

HEALTH CARE AS A SYSTEM-CREATING ELEMENT OF HUMAN CAPITAL: STRATEGIES OF ITS DEVELOPMENT BY THE CASE OF UKRAINE

Yurii Safonov¹, Viktoriia Borshch², Oleksandr Rogachevskiy³

Abstract. The main *purpose* of the paper is to analyze the process of the health care development as the system-creating factor of human capital. *Methodology.* This study combines economic and managerial analysis of healthcare and human capital. The background for this analysis is the data of the 2020 Human Capital Index in Ukraine and other developed and developing countries. The method of historical and logical analysis of the literature was used. The functional and structural analysis was used with purpose to research the main tools of human capital's development. Methods of comparative and statistical analysis and their synthesis were used to study dynamics of human capital. Method of summarization was used to make conclusions and recommendations for improving human capital in developing countries. Works of scientists in the sphere of human capital were used as the informational basis for the conducted study. *Findings.* In the paper it was analyzed the Human Capital Index in Ukraine and its components from the period of 2010–2020. The problems of the development of Ukrainian healthcare sector as the system-creating element of human capital are viewed. Formation of a new model for organizing medical care based on the development of the four P's model of medicine (predicting, prevention, personalization, participation) is considered as the main basis for developing effective healthcare sector in Ukraine. The authors of the article see the following key areas of necessary actions in Ukrainian healthcare sector: technological breakthrough, strengthening a healthy lifestyle, ensuring the availability of high-quality medical services, developing human resources, creating a system of effective drug provision, increasing the efficiency of financing. *Practical implications.* The results of this study form the methodological and practical basis for improvement of the state regulation system of Ukrainian healthcare as a system-creating element of human capital. The results of conducted research could be a framework for formation of effective healthcare system in Ukraine, ensuring its constant development. The main proposals could be used by the Ministry of Healthcare of Ukraine while working out the Concept of national healthcare system development, they should be taken into consideration by state and municipal Health Departments for implement them during the process of Ukrainian healthcare sphere's reformation.

Key words: human capital, healthcare system, the human capital project, Human Capital Index (HCI).

JEL Classification: I18

1. Introduction

From the point of view of the modern economic approach to the study of human behavior, human capital is a set of knowledge, skills, abilities used to meet the diverse needs of man and society as a whole. It is a complex productive factor that has a key impact

on economic development. Therefore, the modern economy is called the economy of efficient human resources, which emphasizes the main, defining role of human capital in the development of the modern state and society. Human capital determines how effectively the state develops. Competitive human

Corresponding author:

¹ Institute of Education Content Modernization, Ukraine.

Kyiv National Economic University named after Vadym Hetman, Ukraine.

E-mail: sum1971@ukr.net

ORCID: <https://orcid.org/0000-0001-5623-1965>

² Odessa National Medical University, Ukraine.

E-mail: viktoriyaborshch@gmail.com

ORCID: <https://orcid.org/0000-0001-6400-7840>

³ Odessa National Medical University, Ukraine.

E-mail: rogachevskiy75@gmail.com

ORCID: <https://orcid.org/0000-0002-8063-258X>

resources become the most significant in comparison, "raw materials economy" is replaced by "knowledge economy". Therefore, one of the main trends in the modern world is to increase competition for skilled and highly qualified human resources. This competition is taking place not only among developed but also rapidly developing countries, both globally and regionally.

As history has shown, any radical economic and social changes (for example, industrial revolution, scientific and technological revolution, etc.) were carried out on the basis of human capital, which was formed at a particular period of history. The accumulated knowledge, the level of development of education and science, the nature of the scientific, technical, managerial elite that exists in the country have always been the drivers of cardinal changes in society leading to a new qualitative level of development.

The quality of human capital in any country can change under the influence of both external (migration processes, integration projects, etc.) and internal factors (identification processes, dynamics of economic development, urbanization, the nature of reforms carried out in the country, etc.). In this regard, the issue of effective human resource management is essential and determines the degree of its competitiveness in the modern world for any state. Thus, a person and his/her capabilities are of key importance in the management of human capital (Nelson & Phelps, 1966).

Moreover, this process has two interrelated directions. On the one hand, human capital management is directly related to the development of the socio-cultural sector, the creation of stable conditions acceptable for the evolution of language, culture, education, healthcare, and national identity (Strauss & Thomas, 1998). In other words, the state forms an effective living environment and intellectual activity for its citizens, providing conditions for a quality life and effective self-realization. On the other hand, each person, guided by the priorities of personal growth, is aware of the need to invest in the development of its own country, through the self-fulfillment of each is the progressive growth of the entire country. Thus, human capital management is a self-sustaining and self-reproducing system in which created conditions and investments in human capital have led to the formation of new human qualities, which, in turn, contributes to the development of a new quality of life.

The goal of this paper is to analyze the process of the healthcare development as the system-creating factor of human capital.

This study combines economic and managerial analysis of healthcare and human capital. Complex of the general scientific and special research methods were used to achieve the goal of the study. The method

of historical and logical analysis of literature was used. Functional and structural analysis was used to investigate the main tools of human capital development. Methods of comparative and statistical analysis and their synthesis were used to study the dynamics of human capital. Method of generalization was used to make conclusions and recommendations for improving human capital in developing countries. The works of scientists in the field of human capital were used as the information base for the study.

2. Discussion and research results

Today's world leaders are the countries that have best learned how to shape and use people's knowledge, skills, competencies, their ability to continue learning and complex collaborative activities. Those owners of human capital who have the opportunity to apply it effectively to their work activities are the key creators of added value.

The market value of the modern corporation is increasingly determined by the ability of its hired "brains" to create new ideas, goods and services.

However, there is currently a huge shortage of human capital around the world. Despite unseen advances in human development over the past 25 years, serious challenges persist, especially in developing countries:

1. Almost a quarter of all children are stunted (being short for their age is an indicator of the risk of developing physical disabilities or cognitive impairment).

2. Many countries are experiencing an educational crisis that hinders their economic development. According to available data, schoolchildren in some countries lag behind their peers from other countries for five years.

3. Half of the world's population does not have access to basic health care, and many join the ranks of the poor each year, forced to pay for healthcare out of their own pocket.

4. In the world poorest countries, four out of five people living in poverty are not covered by social safety nets, making them highly vulnerable.

This deficit in human capital has a dangerous tendency to grow amid rapid global changes in technology, demography, instability, and climate. At the same time, investments in human capital are often neglected. This is unacceptable in a world where there are many examples of rapid transformation of human capital, such as Singapore, the Republic of Korea, and Ireland, as well as in some of the world's poorest countries. Malawi, for example, has made very rapid progress in closing the growth gap among children.

Human capital development is essential for countries at all income levels. While the poorest or most unstable countries face serious obstacles to improving education

and healthcare, even the countries with the world's highest levels of human capital development must not relax their efforts to invest in their citizens if they are to remain successful and competitive in the global economy.

In modern Ukraine, an additional argument in favor of increasing the contribution of human capital to development is the results of research confirming its low capitalization. It is enough to compare data on the quality of human capital and GDP per capita, estimated in terms of purchasing power parity (PPP).

Below we will analyze the human capital index (HCI) data for 2020 in Ukraine and some other countries.

The Human Capital Index 2020 includes healthcare and education data for 174 countries, covering 98 percent of the world's population as of March 2020. These data are a baseline for comparison with the situation before the pandemic. The study also provides a decade-long update on the evolution of human capital outcomes from 2010 to 2020. In all regions of the world for which relevant data are available, and for people of all income levels, these outcomes are improving. This was mainly due to improved health, reflected in increased child and adult survival and reduced stunting, as well as increased school enrollment. Now, with the global pandemic, the preservation of these achievements is in jeopardy.

Of the 48 countries in Europe and Central Asia included in the Human Capital Index 2020 (HCI), 33 are in the top one-third of the world, and almost all are in the top half. However, there are significant differences in the region. Among developing and transition countries in the region, a child born in Poland can expect to achieve 75 percent of the productivity of a fully educated adult with optimal health. And a child born in Tajikistan can expect only 50 percent productivity.

In the period from 2010 to 2020, the HCI value for Ukraine remained approximately at the same level – 0.63 (table 1). This means that greater and more focused investment in education, healthcare and social protection is needed to realize the full human potential of the Ukrainian people.

Thus, the COVID-19 pandemic threatens the significant gains made in health and education over the past decade, and especially in developing countries. This is the conclusion of a new World Bank Group analysis. Investment in human capital and its building blocks (e.g., the knowledge, skills, and health that people accumulate throughout their lives) is key to unlocking a child's potential and accelerating economic growth in every country.

A review of the main challenges and problems related to human capital led to a number of key conclusions that are fundamental to understanding what needs to be done to improve its quality and promote economic growth and development.

Firstly, changes in three sectors should provide a breakthrough in development:

- Education, which is assigned a leading role in the formation of human capital. A modern education system must: create a foundation for technological breakthroughs and economic growth; help overcome demographic challenges; work for social sustainability by reducing inequalities in access to development resources; and teach people to increase the capitalization of their knowledge, skills and competencies;
- Healthcare: Without changes in this area, it is impossible to reach the number of countries with a life expectancy of more than 80 years;
- A system of social support, the main objective of which is to reduce poverty (Barro, 1997).

Secondly, these social sectors cannot fulfill their functions of human capital formation unless they themselves undergo serious technological change (Edmonson et al., 2020, Schultz, 1999). The technological breakthrough must occur in these industries themselves.

Thirdly, given that in the near future the markets for educational and medical services will become global and increase their contribution to world trade, it is necessary to expand the export potential of these sectors of the economy (Bartel et al., 2011).

Fourthly, it is impossible to increase the capitalization of human capital without changing the model of the Ukrainian labor market (Bloom, 2003).

Fifthly, the reduction of not only the share, but even the absolute number of the working-age population makes it necessary to mobilize all the potentials for building up high-quality human capital and increase labor mobility (Hirooka, 2006).

3. Key projects of healthcare development

Increasing life expectancy and improving the health of the population of Ukraine is the main goal of healthcare development. This goal can be concretized in three directions:

- improving access to high quality medical care for all citizens of the country;
- enhancing the scale of public involvement in healthy lifestyle;
- increasing the global competitiveness of the Ukrainian healthcare industry and becoming one of the leaders in the development of medical and information technology.

Improving the accessibility and efficiency of healthcare will require the formation of a new model for the organization of medical care, based on the development of medicine of the four P's (prognosis, prevention, personalization, participation), extensive use of medical information technology and the effective combination of different levels and conditions of different types of medical care (primary, specialized,

Table 1
Human Capital Index in Ukraine and its Components: Comparison over a Decade

Indicator	HCI 2010 – Estimate in Year 2010			HCI 2010 – Source Year			HCI 2020 – Estimate in Year 2020			HCI 2020 – Source Year		
	Male + Female	Male Only	Female Only	Male + Female	Male Only	Female Only	Male + Female	Male Only	Female Only	Male + Female	Male Only	Female Only
HCI Component 1: Survival												
Probability of Survival to Age 5	0,988	0,987	0,990	2010	2010	2010	0,991	0,990	0,992	2018	2018	2018
HCI Component 2: School												
Expected Years of School	13,1	13,0	13,1	2010	2010	2010	12,9	12,8	13,0	2014	2014	2014
Harmonized Test Scores	490	492	488	2011	2011	2011	478	474	482	2018	2018	2018
HCI Component 3: Health												
Survival Rate from Age 1.5-60	0,773	0,671	0,876	2010	2010	2010	0,815	0,729	0,899	2019	2019	2019
Fraction of Children Under 5 Not Stunted												
Human Capital Index (HCI)	0,63	0,59	0,68				0,63	0,59	0,68			
Uncertainty Interval	[0.62,0.64]	[0.58,0.60]	[0.67,0.69]				[0.62,0.64]	[0.58,0.60]	[0.66,0.69]			

Source: *The Human Capital Report 2020*

emergency, rehabilitation, palliative). To achieve the set goals, it is proposed to implement measures in five priority areas, which are described below.

1. Key solutions for a technological breakthrough in healthcare:

1.1. Support for the creation of new medical technologies. The main tools for such a solution are three stages: the development and implementation of the State Program for the Development of Biomedicine, including increased funding for basic medical research on a grant basis; the development and implementation of the State Program to support start-up projects in the healthcare industry; mass training for the development of medical technology and its operation in medical organizations.

1.2. Implementation of innovative models of the organization of medical care. The development of medical information systems and telemedicine as a priority of the Government of Ukraine, as well as the development of virtual clinics that allow the monitoring of 12 morphological and functional systems of the human body in hospitals, clinics and at home.

1.3. Development of export centers for high-tech medical services. Ukraine has real potential for a large-scale increase in the export of medical services that are competitive in price and quality. To run this project you will need implementation of four key steps. The first is the support, on a competitive basis, of development programs (design and implementation of new medical technologies) of high-tech medical services export centers. The second is the implementation of public-private partnership projects in the development of leading Ukrainian clinical centers. The third is the creation of a center for cross-border medical care in Ukraine, which provides for the development and implementation of a marketing strategy for the export development of medical and educational services of leading Ukrainian clinical centers. Fourth, the introduction of new IT-technologies for the interaction of clients (patients) and insurance medical organizations with the staff of Ukrainian clinical centers, including the training of staff to work with foreign patients.

2. Key decisions to promote healthy lifestyles:

2.1. Involvement of the population in physical education and sports

2.2. Continuation of the anti-alcohol policy

2.3. Continued implementation of measures to reduce the prevalence of smoking

2.4. Promotion of healthy food.

3. Key decisions in ensuring the availability of quality medical services. Progress in this direction will require the following measures, first, to change the structure of medical care and the formation of integrated health care; and second, to develop the human resource capacity of the industry:

3.1. Structural changes in the healthcare delivery system and the formation of integrated healthcare. First, it will be necessary to complete the measures already being implemented to form a three-tier system of medical care. Second, the following measures are necessary:

- 1) providing access to pre-hospital care for rural residents living in small and remote settlements by developing a network of obstetric stations and mobile forms of medical care;
- 2) ensuring access to emergency and specialized care for residents of remote areas with a small number of residents by developing regional air ambulance services to comply with the "golden hour" requirements;
- 3) increasing the volume of high-tech types of medical care included in the program of state guarantees of free medical care;
- 4) creation of a modern system of palliative care for seriously ill citizens.

However, it is impossible to make significant progress in increasing healthy life expectancy without significantly strengthening primary care and developing areas of health care that improve the quality of life of older people.

And to achieve this result, the following changes are needed:

- 5) overcoming the shortage of general practitioners;
- 6) implementation of programs for managing patients with chronic diseases, including a set of measures to prevent disease exacerbations (ensuring close interaction between general practitioners and specialists, continuity of treatment in inpatient and outpatient settings, expanding the functional capabilities of nurses, remote health monitoring, drug provision for patients during outpatient treatment, etc.);
- 7) Creation of rehabilitation medical care as a separate structural link in the system of providing and financing medical care. To improve the efficiency and effectiveness of the use of resources available in the health care system, the following steps should be taken;
- 8) introduce tools for mandatory coordination and continuity in the provision of medical care;
- 9) change the procedure for the development and revision of clinical guidelines for diagnosis, treatment and prevention of diseases, taking into account economic opportunities for their use, and introduce an international expert review of draft clinical guidelines.

3.2. Human resource development. This requires action in three areas:

- 1) updating the professional competencies of medical workers: by creating a system of independent accreditation of Ukrainian doctors; introduction of a new system of continuous additional professional education; introduction of training programs for healthcare managers in the field of economics and management;

- 2) increasing the labor motivation of medical workers: by continuing the policy of increasing the salaries of medical workers; strengthening the differentiation of official salaries of medical workers depending on the professional category; adopting a housing program health worker in rural areas and small towns;

3) reorganization of medical education. To overcome the structural shortage of personnel, changes in the structure of medical training are necessary. It is necessary to accelerate the processes of updating the programs of medical universities and institutions of additional education in accordance with the achievements of world medical science and medical technologies. This will require the creation of new university clinics and the organization of student internships at their workplaces, and an increase of 3-5 years in the postgraduate training of physicians. The introduction of economic mechanisms that increase the interest of leading medical clinics in providing clinical facilities for the training of students, and the involvement of foreign specialists in the training will significantly improve the quality of medical education.

4. Key decisions to create an effective drug supply system. It is necessary to expand the use of evidence-based medicine principles in public administration and in the work of medical institutions, to change the programs of existing drug benefits, to introduce effective tools for regulating prices and the distribution of risks and costs in the procurement of drugs.

5. Key solutions in improving the efficiency of healthcare management and financing systems. Forms of healthcare financing must change in order to make efficient use of growing financial flows. Ukraine needs a transition to an insurance system of financing medical services, which provides health insurance and motivates its participants to improve efficiency.

The implementation of key proposals for the development of the healthcare system will lead not only to an increase in human capital and technological modernization, but also to the growth of healthcare as an economic sector with great export potential. The major solutions prioritized above would require an increase in state funding for healthcare in Ukraine from 6.7% of GDP in 2018 to 7.21% of GDP in 2025. The increase in spending will be needed: to support technological breakthroughs and renovation of fixed assets of medical institutions – 0.08% of GDP; to improve the quality of primary medical care – 0.12%; to promote a healthy lifestyle – 0.04%; to improve drug provision – 0.15%; to meet the need for high-tech medical care – 0.07%; to ensure payment for medical workers – 0.2% of GDP.

4. Conclusions

Today in Ukraine there is a deepening technological gap between the healthcare system and that of developed countries. This situation is dangerous because in today's world, healthcare is one of the main platforms for technological progress and is becoming a major industry in the most developed economies. The paper looked at healthcare as one of the main systemic elements of national human capital because investing in people through better nutrition, healthcare, quality education, job creation, and skills training contributes to the development of human capital, which is necessary to end extreme poverty and build more socially cohesive societies.

Today, human capital is the basis for the modernization of the country, which seeks to develop a "smart economy," which in turn requires a new quality of man, his knowledge, competencies and skills. Economic growth and development depend

on both human capital and tangible assets and factors affecting their productivity. Investments in human capital and in tangible assets complement and reinforce each other. Human productivity depends on tangible assets such as infrastructure, equipment, and a stable, well-managed economy. In turn, physically fit and educated people can earn more and invest more in tangible economic assets.

Thus, the above-mentioned priority areas, such as (a) technological breakthrough in health care; (b) strengthening healthy lifestyles at the national level; (c) ensuring the availability of quality health services; (d) development of human resources; (e) creating a system of effective drug provision; (f) increasing the efficiency of financing to improve the quality of the health care system in Ukraine, should be implemented in the near future and should be included in the conceptual framework of the strategic development of human capital of the country and the health care sector.

References:

- Averting the Old-Age Crisis: Policies to Protect the Old and Promote Growth / World Bank. N.Y.: Oxford Univ. Press, 1994.
- Barro, R. (1997). *Determinants of Economic Growth: A Cross-country Empirical Study*, Lionel Robbins Lectures. Cambridge, MA: MIT Press.
- Bartel, A., Phibbs, C., Beaulieu, N., & Stone, P. (2011). *Human Capital and Organizational Performance: Evidence from the Healthcare Sector*. Available at: https://www.researchgate.net/publication/228303288_Human_Capital_and_Organizational_Performance_Evidence_from_the_Healthcare_Sector
- Bloom, D., & Canning, D. (2003). Health as Human Capital and its Impact on Economic Performance. *The Geneva Papers on Risk and Insurance*, vol. 28, no. 2, 304–315.
- Edmonson, C., Marshall, J., & Gogek, J. (2020). Keeping the Human in Health Care Human Capital: Challenges and Solutions for RNs in the Next Decade. *Nurse Leader*, vol. 18, issue 2, 130-134.
- Hirooka, M. (2006). *Innovation Dynamism and Economic Growth. A Nonlinear Perspective*. Chettenham, UK, Northampton, MA, USA, "EdwardElgar".
- Nelson, R. R., & Phelps, E. S. (1966). Investment in Humans, Technological Diffusion, and Economic Growth. *American Economic Review*, vol. 56, no. 2, 69–75.
- Schultz, P. (1999b). *Productive Benefits of Improving Health: Evidence from Low Income Countries*. Yale University.
- Strauss, J., & Thomas, D. (1998). Health, Nutrition and Economic Development. *Journal of Economic Literature*, 36(2), 766–817.
- The Human Capital Report 2020. The World Bank. Available at: <https://www.worldbank.org/en/publication/human-capital>