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PROBLEMS OF HUMAN CAPITAL PRESERVATION AND DEVELOPMENT UNDER DIGITALIZATION CONDITIONS: NATIONAL AND REGIONAL CONTEXTS¹

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Introduction. Digitization of business processes, which take place at domestic enterprises and allow organizing and implementing various areas of their activity, creates new challenges for the state of financial and economic security of economic entities. About the risks of digitalization, including those arising from the total replacement of paper documentation with digital document circulation, from the preservation of large data sets exclusively in electronic form in digital repositories, from the speed of information dissemination and from its availability, vulnerability to unprofessional or harmful actions by personnel companies, conducting financial transactions using online payments, digital data transmission channels – a lot is already known, and all these risks are real, because they are supported by numerous cases of theft, damage, fraudulent use of company resources, transactions with which took place in the digital economic space. Most of the operations related to the personnel of companies are now also implemented in a digital environment. The active impetus for this was the global pandemic, then the processes of remote employment became more active after the start of a full-scale war in Ukraine. The ability to establish working relationships online, on the one hand, has become a salvation for many people and companies who had to move from occupied or enemy-attacked territories in order to save their lives and businesses. However, now, at the end of 2023, the question of preserving and restoring human capital, which Ukraine rapidly lost even in the pre-war period, is beginning to arise more and more actively, however, these losses are most noticeable now, in the midst of wartime. Human capital is the basis of the economic potential of the state, the key and reason for the recovery and development of the country's economy, in fact, the very reason for the existence of the state on the world map. Therefore, it is worth studying the possibilities of using digitalization as a means of preserving the country's human capital and the personnel potential of enterprises, and on the other hand, scientific research in this area can help to find out what risks digitalization can have for the normal organization and implementation of processes related to the movement of the population, its employment and performance of professional functions, education, daily economic life, etc.

Analysis of recent research and publications. Human capital as an important national resource of any country in the world is recognized as a "topical topic" for discussion in the international scientific arena. Foreign researchers, understanding the growing role of the concept of human centrism in the organization and functioning of economic and social systems, approach the study of human capital from different positions. For example, Collin M., Weil N.D. study the effects of increasing investment in human capital for economic

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growth and building economic potential [1], Hyun H. Son offers an Asian context of human capital development [2], Agénor P.-R., Bayraktar N. prove the interrelationships and interdependence of three categories: aid instability, human capital and growth [3], Ngo H. examines the possibilities of using human capital to increase the level of innovative capacity in middle-income economies [4]. Buttet S. and Schoonbroodt A. study human capital in another context. They are interested in the impact of young people's decisions on whether they should enter graduate school, on the formation of the nation's human and intellectual potential, and on its quality in the future [5]. The role of education in the question of the quality of human capital is emphasized by Torul O. [6]. Considering the strengthening of migration processes in Ukraine, the publication of Llull J. on the topic: "Immigration and Gender Differences in the Labor Market" [7] is interesting.

In domestic science, a new wave of research of the problems of preservation, restoration and development of human capital began after the start of a full-scale war, which became a catalyst for the process of Ukraine's loss of personnel and intellectual capital, as well as human resources in general. Taking into account this aspect, Safonov Y., Borshch V., Danylko M. propose the own methodology for evaluating human capital [8]. Taking into account the need to ensure the process of economic recovery of Ukraine in the post-war period with personnel resources, Plaksiuk O., Horvathova V., Yakushev O. investigate human capital as a factor in increasing the levels of efficiency and competitiveness of economic entities [9], Snitko E.O., Zavorodnya E.S. investigate the peculiarities and problems of the formation of human capital as a factor of ensuring economic growth [12], Yurchenko G.M., Sytnyk Y.S. make attempts to retrospectively rethink the theories of human capital in the conditions of the domestic economy in the post-epidemic period [13], Posnova T.V. offers her own assessment of the influence of creative human capital on the economic development of the regions of Ukraine [14]. We made attempts to generalize the theoretical and methodological aspects of the strategic management of personnel security of the enterprise as a direction of preservation and development of human capital in the conditions of BANI World and Industry 4.0 [15]. Thus, this article is a deepening and a continuation of a scientific search that was started earlier in 2023.

Objectives of the article. The purpose of the study is an outline of the problems of preservation and development of human capital under the conditions of digitization in national and regional contexts, determination of the possibilities of using digital products and services, primarily educational ones, for the development of the personnel potential of business entities and with the aim of increasing the level of their personnel security and forming an intellectual capital and personnel reserves to ensure the need for personnel during the post-war economic recovery of Ukraine.

The main material of the study. The war intensified the process of Ukraine's loss of human capital, however, this trend began long before the full-scale invasion. The main reasons for the loss of human capital over the last decade can be named: external migration, aging of the population and increase in mortality, declining birth rate, loss of working capacity, conviction of people for crimes and their serving various forms of punishment, increase in the unemployment rate, increase in the number of cases of various types of diseases (in including as a result of the global COVID-19 pandemic), low quality of medical care and lack of access to medical services in rural areas, rising cost of living, rising poverty, the death of a part of the population as a result of military aggression by Russia, in the occupied territories, during attacks or during performed official duties. A number of the reasons given have a direct impact on the quantitative indicators of human capital, others have an indirect impact on its qualitative indicators. Other, less resonant and tangible reasons for the decrease in the quantity and quality of human capital are being followed, such as, for example, psychological and social tensions, refusal to receive higher education (or the lack of an opportunity to obtain it), reluctance (especially among young people) to work or to establish communication skills at all, integrate into society, etc. The mentioned characteristics of modern society significantly affect the indicators of the intellectual potential of the nation, and if we talk about the issue of the post-war recovery of the economy of Ukraine, which, without a doubt, is a strategic task of national importance, then the quality of human resources, which will become the locomotive of the recovery processes, will depend to a large extent on the mood of the population, as well as the levels of their education, knowledge, skills and abilities, and the desire or unwillingness of emigrants to return to Ukraine, and those people who remained in the country despite the threat of wartime – not to leave it when such an opportunity arises after the end of hostilities actions.

The characteristics of the quality of human capital are embedded in various indicators of its state and development, which are determined and published by various international organizations, usually in the form of ratings. Thus, a well-known indicator in this context is the Human Development Index [16]. Its value is

an indicator of three aspects of each person's life – life expectancy and health status, level of education and standard (standard) of life. It can be said that this indicator is a combination of biological, educational and economic components of human life and it demonstrates the synergy of these three spheres in the context of human capital development. Equally important from an analytical point of view is the Human Capital Index [17]. The third important indicator is the Human Freedom Index, which shows the level of personal, civil and economic freedom of a person [18]. The United Nations uses such an indicator as the Universal Human Rights Index (Universal Human Rights Index) [19]. Also of interest is the Human Poverty Index – now known as the Multidimensional Poverty Index (MPI) [20].

So, the level of human capital can be assessed from many points of view, however, nothing has such a catastrophic impact on the state of human capital in Ukraine in 2023 as war. The informal division of regions into occupied, frontline, and rear regions should be taken into account and can be used when choosing specific tools and means of influencing the processes of loss and restoration of human capital (Table 1).

Table 1

Conditions for preserving human capital in different regions of Ukraine

Characteristics	Occupied territories	Frontline regions	Rear regions
Gender and age composition	Different gender and age composition: elderly people who could not leave the territory, young people who adapted to new living conditions	Predominantly elder people, young people with disabilities, young women caring for elderly relatives	Youth and men of working age, young women with children who have become internally displaced persons
Security and safety	Low level of security, constant threats to life and health due to illegal actions of the occupiers	The need to periodically stay in shelters to preserve life and health	Security is ensured by the operation of anti-aircraft defenses and distance from the front
Economic conditions	Unstable economic situation, need for state support and assistance	Complications due to infrastructure disruption, relocation of business facilities, limited access to economic benefits	Favorable conditions, increased demand for goods and services due to the increase in the number of residents, starting a business, free access to capital
Employment and training	The possibility of working and studying remotely (at the same time, there is a threat of a negative reaction to this from the occupiers)	Possibilities are limited due to the destruction of infrastructure and production and the relocation of business and higher education institutions	The emergence of new jobs at relocated facilities, the concentration of higher education institutions with various educational offers
Access to education and health care	Access is complicated due to the destruction and seizure of educational and medical facilities; limited opportunities for distance learning	Limited access due to the destruction of a number of social facilities, however, opportunities for online learning remain	Accessibility has increased: a large number of new specialists from among the displaced persons have appeared, who have strengthened the personnel of vocational schools and medical institutions
General mood	Constant fear for one's own life, psychological and emotional tension, desire to return to the usual life	A state of permanent anxiety, irritability, fatigue, a sense of injustice, anger	Desire to remain in safety, resistance to change, positive expectations
Intentions for the future	Adapt to new living conditions; in the future, the search for opportunities to move to territories controlled by Ukraine	Searching for opportunities to move to rear regions or abroad	The intention is to remain on the territory of Ukraine, to participate in the post-war recovery of the state's economy

Source: compiled by the author

Digitization of various spheres of private, economic, social, public life forms a set of skills that are necessary for using daily consumer services. Therefore, digital literacy today is not only a characteristic of the quality of human capital, but also one of the conditions for achieving a comfortable standard of living. Every person, and especially those who are employees of modern companies and perform the role of a human resource in the economy as part of their professional functions, are expected to have such digital competencies

as the use of gadgets to perform official duties, including online, participation in communications, organization of information and communication channels for exchanging documents and messages, creating, correcting digital documents, correspondence in digital format, carrying out financial calculations, ordering and receiving certificates, creating video and audio files, messages, other types of digital content, work with social networks (personal and professional profiles), purchasing goods, ordering work and services remotely, studying and participating in educational events in a remote format, using household appliances, their settings, etc. For people who live in the occupied territories and in the front-line regions, as well as for those who are temporarily abroad, mastering digital skills has become a means of ensuring a normal standard of living, staying in Ukrainian society, and an opportunity not to lose contact with the homeland. At the same time, digitalization creates certain obstacles to the preservation of human capital.

The problems of preservation and development of human capital in the conditions of digitalization are as follows:

- the opportunity for citizens to stay abroad for a long time without the need to return to their homeland to settle material, financial, and legal issues;
- a decrease in the number of jobs, the disappearance of a number of professions due to the replacement of human labor by digital technologies;
- increasing requirements for the presence of digital competences when getting a job or enrolling in education;
- the possibility of remote work at foreign companies, the use of intellectual capital and personnel potential of the population of Ukraine for the benefit of the economies of other countries;
- replacing fundamental knowledge and practical skills with automatic actions using digital gadgets;
- the need for constant training and mastering of new skills under the influence of digital transformations;
- the inability of part of the population (mainly the elderly) to quickly adapt to life in the digital space;
- reduction of "live" communication, personal communication, which leads to the degradation of communication skills, a decrease in the level of empathy and emotional intelligence.

The European Framework of Digital Competence for Citizens (DigComp) foresees the need to acquire digital skills in such areas as: problem solving, information and digital literacy, communication and cooperation, creation of digital content, security [21]. The Digital Competence Framework for Ukrainian citizens defines 4 dimensions, 6 spheres, 30 competencies and 6 levels of their mastery. The importance of mastering the basics of computer literacy, information literacy and the ability to work with data, creating digital content, communication and interaction in a digital society, ensuring safety in a digital environment, solving problems in a digital environment and lifelong learning is emphasized [22]. As of December 8, 2023, the Ministry of Digital Transformation of Ukraine published information that according to the results of a study conducted in 2023, 93% of the adult population of Ukraine aged 18 to 70 have digital skills in general. Over 4 years, the share of people who have digital skills has increased by 13% and is 60%. The development of digital skills at the state level is recognized as one of the important areas of human capital development [23]. Increasing the level of digital literacy can have the following positive results for the development of human capital in Ukraine (Figure 1).

We can recommend the following ways of expanding the use of digitalization opportunities to fulfill the task of preserving and developing human capital in Ukraine in war conditions:

- distance learning of schoolchildren and students who are abroad, and foreign students;
- online service by domestic companies of Ukrainian clients who are abroad at reduced prices;
- online counseling by state authorities of displaced persons on issues of return to their homeland and adaptation to new living conditions;
- provision of remote employment by domestic companies for their Ukrainian employees;
- organization and development of free digital educational platforms for short-term course training;
- creation of an information platform for communication and mutual assistance for persons who have gone abroad or become internally displaced persons;
- organization of short-term courses to increase the level of digital literacy of the population;
- saving a person's productive time by using digital tools and services to perform routine tasks;
- providing the opportunity to obtain the necessary product or service without personal presence in a place where a stay may be dangerous for human life and health.

No one is capable of stopping the trend towards the strengthening of the influence of digitalization on all spheres of economic and social life. Therefore, taking into account the problems faced by Ukraine in the context of the preservation and development of human capital, it is expedient for state authorities to learn how to

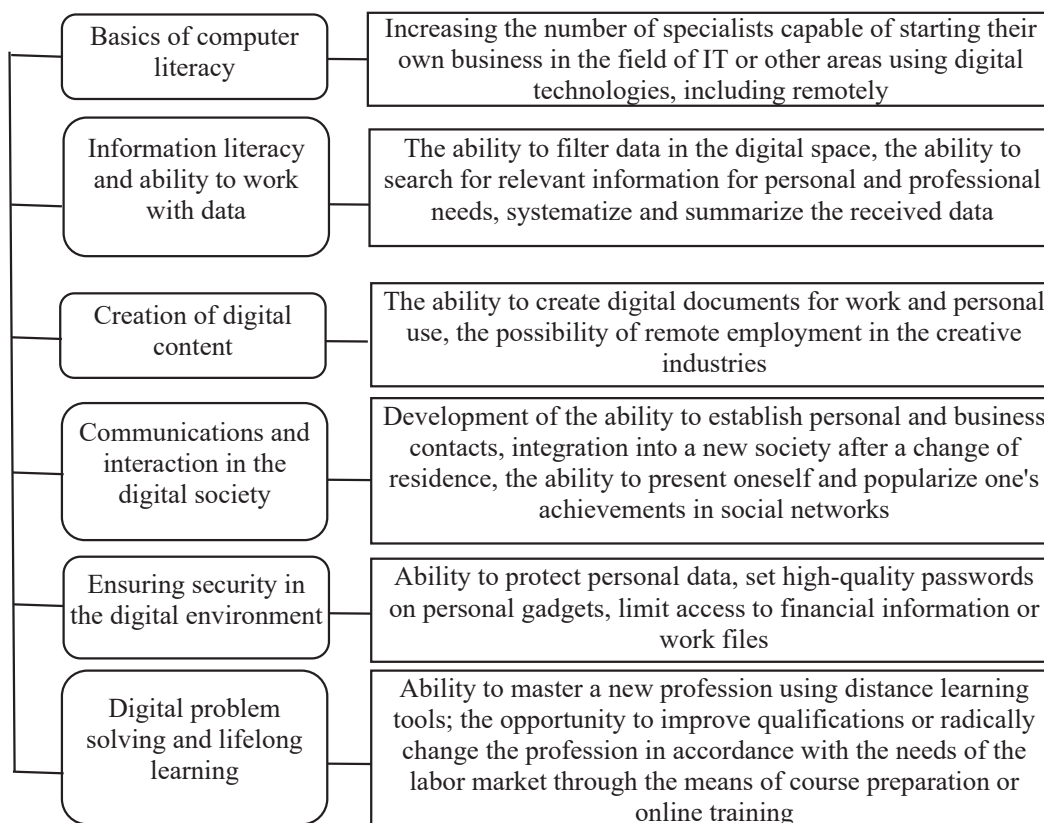


Figure 1. The role of digital literacy in the development of human capital

Source: compiled by the author

use the opportunities and advantages of digitalization to maintain intellectual capital and increase the personnel potential of the nation in order to ensure in the future a quality personnel resource for the recovery of the economy of Ukraine in the post-war period.

Conclusions. The study of the problems of preservation and development of human capital under the conditions of digitalization, taking into account the national and regional contexts, made it possible to draw the following important conclusions.

1. The main reasons for the loss of human capital over the last decade are: external migration, aging of the population and increase in mortality, decrease in the birth rate, loss of working capacity, conviction of people for crimes and their serving various forms of punishment, increase in the unemployment rate, increase in the number of cases of various types of diseases including as a result of the global COVID-19 pandemic), low quality of medical care and lack of access to medical services in rural areas, rising cost of living, rising poverty, the death of a part of the population as a result of military aggression by kussia, in the occupied territories, during attacks or when performing official duties.

2. The conditions that affect the fulfillment of the mission of preserving human capital in different regions of Ukraine – occupied, front-line and rear regions – are determined. Measures for the preservation of human capital should be planned taking into account the gender and age composition of the population of the region, the state of security in one or another territory, the economic conditions in which the population lives, the presence or absence of opportunities for employment and training, the availability of education and medical care, general attitudes residents and their intentions for the future.

3. The problems of preservation and development of human capital in the conditions of digitalization are outlined, such as: the possibility of staying abroad for a long time without the need to return to the homeland, the decrease in the number of jobs, the constant growth of requirements for the possession of digital competences, the possibility of remote work at foreign companies, the replacement of fundamental knowledge and practical skills by automatic actions, the need for constant learning and mastering of new skills, the inability of a part of the population to quickly adapt to life in the digital space, the reduction of "live" communication and "face to face" communication.

4. The role of digital literacy in the development of human capital has been established, in particular, the possession of basic digital competencies enables a person to start his own business in the field of IT, to develop the ability to filter data in the digital space, the ability to create digital documents for work and for personal use, get the opportunity to set up personal and business contacts in digital networks, to develop the ability to protect personal and professional data, to develop the ability to master a new profession using distance learning tools.

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Nataliia Zachosova, Doctor of Economic Sciences, Professor, Bohdan Khmelnytsky National University of Cherkasy. **Problems of human capital preservation and development under digitalization conditions: national and regional contexts.**

The main reasons for the loss of human capital in Ukraine over the last decade are summarized. The conditions that affect the fulfillment of the mission of preserving human capital in different regions of Ukraine – occupied, front-line and rear regions – have been determined. It is well-founded that measures to preserve human capital should be planned taking into account the gender and age composition of the population of the region, the state of security in one or another territory, the economic conditions in which the population lives, the presence or absence of opportunities for employment and training, the availability of education and medical care, the general mood of residents and their intentions for the future. The problems of preservation and development of human capital under the conditions of digitalization are outlined. The role of digital literacy in the implementation of the task of human capital development has been established. Ways to expand the use of digitalization opportunities to fulfill the task of preserving and developing human capital in Ukraine in wartime are recommended.

Key words: human capital, war, economic recovery, human capital development, human capital preservation, digitalization.

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Узагальнено основні причини втрати людського капіталу в Україні за останнє десятиліття. Визначено умови, які впливають на виконання місії збереження людського капіталу у різних регіонах України – окупованих, прифронтових і тилкових. Обґрунтовано, що заходи щодо збереження людського капіталу мають плануватися із врахуванням гендерного та вікового складу населення регіону, стану безпеки перебування на тій чи іншій території, економічних умов, у яких проживає населення, наявності або відсутності можливостей для працевлаштування та навчання, доступності освіти та медичного обслуговування, загальних настроїв жителів та їх намірів на майбутнє. Окреслено проблеми збереження та розвитку людського капіталу в умовах цифровізації, такі як: можливість залишатись за кордоном тривалий час без необхідності повертатись на батьківщину, зменшення кількості робочих місць, постійне зростання вимог до володіння цифровими компетенціями, можливість дистанційної роботи на зарубіжні компанії, заміщення фундаментальних знань і практичних навиків автоматичними діями, необхідність постійного навчання та опанування нових навиків, нездатність частини населення до швидкої адаптації до життя у цифровому просторі, скорочення «живого» спілкування та комунікації «face to face». Рекомендовано такі шляхи розширення використання можливостей цифровізації для виконання завдання збереження та розвитку людського капіталу в Україні в умовах війни, як дистанційне навчання школярів і студентів, які перебувають за кордоном, та іноземних студентів; онлайн-обслуговування вітчизняними компаніями українських клієнтів; онлайн-консультування з питань повернення на батьківщину та адаптації до нових умов життя; забезпечення дистанційної зайнятості для працівників; організація та розвиток безкоштовних цифрових освітніх платформ; створення інформаційної платформи для комунікації та взаємодопомоги для переміщених осіб; забезпечення можливості отримати необхідний продукт чи послугу без особистої присутності у місці, де перебування може бути небезпечним для життя та здоров'я людини.

Ключові слова: людський капітал, війна, відновлення економіки, розвиток людського капіталу, збереження людського капіталу, цифровізація.