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DEVELOPMENT OF DIGITAL INFRASTRUCTURE AND BLOCKCHAIN IN UKRAINE

Purpose. To determine the role of digital infrastructure in the context of the digital transformation of Ukraine and to analyze the possibilities of applying blockchain technologies.

Methodology. To achieve the set goal, various research methods, including analysis and synthesis for illuminating the economic essence of digital infrastructure, were employed as well as statistical methods for analyzing global trends in information and communication technology development. Inductive, deductive, and abstract-logical methods were used to support the conclusions.

Findings. The research results encompass several significant findings. Firstly, various definitions of the digital economy were analyzed, leading to the proposal of an original definition that takes into account the peculiarities of the Ukrainian context and aligns with contemporary trends in digital technology development. Key sectors of economic activity were highlighted where the implementation of digital technologies holds the greatest potential within the context of digital transformation. Special attention was given to sectors where the use of digital tools can have a decisive impact on the development and competitiveness of enterprises. The authors emphasized strategic tasks and instruments that would facilitate the creation of a conducive environment for the development of the digital economy in Ukraine. Additionally, the essence of blockchain technology was studied, and potential areas of its application in Ukraine were discussed. Significant focus was placed on aspects of ensuring cybersecurity and data protection, which are critical in the context of blockchain utilization.

Originality. The introduced original definition of the digital economy places a primary emphasis on the implementation and actual utilization of digital technologies across various spheres of human activity. A comprehensive set of measures for the development of digital infrastructure in Ukraine was proposed, including the enhancement of legislative regulation, creation of favorable conditions for the IT sector to accelerate the adoption and implementation of innovative solutions, development of digital infrastructure, coordination between educational and industrial sectors, nationwide Internet coverage to ensure equal opportunities for all citizens, attracting foreign investments, and utilizing blockchain technology for data protection (a critical aspect of state governance) and the intensification of digitizing administrative and public services.

Practical value. The obtained research results can serve as the basis for the creation of necessary institutional frameworks, fostering the further advancement of the information technology sector in Ukraine. This can be particularly beneficial for the development of the production of goods and provision of services geared towards innovation and quality improvement. Establishing an effective digital economy in Ukraine requires not only technological innovations but also appropriate institutional frameworks that support this process. Such development will enhance the country's competitiveness on the international stage and contribute to the improvement of citizens' quality of life. Ultimately, the establishment of an effective digital economy in Ukraine opens up new opportunities for innovative growth and national development.

Keywords: *digital economy, digital infrastructure, digital transformation, international level, blockchain*

Introduction. Recent technological advancements have opened up new opportunities for societal development, bringing significant changes to the economic system. Digital data has become an additional key resource, complementing traditional production factors. Enterprises are refining their approaches, seeking ways to swiftly implement digital technologies to enhance competitiveness.

Digital transformation holds particular importance for Ukraine, as it adapts to globalization processes and innovative development.

The digitization of various sectors in the country is critically important, as it enables Ukraine to actively participate in the global information space and promotes the formation of innovative centers and hubs. In this context, studying various aspects of digitization and developing digital infrastructure takes on special significance.

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Modern advanced digital technologies are already so integrated into the functioning of financial institutions on global markets, forming a unified digital system. Consequently, Ukraine's financial market faces a challenge in terms of competitiveness on the international stage. However, the extensive opportunities for implementing blockchain technology, which is one of the key components of innovative development in the financial market, require not only the adoption by financial institutions themselves, but also integration into the system of providing financial services.

In the modern world, where the volumes of financial transactions are constantly increasing, the importance of an effective system for recording financial information is hard to overestimate. Blockchain, with its decentralized and reliable nature, provides the ability to store and track transactions in a secure environment, where each operation is recorded and inaccessible to interference.

The application of blockchain in the field of finance can address issues related to abuse and fraud, and also promote

increased confidence among market participants. Additionally, blockchain enables the automation of many processes, significantly reducing costs for data processing and storage.

By implementing blockchain technologies into the financial system, Ukraine has the potential to elevate the quality of financial services to a new level and make them more accessible to the population. Additionally, this could attract new participants to the financial market and foster the development of innovative products and services.

Thus, blockchain technology holds significant potential in the financial sector, and the study on its global implementation experience already confirms this possibility. Ukraine can successfully adopt these solutions to enhance the financial sector and increase competitiveness on a global scale.

Literature review. In the Ukrainian scientific landscape, research on building a digital economy and implementing digital technologies holds significant importance. Scholars such as D. Hladkykh [1], I. Davydova [2], H. Karcheva, et al. [3], O. Lapko and O. Solosich [4], T. Lozova, et al. [5], and others actively contribute to the understanding and analysis of these processes. They delve into not only the theoretical aspects of digital transformation but also strive to find practical solutions for the implementation of digital technologies across various sectors of the economy and society as a whole.

However, some questions regarding Ukraine's digital transformation remain subject to discussion and require further research. For instance, a crucial aspect is the potential use of blockchain technologies to enhance various areas of economic activity, including the financial sector, healthcare, and many others.

Thus, Ukrainian scholars have already achieved significant progress in researching digital transformation, but there are still many aspects that warrant closer examination and exploration. This is an important step towards building an efficient and competitive digital economy in Ukraine.

In the contemporary scholarly discourse, various definitions of the "digital economy" showcase diverse approaches to this concept. Some authors emphasize the use of digital information and communication technologies as the foundation for shaping the digital economy [5]. In their definition, the digital economy emerges as a system of economic relations based on the use of digital technologies for the collection, storage, processing, search, transmission, and presentation of data in electronic format.

Furthermore, these different terminologies such as "electronic economy", "data economy", "creative economy", "new economy", and "web economy" reflect various aspects of the digital transformation of the economy and society at large. They indicate that digital technologies are permeating all spheres of economic activity and provide new opportunities for enhancing productivity and efficiency.

Thus, the examination of various terminologies in the context of the digital economy underscores the significance of implementing digital technologies for the further development of the economy and society.

In this context, the analysis of various definitions contributes to a deeper understanding of the process of digital transformation and the determination of paths for its further development in Ukraine. The diversity of approaches in defining the digital economy indicates the complexity and multifaceted nature of this concept. P. Putsenteilo emphasizes the importance of automated management of the economy using advanced information technologies [6]. This reflects the necessity for an effective system of production management at various levels, from local to international.

Karcheva H., et al. highlights the innovative aspect of the digital economy and its impact on all spheres of economic activity and society as a whole [3]. This underscores how crucial the implementation of innovations and information communication technologies is for increasing competitiveness and efficiency.

Additionally, T. Lozova's, et al. definition indicates that the digital economy encompasses all aspects of production and circulation of products, utilizing computer networks and the technological cycle. This points out the fact that digital transformation influences all stages of the economic process [5].

Overall, these definitions reflect various aspects and approaches to the digital economy. It is important to take this diversity into account when developing strategies for digital transformation, as it allows for consideration of different aspects of the impact of digital technologies on society and the economy.

The digital economy indeed signifies a new stage of economic development, which is based on the implementation and active use of digital technologies in various industries. The key characteristic is not only the technologies themselves, but also their tangible contribution to economic activity and societal life [6].

In the case of Ukraine, where there is potential for active development of digital technologies, it is crucial to focus on their practical implementation. This encompasses various spheres, ranging from the economic activities of enterprises to the provision of public services to citizens.

Such division and practical application enable the effective utilization of the potential of digital technologies to enhance the country's competitiveness and improve the quality of life for its citizens [7].

The implementation of blockchain technology indeed opens up broad possibilities for ensuring data security and reliability, while eliminating the need for consulting organizations and services. This means that each transaction or data record is recorded in the blockchain and becomes an integral part of this chain-like structure.

This approach makes processes more transparent, efficient, and reliable. Moreover, such a system has the potential to reduce costs for data maintenance and management. Instead of relying on intermediaries, participants can communicate directly with each other using the blockchain protocol.

This is especially crucial in the context of financial transactions, where speed, reliability, and security play a crucial role. Such an approach can also be applied in other areas where accuracy and the absence of intermediaries are important. As an example, it can justify the stages of implementing investment projects in the mining industry, optimize loan terms, and credit payments [8].

Furthermore, the widespread application of blockchain technologies in the real sector of the economy will accelerate the opportunities and prospects for innovative-investment development in the post-war economy of Ukraine [9].

Unsolved aspects of the problem. In various industries such as the transportation-logistics sector, tourism, healthcare, and finance, the implementation of digital technologies can indeed lead to numerous advantages and improvements. However, it is important to consider the fact that this process is accompanied by specific challenges and aspects that require attention.

One of the most crucial aspects is the integration and implementation of blockchain technology. This requires careful analysis and adaptation to the specific needs of each industry. It is necessary to determine optimal implementation models that will ensure the highest efficiency and benefit.

Cybersecurity and confidentiality are critical in the context of implementing digital technologies. Ensuring protection against unauthorized access and maintaining data confidentiality requires advanced technologies and reliable protocols.

Standardization and regulation are other important aspects. Establishing common norms and standards creates a favorable environment for the development and implementation of digital technologies.

Scalability and transaction processing speed are important for the effectiveness of technology utilization. Developing efficient algorithms and platforms will ensure high productivity.

Energy efficiency is key to ensuring sustainable development. Developing technologies that consume less energy is an important task.

It is also important to consider process optimization and interaction with the real world to maximize the benefits of implementing digital technologies.

Therefore, addressing these aspects requires further research and development to fully harness the potential of digitization and blockchain technology in various industries.

Methods. To achieve the set goal, various research methods were employed, including analysis and synthesis to elucidate the economic essence of digital infrastructure. Additionally, a statistical method was applied to analyze global trends in the development of information and communication technologies. Induction, deduction, and abstract-logical methods were used to substantiate the conclusions.

Results. In the modern world, the transition to the digital economy significantly impacts various spheres of human activity, accelerating their transformation through the implementation of cutting-edge technologies and the development of digital infrastructure [10, 11]:

1. The manufacturing sector is already actively utilizing digital platforms to optimize processes. This encompasses all aspects from accounting to logistics and marketing. Digital solutions enable effective management of production processes, providing greater accuracy and speed in decision-making.

2. The services sector places a strong emphasis on e-consulting, intelligent transportation systems, e-education, and healthcare. Digital technologies allow for more efficient and accessible service delivery, enhancing customer service quality.

3. The financial sector undergoes substantial changes through the implementation of internet banking, electronic payments, and the use of cryptocurrencies and other virtual assets. This makes financial transactions more convenient and secure.

4. In the field of commerce, e-commerce, online shops, and auctions are actively developing. This provides consumers with the opportunity to conveniently and quickly obtain the goods and services they need.

5. Management and administration encompass the development of management systems in enterprises and the public sector. The application of Internet of Things technologies, data collection and analysis for managerial decisions, digital government platforms, and other innovative methods enable the improvement of management quality and the more efficient realization of projects.

Therefore, the transition to the digital economy is most strongly felt in the mentioned sectors, where the implementation of technologies is already bringing positive changes. However, it is also important to refine and address unresolved aspects to maximize the benefits of this process.

Digital technologies significantly transform the labor market and require new skills from employees. Ukraine can benefit from this by actively adapting its workforce to the needs of modern corporations. This includes the necessity of knowledge in digital technologies, development of creative and innovative skills, as well as critical thinking [12].

Reforming the educational system is a crucial step in this direction. Focusing on quality IT training and implementing new educational programs will allow the preparation of professionals that meet the requirements of the modern job market.

Coordination between the educational, scientific, and industrial sectors is another key component of successful adaptation to the digital economy. The collaborative efforts of these sectors allow for the quicker implementation of new technologies and the teaching of students modern skills.

Financial support for educational and research institutions involved in creating and supporting technological platforms is also crucial. This will enable these institutions to be competitive and efficient in realizing their objectives.

In summary, the adaptation of Ukraine's population to the demands of the digital economy requires comprehensive measures, including the reform of the educational system, increased collaboration between sectors, and financial support for important initiatives.

The implementation of the tasks outlined in the Concept for the Development of the Digital Economy and Society of Ukraine is a critically important step in the integration of digital technologies into all spheres of the country's life. This Concept has identified key directions for digital development, including overcoming the digital divide, developing digital competencies, implementing the concept of digital jobs, and more.

One of the important steps was the development of digital infrastructures, which provide access to modern technologies for citizens and businesses. It is worth noting that many administrative services are already available online, which simplifies and speeds up their provision.

Furthermore, it is important to highlight the fact that the implementation of digital transformations in the real sector of the economy opens up broad opportunities for enterprises and enhances their competitiveness in the global market. The introduction of the concept of digital jobs stimulates the development of new employment areas and contributes to the emergence of innovative enterprises.

Overall, the implementation of the Concept for the Development of the Digital Economy and Society of Ukraine is a step forward in the integration of digital technologies into all aspects of the country's life.

Continuing on this path and further developing digital initiatives is an important task for maximizing the benefits of Ukraine's digital transformation.

The development of digital infrastructures is critically important for the implementation of digital technologies in Ukraine. They form the foundation upon which various activities are built, adapted to the digital era.

Robust digital infrastructures, such as telecommunications networks and infrastructure for computing, virtualization, and data storage, are the basis for fast and reliable information exchange. They provide broadband internet access and other digital services, which are essential for the development of a modern society.

Soft digital infrastructures, such as blockchain infrastructure, electronic payment infrastructure, and others, facilitate the adoption of new technologies and expand capabilities in various sectors. For example, blockchain can provide a reliable system for recording and tracking transactions, which is particularly important in the financial and logistics sectors.

Together, these digital infrastructures create the foundation for transitioning to a digital economy in Ukraine. Their further development and expansion will allow for the maximization of benefits from digital transformation and improve the quality of life for citizens.

The digital infrastructure relies on a wide range of information technologies that form the basis for the development of modern society. The main groups of such technologies include:

1. Internet of Things (IoT) and Artificial Intelligence (AI): These technologies allow for the integration of the physical and digital worlds, enabling the processing of large volumes of data and automation of processes. They are used in various fields, from industry to medicine.

2. Big Data and 3D Additive Technologies: These technologies provide the ability to process and analyze large volumes of data, allowing for valuable insights and informed decision-making. 3D technologies also open up new possibilities in manufacturing and design.

3. Communication Technologies, Quantum, and Supercomputing Technologies: They ensure reliable and fast data exchange and open up new opportunities for the development of quantum computing and the use of supercomputers for complex computations.

4. Blockchain Technologies, Cyber-Physical Systems, Digital Design, and Modeling: These technologies enable the creation of secure and reliable digital ecosystems, ensuring transparent registration and tracking of data. Additionally, they allow for the use of virtual prototypes to enhance design and modeling.

All of these technologies collectively form the foundation for digital infrastructure, which impacts all aspects of society, from the economy to education and medicine. The development of these technologies in Ukraine is a key factor in achieving digital transformation and implementing effective digital solutions [13, 14].

Looking at the dynamics of information and communication technology users, we can observe impressive growth in internet access over the past decade [15].

At the beginning of the 2000s, only a limited number of people had the opportunity to use this technology. However, by 2019, over half of the global population (approximately 4.1 billion people) were already using the internet. This incredible growth demonstrates how rapidly this technology is being integrated into everyday life and business operations.

It is important to note that there is a significant disparity in Internet access levels between developed and developing countries. In developed countries, this indicator averages at 86.6 %, and in some of them, it reaches as high as 98 %. In developing countries, this figure stands at 47 %, highlighting the need for further efforts to expand Internet access in these regions.

One of the most notable trends is the rapid growth of mobile broadband users. From 2007 to 2021, the number of mobile broadband subscribers increased from 4 to 83 %. This analysis shows that there are 121.7 active subscriptions per 100 people in developed countries and 75.2 in developing countries. This demonstrates the swift development of mobile technologies and the increasing popularity among people worldwide.

The progressive development of mobile technologies is a significant factor contributing to increased Internet access. It is important to note that the transition from one generation of mobile communication to the next is happening increasingly faster: it took 10 years between 2G and 3G, and only 5 years between 3G and 4G. In 2018, the latest standard was the fourth generation (4G), and today, 5G has already been deployed.

While the implementation of 5G requires significant investment, it will enable better processing of large volumes of data, efficient handling, and connectivity between a larger number of devices. It is projected that by 2025, in nearly all regions of the world, more than half of the population will have access to 5G technology.

This will open up new opportunities for the development of various industries, including healthcare, transportation, education, and many others. The advancement of Internet of Things (IoT) technologies is crucial in the context of building digital infrastructure. These technologies allow for the connection of numerous devices through embedded sensors, meters, and other devices, facilitating machine-to-machine communication and data exchange [16, 17].

The IoT market reached $151 billion USD in 2018, and with the implementation of 5G technology, it is expected to grow to $1.5 trillion USD by 2026. This trend underscores the importance of developing and implementing IoT in various sectors of society and industry. It is anticipated that the first seven countries (the USA, China, Japan, Germany, South Korea, France, and the UK) will be leaders in spending on the development and implementation of these technologies, but this opens up opportunities for all countries to actively join this process.

The rapid development of the IT sector in Ukraine indeed opens up broad opportunities for modernizing other sectors of the economy and stimulates innovative potential in the business sphere. However, to ensure the sustainable development of the digital economy, it is necessary to focus on several key aspects [18].

Firstly, the continued training of highly qualified IT specialists in Ukrainian universities is critically important. This will allow the country to have its own pool of qualified professionals and prevent massive migration to other countries, such as Poland.

Secondly, it is crucial to ensure effective cybersecurity in the digital space. Alongside the implementation of new technologies, mechanisms for data protection and combating cybercrime need to be considered. In this context, blockchain technologies can serve as a reliable means of data protection and prevention of cybercrimes.

Thus, the development of the digital economy in Ukraine requires a comprehensive approach, encompassing not only technical innovations but also strategic steps in the fields of education, cybersecurity, and data protection.

Blockchain is an innovative technology that allows for the storage and transmission of large volumes of data in an encrypted form. It is based on software algorithms and cryptographic systems that provide reliable information protection through hash functions. This makes blockchain particularly attractive for businesses in various industries [19, 20].

It is important to note that blockchain operates in a decentralized mode. This means that data is not centralized in one location but distributed among numerous network nodes. This fact ensures a high level of reliability and resistance to external interference.

Another important aspect is the cryptographic confirmation of each transaction or record. This means that every operation in the blockchain is mandatory and cannot be altered without the consensus of all network participants [21].

Furthermore, blockchain is characterized by transparency and security. All data is available for real-time viewing, creating a high degree of trust. At the same time, thanks to cryptographic measures, the information remains securely protected from unauthorized access.

A significant advantage is the time and resource savings due to the use of blockchain. As the technology operates in an automated manner and eliminates the need for intermediaries, processes become more efficient and faster [22].

In summary, blockchain is a powerful tool that not only ensures a high level of data protection but also opens up new opportunities for the development of cryptocurrencies and many other industries.

Blockchain technologies have great potential in various sectors of society and the economy. One of the promising areas is the development of electronic property ownership registries. This can contribute to greater transparency and speed in property accounting and transactions. In addition, blockchain can serve as the foundation for digital platforms that provide secure storage and exchange of citizens' personal data. This can be particularly important in the context of confidentiality and reliability of information [23, 24].

The creation of "smart contracts" is another important application of blockchain. These contracts are based on code and can automate the execution of agreements, simplifying the processes of commercial and financial transactions.

In the field of public administration, blockchain can be used to organize e-governance, conduct electronic referendums, and sign electronic petitions. This can lead to greater citizen participation in making important decisions and improve democratic processes.

Another important aspect is the potential use of blockchain in the area of supply chain management. Integrated supply chain systems built on this technology allow tracking the movement of goods from the manufacturer to the consumer, ensuring greater confidence in the quality and authenticity of products, as well as the reliability of product delivery.

Therefore, the development of blockchain technologies in Ukraine can be a key factor in the modernization of various sectors of the economy and in increasing the efficiency of public administration.

Blockchain technologies undoubtedly offer new opportunities for the secure transfer and storage of diverse information. Their main advantage lies in creating a reliable and tamper-proof mechanism for data exchange. In the context of domestic conditions, where trust in certain systems may be limited, the implementation of blockchain becomes particularly significant.

This technology can improve not only data security but also make many systems and processes more efficient and convenient. Reduction in financial and personnel costs will also be a significant advantage, contributing to overall cost optimization in enterprises.

However, it is also important to consider that along with the advantages, blockchain technologies require responsible and competent use. Developing effective cybersecurity and personal data protection strategies in the digital space is an integral component of the successful implementation of these technologies [25].

Thus, combined with other digital solutions, blockchain can be a key factor in the modernization and increased efficiency of various industries.

As of today, China and the United States are leaders in patenting blockchain-related technologies, holding more than 75 % of all patents in this field. It is interesting to note that the main directions of blockchain application include organizing payment systems, providing financial services, business administration, and e-commerce.

Special attention is given to data management technologies based on blockchain. This includes data encryption and protection, networking, data transmission, as well as manipulation and management. Forecasts indicate that the blockchain market has incredible growth potential, and by 2030, its impact on cost reduction and the creation of new revenues could reach 3 trillion US dollars.

Thus, blockchain technologies promise to revolutionize not only the financial and payment sector but also many other areas of the economy and business. This development opens up numerous opportunities for innovation and process improvement in various economic sectors.

The Fintech Development Strategy until 2025 in Ukraine is a crucial step in creating an innovative financial environment in the country. It envisages a systematic plan for the development of a full-fledged fintech ecosystem with accessible digital services and innovative financial solutions.

One of the key directions of the strategy is the development of lending, which is important for supporting economic growth and business development. Payment services, in turn, have enormous potential for streamlining financial operations and improving financial inclusion.

Blockchain, as noted in the Strategy, is an important component of the global fintech ecosystem and represents a developed field in global practice. However, regarding the regulation of blockchain technology usage, this process is still in the developmental stage. The establishment of the Ministry of Digital Transformation of Ukraine in 2019 played a significant role in shaping the regulatory framework for implementing blockchain in Ukraine.

It is worth noting that this step is aimed at creating the necessary conditions for the effective implementation of this promising technology in various sectors of the economy. However, it is important to continue active work on the development and improvement of the legal framework to ensure the reliability and stability of blockchain usage in Ukraine.

Blockchain and virtual assets are undoubtedly important components of the digital financial landscape. They can provide reliability and transparency of operations, which are crucial aspects for the implementation of cutting-edge financial technologies.

Important directions also include cybersecurity, big data analytics, and the use of artificial intelligence. These components play a crucial role in ensuring the security and efficiency of financial operations.

Overall, the implementation of the Fintech Development Strategy in Ukraine until 2030 will contribute to the development of a modern and competitive financial system, which is of significant importance for the stability and economic growth of the country.

The application of blockchain technology in the "Diia" project in Ukraine is an excellent example of distributed data storage for information protection. This digital platform, implemented by the Ministry of Digital Transformation, provides citizens with access to government services online and information from national electronic resources. Additionally, there is a mobile application "Diia" with similar functionality, which is already used by millions of Ukrainians.

Through this project, it is planned to digitize 100 % of all public services by 2024. This step will indeed contribute to reducing bureaucracy and may attract investors, both domestic and foreign, due to the simplification of business registration procedures and other aspects of entrepreneurial activity.

Of course, the development of blockchain and other digital technologies promises revolutionary changes in all areas of society, including the financial sector. This may lead to a reevaluation of traditional roles and positions in this field. On the one hand, it may lead to a redefinition of requirements for professionals, acceleration of innovation implementation, and increased competitiveness.

On the other hand, it may create certain challenges for those who are associated with traditional methods and approaches in finance.

Therefore, finance professionals need to be prepared for learning and adapting to new technologies. It is important to have a deep understanding of digital tools and be able to effectively implement them. Additionally, it is necessary to develop flexibility and the ability to adapt to rapid changes in the global financial environment. Those who show a willingness to learn and adapt will have better opportunities for a successful career in the digital era of finance.

Conclusions. The implementation of the digital transformation strategy in Ukraine requires, first and foremost, the introduction of effective initiatives and projects aimed at creating high-productivity digital infrastructures.

One of the most important components of this process is the development of communication technologies, the Internet of Things, and blockchain. They form the basis for the development of a modern digital economy and open up numerous opportunities for improving the quality of public services, enhancing the competitiveness of enterprises, and improving the lives of citizens.

This direction of development becomes crucial in achieving success in the digital age.

To successfully develop the digital economy in Ukraine, it is necessary to take a comprehensive set of measures:

1. Improving legislative regulation of the use of cutting-edge technologies is an integral part of this process. This will create a legal foundation for innovative development in the field of information technologies.

2. Creating favorable conditions for the IT sector will accelerate the adoption and implementation of advanced technologies. Investing in the IT industry and supporting startups will be a real catalyst for this process.

3. Building digital infrastructure is critically important. High-speed Internet and access to advanced technologies are the foundation for digital development in any country.

4. Coordination between the educational and industrial sectors is important for preparing qualified professionals. Updated educational programs and adapting training to modern labor market requirements are key aspects of this process.

5. Providing internet coverage for the entire territory of Ukraine is a necessity to ensure equal opportunities for all citizens. Attracting foreign investments can be an important source of resources for this.

6. Using blockchain technology to protect data is a critical aspect of public administration. This technology can ensure a high level of security and reliability in important public and entrepreneurial processes.

7. Intensifying the digitization of administrative and public services will significantly streamline the interaction between citizens, businesses, and government agencies.

The implementation of these measures will form the foundation for the development of information technologies in Ukraine and will contribute to the establishment of an efficient digital economy focused on innovation and high-quality service delivery.

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Розвиток цифрової інфраструктури та блокчейну в Україні

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Мета. Полягає у встановленні ролі цифрової інфраструктури в контексті цифрової трансформації України та в аналізі можливостей застосування технологій блокчейну.

Методика. Для досягнення поставленої мети були використані різноманітні методи дослідження, включаючи аналіз і синтез для висвітлення економічної суті цифрової інфраструктури. Додатково застосовано статистичний метод для аналізу світових тенденцій у розвитку інформаційно-комунікаційних технологій. Для обґрунтування висновків використані методи індукції, дедукції та абстрактно-логічний метод.

Результати. Результати дослідження включають у себе ряд важливих висновків. По-перше, були проаналізовані різні визначення цифрової економіки й запропоноване авторське визначення терміну, що враховує особливості українського контексту й відповідає сучасним трендам у розвитку цифрових технологій. Висвітлені ключові сфери господарської діяльності, де впровадження цифрових технологій має найбільший потенціал у контексті цифрової трансформації. Особлива увага приділена тим галузям, де використання цифрових інструментів може мати визначальний вплив на розвиток і конкурентоспроможність підприємств. Авторами відмічені стратегічні завдання та інструменти, що сприятимуть створенню сприятливого середовища для розвитку цифрової економіки в Україні. Додатково була вивчена сутність блокчейн технології та обговорені можливі сфери її застосування в Україні. Особлива увага була приділена аспектам забезпечення кібербезпеки й захисту даних, що є критичними в контексті використання блокчейну.

Наукова новизна. Уведене авторське визначення цифрової економіки, яке відзначається тим, що основний акцент робиться на впровадженні й реальному використанні цифрових технологій у різних сферах людської діяльності. Запропонована розробка комплексу заходів для розвитку цифрової інфраструктури в Україні, що полягають у: вдосконаленні законодавчого регулювання; створенні сприятливих умов для IT-сфери, що дозволить прискорити прийняття та впровадження новаторських рішень; розбудові цифрової інфраструктури; координації між освітнім і виробничими секторами; покритті всієї території України мережею Інтернет, для забезпечення рівних можливостей для всіх громадян; залученні іноземних інвестицій; використанні технологій блокчейну для захисту даних (критичний аспект державного управління); інтенсифікації оцифрування адміністративних і публічних послуг.

Практична значимість. Отримані у ході дослідження результати можуть стати основою для створення необхідних інституційних рамок, сприяючи подальшому просуванню сфери інформаційних технологій в Україні. Зокрема, це може бути корисним для розвитку виробництва продукції й надання послуг, спрямованих на інноваційність і вдосконалення якості. Створення ефективної цифрової економіки в Україні вимагає не лише технологічних інновацій, але й відповідних інституційних рамок, які сприятимуть цьому процесу. Такий розвиток сприятиме збільшенню конкурентоспроможності країни на міжнародному рівні та вдосконаленню якості життя громадян. У результаті створення ефективної цифрової економіки в Україні відкриває нові можливості для інноваційного росту й розвитку країни.

Ключові слова: *цифрова економіка, цифрова інфраструктура, цифрова трансформація, міжнародний рівень, блокчейн*

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