

## **DIGITAL MODERNIZATION OF UKRAINE ECONOMIC PROCESSES IN THE CONTEXT OF EUROPEAN INTEGRATION**

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**Introduction.** The modern world is changing under the influence of digitalization. Advanced digitization tools help to become flexible and efficient professionals in complex and unpredictable conditions. Trends in the development of informatization associated with the introduction of digital communication technologies and platforms are unprecedented. Sectors of the economy based on information and communication technologies are called “digital economy” [1]. That is why the government of Ukraine has chosen the total digital transformation of our country as one of the most important priorities. However, this raises questions about what are the appropriate opportunities for business and professionals in certain sectors of the economy.

Of course, recent events, in particular the COVID-19 pandemic, have prompted both public authorities and businesses, as well as ordinary citizens, to think about their willingness to work, experiment and learn in real time in the digital world. Due to quarantine measures, many companies were forced to transfer employees to remote work. The transition to remote work required technological solutions – development of IT infrastructure, security systems, communications, electronic task setting and tracking their implementation. And at the same time there was a need to train staff on how to use it all and adapt to change. In addition, the coronavirus has become a crash test for implemented projects of state’s digitalization and verify their performance in conditions of uncertainty.

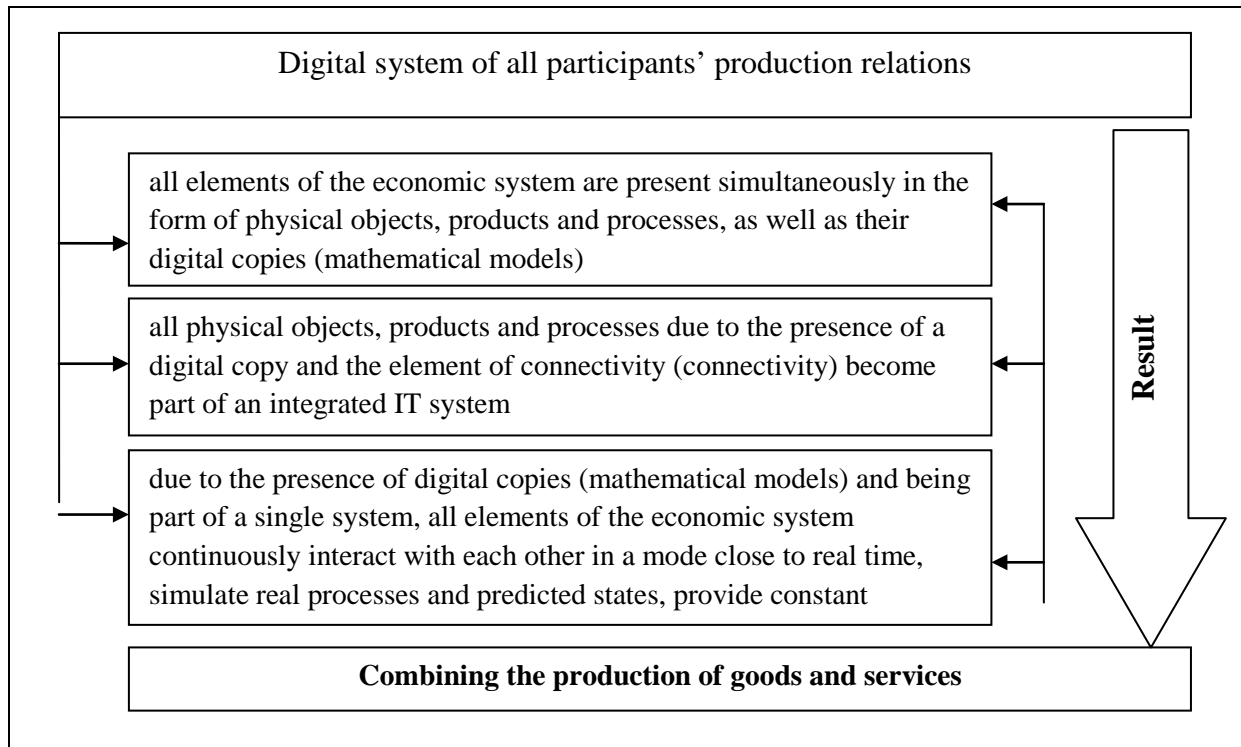
**Review of recent sources of research and publications.** Ben Tarnoff in his work “The data is ours! What is big data?» defines that digitization makes data infinitely more abundant, because it becomes much easier to create, store, and transmit [2]. According to the researcher, sensors can be attached to any device (conveyor, gas turbine or transport container) and receive data. The ability to obtain information about the production process in order to optimize it has reached the level of sophistication [2]. Assistant Director-General for Communication and Information UNESCO Moez Chakchouk emphasizes that in the 21st century, digital technologies offer unprecedented opportunities for access to information, freedom of expression, human connectivity, technological innovations, as well as multistakeholder engagement [3]. In work «WIPO Technology Trends 2019: Artificial Intelligence» WIPO Director General Francis Gurry emphasizes that AI is fast becoming part of our everyday lives, changing how we work, shop, travel and interact with each other [4]. F. Gurry convinced that yet we are only at the beginning of discovering the many ways in which AI will have an impact on – and indeed challenge – business, society and culture. There are numerous misconceptions and misgivings about the nature of AI, and in particular the challenge it poses to humankind. Given these widely held reservations and concerns, it is essential to have a factual basis for policy discussions about innovation in AI [4].

**Setting objectives.** Main purpose of the article is to study the current state of digital modernization of Ukraine’s economic processes in the context of European integration.

**Result of the research.** The digital economy is significantly changing and will change traditional business processes. A feature of the digital economy is its connection with the so-called on-demand economy. The purpose of which is to gain access to goods and services at a time when it is needed. Digital spillover occurs when digital technologies accelerate the transfer of knowledge, innovation in business and

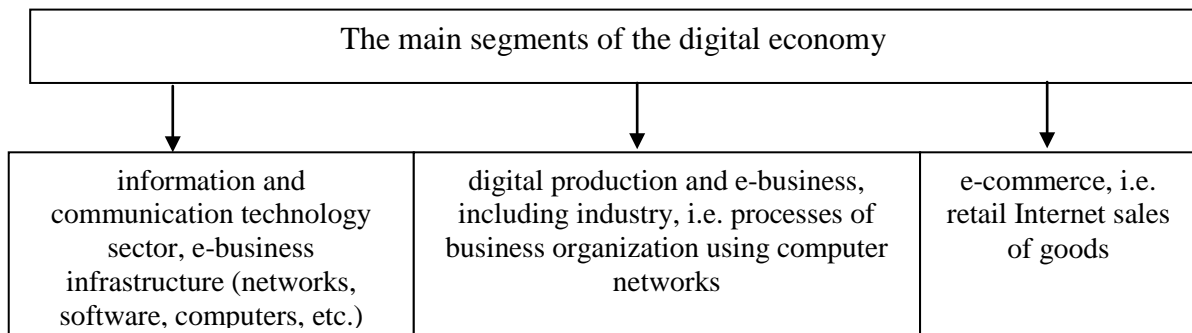
increase productivity within the company through the supply chain of industries to achieve sustainable economic development [5].

Achieving the most complex levels of the economy digitalization is a radical transformation of industrial relations of participants, the result of which is integration of production and services into a single digital (cyberphysical, i.e. coexistence in the form of material elements and interacting mathematical models of these elements) system (Fig. 1) [5].



**Fig. 1. A digital system of all participants' industrial relations, the result of which is the combination of goods production and provision of services**

The main segments of the digital economy shown in Fig. 2 [6].



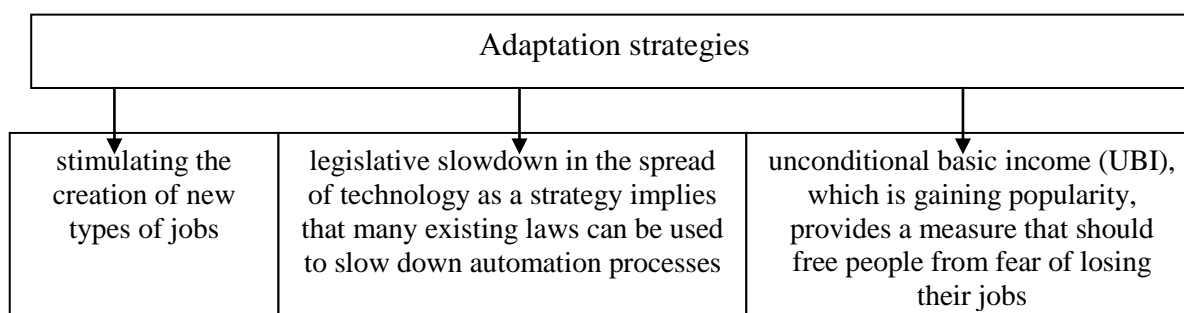
**Fig. 2. The main segments of the digital economy**

The development of technology and automation has a profound effect on the labor force of any country. According to experts, no country in the world has a formally presented strategy for adapting to future changes, and governments are trying to develop effective strategies for the digital economy, facing ever-changing priorities [7].

To mitigate the future shock of society, governments around the world use the following types of actions, which can be called adaptation strategies (Fig. 3).

Legislative slowdown in the spread of technology as a strategy implies that many existing laws can be used to slow down automation processes (Fig. 3). Examples are laws that prohibit the operation of fully

autonomous vehicles on public roads, prevent development of unmanned taxis and trucks, and temporarily protect drivers from losing their jobs. The reluctance to switch to distributed registers on blockchain technologies leaves an opportunity for employees' employment of different registration services. Such actions may delay the introduction of new technologies for some time, but without a parallel adaptation process it will only exacerbate future shocks.



**Fig. 3. Adaptation strategies, which are used to reduce the shock of society**

It is well known that people, among other things, perceive work as meaningful to their lives. Therefore, if a person is deprived of employment and offered unconditional income in return, the result may be ambiguous. Many people may lose their sense of purpose in life. However, any adaptation strategy can be adjusted by any sudden event.

The level of digitalization of Ukraine's economy in each industry is different. In such areas as financial services, communication services, logistics, Ukrainian companies use the achievements of information technology as widely as foreign competitors. However, in a number of industries, intensity of the use of digital technologies (as well as everything related to them – automation, robotics) is extremely low (for example, in the mining industry). This situation is the reason for the significant lag in the industry productivity.

The share of some digital services in Ukraine and the European Union is given in table 1.

Table 1

**The share of some digital services in Ukraine and the European Union, % [8]**

Digital services	Ukraine	the European Union
E-commerce in retail trade	4	7
Organizations that use CRM systems	10	33
People who buy online	23	55
People who receive services online	29	48

Thus, the analysis showed that in Ukraine the share of: e-commerce in retail trade is 4%, which is almost 2 times less than in the EU; organizations that use CRM-systems in Ukraine is equal to 10%, which is 3.3 times less than in the EU; people who buy online is 23%, which is 2.4 times less than in the EU; people who receive services online is 29%, which is almost 2 times less than the EU.

Thus, it is clear that the impact of the digital economy on the labor market will be positive. Unequivocally unique are fifth generation 5G technologies, which accelerate data transmission by almost 40 times or more. Further development of such technologies will lead to a revolution in industry, agriculture and transport. If we talk about the real speeds that await ordinary users, then in 5G they will reach 10 Gbps (for comparison: now the maximum speed of 4G for subscribers rarely exceeds 100 Mbps).

The possibility of uninterrupted and high-speed data transmission, as well as the ability of devices to exchange data directly will allow remote control of agricultural machinery, industrial works or unmanned vehicles. The impact of 5G technologies on people's lives is shown in table 2.

First of all, in order to predict probable image of the labor market and workers in a digital economy, it is necessary to clearly outline the main processes and megatrends that determine profile of the future labor market and affect changes in economic and social relations. Secondly, it is necessary to determine how the content of "work" will change, as well as how the very concept of "labor activity" will be interpreted.

Scope of 5G and effect

Scope of 5G	The effect of application
Unmanned vehicles	Eliminate dangerous signal delay at high speed.
Industry	High-speed industrial works and unification of infrastructure.
Agriculture	Remote management of agriculture, monitoring of agricultural lands and animals.
Education	Online and offline learning.
Telemedicine	Remote real-time operations. Use of distance communication in the form of electronic messaging.
Telecommunications	Interactive virtual reality, interaction at a distance.

Therefore, the megatrends that will shape the scope of future labor relations include following:

- technological progress, automation and robotics (technologies can make life easier, increase its productivity, quality and duration);
- cloud technologies and cloud computing (great opportunities for remote work and involvement of third-party contractors, connecting them to a single system with the ability to monitor and control all processes);
- digitization of personal space (transition from general digitization of the outside world to digitization of personal space);
- Big Data 10 (the Internet becomes a “network of everything”) [9; 10];
- Internet of Things allows to provide control and remote control in real time of many devices (things) through special devices. This technology implements the concept of a Smart home;
- gig-economy is a radical change in the labor market, its transition from the availability of jobs with permanent employment in one employer to temporary projects from different companies to one independent employee;
- formation of a network society and network economy (mesh economy).

Thus, as a result of structural changes in the economy, the share of traditional industry, which formed demand for standard employment and which is exhausting, is declining. The share of services sector, which operates in flexible working hours, with a longer or shorter working day than the current legislation, is increasing. There is also an increasing need for greater mobility of labor resources, which leads to a stronger role of fixed-term employment contracts.

The Cabinet of Ministers of Ukraine by its order of March 3, 2021 approved the Concept for the development of digital competencies and approved an action plan for its implementation [11]. The strategic goal of the Ministry of Education and Science is to teach digital literacy to 6 million Ukrainians in three years. To this end, in 2020 a national online platform was launched, as well as the first national test for digital literacy “Digits”. In addition, a network of 2,000 offline digital education hubs throughout Ukraine has already been built, and another 4,000 hubs are being added to the network.

The concept of digital competencies development by 2025 outlines challenges for the development of digital competencies in Ukrainian society and identifies ways to overcome them and expected results from its implementation. It also lays the groundwork for the creation of a national strategy and strategic action plan for the development of digital competences in society.

The implementation of the Concept will help protect Ukrainians from potential dangers in the digital environment, especially those that occur due to the human factor. They will know the basic rules of behavior on the Internet, typical algorithms of action in case of information attacks, will secure their own personal data, will recognize fakes [11].

**Conclusions.** Thus, in the digital economy, both the nature of labor and the whole system of labor relations changes, and information becomes the subject of labor. In this case, the digital labor market involves interaction of the employer with employee on a digital platform in remote work. An employee can be employed remotely and territorially where his competitiveness and working conditions allow. The means of labor are digital devices such as computers, tablets, mobile phones, cameras, and more. The initial information required for employment is recorded in digital form. The information is aimed at the activities of a specialist who, thanks to his knowledge, experience and ability to produce innovations, makes changes to it.

The scientific novelty of the obtained results is to substantiate the theoretical foundations of the process of Ukraine economic processes digital modernization in the context of European integration, in

particular the further development of adaptation strategies used in modernizing the economy using “digital technologies” to reduce public shock.

Prospects for further research in this area are to study the level of digitization of each individual sector of the domestic economy.

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JEL O14, O31, M21

**Болдирєва Людмила Миколаївна**, доктор економічних наук, доцент. **Чайкіна Аліна Олександрівна**, кандидат економічних наук. Національний університет «Полтавська політехніка імені Юрія Кондратюка». **Цифрова модернізація економічних процесів в Україні в умовах свроінтеграції**. Вивчено особливості цифрової економіки та її зв'язок з так званою економікою на вимогу (on-demand есоному). Досліджено кардинальну трансформацію виробничих відносин учасників, результатом якої є об'єднання виробництва і послуг в єдину цифрову систему. Проаналізовано основні сегменти цифрової економіки. Доведено, що розвиток технологій та автоматизації кардинально впливає на трудові ресурси будь-якої країни. Вивчено адаптаційні стратегії, які застосовують уряди різних країн світу для пом'якшення майбутнього шоку суспільства, а саме: стимуляцію створення робочих місць нового типу; законодавче уповільнення поширення технологій; безумовний базовий дохід (ББД). Досліджено рівень цифровізації економіки України. Наведено частку деяких цифрових сервісів в Україні та Європейському Союзі. Досліджено позитивний вплив розвитку цифрової економіки на ринок праці. Охарактеризовано технології п'ятого покоління 5G (fifth generation). Розглянуто можливість безперебійної і надшвидкісної передачі даних, а здатність пристроїв обмінюватися даними безпосередньо дозволить дистанційно управляти сільгосптехнікою, промисловими роботами або безпілотними автомобілями. Проаналізовано мегатенденції, що формуватимуть сферу майбутніх трудових відносин: технологічний прогрес, автоматизація і роботизація; хмарні технології та хмарні обчислення; цифровізація особистого простору; великі дані (Big Data) 10; інтернет речей дозволяє через спеціальні пристрої забезпечити контроль і дистанційне керування в реальному часі багатьма приладами (речами); гіг-економіка – це кардинальні зміни на ринку праці, його перехід від наявності робочих місць з постійною зайнятістю в одного роботодавця до тимчасових проектів від різних компаній в одного незалежного працівника; становлення мережевого суспільства та мережевої економіки (mesh есоному). Вивчено структурні

зміни в економіці, попит на стандартну зайнятість, сектор послуг, який функціонує в умовах гнучкого робочого часу. Доведено, що у цифровій економіці змінюється як характер праці, так і вся система трудових відносин, зокрема інформація стає предметом праці, а засобами праці виступають цифрові пристрої, такі як комп'ютери, планшети, мобільні телефони, камери тощо.

**Ключові слова:** розвиток, стратегії, цифрова економіка, цифровізація, цифрові технології, цифрові сервіси.

338.2

JEL O14, O31, M21

**Liudmyla Boldyrieva**, D. Sc. (Economics), Associate Professor. **Alina Chaikina**, PhD (Economics), Associate Professor. National University “Yuri Kondratyuk Poltava Polytechnic”. **Digital Modernization of Ukraine Economic Processes in the Context of European Integration.** The peculiarities of the digital economy and its connection with the so-called on-demand economy were studied in the article. The cardinal transformation of participants' production relations, the result of which is the integration of products and services into a single digital system, was studied. The main segments of the digital economy were analyzed by authors. It was proved that the development of technology and automation has a profound effect on the labor force of any country. Adaptation strategies used by governments around the world to mitigate future societal shocks were studied, namely: stimulating the creation of new types of jobs; legislative slowdown in the spread of technology; unconditional basic income (UBI). The level of digitalization of the Ukrainian economy was studied. The share of some digital services in Ukraine and the European Union was given.

**Keywords:** development, strategies, digital economy, digitalization, digital technologies, digital services.