

DIGITAL ECONOMY: FEATURES, TRENDS AND GUIDELINES

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ABSTRACT. The article discusses the trends and characteristics of digitalization of the economy, tools and directions, positive and negative aspects, as well as possible risks and threats.

The current situation in the era of digital transformation requires a deep understanding of the essence of digital technologies, studying the features and opportunities in the development of the digital economy.

The goal is to study the features of the development of digital technologies and their impact on increasing the country's competitiveness and its economic growth. The impact of digitalization on economic development is considered on the basis of a comprehensive study of scientific literature and statistical materials.

The methodology for researching the digital economy is based on methods of external assessment and comparative analysis of the competitiveness of the economy in the context of the development of digital technologies and the expansion of artificial intelligence.

KEYWORDS: digitalization, digital economy, digital technologies, digital transformation, artificial intelligence, economic growth

ЦИФРЛЫҚ ЭКОНОМИКА: ЕРЕКШЕЛІКТЕРІ, ТРЕНДТЕРІ ЖӘНЕ НҰСҚАУЛАРЫ

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АНДАТПА. Мақалада экономиканы цифрландырудың тенденциялары мен сипаттамалары, құралдары мен бағыттары, оң және теріс аспектілері, сондай-ақ ықтимал тәуекелдер мен қауіптер талқыланады.

Цифрлық трансформация дәуіріндегі қазіргі жағдай цифрлық технологиялардың мәнін терең түсінуді, цифрлық экономиканы дамытудағы ерекшеліктері мен мүмкіндіктерін зерделеуді талап етеді.

Мақсат – цифрлық технологиялардың даму ерекшеліктерін және олардың елдің бәсекеге қабілеттілігін арттыруға және оның экономикалық өсуіне әсерін зерттеу. Цифрландырудың экономикалық дамуға әсері ғылыми әдебиеттер мен статистикалық материалдарды жан-жақты зерттеу негізінде қарастырылады.

Цифрлық экономиканы зерттеу әдістемесі цифрлық технологияларды дамыту және жасанды интеллектті кеңейту жағдайында экономиканың бәсекеге қабілеттілігін сыртқы бағалау және салыстырмалы талдау әдістеріне негізделген.

ТҮЙІН СӨЗДЕР: цифрландыру, цифрлық экономика, сандық технологиялар, цифрлық трансформация, экономикалық өсу

ЦИФРОВАЯ ЭКОНОМИКА: ОСОБЕННОСТИ, ТЕНДЕНЦИИ И ОРИЕНТИРЫ

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АННОТАЦИЯ. В статье рассматриваются тенденции и характеристики цифровизации экономики, инструментов и направлений, положительных и отрицательных сторон, а также возможные риски и угрозы.

Сложившаяся ситуация в эпоху цифровой трансформации требует глубокого понимания сущности цифровых технологий, изучение особенностей и возможностей в условиях развития цифровой экономики.

Цель – исследование особенностей развития цифровых технологий и их влияния на повышение конкурентоспособности страны и её экономического роста. Влияние цифровизации на развитие экономики рассматривается на основе комплексного изучения научной литературы и статистических материалов.

Методология исследования цифровой экономики основана на методах внешней оценки и сравнительном анализе конкурентоспособности экономики в условиях развития цифровых технологий и расширения искусственного интеллекта.

КЛЮЧЕВЫЕ СЛОВА: цифровизация, цифровая экономика, цифровые технологии, цифровая трансформация, экономический рост

INTRODUCTION. Today, the world is actively accelerating technological renewal, which leads to an accelerated growth of innovations that influence qualitative changes in the life of society. This pace of updates indicates the advent of a new era of economic dynamics - the digital economy. Digital technologies in the economy are innovations in digital form, which are a key factor in increasing efficiency in various areas of the economy. [1] The new technological era increases the value of intellectual potential, and human capital, as is known, is knowledge and creativity.

All areas of activity today are connected with IT- technologies, global changes in the field of communications and information dissemination. Therefore, countries in the context of their development are faced with the need for digitalization in politics, economics and socio-cultural processes. Digitalization is becoming a global trend as IT transformations make it possible to increase production efficiency, reduce transaction costs, and automate most processes in the production and distribution of products. Digitalization also opens up new opportunities for business development, influencing the selection of specialists, conditions and approaches to work.

Digitalization as a process is the basis of the digital economy, creates conditions for the use of innovative technologies for the purpose of efficient and reliable performance of functions, and allows the introduction of new technologies.

Today, the main trends in digitalization are: the use of artificial intelligence and the industrial Internet of things as mechanisms for sustainable economic growth of companies in Kazakhstan.

MATERIALS AND METHODS OF RESEARCH.

The research is driven by digitalization, national and international trends in the development of the digital economy. Theoretical research into digital innovation is in the process of accumulating knowledge and forming scientific schools.

The issues of determining the close interaction between digitalization and the growth of economic development were considered on the basis of a comprehensive study. As part

of the analysis, various methods and forms of research were used: review, descriptive analysis, comparative and empirical assessment, which made it possible to consider increasing the efficiency of economic growth in the conditions of total digitalization.

Digitalization is the transition of organizations and the entire economic sphere to information technology. [2] This concept first appeared at the end of the 20th century. In 1995, in the USA, computer scientist Nicholas Negroponte introduced the concept of "digital economy". [3]

Scientists B. Hinings, T. Gegenhuber and R. Greenwood consider the influence of institutional factors on the emergence of digital innovations, considering digital technologies the result of the interaction of technological capabilities and institutional conditions. [4] In the scientific work "Digital innovation: A review and synthesis," scientists P. Kohli and N. Melville highlight several key areas: technological capabilities, innovative processes, strategies and decision making. [5]

In a number of scientific works, M. Kenny examines digital innovation and identifies factors contributing to the success of digital startups and their interaction with other market members. [6-8]

Other researchers Karayannis D. and Campbell D. consider digital innovation as a mechanism for achieving the goal of sustainable growth and solving global problems: climate change, environmental crises and social inequality. [9]

The concept of digital technologies was studied by foreign scientists K. Schwab, E. Brynges, M. Porter. In his work *The Fourth Industrial Revolution*, Klaus Schwab proposed a concept in which the future is associated with the widespread introduction of cyber-physical systems (industry 4.0) into production and the satisfaction of human needs. [10]

The digital economy, in our opinion, is an economy based on information technology, in which the key factor is digital indicators, big data processing and the use of computer analysis results, which allows increasing the efficiency of management, production, logistics, sales, actively influencing the economic growth of the

country as a whole.

This definition is reasonable and includes the features of economic, production, management and social communications implemented through the use of digital resources and innovative technologies. Therefore, digitalization is becoming the main direction of sustainable economic growth.

RESULTS AND THEIR DISCUSSION.

According to the World Bank report on the development of the digital economy "Digital Dividends", the positive aspects of digitalization are noted [11]:

- increasing competitiveness;
- growth in labor productivity;
- cost reduction;
- creation of new jobs;
- increasing satisfaction of the population's needs.

At the same time, digitalization also carries potential risks:

- access to confidential information and threats to cybersecurity;
- digital inequality (gap in the level of education and conditions of access to digital services between the population and business within the country and between countries).

To develop the digital economy it is necessary:

1. Improving the level of digital literacy of the population.
2. Expansion of IT infrastructure.
3. Improving the quality of training of IT specialists.
4. Deepening corporate digitalization.
5. Modernization of the business model and management paradigm.

On the one hand, digital technologies provide new opportunities for the development of the country and improving the quality of life of the population, and on the other hand, the emergence of risks and threats associated with the introduction of computer technologies, which negatively affects the life of society (violation of information security, rising unemployment, deepening social economic inequality).

Digitalization risks are a concept that covers digital opportunities caused by IT technology, data processing automation, and decision

automation. Digital risks are the consequences of their implementation and are related to information security. These are the risks:

- leaks of confidential information (cyber risks)
- loss or unavailability of important data
- use of incomplete or distorted information
- the risk of unauthorized hidden exploitation of information and computing resources (botnets).

Along with risks, there are also threats to information security, which can be divided into two types: natural (natural phenomena that do not depend on humans) and artificial (depend directly on humans and can be intentional or unintentional).

The main elements of the digital economy are digital innovations, including digital processes, resources and services based on big data technologies (Big Data), artificial intelligence, virtual reality, blockchain, quantum technologies, industrial Internet, robotics, wireless communications and innovative IT technologies. The IT system of these forms includes Internet banking, electronic payments, online advertising and electronic access to government and commercial services.

The digital economy is actively influencing the development of society, and digital innovation has significant advantages in product development, customer service and equipment operation. Digital innovation can shift to new organizational and business models, creating flexible enterprise architectures, creating measurable results and value.

Features of the digital economy:

1. Data-centric approach to management decision making.
2. Large volumes of data and their variability.
3. Speed of response.
4. Competitive landscape.
5. Customer focus.
6. Business models with an ecosystem.
7. Platforms for exchanging information, services and goods. [12,13,14]

Ecosystems are a further development of platforms and are an adaptive network of independent participants (groups), which develops based on the joint development of

technologies and the creation of innovative solutions. [15]

Since 2008, digitalization has been actively promoting in Kazakhstan. The republic adopted the State Program "Digital Kazakhstan" for 2018-2022, the goals of which were aimed at accelerating the pace of development of the country's economy and improving the quality of life of the population through the introduction of digital technologies and creating conditions for the transition of the republic's economy to a fundamentally new development trajectory, which must ensure the formation of the digital economy of the future.

Achieving this goal developed in two directions: firstly, digitalization of economic sectors, government structures and digital infrastructure; secondly, the formation of the future digital industry - ensuring long-term growth, the start of the digital transformation of the republic through the development of human resources, the formation of institutions for innovative development and the creation of a digital ecosystem.

The country's digital economy should grow at a rate faster than economic growth. The state program, aimed at accelerating the pace of economic development of the Republic of Kazakhstan through the use of digital technologies, makes it possible in the future to raise the quality of life of the population to a high level. Today, Kazakhstan ranks 20th in the world in terms of digitalization speed.

The digital transformation of key sectors of the republic's economy is taking place on the basis of the creation of ICT infrastructure, the introduction of e-government and the creation of an environment for the development of technological entrepreneurship. As a result of its implementation, Kazakhstan became one of the 30 most digitally developed countries in the world and continues its digital transformation.

In 2022, Kazakhstan took 28th place in terms of digitalization in the UN e-government ranking. In the world rankings, Kazakhstan took 51st place in the ICT Development Index and 58th in the Network Readiness Index. In the international IMD digital competitiveness ranking in 2023, Kazakhstan took 34th place

among 64 countries, ahead of Italy and Turkey, and plans to enter the top thirty by 2025.[16]

The leaders of the international ranking are Denmark, South Korea, Estonia, Finland, Australia, Sweden, Great Britain, New Zealand, USA, and the Netherlands. South Korea, Hong Kong and Singapore are stable in these indices, showing adaptability and promotion of innovation.

In March 2023, the Concept of digital transformation, development of the information and communication technologies and cybersecurity industry for 2023 - 2029 was approved in Kazakhstan. The implementation of the concept is aimed at the comprehensive development of the republic and the transition to a qualitatively new innovative level in order to increase the competitiveness of the national economy at the international level.

In addition, the effective implementation of state technology policy will make it possible to achieve the republic's goal of building a diversified economy, qualitatively increasing the sustainability of the economy in the global world.

In the Republic of Kazakhstan, the active implementation of IT technologies is aimed at ensuring the well-being of the country, increasing employment, increasing the competitiveness of education and the efficiency of the healthcare system.

Currently, the level of provision of government online services has reached 93%, and by 2025 it is planned to increase to 100%. Almost 94% of the population has access to the Internet, and Internet access between rural and urban populations has decreased by 4%. Kazakhstan today ranks 20th in the world in terms of speed of digitalization. In the republic, the volume of services in the field of digitalization increased in 2023 by 20% compared to 2022, and IT companies earned 25% more than in 2022.[17]

CONCLUSION. Thus, the achieved level of digitalization of the economy of Kazakhstan is an opportunity to make a qualitative breakthrough in development, which will allow the republic to reach a high level in the global space. Digitalization has acquired a global economic character. Digital innovations have a large-

scale impact on the economy and play the role of basic, developing innovations as the pace of updating products and improving business processes increases. The digital economy is growing at a rate significantly faster than economic growth as a whole, due to specific

projects in the real sector.

The launch of projects for digitalization and technological re-equipment of existing sectors of the economy, government agencies and the development of digital infrastructure allows you to actively influence economic growth.

REFERENCES:

1. Tadviser. (2023). *Trends in the global IT market*. <https://www.tadviser.ru/a/171763>
2. Milner, B.Z. (2023). *Innovative development: economics, intellectual resources, knowledge management* (monograph). M.: INFRA-M.
3. Abad-Segura, E. & Gonzalez-Zamar, M.D. (2020). Sustainable management of digital transformation in higher education: Research trends. *Sustainable development*, 12, 2107.
4. Hinings, B., Gegenhuber, T. & Greenwood, R. (2018). Digital innovation and transformation: An institutional perspective. *Information and Organization*, 28.
5. Kohli, R. & Melville, N. (2019). Digital innovation: A review and synthesis. *Information Systems Journal*, 29(3). DOI: <https://doi.org/10.1111/isj.12193>
6. Kenney, M. & Burg, U.V. (2022). *Institutions and Economies: Creating Silicon Valley*. Stanford University Press. DOI: <https://doi.org/10.1515/9781503618381-013>
7. Kenney, M. (2017). Explaining the growth and globalization of Silicon Valley: the past and today. *Berkeley Roundtable on the International Economy (BRIE) Working Paper*, 1.
8. Kenney, M. (2016). Silicon Valley and Internationalization: A Historical and Political Overview. *Berkeley Roundtable on the International Economy*.
9. Carayannis, E. & Campbell, D. (2009). Mode 3 and Quadruple Helix: Toward a 21st century fractal innovation ecosystem. *International Journal of Technology Management*, 46(3/4), 201-234. DOI:10.1504/IJTM.2009.023374
10. Schwab, K. (2022). *Shaping the Future of the Fourth Industrial Revolution. A guide to building a better world*. Penguin.
11. The World Bank. (2016). *World Development Report 2016: Digital Dividends*. <https://www.worldbank.org/en/publication/wdr2016>
12. Haig, P. (2019). *Management concepts and business models: A complete guide*. M.: Alpina Publisher.
13. O'Reilly, T. (2019). *WTF?: A Guide to Business Models of the Future*. M.: Eksmo.
14. Tadviser. (2018). *Digital Platforms*. <https://www.tadviser.ru/a/395824>
15. Moazed, A. & Johnson, N. (2019). *Platform: Practical application of a revolutionary business model*. M.: Alpina Publisher.
16. Informburo.kz. (2023). *Digital technologies in schools and universities of Kazakhstan: six striking examples of use*. <https://informburo.kz/stati/digital-texnologii-v-skolax-i-vuzax-kazaxstana-sest-yarkix-primerov-ispolzovaniyaa>
17. Yanovskaya, O.A. (2024). Knowledge economy: vectors of marketing and communication strategies. *Education. Quality Assurance*, 1(34), 25-32.

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