

# DIGITALIZATION OF THE UKRAINIAN ECONOMY: GLOBAL CHALLENGES AND LOCAL DILEMMAS

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**Abstract** *The rapid development of information and communication technologies has caused significant changes not only in public life, but also in business processes. Innovations and progressive methods of managing economic activity have caused inevitable changes in its structure. The reality of today is that 55% of global business is digital, and 99% of workers who moved to online work due to the COVID-19 pandemic do not want to return to their workplace in the office. Digitalization is a priority direction of development for modern Ukraine. Despite the significant efforts of the legislative and executive authorities of Ukraine to form the necessary infrastructure, the process of digitalization of the economy in the state still does not meet global challenges, which makes it a relevant object for modern research in the field of management. The theoretical and methodological basis of the study is the fundamental provisions of economic theory and the work of domestic and foreign scientists on the study of the process of transition of the global economic system to the digital space. The study is based on the dialectical method of cognition and a systematic approach. The purpose of this study is to deepen the theoretical foundations of the study of the digitalization of the economy and to identify the impact of global challenges on the digitalization of the economy of Ukraine. This study reveals the essence of theoretical and methodological approaches to the study of the concept of the digitalization of the economy, and establishes its key elements. The domestic and foreign works of scientists devoted to the development trends of the processes of digitalization of the economy and public life are analyzed. It is established that despite the large number of studies of this process, its theoretical aspects and problems of practical implementation are still insufficiently studied due to the high speed of innovative transformations that occur in the global economy and unforeseen factors, the management of which presents certain difficulties even for developed countries (such as the COVID-19 pandemic). The paper analyzes the position of Ukraine in international rankings that describe the process of digitalization and the level of development of the digital economy. It is established that the most significant assessment criterion for the state is the knowledge possessed by specialists in the field of technology and innovation. However, it is emphasized that the local state problem is the outflow of such a resource abroad due to the impossibility of ensuring a high level of wages and appropriate working conditions. The global challenges of digitalization of the economy are identified and local dilemmas are presented that hinder the transformation of economic activity and public life.*

**Keywords:** *digitalization, digital economy, global economic system, digital space, digital infrastructure, electronic commerce.*

## Introduction

The digitalization of the economy is a modern global megatrend that has appeared as a result of the rapid development of information and communication technologies and is designed to simplify business activities through the unification of fragmented approaches to its management. In the widest sense, digitalization is commonly understood as the transformation of information through its synchronization and compression in such a way that the sender and recipient of digital data can successfully communicate with each other (Explanatory Dictionary, n.d.). It has become an integral part of market relations, which are rapidly moving online in the 21st century, thereby opening up new frontiers for national business and making it easier for entrepreneurs of any size to enter the international market. The global problem of the healthcare system, which faced the COVID-19 pandemic, also had a special impact on the growth of the pace of digitalization of the economy.

Statistical data only confirm the statement of the famous American futurist John Naisbitt (2003), that “new information technologies will first be used to solve old industrial problems, and then gradually give rise to new activities, processes and products.”

Despite the fact that the concept of digitalization is not innovative, it is only beginning to develop in economic theory. Changing approaches to managing human economic activity

requires a qualitative restructuring of the global economic system, innovative knowledge and time. It should be noted that the global level of economic development throughout the history of mankind was characterized by a high level of asymmetry; therefore, the processes of digitalization of the economy in different countries occur with different intensity. Most revealing in this case are the growth rates of e-commerce. In 2014 this accounted for only \$1,336 billion, which represented 7.2% of the total volume of trade, while in 2020 this figure reached \$4,248 billion, i.e., 24.9% of worldwide trade (WTO, 2014, 2020; Statista, 2022). Innovative approaches to management and digitalization are being actively introduced in various industries, especially in the construction industry (digital construction, virtual reality, etc.).

Digitalization is a priority direction of development for modern Ukraine. Back in 2016, the ProZorro electronic public procurement system and the e-Health electronic health care system were successfully introduced in the territory of the state. Since 2018, the government of the country has been actively developing and implementing basic provisions to enhance the development of the digital economy and other areas of activity. In 2018, the “Concept for the Development of the Digital Economy and Society of Ukraine for 2018–2020” was adopted, the Internet was launched in 4G format, and laws were adopted “On Electronic Trust Services,” concerning the provision of a high level of protection of electronic signatures, and “On the Main Provisions for Ensuring Cybersecurity in Ukraine,” designed to guarantee the protection of the interests of the national community in cyberspace. In 2019, the State Agency for Electronic Governance of Ukraine was replaced by the Ministry of Digital Transformation, whose activity is aimed at ensuring the implementation of the digital rights of every citizen, namely the right to access broadband Internet, increased availability of information and communication technologies, and so on. In order to transform the perception of the ongoing digitalization processes by the population, in March 2021, the Cabinet of Ministers of Ukraine adopted the Concept for the Development of Digital Competences, the main goal of which “... is identifying priority areas and main tasks for the development of digital skills and digital competencies, increasing the level of digital literacy of the population ... in the conditions of development of the digital economy and digital society.” However, despite the significant efforts of the legislative and executive authorities of Ukraine to form the necessary infrastructure, the process of digitalization of the economy in the state still does not meet global challenges, which makes it a relevant object for modern research in the field of management.

A large number of works of both domestic and foreign scientists are devoted to the study of the process of digitalization of the economy and modern trends in its development. The solution of the problems of socioeconomic relations in the modern paradigm of the information economy is reflected in the works of: D. Antonenko, I. Antokhonova, D. Bell, A. Berko, N. Vasilyeva, O. Vilkhivskaya, V. Vysotskaya, L. Vinarik, L. Vinnik, L. Garmider, D. Amora, O. Melnichuk, A. Orlova, V. Pavlova, O. Pushkar, E. Ponomarenko, J. Strauss, A. Chuchkovskaya, A. Shchedrin and others. The study of global trends in the development of digitalization is reflected in the works of: A. Abeliansky, M. Alstyne, J. Burrell, S. P. Choudary, C. Freund, A. Goyal, M. Graham, M. Hilbert, I. Hjorth, V. Lehdonvirta, E. Oreglia, G. Parker, D. Tapscott, D. Weinhold, G. Karcheva, S. Kuznetsova, D. Ogorodney, V. Openenko, B. Panshin, A. Spartak, I. Sagittarius, V. Khalin, S. Chebanov, G. Chernova, I. Shkvarun, and others. The main problems of digitalization in Ukraine and trends in the development of the digital economy and digitalization of public relations are considered by such domestic scientists as S. Alpakov, O. Bilyk, S. Veretyuk, O. Hudz, O. Dannikov, O. Dzhusov, V. Zagariy, T. Kovalchuk, S. Kolyadenko, Y. Levitskaya, A. Marchenko, V. Pilinsky, I. Plykus, N. Podolchak, V. Sinilnik, K. Sichkarenko, and others. However, despite the large number of studies of this process, its theoretical aspects and problems of practical implementation are still insufficiently studied due to the high speed of innovative transformations that occur in the global economy and unforeseen

factors, the management of which presents certain difficulties even for developed countries (such as the COVID-19 pandemic). Such problems determine the relevance of the study of the digitalization of the economy of Ukraine.

The purpose of this study is to deepen the theoretical foundations of the study of the digitalization of the economy and to identify the impact of global challenges on the digitalization of the economy of Ukraine.

The object of this study is the process of the digitalization of the economy of Ukraine.

The theoretical and methodological basis of the study is the fundamental provisions of economic theory and the work of domestic and foreign scientists on the study of the process of transition of the global economic system to the digital space. The study is based on the dialectical method of cognition and a systematic approach. The main results of the study were obtained using a set of general scientific and special research methods, namely: theoretical generalization, induction and deduction to analyze the conceptual and categorical apparatus of studying the digitalization of the economy; system analysis and synthesis to establish the features of the digitalization of the economy; and abstract-logical and statistical analysis to explain the trends in the development of e-commerce in Ukraine and the positions of the state in international rankings.

The information basis of the study is the official data of international organizations (the United Nations Convention on Trade and Development (UNCTAD), the World Trade Organization (WTO), the World Bank, the World Economic Forum (WEF) and others), statistical agencies and authorities of the European Union, European Commission (EC) and Ukraine, the materials of scientific periodicals, and Internet resources.

### **The main body of the paper**

The rapid development of information and communication technologies has caused significant changes not only in public life, but also in business processes. Innovations and progressive methods of managing economic activity have caused inevitable changes in its structure. The realities of today are such that 55% of global business is a digital space, and 99% of workers who moved to online work due to the COVID-19 pandemic do not want to return to their office workplace (Marinova, 2022). The digitalization of economic activity and public life is rapidly increasing, which poses a number of tasks for states and individual economic structures to create conditions for its successful integration into existing systems or build new ones based on the constitution of the modern information space. In order to identify the basic conditions for the successful implementation of digitalization in the economy, it is necessary to clearly identify its essence and key elements. There is currently no single approach to the interpretation of the concept of digitalization of the economy in economic theory. An analysis of theoretical developments made it possible to systematize theoretical approaches to the definition of the concept of digitalization of the economy (Table 1) and to establish that a variety of methodological approaches to its understanding are crystallized in several synonymous definitions and similar concepts: digital economy, electronic economy, Internet economy, and digitalization of the economy. Systematizing approaches to understanding the essence of the digitalization of the economy, it should be noted that within the framework of the time-spatial approach, it is considered as a stage in the development of the global economy which plays a significant role in the development of the world community. The functional approach focuses on the content and key operations that are carried out in the process of establishing an economic system via the Internet. The communication approach reveals the essence of the digitalization of the economy as a process of interaction between various business entities. The process approach focuses on the direct transformation of the economic system. Finally, the systemic

approach considers it important to consider the digitalization of the economy as an integral system of interconnected elements, which acquires certain features.

**Table 1. Theoretical approaches to the definition of the concept of digitalization of the economy**

*Source: developed by the author*

Name of approach	Essence of interpretation	Representatives
Temporal-spatial	A new way of the economy based on knowledge and digital technologies, within which new digital skills and opportunities are formed for society, business and the state.	The World Bank (2016)
	The main modern trend in the development of the economy and society, based on the transition to a digital format for presenting information, which is aimed at increasing the efficiency of the economy and improving the quality of life.	Khalin & Chernova (2018)
	The modern innovative stage of economic development, which is based on the integration of physical and digital resources in the sphere of production and consumption, in the economy and society.	Achapovskaya (2019)
	A driver of innovation, competitiveness and economic growth, which leads to lower costs and new opportunities in various sectors of the economy.	Shuiskiy (2019)
	A driver of global economic growth aimed at accelerating economic development, increasing the productivity of existing industries, creating new markets and industries, and achieving inclusive sustainable growth.	Rozanov et al. (2021)
Functional	A digital economy, but to a large extent we mean doing business in Internet-based markets.	British Computer Society (2013)
	The consumption of goods and services using digital information technologies (online trading, e-government, etc.).	Pyvovarov (2018)
Communication	A form of economic activity that emerges from a billion instances of networking between people, businesses, devices, data, and processes. The basis of the process is hyperconnectivity, i.e., the growing interconnectedness of people, organizations and machines, formed by the Internet and mobile technologies.	Deloitte (2019)
Process	The transformation of various spheres of the economy by transferring all information resources and knowledge to a computer platform.	Veretyuk & Pilinskyi (2016)
	Active introduction and practical use of digital technologies for collecting, storing, processing, converting and transmitting information in all spheres of human activity.	Babkin & Lychagin (2020)
	The process of creating a technology-driven system designed to generate new sources of income and expand the boundaries of economic opportunities for a business entity.	Tumanyan (2019)
	The process of structural changes at the microeconomic level, aimed at moving existing economic models to the digital space.	Blix (2015)
Systemic	The set of mechanisms necessary to achieve stable economic growth over time and, consequently, for the transition of developing countries to the level of developed ones, as well as for the latter to remain so.	Martínez Euklidiadas (2021)
	A process or ecosystem that transforms all areas of economic activity into a digital economy in its broadest sense.	Hanna (2020)

The study of the essence of existing interpretations of the concept of digitalization of the economy confirmed the conclusion that there are a large number of relevant definitions, each of which characterizes certain aspects of the organization of economic activity on a digital platform depending on the objectives of the study, which are determined by the level of development of the economy as a whole. Thus, the understanding of the essence of digitalization of the economy is being transformed both at the national and global levels.

The economy of the state, as a system, consists of a number of interrelated elements: the market, industry, agriculture, finance, trade, entrepreneurship, management, marketing and many

others. In modern conditions of globalization and internationalization of economic activity, each of the presented elements functions by being closely interwoven with information and communication technologies. Trade, advertising and PR, finance, entrepreneurship and a certain part of the service sector have long used the digital Internet space to manage information flows. It was these areas which formed the basis of the digital economy, the concept of the development of which appeared in the last decade of the 20th century. The basic requirements for entrepreneurs and public authorities have become the availability of qualified personnel and appropriate infrastructure, and for consumers – the presence of an Internet connection and access to computer technology. Despite the fact that in Ukraine the percentage of funds that the population spends on providing themselves with communication services is constantly growing (3.3% in the first half of 2021 compared to 2.4% in the first half of 2018), the picture of population coverage regarding information and communication technologies is very blurry (State Statistics Service of Ukraine, n.d.-a, n.d.-b). This is due, first of all, to the imperfection of statistical accounting in this area. At the moment, the official website of the State Statistics Service of Ukraine (n.d.-a) presents data only on the coverage of the population with communications, without specifying information on the number of Internet users. In addition, this information is no longer updated. The State Statistics Service of Ukraine's (n.d.-b) data on the activity of enterprises involved in the process of digitalization of the economy are relevant and very detailed, but they only allow a fragmentary assessment of the pace of transition to a digital system. Under such conditions, international ratings that assess the level of development of information and communication technologies and the degree of readiness of digital infrastructure are becoming key indicators of the process of digitalization of the economy. The digital economy of Ukraine has found its assessment in a number of such ratings (Table 2).

**Table 2. Assessment of the level of digitalization of Ukraine's economy in international rankings, 2020**  
*Source: compiled by the author on the basis of Acs et al. (2020); Dutta & Lanvin (2020); United Nations DESA (2020); IMD World Competitiveness Center (2021)*

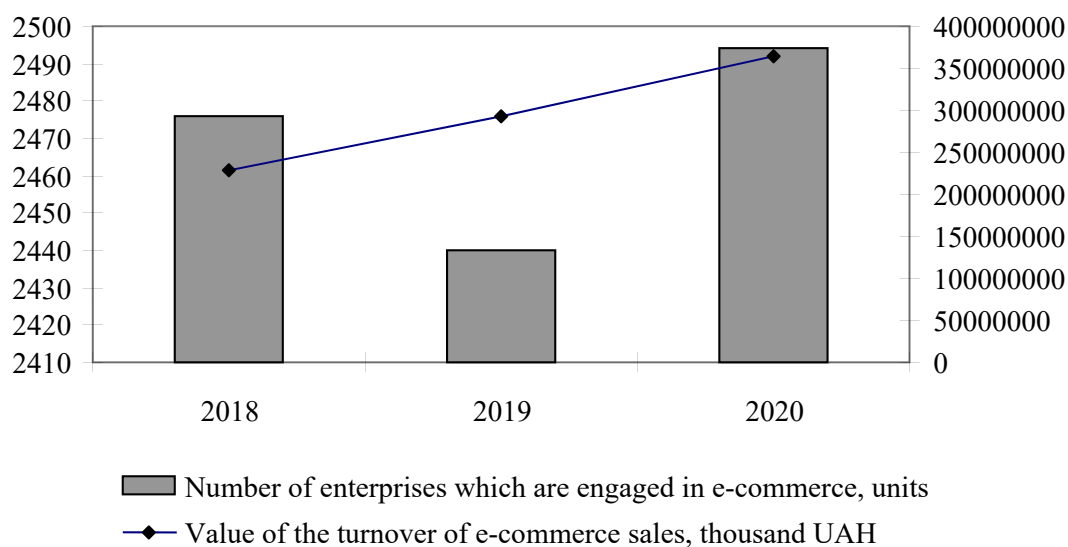
Rating / index name	Ranking of Ukraine	List of countries holding the nearest positions
Digital Platform Economy Index (DPE Index)	54th from 116 countries	Brazil – 51, Argentina – 52, Mexico – 53, Saudi Arabia – 55, Oman – 56, Montenegro – 57
United Nations E-Government Development Index EGDI	69th from 169 countries	Colombia – 67, Armenia – 68, Azerbaijan – 70, Peru – 71
Network Readiness Index (NRI)	53th from 121 countries	Bulgaria – 50, Bahrain – 51, Brazil – 52, Thailand – 54, Kuwait – 55, Costa Rica – 56
World Digital Competitiveness Ranking (WDCR)	58th from 63 countries	Peru – 55, Indonesia – 56, Philippines – 57, Argentina – 59, South Africa – 60, Colombia – 61

The Digital Platform Economy Index (DPE Index) was presented in 2020 by the Global Entrepreneurship and Development Institute to assess the level of development of the digital entrepreneurship system. This indicator includes four structural elements: Digital User Citizenship (DUC), reflecting the flow of users with digital technologies; Digital Technology Entrepreneurship (DTE), which describes the number of actors creating entrepreneurial innovations in the digital space; Digital Multi-Sided Platforms (DMP) – the number of sites where social and economic interaction between users; and Digital Technology Infrastructure (DTI), which includes all requirements for the organization and conduct of technical, social and economic activities on digital platforms (Acs et al., 2020). The Network Readiness Index is formed by four groups of indicators that reflect the network readiness of the state to digitize the economy. These groups include technology (use of ICT as a key factor in economic

development), people (ICT coverage and skills to use it productively), public administration (security of personal data in the digital space) and the impact of digitalization on society's wellbeing (Dutta & Lanvin, 2020).

The United Nations E-Government Development Index is calculated by the United Nations Department of Economic and Social Affairs. It is the only global index that assesses the state of digitalization of government activities in relation to other countries. The indicator is a relative indicator and is used for comparative analysis. It assesses the volume and quality of online services in the form of an index of online services, the status of development of telecommunications infrastructure and the index of human capital (Ministry of Electronics and Information Technology, 2021).

It is worth noting that due to the intensification of the activities of the Ukrainian authorities in providing the state with the necessary regulations governing the digitalization of the economy and the introduction of affordable software technologies for the population, the country ranks high in international rankings. Thus, in the territory of the state, the following are already available: 4G mobile communication, broadband Internet access, and the ability to receive a number of government services and electronic identification through the Action program. The number of enterprises engaged in e-commerce has increased as, accordingly, has its overall volume of trade (Figure 1). Thus, in 2018–2020, despite not insignificant changes in the quantitative structure of enterprises engaged in electronic commerce, its volumes increased by 59.8%, or 136 billion UAH, which is one of the most significant indicators of the growth of the digital economy in the country.



**Figure 1. Dynamics of the number of enterprises using e-commerce and the volume of e-commerce in Ukraine, 2018–2020**

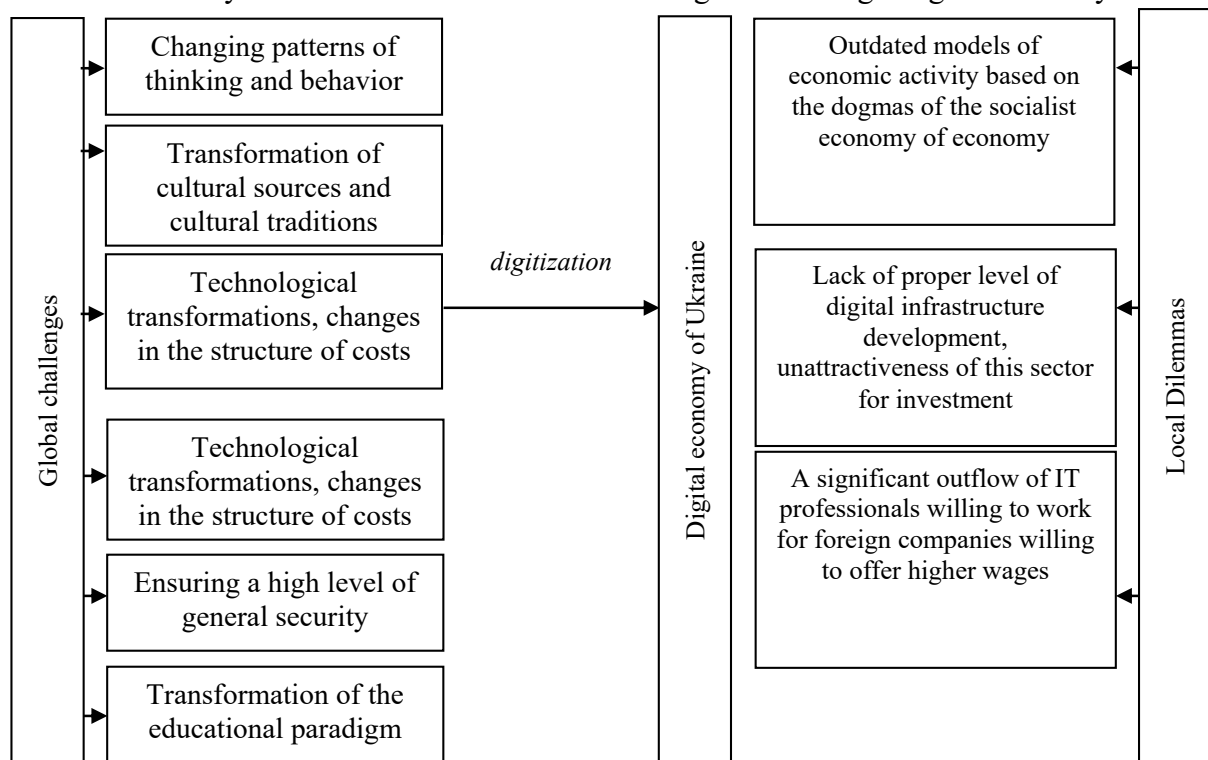
*Source: State Statistics Service of Ukraine (n.d.-b)*

Ukraine's position in the World Digital Competitiveness Ranking is not high enough, which is explained by the specifics of calculating this index. However, it is the most indicative for assessing the process of digitalization of the economy, as it takes into account not only the development of enterprises in this area and the availability of specific knowledge for the employees of such enterprises, but also the strategy of digital transformation of public policy and society as a whole. It is worth noting that digital competitiveness is assessed by the International Institute for Management Development on three main criteria: knowledge, technology and readiness for the future. According to the rating, Ukraine occupies a fairly high position in terms of knowledge: in 2017 it was only 45th place, in 2020 it is already number 38.

Less significant is the increase in the country's rating in terms of digital infrastructure and the readiness of society as a whole, which occupied 60th position in 2017 and 58th in 2020.

The presented results of the analysis of the international position of the Ukrainian economy in the global digitalization process show that the country is making significant steps towards integration into the global digital space, but is not quite ready for the global challenges it poses due to a number of local problems (Figure 2). Already today, the process of digitalization is significantly changing the structure of the world economy and, accordingly, the Ukrainian economy. Not only production systems are subject to transformation, but also social relations and mechanisms of redistribution of economic and social benefits. The digitalization of the economy affects many aspects of human life and public policy. Thus, the transition to a digital economy requires a change of mindset, which involves not just digitizing existing processes, but the innovative reengineering of all processes at organizations of any level in the state, regardless of ownership.

Changing cultural traditions is also a global challenge for digitalization. While traditional cultural values are a unique form of ethnic heritage, modern innovations are common and global. This changes the attitude to economic identity and, accordingly, makes any economy more open and flexible in terms of consumer demand. As for technological transformation, it is based on the availability of scientific and technical information and informative and communicative technologies for a wide range of economic entities and the population. Demand for technological capacity is growing every day, but the level of investment in this area in the Ukrainian economy is still insufficient for a breakthrough in building a digital economy.



**Figure 2. Global challenges and local dilemmas on the way to the digitalization of Ukraine's economy**

*Source: Developed by the author*

With the onset of digitalization of the global economy, international financial markets have changed, which has resulted in the emergence of regulatory arbitrage, cryptocurrencies, FinTech and other elements of the innovative financial market. All of these have contributed to changes in the principles of funding and investment, and have had a significant impact on the transformation of the measurement of value.

Global requirements for successful digitization are data security and the availability of highly qualified specialists. While the first is still a matter of further development around the world, the transformation of the educational paradigm is especially relevant for the countries of the post-Soviet space, including Ukraine. Within the framework of training specialists, work with remote elements, the project approach and the case method of formation of key competencies are still underdeveloped. The new format of training requires universities to be a platform for assembling high-class professionals, rather than manufacturing them by limiting sources of knowledge and reflection.

## Conclusions

Unfortunately, the Ukrainian economy is still far from being integrated into the global digital space, despite the success of the steps already taken by the state in this direction. The level of socioeconomic development of the country as a whole does not meet global requirements for the implementation of innovative programs. Of course, the European Union is currently implementing several projects aimed at stimulating the digitalization of Ukraine's economy, but these steps are still insufficient. One of the main reasons for slowing down the digitalization of the economy in the state is the lack of understanding of this process in the collective consciousness. Thus, the priority point of transformation is working with human resources as the main factor of production in this area.

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