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GLOBAL TRENDS OF ECONOMY TRANSFORMATION UNDER THE INFLUENCE OF INFORMATION TECHNOLOGIES

Abstract. The abrupt introduction of information and communication technologies leads to global shifts in the world economy, society, labor market and other areas. Ukraine demonstrates ~26% annual growth rate of IT services. Nowadays the IT industry ranks third in terms of exports of services. In 2020, the country's exports of IT services exceeded \$ 5 billion. However, as the study showed, the growth rate of the information and communication industry is insufficient to reach a level close to the level of the world's leading economies. Moreover, there are trends that are dangerous for the development of the economy and society. The analysis showed that in the formation of a global information society there are risks of technological and socio-economic gap not only between countries but also between generations and social strata within countries and this is a threat to the development of Ukraine's economy and society. Part of the population is not provided with adequate conditions to increase their own potential, which is the main driver of economic development. This is the basis for the formation of the «digital» gap and slows down social and economic reforms. The systematization of the main features of the global economy revealed inconsistencies in the development of information technology in Ukraine. According to objective indicators, it is analyzed how in Ukraine data are published and used for accountability, innovation, economic and social development. It is indicated that there are limiting factors for the formation, support and disclosure of data. This leads to restraint of the global movement of development in the country — when information and knowledge lead to the direct formation of new information and new knowledge. As the level of development and implementation of information and communication technologies in Ukraine still lags far behind the leading countries, this has a negative impact on the development of the economy, institutional structures and society.

In connection with the identified problems, the need to develop a state strategy for the development of the information society and the use of information and IT are indicated.

Keywords: globalization, IT-technologies, ICT-technologies, knowledge economy, information society, knowledge society.

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ГЛОБАЛЬНІ ТЕНДЕНЦІЇ ТРАНСФОРМАЦІЇ ЕКОНОМІКИ ПІД ВПЛИВОМ ІНФОРМАЦІЙНИХ ТЕХНОЛОГІЙ

Анотація. Стрибокподібне запровадження інформаційно-комунікаційних технологій призводить до глобальних зсувів у світовій економіці, суспільстві, ринку праці та інших сферах. Україна демонструє темпи росту ІТ-послуг щороку ~26%. ІТ-галузь сьогодні займає третє місце за величиною експорту послуг. Експорт ІТ-послуг країною 2020 року перевищив 5 млрд дол. Але, як показало проведене дослідження, темпи зростання інформаційно-комунікаційної галузі є недостатніми для досягнення рівня, наближеного до рівні провідних економік світу. Більше того, з'являються небезпечні для розвитку економіки і суспільства тенденції. Аналіз показав, що в умовах формування глобального інформаційного суспільства виникають ризики технологічного і соціо-економічного розриву не тільки між країнами, а й між поколіннями і соціальним стратами всередині країн, а це є загрозою саме для розвитку економіки і суспільства України. Частина населення не забезпечена належними умовами для збільшення власного потенціалу, який є головним двигуном розвитку економіки. Саме це є підґрунтям утворення «цифрового» розриву і уповільнює соціальні та економічні реформи. За проведеної систематизації головних рис глобальної економіки виявлені невідповідності розвитку інформаційних технологій в Україні. За об'єктивними показниками проаналізовано, як в Україні оприлюднюють і використовують дані для підзвітності, інновацій, економічного і соціального розвитку. Зазначено наявні обмежувальні фактори для утворення, підтримки та

оприлюднення даних. Це призводить до стримування у країні загальносвітового двигуна розвитку — коли інформація та знання призводять до безпосереднього утворення нової інформації та нових знань. Оскільки за рівнем розвитку і впровадження інформаційно-комунікаційних технологій Україна поки що значно відстає від країн-лідерів, то це має зворотний негативний вплив на розвиток економіки, інституційних структур і суспільства. У зв'язку з виявленими проблемами вказано на доцільність розроблення державної стратегії розвитку інформаційного суспільства та використання інформації та ІТ.

Ключові слова: глобалізація, ІТ-технології, ІКТ-технології, економіка знань, інформаційне суспільство, суспільство знання.

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Introduction. Information technology (hereinafter — IT) is playing an increasing role in various aspects of human activity. Today, the IT industry is a driver of economic development and characterizes the willingness and ability of the country to participate in global economic and social transformations. Trends in IT development allow predicting the degree of success and efficiency of the economy and social transformations. Ukraine demonstrates ~26% annual growth rate of IT services. At present the IT industry ranks third in terms of exports of services. In 2020, the country's exports of IT services exceeded \$ 5 billion. For comparison in the US with 4.4 trillion dollars of annual exports of high technology information and communication technologies (ICT) make up more than half of it. Powerful regional IT clusters have been formed in Odesa, Dnipro, Lviv and Kharkiv. This contributes to the development of the economy of the regions, and improves the situation at the labor market. A significant level of wages in the IT industry is a multiplier of the growth of welfare of the population of the regions because one hryvnia of wages in the IT industry leads to a chain increase in profits of local businesses, with a factor of five, relative to the hryvnia paid to an IT employee.

Analysis of research and problem statement. The dynamics and comprehensiveness of global change under the influence of information technology require detailed scientific analysis. The role of IT in the transformation of the economic and social spheres has been studied in the works of Muravyov [1], Isachenko [2], Roztockiet et al. [3]. Various aspects of the effects of IT have been studied in detail by scientists. The role of IT as an engine of development that requires new approaches to enterprise management was studied by Khmel [4], outsourcing in international economic relations by Bilanet al. [5] and Tsygankova et al. [6], the impact of «digital reality» on all socio-economic spheres by Rozin [7]. The details of IT impacts are covered in the work of Ashraf et al. [8], who used an analysis of the conceptual basis of this impact to understand the promotion of IT socio-economic development at the community level in Bangladesh. Broome et al. [9] points out the negative aspects of the use of IT, first of all, the indirect impact of global benchmarking on the activities of international organizations. Hardy and Castonguay [10] studied the economics of social media and their impact on society with the abrupt growth in the media role of IT using data from a social survey. Lee et al. [11] points to the ambivalent role of information and communication technologies in social transformations. Latysheva et al. [12] points to the unexpected effects of IT on monetary and fiscal policies in interconnected economies. Sokiran researches the most impact problems connected with Critical Information Infrastructure [13]. In [14; 15] examines global trends and national features of economic development under the influence of the latest ICT [15].

These studies point to the need to analyze the use of IT, because their impact can be unexpected and even negative.

The purpose of the articles is to use a systematic approach to identify the main features of globalization, analyze their impact on the socio-economic sphere of Ukraine and identify risks to the current pace of IT implementation.

Unsolved aspects of the problem. Researchers focus on specific issues of ICT implementation and general issues of the global knowledge economy without using a systematic approach to the main features of globalization, analysis of their impact on the socio-economic sphere of Ukraine and identifying risks to existing rates of IT implementation.

Research methods. Empirical and theoretical methods of cognition were used in the research. Methods of scientific observation and comparison were used to substantiate the relevance, purpose and objectives of the study. Methods of analysis and synthesis, induction and deduction were used to determine the essential features of the work. System approach was used for the formulation of the main features of globalization, analysis of their impact on the socio-economic sphere of Ukraine.

Research results. The main features of the global economy today are: the structuring role of information and knowledge, the network structure of the economy and society, mostly horizontal public relations, the merger of different communication technologies and a powerful technological leap in the development of electronic communications.

Computerization of industries and management has increased their efficiency and productivity. New clusters of professions have been formed: system analysts, programmers, network administrators, web designers, staff specializing in the collection, processing, storage and transmission of information. The spread of IT technologies has simplified contacts between business partners, saving their time and resources. Traditional economic and industrial activities have changed radically — home-based business and remote jobs appeared. Information is becoming one of the basic values and leads to the emergence of the information society, i.e. it is becoming a major factor in economic prosperity, the key to stable and sustainable economic development. Information, data and knowledge become commodities.

All the above proves that IT technologies are becoming a factor in the globalization of society, creating a single global information space and shaping the global world economy. The latest technologies are used to solve global problems and predict the future. If the pace of development of IT technologies in the country lags behind the world, it leads to stagnation of the economy of this country, falling out of global economic processes, reduces its ability to modernize the economy and hinders the development of society. Information as a value becomes one of the factors that shape socio-cultural and economic change. In today's global shift, knowledge and information directly produce new knowledge and new information. The amount of data and their impact on social and economic processes increases exponentially.

The need to formulate a modern paradigm of globalization of knowledge and information [15] in the new phase of civilization associated with the formation of the information society and its specific form — the knowledge society — creates the need to consider a new economy — the knowledge economy. The use of IT technologies in everyday life, production, public administration, etc., leads to the emergence of new institutional elements in the socio-economic structure of society. There are structures with new ways of providing information — e-government, circulation of electronic documents, digital signature, etc.

Global processes form the basis for the formation of a new hierarchy of states, create new preconditions for industrial development, require the latest legal framework, stimulate horizontal interstate and intercultural ties.

According to [16], society is informational when: any citizen at any time and with automated access and modern communication can get the information or knowledge he needs; society produces modern IT technology that is accessible for any individual or a group of individuals; there are institutional infrastructures that allow to implement the country's information resources to the extent that the desired pace of socio-economic processes is guaranteed; appropriate rates of information and technological transformation of all branches of production and spheres of management are provided; there are conditions for a radical change in social structures, resulting in the expansion of the information industry and services.

Access to information services varies from country to country. For example, only 11% of humanity has access to the Internet [16]. But 90% of this number live in developed countries [16; 17]. That is, a significant part of humanity is not provided with adequate conditions to increase human potential, which is the main resource for economic development. This forms the so-called «digital» and «price» gaps. In particular, access to information services in some countries is a sign

of wealth and is not available even to the middle class. That is, the existence of the latest technologies does not guarantee access to them.

With the globalization of the information society, there are risks of technological and socio-economic gap not only between countries, but also between generations and social strata in each country. This risk is typical for Ukraine, because the country is going through a painful stage of reforms. Not every person can afford to pay for the Internet, buy a computer, which limits his socio-economic capabilities. Then this person remains on the other side of the information gap. Ukraine may not ensure the proper pace of economic reform and social transformation in the context of global transformations, driven by the rapid development and convergence of ICT; the country's government in conditions of war can not sufficiently finance the formation of a society of knowledge, knowledge that is acquired under conditions of unimpeded access to information and skills to perceive and process it. This complicates the formation of a socio-economic system, where everyone is required to be able to acquire knowledge and retrain throughout life. The community of citizens of Ukraine as a whole is not yet ready to integrate into the global society, which is formed on the basis of interpenetration of cultures, tolerance and, with rapid socio-economic transformations, creates conditions for self-realization for every person and every community. This is evidenced by the data given in *Tables 1–3*.

Table 1

Index of readiness to use the information network

Rank	Country / Economy	Value	Rank of the previous year	Income level	Group
71	Ukraine	4.0	81	LM	CIS

Source: made using https://opendatabarometer.org/?_year=2017&indicator=ODB [15; 16].

According to the index of information network accessibility (see *Table 1*), Ukraine ranks only 71st and the network is not available to all groups of the population. Indices of implementation of new technologies in Ukraine (*Table 2*) show a large discrepancy — the sub-index of IT use is much lower than the Index of readiness to use the information network.

Table 2

Indices of introduction of the newest technologies in Ukraine

Readiness subindex and regulatory framework	Rank	Value	Infrastructure		Accessibility		Skills	
			Rank	Value	Rank	Value	Rank	Value
	28	5.6	46	4.7	10	6.6	36	5.6
Sub-index of use and regulatory framework	94	3.4	Individual use		Use in business		Use by government agencies	
			Rank	Value	Rank	Value	Rank	Value
			78	3.7	78	3.5	124	2.9

Source: made using https://opendatabarometer.org/?_year=2017&indicator=ODB [15; 16].

The data openness barometer (*Table 3*) indicates that the level of availability, openness and use of databases indicates an increased risk for foreign investment in Ukraine's economy.

Table 3

Data openness barometer

Database readiness	Digital maps	Data of shipowners	Detailed census data	Detailed state budget	Detailed government spending	Company register	Regulatory and legal framework	Public transport schedule	International trade data	National environmental statistics	Public contracts
Database quality	30	5	50	45	80	60	80	50	60	25	85
Is there data?	+	+	+	+	+	+	+	+	+	+	+
Is it available in any form from the government online?	+	-	+	+	+	+	+	+	+	+	+
Are readable formats available to use multiple times?	-	-	-	-	+	+	+	-	+	+	+
Are readable formats available to use multiple times in full?	-	-	-	-	+	+	-	-	-	-	+
Is the dataset available for free?	+	-	+	+	+	-	+	+	+	-	+
Is the data openly licensed?	-	-	-	-	-	-	+	-	-	-	-
Is the dataset updated?	-	-	+	+	+	+	+	+	+	-	+
Is the dataset updated regularly?	-	-	+	+	+	+	+	+	+	-	+
Is it easy to find information about this dataset?	+	-	+	-	+	-	+	+	-	-	+
Are data IDs provided for key elements in the dataset?	-	-	-	-	-	-	-	-	-	-	+

Source: made using https://opendatabarometer.org/?_year=2017&indicator=ODB [15; 16].

The Global Data Barometer is a global indicator of how public institutions in Ukraine publish and use open data for accountability, innovation, economic development and social impact [16] (see *Table 3*).

It is also noteworthy that the Ukrainian government has not adopted the Open Data Charter and that Ukraine, unlike the G20 member states, has not committed itself to open data to effectively fight corruption. This significantly reduces both Ukraine’s political and economic opportunities. Of the eleven items monitored that are considered to be important from a socio-economic point of view, only five items exceed the quality level marked as 50. According to the total indices as provided by the categories, the situation is as follows: political category — 35; social category — 5; economic category — 45 (see *Table 3*). That is, in terms of the level of information support, Ukraine still lags far behind the leading countries. In a way, this has an inverse multiplier effect on the development of the economy, institutional structures and society.

Conclusion. In connection with the identified problems, the need to develop a state strategy for the development of the information society and the use of information and IT is indicated. Main features of the global economy are systematized: the structural role of information / knowledge; network structure of economy and society; growth of horizontal social ties within countries and between countries; merger of different technologies and a powerful technological leap in the development of ICT tools. The global indicator of how data for accountability, innovation, economic and social development are published and used in Ukraine is analyzed. It is stated that a characteristic limiting factor is Ukraine’s failure to adopt the Open Data Charter and data disclosure

commitments to effectively fight corruption. It was found that in terms of ICT, Ukraine still lags far behind the leading countries and this has a negative impact on the development of the economy, institutional structures and society.

It is pointed out that in the conditions of formation of the global information society there are risks of technological and socio-economic gap not only between countries, but also between generations and social strata within countries and this is a threat to the development of Ukraine's economy and society. A certain part of the population is not provided with proper conditions, in particular, access to ICT to increase their own potential, which is the main driver of economic development. This is the basis for the formation of the «digital» gap and slows down social and economic reforms.

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