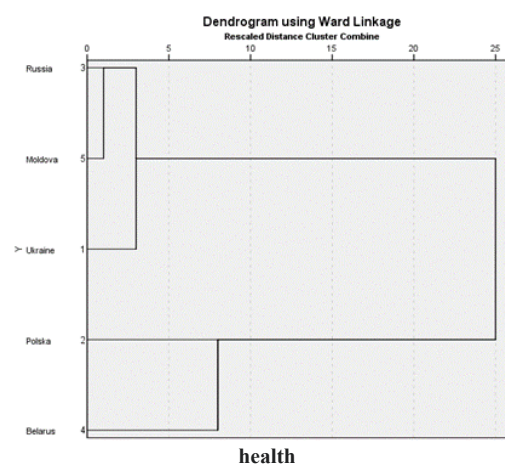
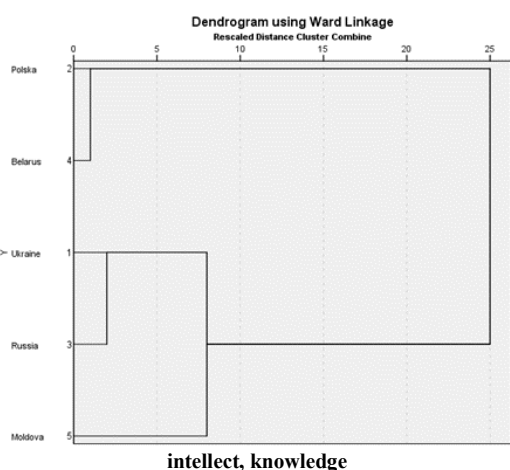
The components of the implementation of high-quality economic production and the quality of life form the national scale of the cost of human capital. A simple comparative analysis makes it possible to determine the direction of change in the stock of human capital (Table 2). Employment Index - the proportion of the working population of working age in the total population [3].

Table 2.

Employed persons (thousands of persons) and Employment Index

the country	data	2016	2017	2018	2019	2020
Ukraine (Data: ukrstat.gov.ua)	Employed persons	16276,9	16156,4	16360,9	16578,3	15915,3
	Employment Index	0,38	0,38	0,39	0,39	0,38
Republic of Poland (data: stat.gov.pl)	Employed persons	15293	15711	15950	16121	16021
	Employment Index	0,39	0,41	0,42	0,42	0,42
the Russian Federation (Data: rosstat.gov.ru)	Employed persons	75934,9	76481,2	76223,2	75097,0	75097,1
	Employment Index	0,51	0,51	0,52	0,50	0,51
Republic of Belarus (Data: belstat.gov.by)	Employed persons	4405,7	4353,6	4337,9	4334,2	4333,7
	Employment Index	0,46	0,46	0,46	0,46	0,46
Republic of Moldova (data: statistica.gov.md)	Employed persons	876,5	873,2	873,5	872,4	834,2
	Employment Index	0,25	0,25	0,25	0,25	0,26

The collected data became the basis for cluster analysis. Cluster analysis was carried out in two stages for the period 2016-2020. At the first stage, clusters were built in the context of each of the components: intellect, knowledge; health; implementation of high-quality economic production; the quality of life. At the second stage, the division into clusters was carried out taking into account all the selected components; they were considered as a general indicator. Such a two-staged analysis was performed to identify the components that have the greatest impact on the overall indicator. The SPSS Statistics program was used for cluster analysis. The dendrograms of the results of the first stage - component-by-component cluster analysis is shown in fig. 1.



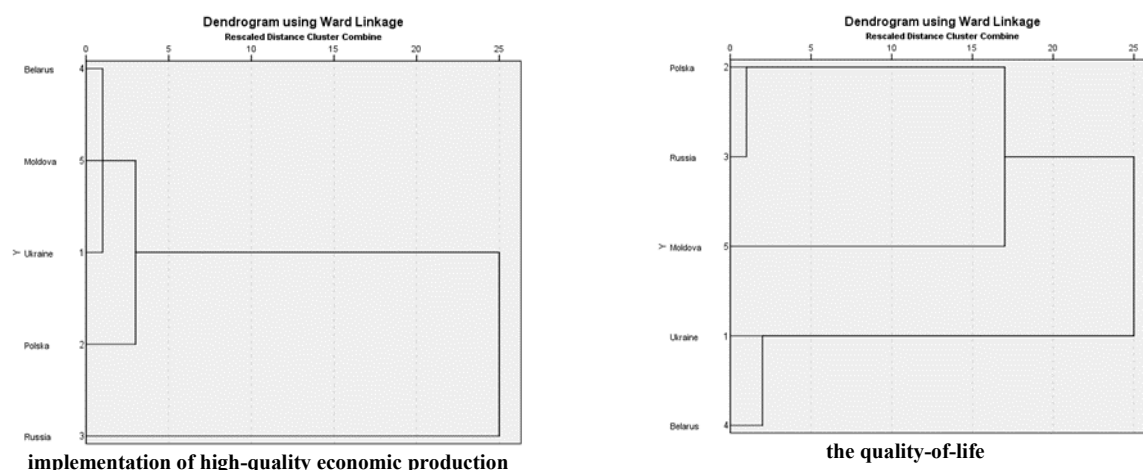


Fig.1 Dendrograms of the results of component-by-component cluster analysis

As a result, no more than three clusters were identified for each component. Similar results were obtained for the components of intelligence, knowledge and health. The first cluster included Poland and Belarus, the second - Ukraine, Russia, Moldova. The cluster analysis allowed to distinguish two clusters (1st - Belarus, Moldova, Ukraine and 2nd - Poland, the Russian Federation) by the component *implementation of quality production economy*. According to the quality-of-life component: the first cluster - Poland, Russia, Moldova, the second - Ukraine and Belarus.

The second stage of the analysis made it possible to identify two clusters: the first - Belarus, Moldova, Ukraine, the second - Poland, the Russian Federation.

Conclusions from this study and prospects for further investigations in this direction

As a result of the research, it was found that component implementation of high-quality economic production had the greatest impact on the overall result of the cluster analysis, as their dendrograms matched. The obtained results will make it possible to further evaluate the components of human capital as factors influencing population migration, and their transformation and development as a tool for regulating migration flows.

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