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DIGITAL ECONOMY: DEFINITION, ADVANTAGES, DISADVANTAGES

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Abstract. The purpose of the study is to analyze the current state and develop effective measures to regulate the digital economy to achieve sustainable economic growth, improve the competitiveness of the economy and improve the quality of life of the population of the Republic of Kazakhstan. The introduction of information technologies in the public sector brings to a qualitatively new level key aspects of life – from payment for utilities to insurance policies and treatment. The methodology is based on methods of analysis, synthesis, induction and deduction. The value of the research is that the model of digital economy development is defined. The practical significance of the study lies in the development of proposals to improve the regulation of the digital economy in the Republic of Kazakhstan. The digital economy is becoming an important driver of innovation, economic growth and competitiveness. More than 15 countries are implementing a national programme of digitization. The formation and development of the national segment of the digital economy through the use of trusted, mainly domestic ICT, and its further integration into the global digital economy, on the one hand, provides a “window of opportunity” for the integration of the economy of the Republic of Kazakhstan in the emerging world economic order, and on the other hand – carries significant risks to economic security and sovereignty of the state. The article is executed within the project AP05135078 “Formation and development of digital economy in the Republic of Kazakhstan: theory and practical measures of realization” of grant financing of scientific researches of the Ministry of education and science of the Republic of Kazakhstan.

Key words: digital economy, digital dividends, digital state, single digital market, online sales, development of electronic networks and digital services.

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Сандық экономика: анықтама, басымдығы және кемшіліктер

Аңдатпа. Зерттеудің мақсаты – тұрақты экономикалық өсуге қол жеткізу, экономиканың бәсекеге қабілеттілігін арттыру және Қазақстан Республикасы халқының өмір сүру сапасын жақсарту үшін қазіргі заманғы жағдайды талдау және сандық экономиканы реттеудің тиімді шараларын әзірлеу. Мемлекеттік секторда ақпараттық технологияларды енгізу коммуналдық қызметтерді төлеуден бастап сақтандыру полистерін ресімдеуге және емдеуге дейінгі халық өмірінің негізгі аспектілерін сапалы жаңа деңгейге шығарады. Әдістеме талдау, синтез, индукция және дедукция әдістеріне негізделген. Зерттеудің құндылығы – сандық экономиканың даму моделі. Зерттеудің практикалық маңыздылығы Қазақстан Республикасында цифрлық экономиканы реттеуді жетілдіру бойынша ұсыныстарды әзірлеу болып табылады. Сандық экономика инновациялардың, экономикалық өсудің және бәсекеге қабілеттілікті қамтамасыз етудің маңызды драйверіне айналады. Өлемнің 15-тен астам елі цифрландыру Ұлттық бағдарламаларын жүзеге асырады. Сенім білдірілген, басым түрде отандық АКТ-ны пайдалану негізінде цифрлық экономиканың ұлттық сегментін қалыптастыру және дамыту және оның әлемдік цифрлық экономика кеңістігіне одан әрі кірігуі, бір жағынан, қалыптасқан әлемдік экономикалық тәртіпке Қазақстан Республикасының экономикасын енгізу үшін «мүмкіндіктер терезесін» ұсынады, ал екінші жағынан, экономикалық қауіпсіздік пен мемлекет егемендігінің елеулі тәуекелдерін көтереді. Мақала AP05135078 «Қазақстан Республикасында цифрлық экономиканы қалыптастыру және дамыту: теория және практикалық іске асыру шаралары» жобасы аясында Қазақстан Республикасы Білім және ғылым министрлігінің ғылыми зерттеулерін гранттық қаржыландыру аясында орындалды.

Түйін сөздер: сандық экономика, сандық дивидендтер, сандық мемлекет, бірыңғай сандық нарық, онлайн сату, электрондық желілер мен сандық қызметтерді дамыту.

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Цифровая экономика: определение, преимущества, недостатки

Аннотация. Цель исследования – анализ современного состояния и разработка эффективных мер регулирования цифровой экономики для достижения устойчивого экономического роста, повышения конкурентоспособности экономики и улучшения качества жизни населения Республики Казахстан. Внедрение информационных технологий в государственном секторе выводит на качественно новый уровень ключевые аспекты жизни населения – от оплаты коммунальных услуг до оформления страховых полисов и лечения. Методология основана на методах анализа, синтеза, индукции и дедукции. Ценность исследования заключается в том, что определена модель развития цифровой экономики. Практическая значимость исследования заключается в разработке предложений по совершенствованию регулирования цифровой экономики в Республике Казахстан. Цифровая экономика становится важнейшим драйвером инноваций, экономического роста и обеспечения конкурентоспособности. Более 15 стран мира реализуют национальные программы цифровизации. Формирование и развитие национального сегмента цифровой экономики на основе использования доверенных, преимущественно отечественных ИКТ, и его дальнейшая интеграция в пространство мировой цифровой экономики, с одной стороны, предоставляет «окно возможностей» для встраивания экономики Республики Казахстан в формирующийся мировой экономический порядок, а с другой стороны – несет значительные риски экономической безопасности и суверенитету государства. Статья выполнена в рамках проекта AP05135078 «Формирование и развитие цифровой экономики в Республике Казахстан: теория и практические меры реализации» грантового финансирования научных исследований Министерства образования и науки Республики Казахстан.

Ключевые слова: цифровая экономика, цифровые дивиденды, цифровое государство, единый цифровой рынок, продажи онлайн, развитие электронных сетей и цифровых услуг.

Introduction. The digital world does not ask us whether we are ready for change, the world is changing globally. The digital economy in developed countries is developing in different ways, but they have important common features: the presence of favorable conditions for the development and introduction of innovations, as well as large amounts of investment in digital technologies and infrastructure. There are great opportunities for Kazakhstan to make technological leaps in all areas of the economy. The development of digital technologies in the country is determined by such factors as the strengthening of the role of information and communication services in the global market and the provision of support to domestic companies.

Indeed, probably, all our actions in computer virtual reality can be attributed to the system of production, distribution, exchange or consumption. However, of course, virtual reality, as such, did not appear with the creation of a computer. All human thought activity can be attributed to it. In addition, money – the main tool of the economy – is also a product of virtuality, since they are invented “measure” of the value of goods and services. But with the invention of the computer, it was possible to “digitize” money, which undoubtedly simplified

commodity-money relations, led to a tremendous time saving and increased security of operations.

Roman Meshcheryakov – Professor of the Russian Academy of Sciences, Doctor of Technical Sciences, Vice-Rector for Research and Innovations, Tomsk State University of Control Systems and Radioelectronics, believes that there are two approaches to the term “digital economy”. The first approach is “classical”: the digital economy is an economy based on digital technologies and it is more correct to characterize exclusively the field of electronic goods and services. The classic examples are telemedicine, distance learning, the sale of medical content (cinema, TV, books, etc.).

The second approach is advanced: “digital economy” is economic production using digital technologies. “At present,” explains Roman Meshcheryakov, “some experts believe that it is necessary to expand this understanding and include in it the chain of goods and services that come with using digital technologies, including such concepts as: Internet of Things, Industry 4.0, smart factory, fifth-generation communication networks, engineering for prototyping, etc.”

Indeed, before the virtual part of the world, which was located in the mental reality of man, was not a

productive force, it was not the medium where new ideas and products are created. Now the virtual part is combined with the real: you can create a “world based on real events” world, which itself will be an “economy in the economy.” The virtue of this world is that there you can do anything. This is important not only in the case when it becomes possible to create an online game where you can jump up to the height of a multi-storey building, travel around space without a spacesuit and die many times – this is important for testing, improving, testing new products.

Thus, the digital economy has got a smart chance to overtake the “analog” one, which is obliged to carry out a crash test every time, breaking machines in reality, and not in a virtual environment. Alexandra Engovatova – Candidate of Economic Sciences, Associate Professor, Department of Economics of Innovations, Faculty of Economics, Moscow State University Lomonosov, it gives the following definition: “Digital economy is an economy based on new methods of generating, processing, storing, transmitting data, as well as digital computer technologies.”

“Within the framework of this economic model,” emphasizes Alexandra Engovatova, “the existing market business models undergo a radical transformation, the model of value-added formation changes significantly, the value of intermediaries at all levels in the economy is sharply reduced. In addition, the value of the individual approach to product, because now we can simulate anything” Summarizing, we can say that the digital economy can cover everything that is amenable to formalization, that is, transformation into logical circuits. Moreover, life itself will find an opportunity to write this “something” into the system of production, distribution, exchange and consumption.

Literature review. Research of the main trends of the digital economy dedicated to the works by I. V. Alekseeva, A. S. Airapetian, A. Bryan, A. P. Dobrynin, A. V. Druzhinin, K. A. Zhumagaliev, V. Ivanov, V. Yu. Konyukhov, D. Marchukova, V. P. Kuprianov, I. A. Matveeva, E. V. Popova, K. A. Seed, N. Stefanova, D. V. Sikorski, D. A. Smirnova, I. M. Tushkanova, A. Rusina, L. Yu., Chernykh, A. A. Kharchenko and T. N. Yudina.

In the Republic of Kazakhstan, the problem of formation and development of the digital economy, Internet marketing, the information sector of the economy were engaged in such scientists as A. A. Ashimov, F. M. Dnishev, A. K. Koshanov, G. M. Mutanov, B. M. Mukhamediev, etc. Theoretical and practical issues, K. A. Sagadiyev, M. S. Tulegenova A. G., etc.

Despite the scientific contribution of scientists to the theory and practice of the formation and development of the digital economy, there are issues that require further study, in particular, requires clarification of the regulation of the digital economy.

The relevance, great demand, and not the study of the main trends in the development of the digital economy in the future predetermined the choice of topics and main areas of research.

At the World Bank seminar in December 2016, the digital economy was identified as the paradigm of accelerating economic development with the help of digital technologies. In another definition, digital economics implies a virtual environment that complements our reality.

The digital economy is digital production. Currently, about half of the world’s population uses the Internet in their daily lives to learn and conduct business. The volume of virtual trading in the near future will exceed the standard types of trade relations. Digitized money is easier to use, much more difficult to fake.

Virtual life is an industry where new products are produced and the craziest ideas are implemented. Tests of new inventions have become more accessible and faster – there is no need for real tests. Emulation allows you to identify the pros and cons of new products with minimal cost. Electronic economy, according to experts, will completely change the usual business processes and economic relations.

However, until now, the content of this concept remains vague, and there is no clear definition in the WB report. In this material, RIA “Science” contains the most general ideas about what constitutes a digital economy. To begin with, it is worth remembering the definition of a conventional “analog” economy – this is the economic activity of a society, as well as the totality of relations developing in the system of production, distribution, exchange and consumption. The use of computer, Internet, mobile phones can already be considered “consumption”, in this case, the digital economy can be represented as that part of the economic relations, which is mediated by the Internet, cellular communication, ICT. Doctor of Economics, Corresponding Member of the Russian Academy of Sciences – Vladimir Ivanov gives the broadest definition: “The digital economy is a virtual environment that complements our reality” (Message of the President, 2017).

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computer. All human thought activity can be attributed to it. In addition, money – the main tool of the economy – is also a product of virtuality, since they are invented “measure” of the value of goods and services. But with the invention of the computer, it was possible to “digitize” money, which undoubtedly simplified commodity-money relations, led to a tremendous time saving and increased security of operations.

The term “virtual economy” is increasingly appearing in news and newspaper headlines. Scientists, politicians and businesspersons use this concept in their speeches, reports and scientific papers. A great future is predicted for the virtual economy (Digital Kazakhstan, 2017).

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commodity-money relations, led to a tremendous time saving and increased security of operations.

Material and Methods. The research methodology is based on a comprehensive analysis of the problem. The state can provide a “digital leap” in the country through the accelerated development of specific technologies. In such cases, the state assumes the role of an investor, determining the key, the most promising areas of financing, based on the assessment of long-term return on investment, competitive position, trends, as well as invested in the fundamental conditions of success, such as education and retraining. In South Korea, with the active position of the state, support companies are beginning to independently invest in breakthrough digital technologies. Virtual life is an industry where new products are produced and the craziest ideas are implemented. Tests of new inventions have become more accessible and faster – there is no need for real tests. Emulation allows you to identify the pros and cons of new products with minimal cost. Electronic economy, according to experts, will completely change the usual business processes and economic relations. Formation and advantages of the digital economy. The main direction of the digital economy is to provide quick and easy access to services through the Internet. The advantage of digital technologies are low costs, which affects the reduction of the cost of goods and prices for the end user. For example, an electronic version of a book can be purchased at least 25 percent cheaper than its printed equivalent. Virtual releases of your favorite artists are less expensive to produce than recordings on standard media.

Results and Discussion. For the successful functioning of the digital economy in the country, it is necessary to: develop infrastructure with Internet access, using telecommunications, as well as e-business and commerce (See tabl 1):

Table 1 – Tasks for achieving the goals for the implementation of the digital economy in the Republic of Kazakhstan

Companies	State
Introduction of new technologies, improvement and digitalization of production processes	Improving and digitizing production processes The introduction of new approaches to learning, the improvement of educational processes. Increase investment in R & D
Search for new personnel, cooperation with educational and research centers	Preparation of the base for mass retraining of personnel, in connection with the disappearance of many professions and the emergence of new professions and jobs
Investments in new technologies, a choice of advanced directions	Improvement of innovation processes and their competent regulation by the state

Companies	State
Increasing competitiveness, developing an innovative culture modeled on the world’s highly developed digital companies	Digitization of public services, literacy and widespread community involvement in the digital economy

The penetration of the digital economy is everywhere observed around the world, in particular, new opportunities are opening up in all areas where new products are being developed, working methods are being modernized, production processes are being optimized, logistics supply channels are being improved, and ways of interacting with suppliers and customers are

improving. Through cheaper processing, transmission and storage of information, as well as infrastructure development, society is on the first step towards a new digital revolution that will change the global economy as a whole. Digitalization will affect all industries, including oil and gas. The effect of using digital tools in the oil and gas industry is shown in Fig. 1:

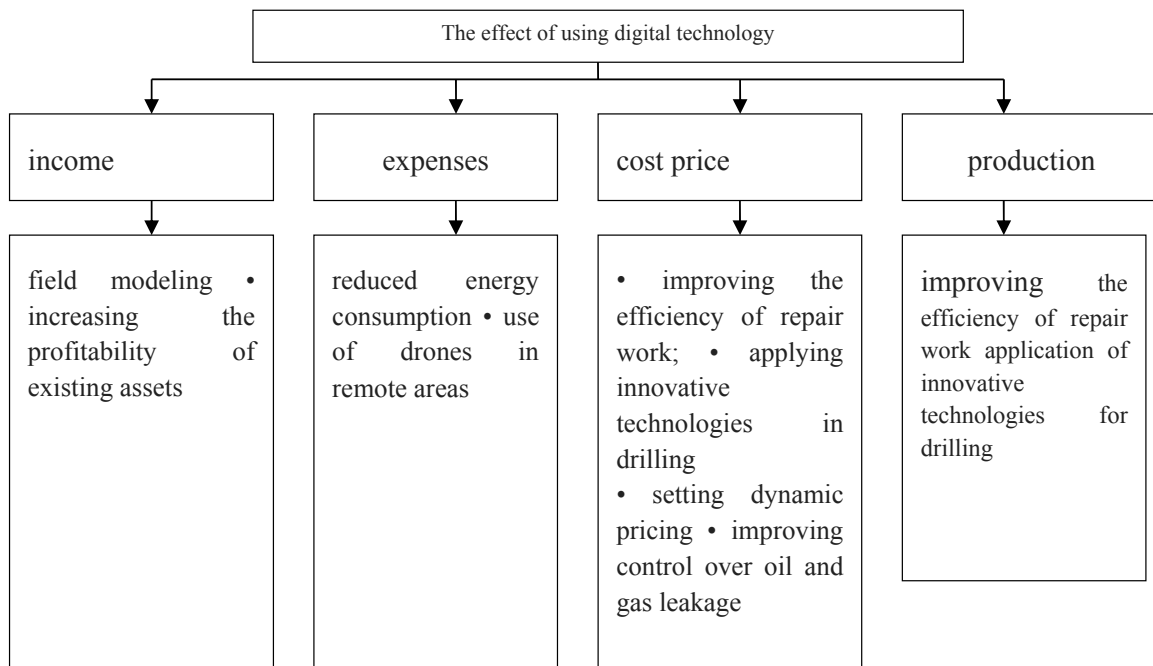


Figure 1. The effect of using digital technology

The main task that the digitalization of the sector is intended to solve is to increase the volume of transit freight traffic. It is expected that the reduction of transit time will significantly increase the volume of transit freight in the railway sector in all directions from China through Kazakhstan to Europe, Turkey and Iran. The main effect will be obtained both through the transition to electronic document flow, including in the field of air transportation, and through the introduction of an intelligent transport system, which will increase the volume of cargo transportation by providing high-quality and safe road infrastructure

between the regions of Kazakhstan and international traffic.

The priority will also be the creation of an infrastructure of support, including direct and indirect measures, including the creation of service support centers for the conduct of electronic commerce (E-commerce and Fulfillment). To ensure the security, simplification and development of digital services, including government, social and commercial, it is planned to build a model of remote identification, including based on various biometric indicators, based on the principles of the risk-based approach.

The model involves the identification of customers using a database of state and commercial companies, as well as obtaining services by government agencies, commercial companies and in the social sphere (education, health care, population census and others). The introduction of the digital identification mechanism will be the underlying infrastructure. This will allow building a universal digital environment for interaction and communication between financial institutions, customers, government agencies and organizations. This will qualitatively increase the level and efficiency of financial, state and other services.

There are many ways to develop a digital economy, since each of them is characterized by the concept of integrating IT into real economic processes. The formation of the digital economy occurs with a focus on consumer preferences, methods of implementation and the level of prices, which should correspond to the quality of the services provided. Today, the world economy is at the stage of transition to a post-industrial digital economy, the main features of which will be: Information as the main resource; Unlimited online trading platforms; The ability of small companies to compete with the largest market players; The scope of operations is limited only by the size of the Internet.

Conclusion. The new digital revolution is changing the way we produce, supply chains and value chains. Industry 4.0, one of the drivers of the digital transformation of the industry, is a concept of organizing production, where additional value is provided through the integration of physical objects, processes and digital technologies, in which physical processes are monitored in real time, decentralized decisions are made, and interaction also occurs between themselves and people.

The end-to-end digitalization of all physical assets and their integration create the basis for the transition from mass production to mass individualization, increases production flexibility, shortens the time to master new products, which allows implementing new business models and applying an individualized approach to working with clients. All this greatly improves the efficiency and competitiveness of industrial enterprises. The end-to-end digitalization of all physical assets and their integration create the basis for the transition from mass production to mass individualization, increases production flexibility, shortens the time to master new products, which allows implementing new business models and applying an individualized approach to working with clients. All this greatly improves the efficiency and competitiveness of industrial enterprises. In the next 10 years, it is expected that

the attractiveness of e-commerce will increase due to a number of qualitative changes. Among them – improving the efficiency of delivery, including with new delivery methods, widespread use of client analytics, expanding the range of products and the growing popularity of mobile commerce. At the same time, it is necessary to take into account a number of barriers to the development of electronic commerce present at all stages of the value chain. Thus, at the stage of attracting customers, the limiting factor is the insufficient promotion of electronic commerce and players; electronic commerce is not advertised on television and in outdoor advertising, which also does not allow attracting new consumers. When organizing access to an electronic platform, frequent technical failures of IT systems occur among players in the e-commerce industry. At the same time, one of the most common problems remains the inability of the widespread adaptation of systems for their use from mobile devices. In addition, in Kazakhstan, there is a shortage of specialists with specific competencies necessary for the development of the industry, for example, Internet marketers and content specialists. Completion, shipment and delivery of goods are complicated by the insufficient level of development of transport and logistics infrastructure, which causes expensive and long-term logistics. To all the above-mentioned difficulties, a low consumer culture online, a low level of public awareness, poor availability of debt financing for SMEs and an unfavorable economic environment causing high cost of capital are added.

There are also key problems in the field of legal regulation of e-commerce. These include complex customs procedures that restrict the export of e-commerce companies, the absence of tax incentives, and other effective incentives from the state, restrictions on the development of foreign companies, including cross-border trade and large shadow trade. The financial sector is an important element of the economy, and the speed and quality of the changes taking place depend on its condition. Currently, electronic payments and electronic commerce have become an integral part of the financial sector. The financial industry has traditionally been a leader in the implementation and application of innovative technologies and digital services for interacting with customers. Almost all banks provide services through remote channels. 70% of banks provide services to individuals through the Internet and mobile banking, 55% of banks provide their services based on mobile applications. The volume of payments of individuals using the Internet and mobile banking in 2016 compared to 2015 increased by 2.6 times.

For investors, the procedure for providing electronic services by brokers has been simplified, including conducting trading operations based on a client's digital signature and providing electronic services through a personal account. This simplified access to the market for regional investors and allowed investors to trade in financial instruments on the Kazakhstan stock market from anywhere in the world.

Obstacles to the further digitalization of financial relations are the lack of effective regulation, unified standards for the electronic interaction of the financial sector with state information systems and databases, a universal mechanism for remote customer identification, as well as an insufficient level of financial literacy of the population. An important element is the involvement of the population in the formal financial system.

Today, a number of factors affecting the development of the digital economy can be identified. Internal factors are managerial. Management factors include: corporate governance effectiveness; dynamism in the perception of innovations by managers; level of corruption. External factors –

infrastructural and general economic. Infrastructure factors: the development of information technology, especially telecommunications; the size and rate of growth of the Internet audience; the level of intellectual potential in the development of computer technology.

General economic factors: the stability of the economic situation; the share of the “shadow” sector in the economy; the size of the national economic complex; dynamics of indicators of national production and consumption; the level of monopolization of the economy; tax climate; investment climate; the level of monetization of the economy; the level of price differentiation for homogeneous products, etc.; the level of development of electronic payments; availability of convenient and relatively inexpensive ways of delivering goods to consumers, etc. It has been established that the development of the digital economy in the future will depend on the success of a number of breakthrough technologies. There are five such technologies: 5G-connection; 3D printing; blockchain; Artificial Intelligence; a virtual reality. The listed technologies are among the most important areas of development outlined in the strategic documents of most developed countries.

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