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THE PHENOMENON OF HUMAN CAPITAL IN THE CONTEXT OF A NEW FORMAT OF CIVILIZATIONAL DEVELOPMENT

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ABSTRACT

The article provides a theoretical analysis and substantiates the importance of the phenomenon of human capital in the context of a new format of civilizational development through the prism of necessary competencies and skills in the future. The research draws on works by foreign and domestic scientists, statistical data from the Federal State Statistics Service, and reports from expert agencies and international organizations, supplemented by materials from international and domestic publications. The study employs comparative analysis, an interdisciplinary approach, and systematic methods with a descriptive focus to ensure result validity. The findings highlight the importance of human capital in the digital economy, identifying key skills such as problem-solving, critical thinking, team management, customer orientation, technological adaptability, and innovation. A proposed model emphasizes continuous learning, self-improvement, and adapting to emerging technologies and business models for sustainable human capital development.

Keywords: Human capital; Technological development; Skills and competencies; Digital economy

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INTRODUCTION

Modern society is characterized by a rapid change in technological patterns and a new form of development that involves not only the transformation of the spatial structure of the world and the domestic economic system (Kenzhin et al., 2021), but also a rethinking of civilizational values (Katkova & Mekka, 2022). Paradoxically, the key role in this process is not assigned to artificial intelligence (Kubrak, 2022) or digital technologies (Malika et al., 2022; Ybyraimzhanov et al., 2022), but rather to individuals with their skills and knowledge, who are capable of making a scientific breakthrough. This allows us to solve modern problems such as environmental, economic, and geopolitical issues, as well as social inequality. It also helps to create a stable and competitive ecosystem for the territory. In this regard, the study of the human capital phenomenon through the lens of the competencies and skills required in the future, as well as methods and models for their development, is of particular significance and relevance in order to enhance the competitiveness and sustainable growth of the economy in a given territory in today's context. Additionally, it is essential to develop recommendations and strategies for improving this process (Osiobe, 2019; Eskindarov et al., 2020).

Anticipating the review of existing definitions of the essence of the "human capital" category, let us explain what we believe the new format of civilizational development to be. As mentioned above, this new format is characterized by a rapid change in technological patterns, leading to technological singularity and the transition to a new type of digital industrial relations (Matvienko et al., 2022).

This entire process, which occurs through cyclical crises, leads to the formation of a new geopolitical reality, with an increase in the positions of technologically advanced countries and a significant gap in development between technologically advanced and less developed countries.

In these circumstances, a paradox arises: while the importance of technological development, including AI, increases, the significance of human capital also increases.. Thus, another breakthrough may occur where the greatest emphasis is placed on the development of human capital and its innovative potential as a primary source of breakthrough innovations. Knowledge is now recognized as one of the most significant resources and a key contributor to capital accumulation and the formation of knowledge-based economies (Kelchevskaya & Shirinkina, 2020; Bulina et al., 2020).

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To understand the significance of human capital in relation to technology, it is essential to conduct a theoretical review of the concept of "human capital." The theory of human capital has evolved through three stages:

- The first stage, the classical period (17th-19th centuries), is represented by the works of such political economists as William Petty, Adam Smith, David Ricardo and John Mill, who studied man as a resource in the economy. This stage culminated in the definition of the role of man in productive labor. Smith (1962) wrote, "An increase in the productivity of labor depends primarily on the improvement of the dexterity and skills of the workers, and then on the improvement of machines and tools they use."

- The second stage (first half of the 19th century), the managerial stage, saw a shift towards the development of theories on how to motivate and manage workers.

The third stage, which is the second half of the 20th century, is characterized by the development of the theory of human capital as a separate field of economics with its own subject, conceptual framework, and research methods. This stage is represented by researchers such as D. Mincer, G. Becker, T. Schultz.

For the first time, in 1958, Mincer (1958) introduced the term "human capital". Subsequently, Schultz (1971) and Becker (1962) used and developed this terminology. Later, Schultz (1971) received the Nobel Prize for Economics in 1979 for his work on human capital theory, and Becker (1993) received the same award in 1992 for his contributions to the field. Along with them, S. Kuznets also made a significant contribution to the theory of human capital, receiving the Nobel Prize in Economics in 1971.

Unlike the previous stages in the development of the theory of human capital, the issue of assessing the role of individuals as knowledge carriers in economic development emerged in the second half of the 20th century. This was because the pace and quality of societal and economic development (particularly in developed countries) could no longer be understood through traditional growth factors. The understanding of human capital evolved from a costly, non-productive aspect of society to a central, productive factor.

The primary justification for the increasing importance of human capital came from research on statistical data regarding the growth of developed economies, which surpassed calculations based on traditional growth factors.. The analysis of real processes of development and growth under modern conditions has led to the recognition of human capital as the primary productive and social force in the

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development of modern economies and societies (Mazur, 2020) has pointed out this fact.

The creators of the human capital theory define it as "a measure of a person's ability to generate income through their skills, talents, education, and qualifications." This definition has since been expanded and modified.

Schultz (1971) was the first to define human capital as an intense factor of economic growth. He argued that each individual has a unique value, which is based on their acquired knowledge, skills, experience, and the needs of the job market. According to Schultz (1961), "everyone has his or her own price."

It is worth noting that human capital's unique feature is its ownership right, which belongs exclusively to the individual.

Another founder of the concept of human capital, Gary S. Becker, defines human capital as a set of skills, knowledge, and abilities of an individual, as well as their physical qualities, that allow them to work effectively and generate income for themselves, their employer, and others. (Becker, 1962) The research he conducted allowed him to identify education as the core component of human capital. Other structural elements include health capital, vocational training (qualifications and skills), migration (mobility), awareness (possession of economically valuable information), and motivation for economic activity.

Bourdieu P. (2002) has also made a significant contribution to the theory of human capital by identifying three types of capital: economic, cultural, and social, and considering their functioning. According to him, cultural capital is the cultural baggage (mainly educational) accumulated throughout a person's life and becomes an integral part of their personality. Social capital, on the other hand, is formed by social ties such as kinship, acquaintances, professional, and corporate relationships, and can be converted into economic capital. Bourdieu P. (2002) believed that the ability to convert forms of capital into one another is a pattern associated with preserving and accumulating capital.

The development of the theory of human capital in Russia has been presented in the works of various scholar. These scholars have studied human capital from various perspectives, considering its features in the context of the Russian economy at different stages of development, such as the planned economy, the transition to a market economy, and the current digitalization.

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Domestic researchers have explored human capital by examining its essence in a broader context and adapting the main principles of the theory to the specific conditions of Russia. They understand human capital as an important productive factor that contributes to the development of the economy, society, and families. This includes the educated workforce, knowledge, intellectual and managerial skills, and a supportive work environment.

Understanding the structure of human capital in terms of intelligence, health, knowledge, quality and productivity of work, and quality of life, leads us to identify the factors that contribute to human capital formation through investments in improving the standard and quality of life for the population (Serikbai et al., 2023).

In studies on the category of human capital, other terms such as human potential, human resources, and labor resources are also used to describe the population as an essential component of the economic structure.

Thus, the goal of the study is to explore the phenomenon of human capital in the context of a new format of civilizational development.

METHODS

The materials of the presented research are the works of foreign and domestic scientists devoted to the problems of the development of the theory of human capital in the aspect of development in the context of digital transformation; statistical data from the Federal State Statistics Service and its territorial offices; data and reports from expert agencies and international organizations on the assessment of human capital development. The empirical base, in addition to these sources, which contributed to the development of scientific provisions based on their analysis and generalization, was made up of materials published in international and domestic publications.

The article used a comparative analysis, an interdisciplinary approach, a systematic method with an emphasis on a descriptive one, which influenced the integrity and validity of the results obtained.

The theoretical and methodological basis of the research is represented by the concepts of human capital development, as well as a set of analytical and descriptive methods.

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RESULTS

In the works devoted to the study of the role of the phenomenon of human capital from the perspective of post-industrial innovative economic development, it is noted that human capital is a profitable economic asset, where knowledge, skills and professional skills have become an instrument of synergy between capital and wage labor, transforming the principle of distribution of surplus value between owners of means of production and human capital (Lazarev et al., 2016).

The issue of determining the role of man and human capital in the context of a new format of civilizational development is associated with the definition of the modern development of the world economic system and the factors influencing its development. To fully understand the logic of the study, we will give an explanation of what we mean by the new format of civilizational development. The transformation of social and economic systems under the influence of new technological structures, the geopolitical restructuring of the world and the unexpected but very rapid influence of a biological factor in the form of coronavirus infection SARS-CoV-2 seems to us to be a new format of civilizational development. It is already a recognized fact that the pandemic has significantly accelerated the digital transformation of the economy, the image and format of life of both individuals and states has changed in a matter of days, and the principles of globalization have turned into radically opposite principles. So, each state solved problems in its own way, developed its own vaccines and took measures to support the economy. For the first time in world history, a biological factor appeared that had such a strong impact on the global economy. In a short period of time, there is not only a transformation of the spatial structure of the world and domestic economic system, but also a rethinking of civilizational values. Thus, industrial relations are transformed into a digital type, and the form of conducting business processes is switching to a network one. At the same time, it should be noted that the key role in the ongoing processes is assigned not to artificial intelligence and digital technologies, but to a person with his skills and knowledge who is able to make another scientific breakthrough that allows solving modern problems of society (environmental, economic, geopolitical, social inequality, etc.), to form a stable and competitive ecosystem of the territory. To further substantiate the new skills and competencies necessary for human capital, let us explain in more detail the current trends taking place in the world and Russia. Modern socio-economic systems have transformed into

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a digital type of industrial relations and digital transformation is characterized not only by the use of modern software products and equipment, but also implies new thinking that contributes to the formation of new approaches to management, to the culture of business processes, both in the internal and external environment, increasing employee productivity, company competitiveness based on new generation business processes in the digital economy (Gribanov, 2019). The fourth Industrial Revolution (Industry 4.0), accompanied by digital transformation, forms a knowledge economy, where knowledge becomes a key factor, in addition to traditional (land, labor, capital), and the main trend of the digital economy is the speed of the transformation of knowledge, from uniqueness to public good, while maintaining competitive advantages for a very short period. That is, digital transformation leads to the formation of a knowledge economy, where a competitive advantage appears not with the possession of knowledge, but with the ability to create unique knowledge. At the same time, the new role of knowledge implies not only accessibility, but also the expansion of opportunities for their creation and use, since the globality of the formation of social networks has given dynamism to society, which contributes to the rapid spread of innovations. The transformation of the economy from an industrial one with commodity production to a knowledge economy based on the formation and accumulation of key competencies is changing the nature of competition based on the ability to generate unique knowledge. New conditions for cooperation between companies based on network relations are being formed, where, due to the high level of technological infrastructure development, the speed of data storage, transmission and processing is growing exponentially and may lead to a technological singularity in the near future. Currently, there is a global transformation of the global economic system, where the leading world powers are moving to a new format of the digital economy from Industry 4.0. to Society 5.0, etc. where the main driving force of development is knowledge and human capital (Gribanov, 2019; Khuriev et al., 2024). The ongoing processes require constant and dynamic updating of the human capital development model with the necessary competencies and skills, with a lifelong education orientation. The ongoing processes set an even higher bar in the development of society, which can be achieved with a well-structured strategy for the development of domestic science and education to form human capital in a new format for the digital economy.

So, in the era of digitalization, the most important factor in the effective formation of the digital economy, among others, is human capital. It is obvious that, like other

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spheres of activity, the labor market is also being transformed, as a result of the development of new high-tech sectors of the economy, there is a need for high-class specialists with new competencies and digital literacy. Currently, high-tech, as well as the entire real sector of the economy, according to experts, requires specialists not just with good computer training, but the ability to analyze big data, work with digital devices, create applications, etc.; in terms of behavioral competencies, the most in demand are: methods for solving complex problems and critical thinking, interaction with staff and its management, development and adoption of effective solutions, customer-oriented approach, orientation of the latest technologies and the ability to adapt to transformational processes, etc.

Conducting surveys by experts and researchers of employers belonging to high-tech sectors of the economy and representatives of large businesses in the real sector of the economy of sectors, allow us to objectively talk about specialists who are currently in demand with the following skills and competencies: the ability to independently master new technologies and lack of fear of them, and the ability to set a task from a specialist to a programmer, for this it is necessary to understand algorithms development, big data analysis, the ability to work with digital devices, create apps and other digital skills. Along with the above skills, the following behavioral competencies are needed: methods of solving complex problems and critical thinking, interaction with and management of personnel, emotional intelligence, development and adoption of effective decisions, a client-oriented approach, effective negotiations, orientation to innovations and the ability to respond to changes in the environment (Zhilenkova, 2019; Tumarov, 2023).

The listed competencies and skills are currently necessary in the context of the digital transformation of the economy, however, rapid technological development can radically change the requirements for the quality of human capital and the necessary skills and competencies, therefore, the phenomenon of human capital consists in being able to transform in time and adapt to the emerging conditions of the external and internal environment.

In this regard, there is a need to form a mechanism for the continuous development of human capital as a generally recognized fact – lifelong learning, while the mechanism for the formation and development of human capital must be adapted to all upcoming transformations and a person's willingness to self-study is an insufficient factor in the development of his human factor, without the institutional

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support of the state and society. This implies, in turn, the development of a chain of interconnected institutions – universities – employers – the state – the person. That is, it is necessary to create such a mechanism for the formation and development of human capital, which would maintain its condition at such a level of intellectual development, in which all stages and modes of technological development, including artificial intelligence, allowed a person to use existing technologies for innovative breakthrough and creation of new forms of production with significant human superiority (natural intelligence) over artificial intelligence, without descending into the plane of competition and fear of technological singularity (Jones, 2019; Sultana, 2022).

To solve this problem, major transformations of the higher education system at the institutional level are needed. These transformations involve not only research activities and educational activities, but also the commercialization of knowledge and technology. This is because these factors are the most significant in determining the format of the modern technological revolution and the formation of technological markets.

A strategically promising direction for the development of the education system is the creation of educational organizations of a new format. These organizations should integrate innovation processes with all structures of society, including those that support the development of human capital throughout a person's life. The main goal of a modern educational organization should be to combine the global objectives of innovative development with the formation of an entrepreneurial ecosystem and promising technological markets, which will lead to an innovative breakthrough and global competitiveness.

To achieve this, it is essential to create a new generation of universities that integrate processes within an innovation ecosystem. The "University 3.0" model is an example of such a modern university, which combines the global objectives with the potential to form an entrepreneurial ecosystem. This model embodies a mechanism for commercializing scientific results by introducing them into production through links with businesses and government.

This new model of university aims to promote the commercialization of scientific research and ensure its integration into the economy. It also emphasizes the importance of collaboration between academia, industry, and government in order to foster innovation and create a sustainable future..In developed countries, there is a growing trend of collaboration between universities and businesses. However, in

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Russia, this trend is still in its early stages, and measures are being considered to transform the role of universities in the country's science project. These measures include the creation of world-class research and education centers (RECs) based on universities, which would provide favorable conditions for innovation and entrepreneurship, as well as platforms for collaboration between science, business, and government.

The "University 3.0" model may be outdated in the near future, as we see the emergence of the "University 4.0" concept. This new model is described as the future of higher education, integrating education, research, innovation, and collaboration with all aspects of society to support lifelong learning and human capital development.

Based on the above models of universities and their effectiveness in the context of digital transformation, we can conclude that the "University 4.0" model is the most optimal for the successful and continuous development of human capital. This is because there is a need to change the current institutional and economic model of higher education in order to improve the global competitiveness of Russian human capital.

The assessment of global competitiveness shows that Russia's higher education has a low rating, along with high ratings for primary schools (5th out of 50 countries) and an average rating for secondary schools (26th out of 73 countries). This suggests that there is room for improvement in the system.

Changing the model of higher education would allow for more effective development of human capital and better global competitiveness. The "University 4.0" model provides a framework for this change, incorporating digital technologies and innovative approaches to learning. According to an expert assessment by The Boston Consulting Group, the attractiveness of Russia's talent labor market is low. Russia ranks 106th out of 116 countries in terms of this attractiveness, according to domestic and international experts. The domestic and international rankings show a low rating for higher education in Russia. Only about 30% of Russian universities are in the top half of these rankings, and only one has entered the top 200.

This situation has led to the need for a new model of higher education that will allow the formation of high-quality human capital for the digital economy. However, Russian scientists have noted a paradox: while Russia has a high human capital index (ranking 16th out of 160 countries), the quality of its institutions is low, which hinders its competitiveness in the global economy (Semeshina & Erokhina, 2021).

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In this regard, we would like to outline the priority areas for the development of the education system in the context of the digital economy. We believe that it is essential to focus on the formation of high-quality human capital, taking into account the challenges of integrating natural and artificial intelligence in the digital environment.

The digital economy inevitably presents both opportunities and challenges, as it requires a balance between human creativity and machine intelligence. To maintain a competitive edge, it is crucial to create innovative educational programs that support natural intelligence, while also exploring ways to utilize artificial intelligence to enhance human capabilities.

Assessing the potential areas of collaboration and competition between humans and machines, we recognize that artificial intelligence has the potential to automate certain tasks that require algorithmic thinking, while humans excel in non-algorithmic, creative activities. Therefore, it is essential to develop educational programs that foster both technical skills and critical thinking, allowing individuals to thrive in a rapidly evolving digital landscape.. Based on this, the competitive advantages of artificial intelligence emerge in all areas of human work related to algorithms, as well as natural intelligence in so-called "right-hemispheric" thinking and the possession of morality (ethics). This is referred to as emotional intelligence (Zhdanov, 2022; Deming, 2022).

However, we note that contrary to the prevailing opinion, the field of emotional intelligence is becoming the subject of interaction between natural and artificial intelligence. The established patterns regarding the inability of artificial intelligence to master the emotional sphere are being refuted.

To strengthen the competitive advantages of natural intelligence, it is essential to recognize the high significance of education in mathematics and the arts. Just as mathematical education fosters analytical thinking and logic, education in the arts cultivates abstract and imaginative thought (fantasy). As a rule, the effective combination of these factors makes it possible to conduct research at a new level and make discoveries necessary for the further development of science and technology.

Returning to the paradox of a high level of human capital and a low level of institutions in Russia, it is important to note that in the process of further developing natural intelligence - human intellectual capital - it is essential to use socio-cultural characteristics for digitalization. This involves developing the ability to work through multiple channels by changing the method of communication, strengthening memory, and operating with data.

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Considering the above and key guidelines for developing human intellectual capital, we have proposed a model for its development (Figure 1).

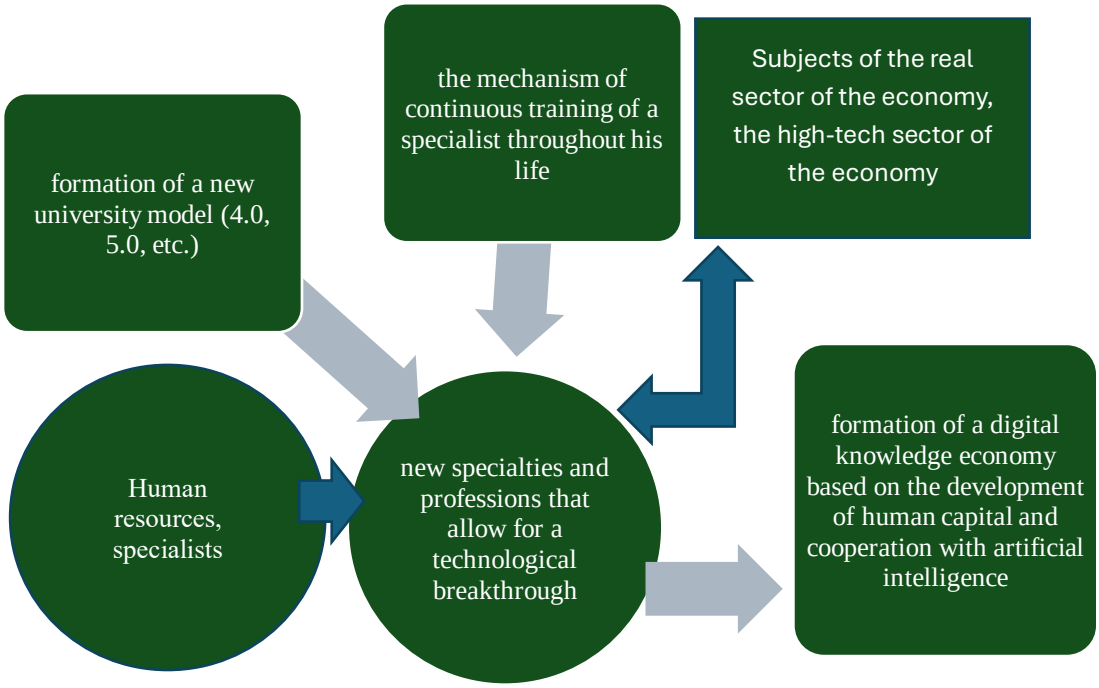

Figure 1. Model of human capital development in the digital economy

CONCLUSION

The article provides a theoretical basis for the significance of human capital in the digital economy. It identifies the skills that are most essential in the digital world, such as the ability to solve complex problems, critical thinking, managing and interacting with others, developing and implementing effective solutions, adopting a customer-centric approach, staying up-to-date with the latest technologies, and adapting to changing circumstances.

The article also proposes a model for developing human capital that is relevant in today's environment and can be sustained in the long run. This model emphasizes the importance of continuous learning, self-improvement, and adaptation to new technologies and business models.

Currently, high-tech, as well as the entire real sector of the economy, requires specialists not just with good computer training, but with the ability to analyze big data, work with digital devices, create applications, etc.; in terms of behavioral competencies, methods of solving complex problems and critical thinking, interaction

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with personnel and management are most in demand, development and adoption of effective solutions, customer-oriented approach, focus on the latest technologies and the ability to adapt to transformational processes, etc.

For the formation of high-quality human capital and highly qualified specialists with the above-mentioned skills and competencies, the ability to independently master new technologies and lack of fear of them, the ability to set a task from a specialist to a programmer, it is necessary to optimally build a model of human capital development with the key participation of universities and the direct inclusion of employers in the educational process, with a clearly built interaction mechanism for joint training, retraining and increase the level of human capital.

The problem of human capital development, at present and in the long term, will be very relevant, since the development of the global economic system and society is just beginning to move to a new format and a high level and new quality of human capital will be required for a further leap.

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