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CONCEPTUAL MODEL FOR THE DEVELOPMENT OF UKRAINE'S DIGITAL ECONOMY

The formation of effective methods and tools for management in the digital age involves the comprehensive use of digital technologies and data, which makes it possible to conduct a comprehensive assessment of the current state of social and economic systems, identify the most influential challenges, and develop strategic development prospects. A theoretical assumption has been formulated regarding the introduction of advanced management methods based on artificial intelligence and machine learning algorithms, big data, and digital platforms, which allows for a comprehensive and prompt assessment of transformation processes, overcoming negative manifestations in the digital economy, and will contribute to increasing the level of competitiveness of national economic systems in the global digital dimension. The research used general scientific methods of analysis and synthesis to characterize the conceptual foundations of the digital economy and identify its role in overcoming a complex of negative environmental factors; a comparative method and system-structural analysis to study the best practices of developed countries of the world; and conceptual analysis and theoretical

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КОНЦЕПТУАЛЬНА МОДЕЛЬ РОЗВИТКУ ЦИФРОВОЇ ЕКОНОМІКИ УКРАЇНИ

Формування ефективних методів та інструментарію управління в цифрову епоху передбачає комплексне застосування цифрових технологій та даних, що дає можливість провести всебічне оцінювання поточного стану соціально-економічних систем, визначити найвпливовіші виклики та ідентифікувати стратегічні перспективи розвитку. Сформульовано теоретичне припущення щодо запровадження передових методів управління на основі алгоритмів штучного інтелекту та машинного навчання, великих даних та цифрових платформ, що дозволяє всебічно та оперативно оцінювати трансформаційні процеси, подолання негативних проявів у цифровій економіці та сприятиме підвищенню рівня конкурентоспроможності національних економічних систем у глобальному цифровому вимірі. Використано загальнонаукові методи аналізу та синтезу для характеристики концептуальних основ цифрової економіки та ідентифікації її ролі при подоланні комплексу негативних факторів зовнішнього середовища; порівняльний метод та системно-структурний аналіз для вивчення передового досвіду розвинених країн світу; концептуальний аналіз та теоретичне моделювання для розробки моделі



modeling to develop a model for the development of the digital economy in Ukraine by 2030. The feasibility of developing national digital strategies to drive intensive growth in line with sustainable development goals is substantiated.

The feasibility of implementing advanced management methods in the conditions of globalization and digitalization is substantiated, which involves adapting the business environment to a set of factors and the need to improve the analysis methodology. A conceptual scheme of the four main directions of the digital transformation of Ukraine and the system-forming factors of the digital economy is presented. A formation study of a comprehensive digital transformation management system, considering factors at the meso and macro levels, is conducted. The feasibility of using the Internet, digital platforms, and big data to form an up-to-date information base about international markets, national systems, and types of economic activity is substantiated. The need to use modern artificial intelligence and machine learning algorithms to assess trends, conduct prospective analysis, identify risks, and search for optimal management solutions in the business environment and the public administration sector is substantiated. The scientific novelty lies in the systematization of conceptual principles and the theoretical substantiation of the role of innovative digital management tools in optimizing the digital economy and implementing best practices in Ukraine, considering military operations.

Keywords: digital economy, management, optimization, Internet, information technology, digital technology, global economy, strategy.

розвитку цифрової економіки в Україні до 2030 р. Обґрунтовано доцільність формування національних цифрових стратегій для забезпечення інтенсивного зростання у відповідності з цілями сталого розвитку і впровадження передових методів управління в умовах глобалізації та цифровізації, що передбачає адаптацію бізнес-середовища до комплексу факторів та необхідність удосконалення методології аналізу. Представлено концептуальну схему чотирьох основних напрямів цифрової трансформації України та системо-утворюючі фактори цифрової економіки. Розглянуто особливості формування комплексної системи управління цифровою трансформацією з урахуванням факторів на мезо- та макро-рівнях. Обґрунтовано доцільність використання інтернету, цифрових платформ та великих даних для формування актуальної інформаційної бази про міжнародні ринки, національні системи, види економічної діяльності; необхідність використання сучасних алгоритмів штучного інтелекту та машинного навчання для оцінювання тенденцій, проведення перспективного аналізу, визначення ризиків та пошуку оптимальних управлінських рішень у бізнес-середовищі та секторі державного управління. Наукова новизна полягає у систематизації концептуальних засад та теоретичному обґрунтуванні ролі інноваційних цифрових інструментів управління з метою оптимізації цифрової економіки та впровадженні передового досвіду в Україні з урахуванням воєнних дій.

Ключові слова: цифрова економіка, управління, оптимізація, інтернет, інформаційні технології, цифрові технології, глобальна економіка, стратегія.

JEL Classification: O32, O33, O38, M15.

Introduction

The post-industrial era is characterized by the development of the electronic environment and the transition to information civilization. In this context, one of the main drivers of revolutionary transformations in the global economic system and changes in the hierarchy of global centers of power is the development of the digital economy, based on the fourth industrial revolution, which is based on cyber-physical systems, the merger of advanced digital, physical, and biological technologies. Today, the struggle is intensifying between developed countries for control over the sphere of material production, for the return (restoring) of production capacities, previously distributed by global economic leaders from the USA and the EU in developing countries to their historical homeland. The reason is that it is the industry that is the main generator of innovation in the modern world,

which provides a unique combination of technological process, increasing returns, and perfect competition, which, in general, is the basis of the success of developed countries. Digital technologies are necessary for the growth of efficiency in many sectors of the economy, and in some sectors, they become the basis of product and productive strategies. Digital technologies help to find sources of efficiency improvement and opportunities for rapid competitive development of enterprises (companies, corporations, and entities of the business sector). At the same time, they require changing existing management models, reformatting communications, technologies, and organizational structure of companies based on new values, priorities, and guidelines based on partnership, customer orientation, innovation, and synergy.

Domestic and foreign researchers have paid considerable attention to the problems of the digital economy and the transformation processes taking place in the economic complexes of countries and their regions under its influence.

Nambisan et al. (2019) note the emergence of modern digital technologies and their active implementation at micro, macro, and meso levels. Digital technologies provide companies with a new level of value, allowing them to strengthen competitiveness in the country and international markets. The transformation of companies in the new reality will contribute to the establishment of close communications with the target audience. Image management in the digital environment is caused by the reorientation of modern users to the use of the Internet in everyday life.

Eller et al. (2020) examine the management challenges for small and medium-sized enterprises in the context of digitalization, as well as the resources necessary for successful transformation. IT is considered the most important factor in qualitative transformations and the construction of modern management systems. Digital technologies allow optimizing business processes, including increasing the efficiency of using available financial resources.

Verhoef et al. (2021) presented interdisciplinary approaches to the digital transformation of companies, which is associated with innovative changes in technologies based on big data, digital competition, and growing demand among consumers for goods and services on the Internet. The team of authors identified three stages of digital transformation: digitalization, digitization, and digital transformation. Companies need to accumulate digital assets, developing through the analysis of big data based on modern mathematical algorithms.

Hanelt et al. (2021) conducted a systematic review of the impact of digitalization on strategic management and organizational change in companies. The authors proposed a multidimensional framework for the synthesis of digital technologies and identified the main patterns. Digital technologies contribute to the transition of enterprises to flexible organizational structures that allow them to adapt to a changing external environment. Digital business

ecosystems are becoming a new reality for successful entrepreneurial activity and the formation of user loyalty in the long term.

Mikalef et al. (2021) consider artificial intelligence as a tool for managing the B2B sector of the digital economy. Digitalization and the accumulation of significant amounts of information open significant opportunities for companies, influencing the optimization of various processes, among which marketing plays a key role. The authors identified the main factors (corporate, business, and individual) that affect the provision of value using artificial intelligence.

Makedon et al. (2023) investigate the main approaches to managing the value of international corporations according to the characteristics of the formation of digital assets. The digital environment is considered a space for the realization of competitive advantages by market participants. Factors of value growth in the context of digitalization are identified based on a modified approach.

Raihan (2024) assesses the relationship between the paradigms of the digital economy and sustainable development. The development of renewable energy sources is important for ensuring a safe environment for humanity, which is actively introducing digital technologies into economic systems. Along with this, it is emphasized that there is a complex of risks for the digital economy at the global and national levels.

Dimitrova et al. (2025) conduct a comprehensive analysis of factors that, in the context of digitalization, create the prerequisites for the intensive development of enterprises. The authors pay considerable attention to proving the feasibility of modeling business processes based on the cost indicators of scientific and research work. The process of creating a technological map of innovations at industrial enterprises, taking into account regional factors, is presented.

Entezami et al. (2025) analyze key criteria based on artificial intelligence for the development of the digital economy in accordance with the multi-criteria decision-making method. The authors identified 20 criteria for artificial intelligence, which were combined into four groups: structural, organizational, technological, and economic. It is argued that an emphasis on innovation and processing of large data sets contributes to increased productivity and business sustainability in digital transformation.

The analysis of scientific works shows that most of the research is focused on the corporate level of digital transformation, while the issues of systematization of conceptual approaches at the national level remain insufficiently developed. Despite the presence of works on national strategies of individual countries, there is a lack of comprehensive models adapted to the specifics of Ukraine in war conditions. Thus, the identified gap in the systematization of conceptual approaches determines the need for this study.

Management of modern digital systems at the national and global levels involves the use of large volumes of information, which acts as a valuable resource for the formation of effective management decisions.

Processing large amounts of information involves the use of modern mathematical algorithms, among which artificial intelligence and machine learning occupy an important place. Thanks to the implementation of these approaches in information processing, it is possible to identify hidden relationships.

The aim of the article is to systematize and theoretically substantiate the prospects for using new methods and tools of digital management in the digital economy, including in the conditions of the Ukrainian economy.

Under the aim, a theoretical hypothesis is formulated that a comprehensive understanding of the conceptual foundations of the digital economy and its role in the process of solving social and economic problems at the global and national levels allows for harmonious transformations in accordance with the goals of sustainable development.

The formation of a complex system of digital transformation management based on digital platforms, cloud computing, and big data processing makes it possible to make effective management decisions regarding the use of available digital resources. Along with this, the implementation of digital strategies by countries in accordance with national characteristics creates the prerequisites for maintaining a high level of competitiveness, contributing to accelerated economic growth.

The theoretical and methodological foundations for writing the article were the works of domestic and foreign researchers. The research was carried out using the methods of theoretical generalization and systematization of scientific literature, comparative analysis and synthesis (to clarify the contradictions between traditional types of resources and digital data), conceptual modeling (to develop a model of the development directions of the digital economy of Ukraine for the period of 2030), and the method of comparative analysis of international experience.

The activation of digitalization processes for national economic systems, types of economic activity, and companies involves the use of innovative methods and tools for management. The modern digital economy is characterized by a significant level of turbulence due to the presence of a significant number of external environmental factors that can have a positive or negative impact in the long term.

The three sections of the main part of the article present the conceptual principles of the digital economy as a complex, innovative system of communications between stakeholders based on modern technologies. Economic systems in the conditions of the fourth industrial revolution are undergoing radical transformations that occur on a qualitatively new basis with an orientation towards flexibility, dynamism, and manageability of economic processes. A comprehensive analysis of digital data as an important resource that is growing exponentially due to the generation of diverse information by stakeholders has been carried out. The feasibility of developing national digital strategies to optimize the integration of

innovative technologies, increase the efficiency of social and economic systems, and ensure information security in the presence of a significant number of cyber risks is substantiated. The international experience of forming effective digital development strategies in countries such as the USA and China has been studied. The characteristic features of the above-mentioned highly developed countries are revealed, taking into account the specifics of their development of social and economic systems. A conceptual model of the development of the digital economy of Ukraine by 2030 is presented, which contains four basic directions of transformations, considering global forecasts of the spread of digital infrastructure. The features of changing the business environment in the digital era due to the emergence of new segments of the economy and changing relationships with business entities are revealed. Key factors for the development of the digital economy have been identified, including electronic technologies, big data, institutional development, ensuring sovereignty and security to achieve modern living standards, and protecting personal information.

1. Conceptual ambushes of the digital economy and their role in the modern world

The digital economy is a holistic, systemic relationship between a significant number of stakeholders (users, companies, national and international institutions), which is compatible with digital technologies and other high technologies of the 21st century, including within the framework of the fourth industrial revolution, and, in its formation, development, and implementation, must ensure the achievement of an objectively set goal. Thanks to digitized, networked, and intelligent technologies, modern economic activity has become more flexible, dynamic, and manageable. Most developed countries, such as the USA, Japan, Germany, France, Canada, Singapore, China, consider the formation of conditions for the development of the digital economy as a strategic goal for the coming decade, the achievement of which is impossible without the large-scale use of IT. The emphasis on the priority areas of digital development of the modern economy, which contribute to economic growth, increasing budget sustainability, and strengthening social cohesion, indicates the importance of the digital economy, which should play a certain role in achieving sustainable development of social and economic systems, carrying out structural reforms and progressive transformations around the world.

The digital economy accumulates various types of economic activity in which the use of digital data plays the role of a key factor of production and its competitiveness. Modern information networks are the infrastructure for data exchange, and the effective use of information and communication technologies is an important driving force for increasing the effectiveness and efficiency of the functioning of the national economy, as well as optimizing its structure.

The digital economy is formed in the process of informatization, which is understood as the social, economic, scientific, and technological process of mass application of digital technologies in all spheres of human activity to radically improve working conditions and the quality of life of the population, and significantly increase production efficiency. The increasing importance of digital data in relation to traditional types of resources is due to their specific properties, as well as the currently exacerbated contradictions in the development of the economies of different countries of the world.

The basis for the formation of these contradictions, according to some well-known scientists, is primarily that humanity has practically exhausted extensive development paths (Su et. al., 2022; Rong, 2022). The use of traditional technologies and methods of production inevitably leads to a rapid depletion of resources and deterioration of the ecological situation, which threatens the very existence and further development of civilization. That is why the search for and large-scale involvement in social production in the world economy of new resources that would allow to level out negative environmental and economic effects on the one hand and ensure the progressive development of the modern economy on the other, is considered one of the most important strategic tasks of the new millennium (Makedon et. al., 2023).

One of such resources can be attributed to data in digital form, which have such properties that distinguish them from other factors of production, namely:

- digital data is a practically inexhaustible resource in the sense that, in the process of use, they do not decrease, while it is easily replicated and distributed;
- digital data has resource-saving properties: its use allows institutions to reduce the consumption of other resources and create resource-saving and environmentally friendly technologies and production.
- the production and use of digital data do not entail environmental pollution;
- universal means of production should be created to work with digital data, forming the basis of information and digital technologies (Yeganeh et. al., 2024, October).

Awareness of the relationship between the need for digitalization and the search for solutions to these contradictions has contributed to the development in many countries of the world of digital strategies aimed at introducing innovative digital technologies to increase the efficiency of the functioning of national social and economic systems. Within the framework of these strategies, the use of digital technologies, primarily the Internet, is considered the basis for economic modernization and structural changes in the real sector of the economy, and the target areas of development vary from climate change to increasing the efficiency of the functioning of state structures, the use of resources, or the creation of new jobs.

Therefore, it is also necessary to emphasize that to achieve the set goals, digital development strategies should be much broader than digital

technology development strategies. To maximize the effect of the digital economy, governments need to create appropriate conditions for comprehensive social and economic development based on the large-scale use of digital technologies, which include:

- mechanisms for developing competition;
- the formation of skills that allow for the profitable use of the opportunities of the digital economy;
- the formation and further development of effective institutions.

The implementation of these conditions should accelerate the pace of development in national economies and help overcome the basic contradiction of modern development using digital technologies. In addition, most countries have created national programs to protect network infrastructure, which define technical and functional criteria for digital technologies and contribute to identifying potentially vulnerable elements by developing rules and procedures to ensure access to them. It should also be noted that the security of information systems is an increasingly urgent problem for the economy and society.

Information systems security – primarily ensuring trust and security on the Internet – is one of the keys and "cross-cutting" areas of managing the digitalization of economies and requires adequate measures to protect users.

2. International Evidence on the Formation of National Strategies for Digital Development

It should be noted that many countries adopt a digital security strategy as a holistic document related to ensuring national security. At the same time, most recognize that the scale of information threats and risks of the digital economy goes beyond the boundaries of individual organizations and becomes global.

Typical goals of these strategies are:

- detection and response to cyberattacks;
- threat prevention, support, and development of reliable service products for state structures and economic entities;
- support for state institutions and infrastructure operators;
- promotion of education in the field of digital technologies.

In our opinion, the implementation of the digital economy development strategy also requires a transformation of the entire social and economic system, within which conditions must be created, including for the development of culture.

The development of the digital economy gives rise to new, previously non-existent problems and risks, in particular:

- transformation of the role of state structures, the need to expand the spectrum of their activities;
- high risk of interference in the private lives of citizens and a decrease in the level of information and information-psychological security;

- increasing unemployment due to structural changes in the economy associated with the introduction of modern digital technologies, as well as the impact of the consequences of the global coronavirus pandemic on national economies;

- increased competition in all areas of economic activity, which leads to the complication of existing economic models;

- the need to improve the regulatory framework and form a new institutional framework in terms of developing rules and mechanisms for the functioning of the digital economy.

Work to eliminate problems is actively underway around the world. Thus, the USA seeks to become a leader in international trade using digital technologies. According to the Digital Economy Agenda, the United States will support the expansion of the Internet as a global digital platform for communications, trade, innovation, and civic engagement.

The strategy outlines four key areas:

- a free and open Internet for expanding international trade, minimizing barriers from countries that set rules to mitigate risks of reducing the competitiveness of American and foreign companies;

- trust and security, ensuring privacy, and protecting consumers' intellectual property on the Internet;

- accessibility to the Internet by eliminating uneven infrastructure development and ensuring fast access to the network with minimal barriers to data flow, as well as training American workers in the skills of working in a digitized global economy;

- innovation and new technologies in the digital economy that open new opportunities for their commercialization.

Another clear leader in the global digital space is China. This country is aimed at increasing the quality of life through effective production (for example, digitalization of transport), while digital technologies are considered one of the main tools for increasing the efficiency of the national economy. Strategically, China expects to transform from a global factory of goods into a "planetary" laboratory by 2030 and, to this end, to intensify informatization using digital technologies, primarily in three areas – industry, finance, and trade.

To bring the country's economy to a new level of development, China has adopted a plan for the reindustrialization of the country, "Made in China 2025", aimed at building a "smart" economy, the technological base of which is digital technologies within the framework of national digital platforms (Li & Branstetter, 2024). As a result, it is planned that, even taking into account some damage to the economy caused by the global coronavirus pandemic, China will become a world power with a full cycle of industrial production, an important component of which is the production of its own innovative products, which indicates the country's orientation

towards economic growth based on the consistent development of digital technologies. According to many experts, an important aspect of development is the independence of the Chinese economy from other countries in the field of digital technologies as a guarantee of strategic security (Nawaz et al., 2025).

The analogues of the largest American companies and a kind of other foreign companies in the digital technologies in the field of telecommunications, and consumer electronics created in the country are considered the basis for the country's further innovative development. Significant attention is paid to the problems of digital technologies in Ukraine. There are certain achievements, although the gap between developed countries of the world is quite large. Thus, information systems, social media, access to which is carried out using the Internet, have become part of the everyday life of Ukrainians. However, several problems in the field of digitalization of Ukraine and its regions require their solution. In our opinion, among the main restraining factors of the spread and use of digital technologies in the socio-economic sphere, in public administration and business, we can note: a shortage of financial resources; extremely weak development of domestic industries to create an elemental base for modern digital systems; the level of use of many public services in digital form remains quite low; a shortage of qualified personnel for the sphere of the digital economy, including due to the negativity of the education reform and the lack of modern means and technologies related to the educational process, etc.

Certain technological achievements in the field of digital economy and information technologies are not properly supported by changes in the regulatory framework for a more complete realization of the potential of the digital economy in Ukraine. Most often, digital technologies are still not actively implemented in internal administrative processes. Due to the lack of proper funding in the conditions of war in the country, the solution to certain problems of implementing elements of the digital economy and implementing information technologies has not been implemented in practice to a sufficient extent. The presence of Diia and other digital services does not fully meet the modern requirements of highly developed countries of the world, especially in the economic sphere. The objective reasons are, in fact, a full-scale invasion, crisis phenomena in the economy, a decline in domestic production volumes, the consequences of the coronavirus pandemic, and low computer literacy of the population. The conceptual model of the direction of development of the digital economy of Ukraine for the period until 2030, proposed by the authors, contains four basic directions of digital transformation:

- sectors of the economy and cross-sectoral transformation;
- markets, goods, services, capital, and labor;
- processes of managing integration processes;
- digital infrastructure and ensuring the security of digital processors.

This concept model is formed taking into account the forecast for the spread of digital infrastructure in the world (from 2000 to 2060) – *Figure 1*.

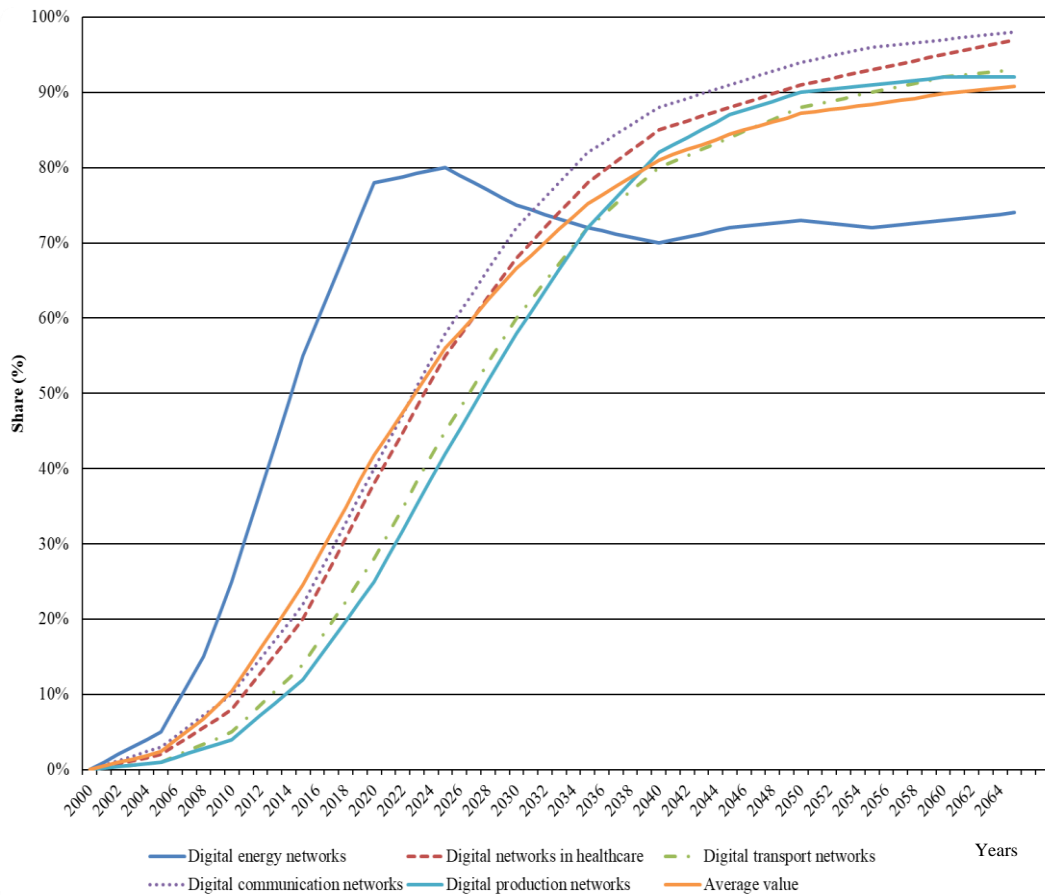


Figure 1. Distribution of digital infrastructure in the world over the years

Source: (Westerman et al., 2014).

It should be noted that the weaknesses of the Ukrainian program for the development of its own (rather independent) digital economy are the lack of a systematic analysis of the current state of the digital economy, and the lack of current provisions on the creation of structures responsible for their implementation. In addition, the amounts of financing and state support for specific areas of digital economy development are not indicated, and the competitive advantages of the domestic digital economy in the global system are not indicated.

Copying the experience of other countries in developing the digital economy and having limited financial and production resources, Ukraine risks becoming dependent in the field of digital technologies and information technologies, including for ensuring both economic and information security. In the scenario of integration into the global digital space of Ukraine, it will be quite difficult to gain significant competitive advantages and achieve high results in social and economic development.

3. Transformation of the business environment and analysis methodology in the minds of digitalization

The goal and strategic objectives of the development of the digital economy for Ukraine should be to create its own digital technologies, their use to increase the efficiency of management of national and regional economies, create conditions for the transition of the digital economy to a fundamentally new technological level in the areas of: innovation in the field of digital technologies and information technologies; in the formation of information infrastructure based on significant digital platforms; the introduction of digital technologies into social and economic processes; a radical increase in information, communication and digital education, as well as in the field of developing skills in the use of modern technologies among business and the population, within state structures and the formation of trust in the digital space. When assessing the prospects for the use of new methods and management tools in the era of the digital economy, it should be noted that the digital environment is currently having a revolutionary impact on the development of modern enterprises, companies, and corporations without restrictions on industry affiliation. For businesses that strive to meet current technological and technical trends, as well as for public sector organizations, the implementation and development of information and communication technologies has become an urgent need to increase the efficiency of their activities, which declares either the achievement of economic goals or the provision of socially useful services with the maximum level of satisfaction for consumers.

The development of digital technologies leads to the formation of a new segment of the economy (including the design of new markets with its active actors – digital companies), but already now, not only in the USA, Japan, Germany, Singapore, China and others, we can also talk about fully digital companies in other countries, including Ukraine (business models that are implemented in a digital environment), and about companies that implement digital technologies to improve their activities (with the introduction of digital solutions into basic business processes).

The digital economy is recognized as a current trend in the development of modern society, business, public administration, and citizens' lives, etc. The formation of the global digital space is becoming the next stage of development in the chain of "new industrialization – digitalization" and is caused by the need to ensure technological, information, and psychological leadership of business entities and states as a whole on the basis of information and communication and related technologies. These processes are accompanied by the modernization of traditional manufacturing industries and service industries and the reformatting of trade, procurement, and logistics activities.

When adapting the study of the digital economy as a modern external environment, attention should be paid to the fact that this phenomenon cannot be attributed only to a new factor, even such a global one. The digital

economy adapts, changes, and creates something new in almost all elements of the external environment.

First of all, the economic conditions of activity are changing (from methods and means of payment to the organization of logistics flows), and the methods and means of the activities of business entities themselves are changing (from transferring activities in the digital space to the use of fundamentally new technologies, including artificial intelligence), economic factors are changing (in terms of creating new (digital) barriers and forming an oligopolistic conspiracy of digital market leaders), social factors are changing (most clearly manifested in the widespread distribution of social networks and messengers), national factors are changing (this is how developing countries get their chance to join the ranks of developed countries, no longer doomed to a technological gap), natural factors are changing (there is again a need to study environmental and other factors that reflect the processes of energy consumption of cryptocurrencies), methods of regulation at the level of state and inter-national structures are changing, new factors of economic and information security are emerging. In view of the above, it should be noted that it is necessary to develop new methods of analyzing the external environment (*Figure 2*).

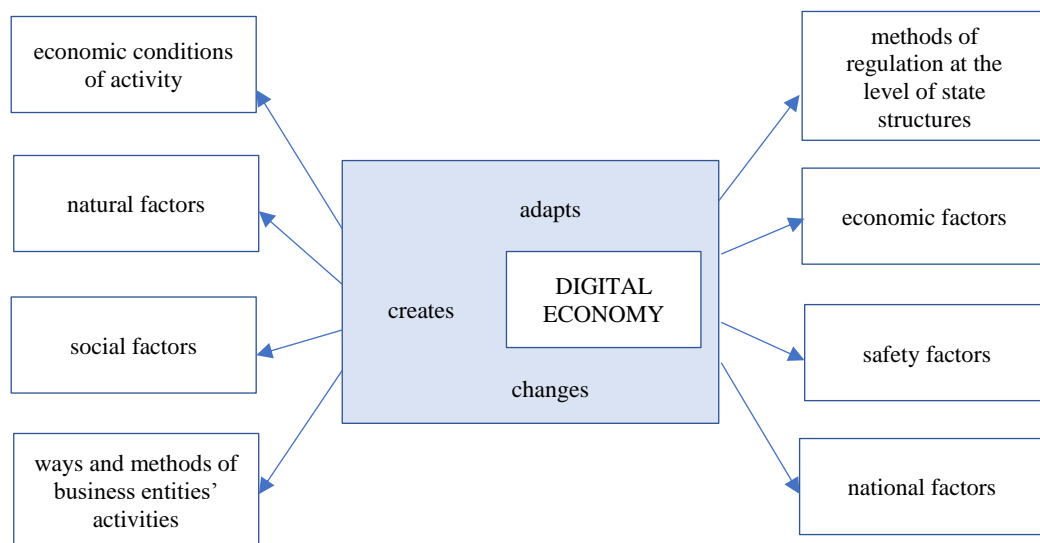


Figure 2. 8-factor model of environmental change

Source: (Smith et al., 2020).

Adapting the methodology for analyzing the external environment, first, it is necessary to identify and classify the manifestations of "digits" at different levels of management. First, it is necessary to determine the system-forming factors of the formation of the digital economy:

- the formation of a qualitatively new structure of economic assets that meet the economic priorities of the digital economy;
- the use of electronic technologies and services;

- the formation and support of favorable organizational, infrastructural, and regulatory characteristics for the development of digital technologies;
- the collection and processing of large data sets in digital form;
- the development of digital economy institutions;
- the preservation of the sovereignties of countries in the context of economic globalization;
- ensuring the economic information security of the state, business, society, and man;
- contributing to improving the quality of life of citizens;
- the protection of personal data and the inviolability of the private life of citizens in the digital space (Dovgal et al., 2021).

Thus, the system-forming factors of the formation of the digital economy encompass many interrelated elements (evolution of the structure of economic assets, integration of electronic technologies, optimization of information security, protection of users' personal data, etc.). The complex influence of the presented factors of action forms the institutional and infrastructural basis, without which a full transition to the digital economy is impossible.

Conclusions

According to the results of the research, the aim has been achieved, and the theoretical hypothesis put forward has been confirmed: a comprehensive analysis of the conceptual foundations of the digital economy and its role in the process of overcoming social and economic problems at the global and national levels allows for intensive growth in accordance with the goals of sustainable development.

In the context of globalization and complex transformation processes of the digital economy, the key factor in increasing the competitiveness of national economic systems is the implementation of effective management strategies that will allow achieving a long-term positive effect. The presence of various sources of information and their accumulation on a permanent basis allows national government bodies and international institutions to contribute to the adoption of effective management decisions. The main sources of information are web resources on the Internet, digital platforms, corporate data, etc. Both structured and unstructured data are valuable, since, thanks to machine learning algorithms, it is possible to identify hidden relationships.

Theoretical analysis of scientific literature and international experience shows the high efficiency of using modern information technologies, including machine learning algorithms, to process large amounts of information about the global environment and national economic systems. An analysis of international experience in the formation and implementation of national digital strategies (USA, China) has shown that effective transformation based on information technologies requires the introduction of relevant innovations and effective regulatory acts. Systematization of research

confirms the potential of these technologies to optimize the transformation of the business environment, the formation of new markets, and strengthening competitiveness in accordance with existing requirements. The scientific novelty lies in the systematization of the conceptual foundations of the digital economy and the development of a conceptual model for the development of the digital economy of Ukraine by 2030, which integrates four basic areas of transformations, considering global trends and national characteristics. In the conditions of a full-scale invasion of our country, the proposed model can serve as a guideline for the formation of an effective national digital policy for the long term. The role of new management methods based on artificial intelligence and big data in overcoming the challenges of digital transformation, adapting best practices in the implementation of innovative information solutions in Ukraine in conditions of war and social and economic instability, is theoretically substantiated.

The importance of this research lies in the theoretical justification of the advantages of introducing high-performance digital tools into the management systems of domestic enterprises and the national economy of Ukraine to ensure technological sovereignty and competitiveness in international markets.

Further research will focus on empirical verification of the proposed conceptual model by collecting and analyzing multilingual and multi-contextual data using artificial intelligence algorithms and blockchain technologies. This will allow us to identify optimal directions for integrating digital technologies into economic systems and assess their multiplicative effect in the long term.

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