

DIGITAL TRANSFORMATION OF BUSINESS STRUCTURES IN UKRAINE: THE BARRIERS AND DRIVERS

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Chepeliuk M. I. Digital Transformation of Business Structures in Ukraine: The Barriers and Drivers

In recent decades, one of the main trends in the development of economy and society has been the penetration of information technologies into various spheres of human activity. The digital transformation of the economy poses challenges to economic science and management, as the socio-economic institutions of society change dramatically, the same holds for the conditions and methods of doing business under the influence of technological changes in the economy. The problem is that traditional economic laws (economies of scale, value chain) are no longer functioning, and new economic actors (digital companies) are emerging that do not fit into traditional models of performance and business indicators. In addition, in the context of digitalization of the economy, the management of economic entities is the relevant issue. In order to play a dominant role in the global computer economy, a country must pay special attention to the production of innovations and to the domestic employment opportunities. For each country, the production and support of technical skills is an important component of economic development, employment, economic growth and development. The article analyses the development trends and the size of the digital economy in Ukraine and in other countries of the world. Key trends that will determine the direction of this type of economy are identified. It is proved that digitalization should be carried out in accordance with the principles of equal access, creating benefits, economic growth, promoting the development of the information society and the orientation towards cooperation. The advantages of digitalization of the Ukrainian economy are presented, as well as the threats and risks that will arise as a result of this process are specified. Thus, the developmental role of many countries, including Ukraine, is associated with unlimited access and transformation of new forms of economic development, taking into account the use of intellectual skills.

Keywords: transformation, strategy, system of strategies, digitization, digital transformation strategy, globalization, international business.

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Чепелюк М. І. Цифрове перетворення бізнес-структур України: бар'єри та рушійні сили

Останніми десятиліттями однією із основних тенденцій розвитку економіки та суспільства стало проникнення інформаційних технологій у різні сфери людської діяльності. Цифрова трансформація економіки ставить виклики економічній науці й управлінню, оскільки соціально-економічні інститути суспільства різко змінюються, як і умови та способи ведення бізнесу під впливом технологічних змін в економіці. Ці проблеми полягають у тому, що традиційні економічні закони (економія від масштабу, ланцюжок створення вартості) вже не функціонують, і з'являються нові економічні суб'єкти (цифрові компанії), які не вписуються в традиційні моделі показників ефективності та бізнесу. Крім того, у контексті цифровізації економіки актуальним питанням є управління суб'єктами господарювання. Для того, щоб країна могла відігравати домінуючу роль у глобальній комп'ютерній економіці, особливу увагу необхідно приділяти виробництву інновацій і можливостям працевлаштування в країні. Для кожної країни виробництво та підтримка технічних навичок є важливим компонентом економічного розвитку, зайнятості, економічного зростання та розвитку. У статті проаналізовано тенденції розвитку та розмір цифрової економіки в Україні та інших країнах світу. Визначено ключові тенденції, які визначатимуть напрямок цього типу економіки. Доведено, що цифровізація повинна здійснюватися відповідно до принципів рівного доступу, створення вигод, економічного зростання, сприяння розвитку інформаційного суспільства та орієнтації на співпрацю. Наведено переваги цифровізації української економіки, а також вказано загрози та ризики, які виникнуть у результаті цього процесу. Таким чином, розвивальна роль багатьох країн, включно з Україною, пов'язана з необмеженим доступом і трансформацією нових форм економічного розвитку з урахуванням використання інтелектуальних навичок.

Ключові слова: трансформація, стратегія, система стратегій, оцифровка, стратегія цифрової трансформації, глобалізація, міжнародний бізнес.

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The modern world has already taken the first step towards new technological, economic and social sciences. But the challenges brought by modern corporate society are much more complex. Here we can name changes in the world economic system leading to a complete overhaul of our systems and the introduction of new economic and social policies. At the same time, the technical paradigm is changing, the types of governance

and social norms are changing, and there are dramatic changes in the population. But the problem is not that a new type of mutation is happening. The problem is that these changes are happening very quickly: not in a thousand years like in the agrarian sector, not in a century like in industry, but in a few years.

In the new context, the country will also benefit from technology and digital technologies, in which all

sectors of the economy grow, connect, and improve. Thus, the role of many developing countries, including Ukraine, is linked to unrestricted access and the transformation of new forms of economic development that take into account the use of intellectual and human skills.

In order for a country to dominate the global computer economy, special attention must be paid to production, innovation and employment opportunities in the country. For each country, the production and maintenance of technical skills is an important component of economic development, employment and economic growth.

Ukraine is changing towards a 4.0 industry. The movement «Industry 4.0 in Ukraine» has been established, and the Association of Industrial Automation Enterprises of Ukraine pays great attention to these issues. At the industrial exhibition in Hannover, IT-Enterprise representatives noted with satisfaction that the «Manufacture» module and other modules of the IT-Enterprise ERP-system are already solving the problems of Industry 4.0, making it more efficient than similar systems made by competitors. At the forum in Hong Kong in 2016, representatives of 200 industry technology incubators of industry 4.0 were surprised to learn that IT-Enterprise had already solved some of the problems they were just beginning to face, and its specialists were ready to announce the results achieved.

According to GII rankings, Ukraine holds high positions on the quality of human capital. Here we are talking about the wide demographic coverage of higher education, and the number of qualified employees in knowledge-intensive industries. For example, about 90.000 employees work in the IT outsourcing sector and according to the forecasts of the «IT Ukraine» association their number will increase to 200.000 in the next 2–3 years.

De facto, IT is the only sphere that is integrated into the global market, but it is generally far from Ukrainian industry. The process of industrial development is dominated by specialists in narrow production technologies and industrial management systems. At the same time Ukrainian system integrators of control systems, engineering companies, and machine builders are well known in the CIS, but not in the world. In many ways, they are conservative and lag behind IT and the global rate of innovation.

The accelerated de-industrialization of Ukraine can be illustrated by comparing the economies of Ukraine and Poland, in particular the dynamics and structure of exports. Poland has outperformed Ukraine in industries where Ukraine was stronger, such as engineering and aviation. Today, Poland exports mainly high-value-added products and Ukraine exports raw materials [14] (*Tbl. 1*).

All this means that Ukraine is not ready for the introduction of Industry 4.0 technology. Moreover, the implementation of Industry 3.0 in Ukraine is not yet complete. Even the level of automation in Ukrainian in-

dustry is still below average. In metallurgy, for example, it is about 50 percent. So, the problem, i.e., the digital leap, when companies urgently need to go from 3.0 to 4.0, is that the country is developing very quickly. The level of digitization of the Ukrainian economy varies considerably from sector to sector. In such areas as financial services, communication services, and logistics Ukrainian companies use advances in information technologies as widely as their foreign competitors do [7; 8; 15].

Table 1

Comparison of the dynamics and structure of exports for Ukraine and Poland, \$ billion [23]

	Poland	Growth	Ukraine	Growth
Export				
1993	17.5		16	
2020	325	19 times	59	3 times
Export structure				
Export of equipment	51		4.5	
Export of motor transport	31		0.7	
Export of metals	21		11.4	
Export of chemical products	15		1.75	
Export of plant products	5		9.48	

At the same time, the intensity of digital technologies use (as well as everything associated with them, i. e. automation, robotics) is very low in several industries (for example, mining). This situation accounts for a significant productivity gap in the sector (*Tbl. 2*).

Table 2

Share of some digital services in Ukraine and EU (by the end of 2020), %

Digital service	Ukraine	EU
E-commerce in retail trade	4	7
Organizations that use CRM systems	10	33
People who buy online	23	65
People who receive services online	29	59

Source: compiled by [21; 22].

It is estimated that the level of expenditure of enterprises on the development of new technologies and products and the state of investment in innovation is unsatisfactory in Ukraine compared to world leaders, and catastrophic, if you look at it from the perspective of the country's development prospects. According to the State

Statistics Service of Ukraine it is UAH 10.954 million. \$400–450 million was spent on research and development of Ukrainian enterprise in 2017. Whereas according to the "Global Innovation 100" report, the combined R&D spending of the world's top 1,000 companies in 2017 reached \$702 billion [2; 3].

According to the data of the State Statistics Service of Ukraine for 2018 innovation activity in the industry accounted for only 16.4% of enterprises. In advanced countries, the share of innovative enterprises is four to five times higher, accounting for 50 to 60% of the total number of enterprises [26].

The share of innovative enterprises in the EU on average is 51%. Belgium has the highest level of 68%, Portugal has 67%, Finland has 65%, Germany has 64%, and Luxembourg has 64%. The lowest level is in Romania (10%) and in Poland (22%). In Ukraine, only 3.9% of enterprises spend on research and development (both internal and external). The share of innovation in total output sold has remained in the range of 6–7% for many years. The knowledge intensity of GDP in Ukraine declined almost threefold between 1990 and 2019 and is less than 1% [3; 6].

However, the low innovation performance of Ukrainian enterprises does not mean that they do not have sufficient funds to carry out the innovation activity. Enterprise research expenditure can be compared, for example, to business expenditure on political parties, football clubs, bribes, and the like. This pattern of expenditure only indicates that enterprises have assets for research and development but choose other areas of expenditure. So, the expenses of the Ukrainian manufacturer on innovation are not a primary need for business. The technical backwardness of the enterprise is not a critical problem for the producer [19; 22].

Official statistics do not figure up the volume of the digital economy in Ukraine. Therefore, we present KPI in the table below based on our own estimates (based on numerous studies by international organizations on the impact of digitization) (*Tbl. 3, Tbl. 4*).

Ukraine's digital development indicators should be considered in the following ways [4; 5; 18; 20]:

- ✦ digital infrastructure coverage (penetration / coverage);
- ✦ absorption (absorption), that is, the level of digital technologies use (scrap or deep, superficial or in key business processes);
- ✦ frequency of use (intensity).

However, coverage is the key issue in Ukraine, as it is from there that the diffusion of technologies and their use by users begins.

As a result, the main problems of the development of the Ukrainian economy within global transformational processes related to digitization are analysed. For Ukraine, digitization may become a spur to modernize the economy and overcome the crisis. An analysis of the current state of its development shows that the further introduction of digital technologies in all the sectors of the economy is impossible without removing obstacles to their development: inadequate protection of intellectual property rights, high investment risks, low levels of cybersecurity, and piracy [9–11; 17].

Other problems include the lack of motivation to digitize both the society and the company staff. Government policies should be aimed at enabling the introduction and use of new digital tools, instead of traditional ones, among citizens and businesses, and making digital technologies accessible for consumers, thereby increasing the demand for them. As far as business is concerned, such transformations require many resources, from eco-

Table 3

KPI of the Ukrainian economy

Indicator	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
Domestic market (ICT consumption), billion dollars	2.0	2.5	3.0	4.5	6.0	8.0	10.0	12.0	14.0	16.0
Impact on GDP, percentage of growth	+0.5	+1	+2	+3.5	+4.5	+6	+7.5	+9	+11	+14

Source: compiled by [22].

Table 4

Share of the digital economy in Ukraine's GDP (KPI)

Indicator	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
Share of the digital economy in total GDP	3	5	8	11	15	20	28	40	52	65

Source: compiled by [22].

conomic to cultural ones. Only then the benefits of digitization can be effectively optimized while minimizing its risks [12; 13; 16].

The first step to developing digital economy at the state level was the development in 2016 of the conceptual basis for digitization, reflected in the joint project «Digital Advent of Ukraine-2020». The project was initiated by the Ministry of Economic Development and Trade of Ukraine, while representatives of State authorities, leading companies in the field of digital technology, voluntary organizations, associations, consulting groups, academics, and independent experts were involved in the development of the project. Based on the already existing project for the realization of digital economy in Ukraine the Cabinet of Ministers of Ukraine in 2018 approved the «Concept of developing the digital economy and society of Ukraine for 2018–2020» [21].

The main instruments to guide our State in digitization are its objectives [21; 22]:

- ✦ digital modernization of all the areas of life and activities of the population;
- ✦ transformation of the traditional economy into an competitive, efficient and attractive one;
- ✦ accessibility of digital technologies;
- ✦ improving economic performance at the international level;
- ✦ opportunities for human resource development, innovative entrepreneurship, digital industry.

The goals, principles and directions of digital modernization that require rapid modernization are clearly defined. They are: education, medicine, transport infrastructure, tourism, public administration and environmental protection.

Also, the desired results of realizing the developed projects and concepts in 2020 are indicated; in particular, the «Concept of developing digital economy of Ukraine» gives the following characteristics:

- ✦ 30th place in the Networked Readiness Index (WEF) and The Global Innovation Index (INSEAD, WIPO) rating
- ✦ 50th place in the ICT Development Index (ITU);
- ✦ 60th place in the Global Competitiveness Index (WEF).

However, in the «Digital Agenda» project, which was developed in 2016, other expected results based on global development indices were noted:

- ✦ 2020 Ukraine is No. 40 in the Networked Readiness Index (WEF)
- ✦ 2020 Ukraine is No. 40 in the Global Innovation Index (INSEAD, WIPO)
- ✦ 2020 Ukraine is No. 50 in the Global Competitiveness Index (WEF).

On the basis of these expected indicators of implementing digitization in Ukraine, we will analyse the published indicators and estimate the world organizations in the period 2016–2020 (Tbl. 5).

Table 5

Indicators of global indices of digital economy development for Ukraine

Indicator	Year				
	2016	2017	2018	2019	2020
Global Innovation Index (INSEAD, WIPO)	56	50	43	47	45
ICT Development Index (ITU)	78	79	–	–	–
Global Competitiveness Index (WEF)	85	81	83	85	83

Source: compiled by [23–25].

CONCLUSIONS

The reorientation of Ukraine towards innovative development is possible only under conditions of large-scale implementation of innovative projects, and the transition to an innovative model of economic growth is one of the main tasks of the State in the near future. However, as the study shows, the dynamics of Ukraine's innovative potential and ratings for 2015–2020 are rather slow and in some respects negative, which fact, together with political instability, reduces the investment attractiveness of domestic firms. ■

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