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INTELLECTUAL MIGRATION AS ONE OF THE FACTORS DETERMINING THE STATE OF THE "HUMAN POTENTIAL" SYSTEM: UKRAINIAN REALITIES

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Abstract — The paper examines the changes in the quality of human potential in Ukraine that have been taking place over the past ten years under the influence of intellectual migration. The analysis of the structure of migration flows and their direction is carried out. A cognitive model has been built to predict the impact of the processes under consideration on the level of economic development of Ukraine.

Key Terms — Knowledge economy, cognitive analysis, intellectual migration, structure of migration flows, proactivity.

The modern stage of development of society is determined as the post-industrial society or information society. An increasing importance in the development of the economy is played not so much by labor resources in their quantitative terms as by intellectual resources, i.e. the quality of these resources. In this sense, the modern economy is defined as a knowledge economy. Accordingly, a country that is focused on building its economy as the basis of a strong independent state should first of all care about the development of human potential. It is the realization of the human potential of individuals in the form of the human capital of an enterprise that makes it possible to create the greatest possible surplus value.

The formation of human potential as a complex characteristic of the state of the country as a whole is a complex multi-level process that depends on a large number of factors. This is confirmed by the following. The main indicators in determining the Human Development Index, data for which are published annually by the

United Nations, are life expectancy, literacy level (average number of years spent on education) and expected duration of schooling, as well as the standard of living, which is estimated through the gross national income per capita at purchasing power parity in US dollars. In turn, these indicators depend on the level of development of the country's economy at the previous stages. Thus, the formation of the human potential of the country as a whole should be viewed as a dynamic process taking place in a complex system with positive feedback. This type of feedback leads to the fact that the change in the output signal of the system is accompanied by such a change in the input signal, which contributes to the further deviation of the system from the initial state.

The purpose of this article is to study the impact of intellectual migration on the general level of human potential in Ukraine and on the trends of its change.

In economic science, there are two approaches to considering the category of "human potential". At the level of an individual, this concept involves the assessment of a person's personal qualities in connection with their influence on the results of his activity. At the state level, human potential determines the country's development opportunities, its competitiveness in the world market. Potential is not just the amount of resources, but also the possibility of the development of the system in a given direction contained in them. This division is based on two fundamentally different approaches to the interpretation of human potential, namely, resource and consumer. According to the United Nations Development Programme (UNDP), economic growth is seen as a means of human develop-

ment rather than an end goal. Whereas the resource approach, on the contrary, considers the human potential of the country as a means of its economic development.

The key concepts that determine the innovative component of the "Human potential" system at the state level can be represented in the form of a cognitive map (Fig. 1).

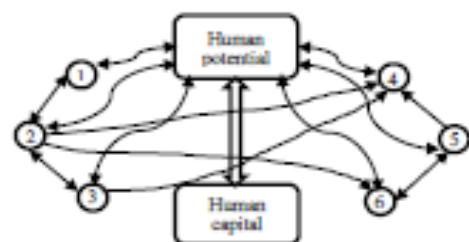


Fig. 1. The key concepts of the "Human potential" system as implementation of the resource approach:

1. general education; 2. professional education; 3. skills; 4. work migration; 5. proactivity; 6. creativity

As can be seen from Fig. 1, in addition to traditional concepts such as general education, vocational education, skills, in the concept map of the "Human potential" system we included such qualities of the human psyche as proactivity, creativity, as well as such a factor as labor migration. It is the proactive and creative part of the population that tends not to succumb to circumstances, but to look for radical ways out of the crisis [1]. This applies both to the development of business within their own country, which contributes to the development of the economy of this country, and outside the country. It also contributes to economic development, but another country.

Conversely, the economic factor was excluded from consideration, since This scheme provides for a certain cut of the state of the system at a fixed state of the economy, that is, it characterizes the state of the system at known values of economic indicators.

Let's consider the concept map of the "Human Potential" system as a directed graph,

$$G = \langle V, E \rangle, \quad (1)$$

where V is a set of graph vertices, $v \in V$; E is a set of elements, each of which $e \in E$ is an ordered pair (v_j, v_i) of elements of the set V which are named directed edges or arrows.

Let each vertex v_i ($i = \overline{1, n}$) takes on a value $u_i(t)$ at every discrete moment in time t . We assume that the value $u_i(t+1)$ is determined by the value $u_i(t)$ and information about how at the moment of time t the values changed in other vertices v_j , which are adjacent to the vertex v_i ($i \neq j$). This change is quantified by a number $p_j(t)$ and the decrease or increase in the value of the vertex v_i is determined by the sign of the arrow (v_j, v_i) :

$$\text{sgn}(v_j, v_i) = \begin{cases} +1, & \text{if the arrow } (v_j, v_i) \text{ is positive;} \\ 0, & \text{if the arrow } (v_j, v_i) \text{ is absent;} \\ -1, & \text{if the arrow } (v_j, v_i) \text{ is absent.} \end{cases} \quad (2)$$

Since the investigated system "Human potential" is open, it is also necessary to take into account the possibility of external influence $p_i^0(t)$ on the vertex v_i at a moment in time t .

Using the general approach proposed to the description of discrete states of complex systems [6], to characterize trends in the change of states of the "Human potential" system, the following formula may be applied:

$$u_i(t+1) = u_i(t) + p_i^0(t+1) + \sum_{j=1}^n \text{sgn}(v_j, v_i) \cdot p_j(t). \quad (3)$$

As noted above, shown in Fig. 1 cognitive map is some cross section of a spatial figure, the constant values for which in this case are economic indicators. Since we are interested in trends in the change of human potential in Ukraine, we will consider this cross section taking into account the current realities of Ukraine.

At the end of the 20th and beginning of the 21st centuries, the first complex indices appeared, which make it possible to assess the

success of both individual countries and entire regions in their movement towards the knowledge economy. Among them are Human Development Index (HDI), Knowledge Economy Index (KEI) of the World Bank, Global Innovation Index (GII) and others. And these indexes are constantly being improved. For example, the Consumer Technology Association has expanded the innovation index by adding new categories for assessment. Here are the values of these indicators for Ukraine in comparison with other countries considered in the rankings. Thus according to the level of HDI [3] in 2020 Norway had 0.957 (1st place among 189 countries), Germany 0.947 (6th), Slovenia 0.917 (22nd), Czech Republic 0.900 (27th), Poland 0.880 (35th), Russia 0.824 (52nd), Belarus 0.823 (53rd), Ukraine 0.779 (74th). According to the KEI [2] as of 2012, there was such a relationship between countries. Sweden has 9.43 (there is 1st place among 145 countries), Germany 8.90 (8th), Czech Republic 8.14 (25th), Slovenia 8.01 (28th), Poland 7.41 (38th), Russia 5.78 (54th), Ukraine 5.73 (55th), Belarus 5.59 (58th).

We have provided objective indicators. It is also interesting to give an example of how the Ukrainians feel. As an indicator of this, we can consider the Happiness Index, which is based on the results of the Gallup World survey, which is unique in scale. For the data of 2020, among 156 countries of the world, Finns read themselves as the happiest [5]. According to the rating, the following indicators were obtained: Finland 7.809 (1st place), Germany 7.076 (17th), Czech Republic 6.911 (19th), Slovenia 6.363 (33rd), Poland 6.186 (43rd), Russia 5.546 (73rd), Belarus 5.540 (75th), Ukraine 4.561 (123rd).

In this regard, it becomes clear why the outflow of labor force abroad has been increasing in Ukraine in recent years [4]. There are some differences in the number of migrants according to the Ukrainian Labor Force Survey and partner countries, although the general trends are the same. Thus, the statistics of the survey results in 2012 and 2017 show that the number of migrants from Ukraine to the EU increased from 1.6 million to 2 million per year, i.e. by 25%. According to the Economic Statistics

Center, it will be even higher, as many people are abroad for temporary or seasonal work. The migration vector has also changed. If in 2012 the main migration flow was directed to Russia, now it has decreased by a third. At the same time, the number of labor migrants to Poland has almost tripled. However, this did not significantly affect the quality indicators. Among seasonal workers, as well as among women migrants, the vast majority are unskilled workers, who find work in agriculture, construction or caring for the elderly. Whereas workers with vocational training (34% of the total number of migrants) and with higher education (33% of the total number) leave for a long time. At the same time, young people under the age of 35 make up 41-47% of the total number of migrants.

It is intellectual migration that leads to a significant decrease in the country's human potential, not only in the present, but also in the future.

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