

THE DIGITAL ECONOMY IN A GLOBAL ENVIRONMENT

^aYULIIA CHALIUK, ^bNADIIA DOVHANYK, ^cNATALIA KURBALA, ^dKATERINA KOMAROVA, ^eNATALIA KOVALCHUK

^{a,b}*Kyiv National Economic University named after Vadym Hetman, 54/1, Prospect Peremogy, 03057, Kyiv, Ukraine*
^c*Oles Honchar Dnipro National University, 72, Gagarina Ave., 49010, Dnipro, Ukraine*
^d*Dnipropetrovsk Regional Institute of Public Administration, National Academy for Public Administration under the President of Ukraine, 29, Hoholia Str., 49044, Dnipro, Ukraine*
^e*University of Customs and Finance, 2/4, Vladimir Vernadsky Str., 49000, Dnipro, Ukraine*
 email: ^alamur4ik07@gmail.com, ^bnwo@ua.fm, ^ckurbala@ef.dnu.edu.ua, ^dkaterinakomarova@gmail.com, ^en.v.kovalchuk@gmail.com

Abstract: The article aims to clarify society's digital transformation under the influence of the explosive growth of cross-border data and cross-border e-commerce, which led to the next stage of globalization. A characteristic feature of it is becoming a new form of organizing economic relations – the digital economy. The essence of globalization, its components, stages, and trends are considered. The advantages provided by the development of modern information and communication technologies to the participants in the globalization process are reflected. The characteristics of the digital economy as a new stage of economic development are presented, its various definitions and specific features are considered. The features of the development of cross-border electronic commerce, the advantages it provides, and the essence of cryptocurrencies as potentially new world money are described. Considerable attention is paid to the development trends of new global digital processes and the digital economy's risks.

Keywords: Economic development, Digital economy, Global environment, Modern technologies, New global digital processes.

1 Introduction

Among the prevailing trends in modern world development, globalization is still singled out, which has a significant impact on the transformation of all spheres of public life and is one of the sustainable processes that contribute to the growth of interdependence of various countries and regions of the planet [3]. Globalization manifests itself in the irreversibility, inclusiveness, and complex nature of changes expressed in the global economy's formation, geopolitical and socio-cultural space. As a result, national borders disappear in politics, economics, science, technology and technology, information, education, culture, ideology, law.

Currently, globalization is entering a qualitatively new stage in its development, which is characterized by the development of information and communication technologies (ICT), the spread of the Internet and mobile communications. The current stage of globalization's main technological attributes is the computer and the new ICTs generated by it, which united the world into a single communication system, creating an integrated financial and information space [37]. The importance of a new digital perspective on the concept of "globalization" is evidenced, for example, by the forum "Digital Agenda in the Age of Globalization", held in February 2018 in Almaty, in which the prime ministers of the CIS countries took part.

2 Literature Review

Globalization is traditionally called the process of strengthening interconnections between countries of the world due to the ever-closer integration (splicing) of their national markets for goods, services, capital, and the increasingly active movement of people and dissemination of information beyond national borders [1]. In globalization, two stages are traditionally distinguished:

1) The turn of the 19th-20th centuries, the period of active development of international economic relations, that ended with the First World War, which buried the hope for a single prosperous world;

2) The second stage of globalization began in the 70s of the XX century and is associated with the integration of the world economy and the emergence of TNCs.

Under the influence of the second stage of globalization, international economic relations developed rapidly [2], trade unions and organizations were created, stable interstate institutional ties were formed, and people's mobility increased. One of the second stage's most significant achievements was the GATT-WTO trade rules and the global payment systems SWIFT, VISA, Europay.

At the turn of the XXI century in human civilization development, tendencies towards the rapprochement of countries and peoples on a planetary scale towards an intensive exchange of knowledge and technologies have emerged.

The most important feature of globalization and the mechanism that generates it at the end of the last century and the beginning of this century is the emergence and spread of the Internet. It led to the formation of a single information space, a new, third stage of globalization, called "Internet globalization" or "digital globalization," explained by the following considerations.

First, the Internet has had a significant impact on information globalization. Instead of reading local newspapers, the smallest town population (to the extent of their knowledge of languages) received access to information from all over the world. The Internet has become the main source of news. Colorful sites have successfully replaced print and traditional television. There is evidence that 80% of Financial Time subscribers and 60% of BBC readers prefer the Internet version of these media. News in this format is very popular among the youth audience [1].

Secondly, the Internet has created the phenomenon of social globalization. Instead of communicating with relatives, neighbors, and work colleagues, people were able to find friends with the same interests in any country and freely communicate with them through social networks (*Facebook, Twitter, VKontakte*) or messenger programs (*Viber, Telegram, WhatsApp*). A huge number of professional networks (*LinkedIn, Moy Krug, etc.*) allow you to exchange information on professional activities and attract new clients, business partners.

Thanks to such networks, employers have the opportunity to receive additional information about current and future employees, post new vacancies, and job seekers – to receive exciting job offers. The scientific community is creating new global networks for the dissemination of knowledge. You no longer need to wait 2-3 years for a publication in a "paper" journal – through the Internet, new thoughts and ideas instantly become known to the interested audience.

Third, the Internet is instant and, most often, free access to content worldwide. Thanks to *YouTube* and similar services, humanity has the opportunity to watch films that have not even been released yet, read books and scientific articles that have not previously been published. Of course, problems arise with the use of the intellectual property and the disclosure of commercial secrets, but often the world fame becomes higher than the prejudices that took place in the 20th century.

Thus, the Internet has led to the global economy's virtualization and instant access to its services. Fourth, the Internet has fundamentally affected retail, which is already 20% virtual in many countries. *Amazon, eBay, Alibaba* have changed the way people buy goods and services. Electronic trading platforms, for example, *Yandex.Market* and *onliner.by* not only allow you to buy a product at the best price but also better know its characteristics (including reviews of real users) and compare your choice with other options. The global integration of retail markets without customs duties is a powerful factor in Internet globalization [6].

Today the world community has embarked on the third stage of globalization – the digital transformation of society, first of all, under the influence of a large increase in cross-border data [4]. The digital transformation of the economy is understood as the manifestation of qualitative, revolutionary changes, which consist not only in digital transformations of individual processes but also in a fundamental change in the structure of the economy, in the transfer of value-added centers to the sphere of building digital resources and end-to-end digital processes [11].

A new phase of globalization has come with the growth of cross-border digital transactions through virtual goods and services. The processes of production, distribution, exchange, and consumption of information are becoming increasingly important compared to other types of economic and economic activity, increasing the virtualization of the economy and giving rise to a new form of organization of economic relations – the digital economy.

3 Materials and Methods

The term "digital economy" was first used by the famous American scientist from the Massachusetts Institute of Technology, Negroponte [20], connected with the intensive development of ICT and the beginning of the second generation informatization process. He pointed out that virtually all spheres of human life (economic, social, political, cultural, social, and others) have changed to one extent or another due to the development of ICT and the Internet.

However, changes in recent years suggest that a new stage of informatization is beginning, the name of which is "digital economy". There is no common understanding of the "digital economy" phenomenon, and therefore there are many definitions of this concept. OECD experts, "The digital economy is the result of the transformational effects of new general-purpose technologies in the field of information and communication" [21]. World Bank, "The digital economy is a new paradigm of accelerated economic development based on real-time data exchange" [5]. United Nations Conference on Trade and Development (UNCTAD), "Digital economy – the use of digital Internet technologies in the production of goods and services and trade in them" [31, p. 156].

The basis of the digital economy is the decentralized cross-border technology "blockchain", cloud computing, big data, cyber-physical systems, the Internet of things, 3D printers, which together implement the concept of "Industry 4.0" – the new approach to the integration of production and consumption, representing a symbiosis of technical devices (robotic workshops and factories), software (artificial intelligence) and the Internet.

According to the World Economic Forum, the digital economy affects all aspects of society, including the way people interact with each other, the skills needed to get a good job, and even the political decision-making process (e-government) [30]. The digital economy, due to the presence of certain properties of intangible functioning, makes it possible to overcome country restrictions that are inherent in the classical economy:

- Several people cannot use-tangible products, and there is no such barrier for digital products – they can be copied and distributed among an unlimited number of people around the world [5, 8, 10];
- Tangible products are subject to wear and tear in the process of use, and digital products do not lose their original properties, which can even be improved in the process of joint use or exchange [9, 14];
- Digital trading platforms allow you to avoid restrictions on the size of space, the volume of the assortment, and the number of simultaneously served clients [36].

A significant consequence of the process of introducing digital economy technologies has become an increase in intangible information flows (big data, cloud computing, video, transactions, e-commerce, analytics, etc.) between countries, regions, corporations, and individuals. According to the

McKinsey Global Institute, cross-border data flows at the global level from 2005 to 2014 increased 45 times and reached 2.8 trillion US dollars. Simultaneously, the growth of data flows over the specified period had a greater impact on the increase in world GDP than world trade in goods [6].

The number of users of the largest online platforms is already comparable to the largest states' population (for example, the number of accounts on the social network Facebook in the summer of 2017 exceeded 2 billion). The digital aspect of economic globalization includes:

- The formation and development of global electronic networks, the production of non-material products and services of IT companies;
- The emergence of fundamentally new cross-border virtual markets for transport, banking, and insurance services, as well as new financial markets operating around the clock;
- The emergence of new IT-subjects of international interaction in the digital economy represented by TNCs (Amazon, Alibaba, Uber, etc.), international economic organizations, consulting companies, and rating agencies.

The digital economy offers great opportunities for information exchange, education, transparent business, international cooperation, high growth rates, rapid innovation, and widespread use in other economic sectors. It is becoming an increasingly important driving force for sustainable economic growth. It plays a significant role in accelerating economic development, increasing existing industries' productivity, and shaping new industries and markets.

4 Results and Discussion

The use of digital technologies has already become a global process and plays a crucial role in increasing the competitiveness of individual enterprises, countries, and economic unions, stimulating the strengthening of business activity of both leading companies and start-ups.

4.1 Cross-Border E-Trade

Electronic commerce is a conducting trade operations and transactions on the Internet, through which the purchase (sale) of goods and their payment is made. Electronic commerce functions include the selection of goods, order confirmation, payment acceptance, and delivery [12, p.96]. Electronic commerce is often not entirely correctly identified with electronic commerce (e-commerce) – a sphere of the economy that includes all financial and commercial transactions carried out using computer networks and the business processes associated with conducting such transactions. Among the distinctive features of e-commerce over traditional ones, Razuvaev notes:

- The absence of geographical, temporal, and, to some extent, language barriers, which allows promoting goods and services to new sales markets;
- A lower level of production and distribution costs, which is achieved through the introduction of new technologies in all areas of the company's activities, from the procurement of raw materials and materials to the distribution of finished products and post-sale service;
- A higher level of competition, since the store is located at a distance of several seconds from the store, which is required to load the corresponding site;
- An electronic store's potential capacity significantly exceeds traditional stores' capacity due to the absence of physical restrictions on warehouse and retail space [23].

The intensive development of the world economy contributes to the vast expansion of cross-border cooperation, one way of implementing international (or cross-border) trade. It differs from domestic trade in that the other party is always a foreign legal entity or individual [7]. This determines the specifics of trade relations manifested in a particular system of regulation,

including national and international law, trade customs, and judicial practice.

For consumers, cross-border e-commerce is the ability to shop online for everything they need, from music and movies to gadgets, clothing, and food [11]; to book and pay for transport, accommodation [15]; buy tickets to events, etc. The cross-border e-commerce market is available to everyone through the Internet, which helps to eliminate country borders and simplify the procedure for establishing relations between small and large businesses, representatives of various industries and complexes, manufacturers and consumers, social and public institutions, etc.

Thus, the role of distance and geographic location of producers and consumers is significantly reduced, space seems to "disappear", the whole world turns into a global consumer and seller at the same time. The use of the Internet as a medium for data exchange has significantly reduced the cost of conducting cross-border e-commerce due to the low cost of information transmission and has led to the emergence of its qualitatively new segments – "business-to-business" (B2B) and "business-to-consumer" (B2C). The use of digital technologies has already become a global process. It plays a crucial role in increasing the competitiveness of individual enterprises, countries, and economic unions, stimulating the strengthening of business activity of both leading companies and start-ups.

Cross-border e-commerce in general demonstrates rapid annual growth rates (20-25%) [7]. Retail e-commerce sales, including online products and services (excluding travel, restaurant, and event tickets), reached 1.915 billion US dollars in 2016, accounting for 8.7% of total retail worldwide eMarketer expects retail e-commerce sales to rise to 4,058 billion US dollars in 2020, accounting for 14.6% of total retail spending [7].

On the global stage, trends in cross-border e-commerce are driven by the largest players – China, the USA, the EU, and Japan. According to the National Bureau of Statistics of the People's Republic of China, cross-border operations of Chinese e-commerce enterprises (Alibaba, Jingdong, Suning, etc.) are developing rapidly: according to the National Bureau of Statistics of the People's Republic of China, from 2008 to 2015. China's total cross-border e-commerce transactions grew by almost 30% (to 4.8 trillion yuan) and reached 6.3 trillion yuan (752 billion US dollars) in 2016, increasing 26.2% over the year.

According to the Alibaba corporation, in 2016, its services were presented in more than 220 countries globally, the number of foreign buyers in total exceeded 100 million people. This suggests that the Belt and Road Initiative's consistent implementation is contributing to the rapid development of China's cross-border e-commerce industry [12]. According to the Boston Consulting Group (BCG), in 2010, the volume of online retail (online commerce, online advertising, online games, online payments, etc.) in China was only 3% of total consumption, in 2014, 8.4% of all purchases were made via the Internet (higher relative indicators were recorded only in the UK – 11.4% and Germany – 10.2%, in the USA and Japan they were lower – 6.8% and 6.2%).

With the projected annual growth of sales through the Internet by 20%, the Chinese e-commerce market by 2020 will reach a sales volume of 1.6 trillion US dollars, which will be approximately 24% of the total retail trade [13, p.26], and both exports and imports will increase. To a large extent, this was facilitated by the adoption of the state program to facilitate cross-border e-commerce, according to which free customs zones.

The American e-commerce market grew by 15.6% in 2016 to 395 billion US dollars. As evidenced by the European Ecommerce Report 2017, in 2016, European e-commerce increased by 15% (to 530 billion euros), while the most active buyers on the Internet are residents of the UK, Denmark, and Germany [14]. According to the forecasts of the European online trade association EMOTA, the volume of e-commerce in the

European Union will reach 578 billion euros by 2018, and the share of cross-border e-sales will rise to 116 billion euros.

In 2016, the Chinese Internet giant Alibaba topped the top ten global players in the e-commerce market, according to the analytical company Internet Retailer. The company accounts for about 27% of the market, while its closest competitor Amazon holds 13% of the market. In third place is the American online auction eBay, which accounts for 4.5% of the e-commerce market. Next comes another Chinese Internet retailer JD.com (market share 3.8%), and the Japanese company Rakuten (1.5%) closes the top five. Capitalization of Alibaba Group Holding Ltd. as of 02/01/2018 – 494.9 billion US dollars, revenue as of 12/31/2017 – about 29 billion US dollars, net profit – 8.4 billion US dollars (fiscal year ends 03/31/2018). Capitalization Amazon.com, Inc. as of 02/01/2018 – 689 billion US dollars, net sales at the end of 2017 amounted to 177.9 billion US dollars, net profit – more than 3 billion US dollars [27]. Note that the legal regulation of cross-border electronic commerce lags behind the dynamics of its development.

The model law on electronic commerce of the UN Commission on International Trade Law requires its uniform interpretation by national governments. This is not observed even within the EAEU in terms of taxation and determination of limits for duty-free import of goods for personal use sent in international mail and express cargo. In February 2018, the WTO, together with the General Administration of Customs of the People's Republic of China, held the First World Conference on Customs Regulation of Cross-Border Electronic Commerce in order to unify the rules of international trade, which was attended by more than 1.5 thousand representatives of government, commercial and expert circles, organizations in the field of security customs services from many countries of the world (Australia, Canada, India, China, Republic of Korea, Russia, USA, France, Japan, etc.).

4.2 Cryptocurrencies are the World's New Money

Due to the ubiquity and growth of electronic commerce, electronic money has gained particular popularity, which is facilitated by such factors as the convenience of paying for goods in online stores, the high speed of transactions, and modern technologies that ensure the security of transactions. Since 2008, there have been active discussions about a new type of virtual money – cryptocurrency (from the English word "cryptocurrency"). In the terminology of the Financial Action Task Force on Money Laundering (FATF), cryptocurrency is a type of virtual currency and "means a mathematical-based decentralized convertible currency that is secured by cryptographic methods, that is, it uses cryptography to create distributed, decentralized, and secure information economy" [8, p.7].

In the early days of cryptocurrency, it was often confused with electronic money used in popular cross-border payment systems. However, these are completely different things since each standard electronic money unit is released into circulation in exchange for cash or non-cash funds [16]. Simultaneously, cryptocurrency is initially formed on the network using programs for calculating mathematical algorithms; it has no physical media and material embodiment and is also not provided with any resources, such as the gold and foreign exchange reserves of the state. The limitation of its emission is laid down only in the source code on which the crypto coins are built; otherwise, they would lose their value and become devalued from continuous issuance.

It is crucial that cryptocurrencies, as private money, are essentially a means for cross-border payments. In competing with each other, a new global virtual currency will stand out among them over time. Over time, a new global virtual currency will stand out among them, becoming the primary means of payment in international payments. Cryptocurrencies using ICOs – the issuance of tokens for specific investment projects – are already creating cross-border capital flows that are not controlled by governments (UNCTAD World Investment Report 2017 is devoted to the topic "Investments and the Digital Economy")

[31]. Many people believe that cryptocurrencies are the money of the future; they are faster, cheaper, significantly more reliable than all modern national currencies, and are the most promising and progressive international payment instrument.

4.3 New Global Digital Processes

Today, the concept of the digital economy, evolving with the rise of digital technologies. It has expanded beyond e-commerce and now includes doing business, maintaining communications, and providing services in all industries (including transport, financial services, manufacturing, education, healthcare, agriculture, retail trade, media, and entertainment industry) [29, p. 7].

In recent years, digital infrastructure has developed rapidly. The use of digital platforms and digital solutions provides companies and citizens with new opportunities:

- Companies can conduct business "without borders", Internet technologies allow organizing global access to information and "instant" transactions (e-commerce);
- The costs of transactions, marketing, interaction with customers in new markets are reduced;
- Sales can be carried out in small and fast-growing markets by organizing virtual teams interacting online;
- Small enterprises and start-ups from the moment they start functioning become transnational [15, p.140].

Companies now have new opportunities to find the best suppliers, customers, and talent around the world [30, 32]. Through digital technologies, people gain access to global markets for training, work, etc. Global digitalization is changing business models, which entails a revision of interaction principles with customers, suppliers, and partners, including changing the product line following changing customer preferences and conditions providing products and services.

The formation and development of the digital economy lead to the development of new functional activities:

- Remote monitoring and support service for employees during operations and customer service [17, 19];
- Remote management of supply chains on a global scale;
- Organization of unhindered access to clients, labor force, financial resources, wherever they are [23];
- Cross-border payments [18, 21];
- Organization of communications and interaction in real-time [35];
- The use of big data and analytics when making management decisions (attracting new customers, forming loyalty programs, etc.) [20].

4.4 Digital Risks

Digital technologies carry both benefits and risks, including technological, social, political, the risk of an increase in crime in its new manifestations, the risk of social, environmental, and personal degradation.

Technological risk is associated with the fact that digital technologies' benefits can be fully manifested only with a balanced development of organizations in the real sector of the economy. But if one segment of actual production works at an accelerated pace and qualitatively, that is, "digital", and the other – slowly and poorly, "in the old way," then as a result, the entire economy will work unsatisfactorily.

Social risk is associated with the fact that the digital economy's development inevitably leads to a significant transformation of the labor market, which is complex and occurs gradually as more and more traditional sectors are involved in the digital economy [24]. Simultaneously, such a transformation is accompanied by a reduction in the number of jobs for people with low and medium qualifications, an increase in unemployment among older people in connection with the robotization of jobs, automation, and optimization of management processes.

As a rule, these are positions held by representatives of the least competitive and most vulnerable segments of the population, so the state needs to consider the possibility of implementing special measures to adapt such categories of citizens to the potential difficulties that they may face in the development of the digital economy [34]. Highly qualified specialists will find themselves in an even more disadvantageous position since, until the last moment, they will be involved in the transition from traditional to the digital organization of production [26]. They will be thrown into the labor market when the positions corresponding to their status are no longer needed.

Old professions will disappear, and during active working life, a person will be forced to change jobs several times. In this situation, an unwillingness to receive high qualifications may form, since, in 5-7 years, it will still be necessary to retrain, spending time and money. An atmosphere of social tension will form, which may lead to the rejection of the very idea of introducing the digital economy [27, 29]. As a result of the development of digital technologies, there will be a radical transformation of the work organization system in the future, which will lead to a sharp reduction in the traditional relationship between the employee and the employer.

Digital platforms make it possible to organize economic activities so that the bulk of the functions traditionally performed by full-time workers within a given organization can be transferred to a group of sole proprietors and "online workers". As a result of this, an economy is formed based not on full-time employment but on short-term relationships with freelancers [28, p.6].

The Global Digital Economy helps develop additional skills and qualifications, especially for people who previously did not have such opportunities due to social or geographic constraints. In addition, digital platforms will create employment opportunities for new high-paying jobs created through the digitalization of professions [21, p.9]. Thus, the above social risks will be offset by the increased demand for specialists needed to create the digital economy's infrastructure. Political risks are especially dangerous.

According to experts, in the cross-border world of the digital economy based on blockchain technology with its decentralization and lack of a regulator, the state's role will have to be reconsidered. It should take the form of a simple territorial entity with some population, sorted according to their digital skills level [22]. This will lead to the abolition of the state's governing and controlling role, weakening state regulation of the economy, losing the ability to exercise its functions, and protecting its sovereignty.

It becomes possible for the emergence of private cross-border systems for managing economic, social, and political processes affecting the national interests of states and their associations. The basis for such systems is provided by global socio-informational and trade-informational networks and cryptocurrencies, the Internet of Things and other impersonal information means of transactions that take international trade and finance beyond national jurisdictions. Citizens can abandon government systems to protect their interests, relying on network structures and using blockchain technologies and smart contracts [9, p.4]. In the global digital economy, businesses and individuals face increasing digital security and privacy risks.

The connected world opens up new opportunities for cybercriminals who collect personal data to use it to conduct fraudulent transactions or introduce *ransomware* – malicious software that can block devices or encrypt data and demand money in exchange for a decryption key. Information is taken from acoustic and video sensors of "smart things" that may be available to unwanted parties; it becomes possible to spy on a person through the Internet of Things. Many countries are responding to these threats by adopting national digital security strategies, but few have a national privacy strategy [33].

Personal privacy risks add to consumer concerns about online fraud. There is a misconception that the digital environment minimizes the risk of fraudulent activity, but this is only true for the low-tech types of fraud that are taking place today. In the coming era of the domination of the Internet, every organization becomes digital by definition and, in one way or another, uses online technologies in its activities. Such conditions create opportunities for hacker attacks, and they can be both massive and targeted at a specific organization.

Experts predict an increase in the scale of cross-border computer crime. Now, being in one country, with the help of simple manipulations, you can get the necessary information stored in the data bank of another country's computer system, then transfer it to a third country while achieving the set goal – steal and embezzle money.

The risk of an increase in corruption in the digital economy should also be considered, since a person, leaving for virtual reality, can use material benefits (for example, cryptocurrencies) anonymously, without revealing their identity. It seems possible to find him and punish him only by organizing constant and continuous monitoring of the corrupt official and comparing the expenses he has committed with his personality.

The expansion of digital technologies and their introduction into a person's everyday life transforms the inner and outer world, which takes on more individual, but contradictory features. This is facilitated by:

- Individualization of production, in which the manufactured products will meet the needs and requirements of each specific consumer;
- Communicative interaction of all kinds of technical devices and equipment within the Internet of Things, which becomes systemic and, therefore, more customizable for a specific consumer;
- Virtual and augmented reality, which creates an individual artificial world for each person;
- The very life of a person, which is becoming more and more "digitized", analyzed, controlled, guided and regulated, as a result of which a person loses his individuality, identity;
- A person's loss of freedom and the ability to independently form his own personality;
- Expanding the ability of the authorities to segregate people, define and shape their life paths, as well as the necessary workers [25].

A significant concern is the opportunity of implanting microelectronic devices into the human body designed to enhance any natural functions (strength, speed, vision, hearing) or the implementation of new ones (night vision, reception of radio signals, an electronic passport or wallet, etc.). Once started, this process will become irreversible and will eventually lead to human cyborgization.

5 Conclusion

Digital globalization of economic processes is becoming a fundamental trend and principle of development of the modern economy. It is determined not only by revolutionary technological changes, but also by the laws of the evolution of the economy as a whole, orientates modern management to take into account the rules of doing business, contributes to the growth of labor productivity and product quality, and neutralizes the negative phases of the economic cycle [26].

The consequence of digital globalization is international economic integration [8]. Thanks to which non-traditional cross-border flows of goods, loans, and investments are rapidly growing, and the global exchange of information, ideas, and technologies is intensifying. This leads to the fact that national economies become part of a single global digital economic system. In this regard, it is necessary to formulate a national digital security policy and constantly update it. This should

become one of the most important areas of activity of the leadership of our country.

Today, the state's key task is to establish clear, transparent, and equal rules for international communications and control over their observance. The authorities must prevent any discrimination, protect consumer rights, intellectual property, and personal data, and take care of citizens' proper education and digital literacy.

At the same time, excessive national protectionism can impede the development of the global digital economy. The desire to store all data on the servers of only one's own country, the protection of confidential information are barriers to cross-border trade that slow down digital globalization [1].

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