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DIGITALIZATION AMPFLIFICATION EFFECT ON INTERNATIONAL ECONOMIC STABILITY

The definition of the digital economy is considered, as such, which can be characterized by activities related to the creation, dissemination, and use of digital technologies and related products and services. Today, digitalization is essentially implemented to encourage the development of ICT, promoting the informational openness of society, and providing the necessary opportunities for access to services and information offered by ICT. The study of domestic and foreign literature demonstrates the existence of an objective connection between the digital economy and the traditional economy. The advantages of the digital economy are fast ordering and delivery of the required product or service, lower prices for the end consumer due to the elimination of intermediaries, and a simpler process of selecting suppliers and customers. According to studies, digitalization provides incremental economic growth: countries that are at the most advanced stage of digitalization receive 20 percent more economic benefits than countries that are in the initial stage. Digitization has a proven impact on reducing unemployment, improving the quality of life, and increasing citizens' access to public services. During the pandemic, consumers have shifted dramatically to online channels, and accordingly, companies and industries have actively responded to these systemic changes. Statistics also confirm the rapid shift to customer engagement through digital channels. Accordingly, digital technologies have the potential to drive more inclusive and sustainable growth by driving innovation, increasing efficiency, and improving services. They are also an important tool to help countries confront and recover from the COVID-19 pandemic. Digital technologies are used to stabilize socio-economic processes in the conditions of modern global challenges - high inflation, energy, and food crisis, and negative consequences of Russian military aggression in Ukraine.
Keywords: *digital technologies, digital economy, e-commerce, economic sustainability*

Problem. Recently, new forms of contradictions and instability in the global economy have emerged. Modern crises encourage companies and countries to increase their competitiveness by the means of introducing innovations, new strategies, and methods. Despite that national economies are slowing down, the rising inflation, changing global value chains, digitization, and the speed of diffusion of innovations are increasing.

Recently, national economies have not been able to resolve economic losses from pervasive crises on their own, separately and independently of the global economy. The economic response to the COVID-19 crisis caused by the global spread of the coronavirus disease in 2020-2021 is still an actively discussed issue in the economic community.

The COVID-19 crisis, in turn, was also accompanied by the acceleration of digital technologies and digitization. This acceleration increased the speed of digitization in all spheres of the economy, regardless of the previous digital disposition of the country in the

field of information and communication (ICT) technologies. In turn, ICT development is an active tool for strengthening the sustainability of economic development.

The analysis of recent publications. The review of previous studies demonstrated the impact of the pandemic as a global process on the economy. It makes the evaluation of innovation and digitalization possible in conditions of modern instability. Thus, Kozlovskyi, S., Petrunenko, I., Baidala, V., Myronchuk, V., & Kulinych, T., researched in 2021 claims that the COVID-19 pandemic has profoundly disrupted the understanding of typical models of social welfare assessment, thus causing a shift in the scientific approach to assessing the public welfare of the population of Ukraine in the conditions of the COVID-19 pandemic and digitalization of the economy [10].

At the same time, Handoyo R. D. believes that the COVID-19 pandemic has triggered not only an unprecedented global health crisis but also a global economic, trade, and investment crisis that has caused a global recession. At the same time, digitalization only accelerated during the pandemic [7].

International organizations are also investigating the coincidence of the pandemic and the phenomenon of deepening digitalization. Thus, the Organization for Economic Cooperation and Development (OECD), which is an intergovernmental organization with 38 member countries to stimulate economic progress and world trade, determines the impact of the pandemic on the spread of digitalization. The OECD Digital Economy Outlook 2020 highlights the growing importance of digital technologies and communications infrastructure in everyday life and shows that governments are increasingly putting digital strategies at the heart of their economic policies. It also discusses the steps needed to increase resilience and overcome the digital divide in the world after COVID. Accordingly, the question of analyzing the impact of digitalization given the acceleration of economic development remains particularly important [11].

Unsolved parts of the problem. The review of scientific papers indicates the lack of consideration of digitalization as a comprehensive tool for solving the issue of economic instability against the current interdisciplinary challenges.

The aim of the article is to study the aspects of digitalization as a tool for maintaining the stability of the economy.

Research methods lay in the use of general scientific methods of research (empirical and theoretical), namely methods of analysis, synthesis, analogies, abstraction, and generalization. These methods of study are based on the observation of some basic indicators of economic development, namely macroeconomic indicators. The approach shows how well the countries use the competitive advantage of digitalization. The difficulty of accomplishing that concurrently is due to the fact that some countries are more digitally advanced than others. are more or less competitive rather than complementary. The proposed assessment is based on an approach, that is dependent on convoluted digital indicators and economic indicators.

The results of the research. It is generally recognized in economics that technology is a key driver of economic growth in countries and regions. Digital technologies are spreading in many areas of human activity faster than previous waves of technological innovation, transforming all areas of the economy. Such transformation, according to Dalman K., Mealy S., and Vermelinger M., led to the emergence of the digital economy [4].

T. I. Oleshko, N. V. Kasyanova, S. F. Smerichevskii, and others presented their definition of digital technologies and the digital economy. According to their approach, digital technologies are technologies for searching, collecting, storing, processing, transmitting, and presenting data in electronic form, while the digital economy is the activity of creating, distributing, and using digital technologies and related products and services [14, p. 8].

Digitalization, in its essence, is implemented with the aim of increasing labor productivity, economic growth, and competitiveness of national firms, creating jobs, and fighting poverty. In addition, digitalization can act as a tool that encourages the development of ICT and at the same time promotes the informational openness of society.

It is also important to note that there is an objective connection between the digital economy and the traditional economy. The advantages of the digital economy are fast ordering and delivery of the required product or service, lower prices for the end consumer due to the elimination of intermediaries, and a simpler process of selecting suppliers and customers. It should be noted that one of the goals of the digitalization of the economy is to provide the opportunities necessary to access services and information that are offered by ICT. Accordingly, the concept of the digital economy is closely related to the concept of innovative development of economies, the measure of which can be equated to technological progress, which is the driving force of the development of society in the paradigm of the fourth industrial revolution.

New technologies based on the digital processing and use of information, such as the Internet, artificial intelligence, and machine learning, are developing at a rapid pace. These technologies, as noted above, can improve the quality and quantity of services that can be produced with available technologies.

The importance of digital technologies for the economy lies in the fact that their application allows for achieving systemic results that contribute to strengthening the sustainability of production, business, and markets:

- dynamic study of demand and improvement of its balancing with supply and production of goods and services, which helps to achieve a better market balance;
- optimization of the use of raw materials and energy, which allows for increasing the stability and efficiency of production;
- increasing the efficiency and effectiveness of enterprise and business management, electronic control, and tax reporting;
- increasing the reliability and efficiency of supply chains;
- prompt response to changes in international market conditions, improvement of the organization of foreign trade;
- improvement of the tax administration of taxes and revenues to state and local budgets, which will contribute to better macroeconomic balance.

Using the opportunities of digitization requires measuring its dynamics and structure, and comparative analysis. The need to measure the impact of ICT focuses mainly on assessing the economic consequences of widespread access to wireless or broadband information technologies, as well as the benefits associated with the increased use of digital technologies and applications.

According to the study of the international consulting company PricewaterhouseCoopers (PWC) "Maximizing the impact of digitization", digitalization ensures gradual economic

growth: countries that are at the most advanced stage of digitalization receive 20 percent more economic benefits than countries that are at the initial stage. Digitization has a proven impact on reducing unemployment, improving the quality of life, and increasing citizens' access to public services. In addition, digitization allows governments to work with greater transparency and efficiency [15, p. 4]

At the same time, in modern conditions, the introduction of new products and technologies is accelerating. The rate at which newly commercialized technologies are adopted by consumers is also increasing. Today, due to the well-established infrastructure systems, new ideas and products can spread at an unprecedented speed – and this allows new products to reach the hands of consumers instantly.

In an article by McGrath R. G., the author states that it previously took decades for the telephone to reach 50% of US households, analyzing the period since 1900. It only took five years for cell phones to reach the same level of adoption since 1990. Electricity and phones took 30 years and 25 years respectively to reach 10% adoption, but less than five years for tablets to reach 10% [11]. Accordingly, technological innovations introduced recently are assimilated more quickly.

At the same time, technological progress is widely considered to be the dominant source of growth in the middle- and high-income countries. This is because technological progress increases GDP and increases welfare by increasing productivity – allowing more output to be produced with the same resources – and enabling further innovation and development.

One of the indices used to measure the ICT development of countries is "ITU's Measuring digital development: Facts and figures", created by a special agency of the United Nations (UN), the International Telecommunication Union (ITU). ITU is the official source of global ICT statistics.

ITU’s Measuring digital development: Facts and Figures 2021 offers a brief overview of the most important ICT indicators. Data from 2021 shows that approximately 4.9 billion people use the Internet, which is 63% of the world's population. Compared to 2019, this indicator increased by almost 17%, which means that almost 800 million people connected to the Internet during this period. Statistics show that there is a 'Grand Canyon' of connectivity that separates the digitally enabled from the digitally deprived, with 96 percent of the 2.9 billion still living without access to the internet in developing countries. The location also plays a big role: the share of Internet users in cities is twice as high as in rural areas. There is also a generation gap, with 71 percent of the world's 15-24-year-olds using the Internet, compared to 57 percent of all other age groups [12].

It is important to note that technological development is also closely related to both economic growth and the cheapening of technology. For example, according to Our World in Data, the price of hard disk technology in 1988 compared to 2008 decreased by 1723 times [16].

Another index to measure countries' ICT is the Digital Intelligence Index, which is an interactive benchmarking research platform designed to provide evidence-based, actionable information on how to improve digital competitiveness, strengthen trust in the digital economy and promote responsible use of data and other advanced technologies.

The index covers the Digital Evolution Scoreboard, which analyzes global digital development, describes the key drivers of change and momentum, and reveals the impact of digital trust and digital evolution on a country's digital competitiveness.

The 2020 edition of the Digital Evolution Scorecard analyzes 90 economies based on a combination of 160 indicators across four key factors: supply conditions, demand conditions, institutional environment, and innovation and change. One of the results of the report is the segmentation of countries into four zones: those that stand out (Stand Out, economies that are both digitally advanced and demonstrate a high rate of development), those that slow down (Stall Out, economies that have a high level of digital progress, demonstrating slowdown), those that break out (Break Out, economies have low scores in their current state of digitalization, but they are developing rapidly) and those that are wary (Watch Out, economies face significant problems due to low level of digitalization and low dynamics) [4].

As it was mentioned, the Stand Out zone includes economies that at the same time have a high level of digitalization and a strong momentum in the further development of their digital capabilities. Yes, South Korea, Singapore, and Hong Kong, along with other countries such as Estonia, Taiwan, and the United Arab Emirates, are consistently at the forefront of digitization and have demonstrated both adaptability and institutional support for innovation. Interestingly, the US is also showing extraordinary growth dynamics for an economy of this size and complexity, ranking second in digital evolution after Singapore.

At the same time, the Watch Out zone, which includes countries in Africa, Asia, Latin America, and Southern Europe, is characterized by shortcomings in both existing digital capabilities and momentum for future development. Countries in this area should look to the digitization models of other countries to follow suit to use digital growth as a lever to create competitive economic sustainability.

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At the same time, for example, European economies, most of which fall into the zone of instability, are leaders in digital inclusion. These economies have pioneered inclusive public policies: providing access to the Internet, providing assistive technologies for people with disabilities, and investing in workers' digital skills.

The presence of numerous ICT measurement indices indicates the ambiguous nature and methods of measuring this indicator, which in turn encourages various subjects to create their digitalization assessment systems and complexes. Accordingly, measuring the transition to the information society is a complex task that implies an imbalance between different dimensions of ICT in different countries.

The COVID-19 pandemic has undoubtedly accelerated global digital transformation. Thus, Internet traffic in some countries increased by up to 60%, highlighting the digital acceleration that the pandemic itself caused [5]. Internet trade, online work and training, electronic services, and payments have increased.

During the pandemic, consumers have shifted dramatically to online channels, and accordingly, companies and industries have actively responded to these systemic changes. Statistics also confirm the rapid shift to customer engagement through digital channels.

The use of information and communication technologies by businesses has the potential to improve services and products, as well as increase competitiveness. This can have a profound impact on how business is conducted, including the organization of production or service delivery processes, and internal and external communications.

The COVID-19 pandemic has also led to an increase in demand for online ordering in many countries. Data for these countries, which accounted for 65% of global B2C e-commerce in 2019, show that online retail sales as a share of total retail sales grew by 3 percentage points in 2020 (from 16% to 19%). Thus, on average, total retail sales decreased by 1% in 2020, while online retail sales increased by 22% [5].

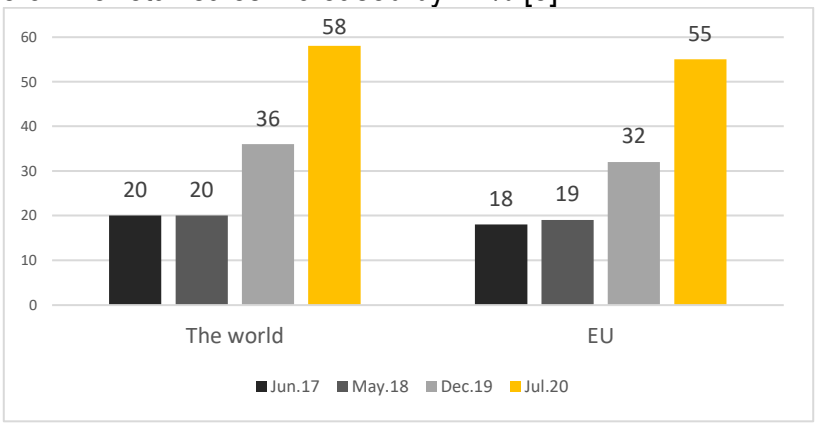


Fig. 1.- Percentage ratio of digital interaction with customers, 2017 – 2020
Source: adapted by the author based on [8]

McKinsey&Company - an international consulting company, conducted a study on the impact of the pandemic on the acceleration of digitalization. In fig. 1 demonstrates the acceleration of digitization globally and in Europe by measuring the percentage of digital customer engagement between 2017 and 2020. Accordingly, since the start of the COVID-19 pandemic, 85% of CEOs said their business has somewhat or significantly accelerated the adoption of digital technologies that enable employee interaction and collaboration. Thus, COVID-19 preceded digitalization in Europe by 1.5 years, and at the global level by 1.6 years [8].

The pandemic crisis has clearly demonstrated the potential of digital technologies, and some changes may now be too comprehensive. For example, in fact, about 35% of all firms in the Middle East and Central Asia region report that they have increased or started their online activity as a result of the pandemic [1].

Regardless of how the crisis unfolds against the background of global challenges, digital technologies will definitely continue to change the way of life of both individual local economic entities and global ones.

It is worth mentioning the development of the digital economy of the EU. The dynamics of the use of digital technologies in European countries is a reflection of the demand of society and the economy for their more active use in various spheres. The EU's Digital Strategy aims to make this transformation work for people and businesses while helping to achieve the goal of a climate-neutral Europe by 2050.

The EU report includes data from 37 countries on the European continent, demonstrating the importance of not only EU member states, but also neighboring digital economies. Overall, European e-commerce saw growth in the Business-to-Consumer (B2C) segment in 2021,

despite some countries reporting lower sales due to the improving situation surrounding the Covid-19 pandemic [16].

Table 1

Selected EU and neighboring countries, share of GDP generated by e-commerce and number of shoppers in online stores, 2020

Country	Share of GDP created by e-commerce, %	Number of customers in online stores, %
United Kingdom	9,92	92
Netherlands	3,45	91
Denmark	7,29	90
Germany	3,08	87
Norway	2,57	87
Sweden	2,42	86
Ireland	2,44	81
Czech Republic	5,71	80
France	4,79	78
Finland	2,43	78
Estonia	6,78	76
Austria	2,30	74
Poland	4,67	72
Hungary	2,33	70
Spain	5,63	67

Source: created by the author based on [16, p. 9-10]

As shown in table. 1, the level of the share of GDP created by e-commerce, demonstrates the importance and significance of e-commerce on the example of European countries. Countries in which the number of shoppers involved in e-commerce is significant (92%-80%) also have a large share of GDP generated by e-commerce, such as the UK, the Netherlands, Denmark and the Czech Republic.

It is important to note that at the firm level, the COVID-19 crisis has several consequences. As of today, it is unlikely that economies and societies will return to pre-COVID models. Small and medium-sized enterprises in many countries, especially in developed ones, during the COVID-19 pandemic quickly adopted technologies and pushed public and private businesses to digitize.

Conclusions. To conclude, in the near future, in which jobs, education, health care, public services, and even social interactions ought to be more dependent on digital technologies than ever before, the failure to ensure broad and reliable access to digital resources may contribute to deepening cross-border inequalities. Subsequently, governments should implement digitalization strategies to ensure the access and diffusion of digital technologies.

Under the current circumstances, digital technologies have the potential to promote more inclusive and sustainable growth by stimulating innovation, increasing efficiency, and improving services. They are also an important tool to help countries cope with and recover from the negative effects of the COVID-19 pandemic. Digital technologies are thus used to stabilize socio-economic processes in the conditions of modern global challenges: high

inflation, energy, and food crisis, and negative consequences of Russian military aggression in Ukraine. Therefore, the steady progress of digital technologies is a factor in stabilizing the economy, strengthening competitiveness, and saving resources.

The national and international regulatory policies should be oriented on the key components of digital transformation: access to the Internet and digital services, development of digital infrastructure with public and private investments, improvement of digital skills of the population, education training of digital professionals, electronic personal identification and digital security.

The issues of digital penetration and cross-countries networking could be an object of ongoing research. International cooperation in such areas should be vital for digital services' impact on economic and social progress. It is also necessary to study various ways to promote digital inclusion for all. Special interest should be put into the participation of Ukrainian organizations in activities of the Digital Europe program as a part of the European integration.

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ВПЛИВ ЦИФРОВІЗАЦІЇ НА МІЖНАРОДНУ ЕКОНОМІЧНУ СТАБІЛЬНІСТЬ

Розглянуто дефініцію цифрової економіки, як такої яка може характеризуватися діяльність щодо створення, поширення та використання цифрових технологій і пов'язаних з ними продуктів і послуг. На сьогодні цифровізація впроваджується з метою заохочення розвитку ІКТ, пропагує інформаційну відкритість суспільства, надає можливості, необхідні для доступу до послуг та інформації, які пропонуються за допомогою ІКТ. Дослідження вітчизняної та іноземної літератури демонструє наявність об'єктивного зв'язку між цифровою економікою та традиційною економікою. Переваги цифрової економіки полягають у швидкому замовленні та доставлення необхідного товару або послуги, зниження ціни для кінцевого споживача через усунення посередників і простішого процесу підбору постачальників і клієнтів. Згідно з дослідженнями цифровізація забезпечує поступове економічне зростання: країни, які перебувають на найбільш просунутому етапі цифровізації, отримують на 20 відсотків більше економічних вигод, ніж країни, які перебувають на початковому етапі. Цифровізація має доведений вплив на зниження безробіття, покращення якості життя та розширення доступу громадян до державних послуг. Під час пандемії споживачі різко перейшли до онлайн-каналів, і, відповідно, компанії та галузі активно відреагували на ці системні зміни. Статистичні дані також підтверджують швидкий перехід до взаємодії з клієнтами через цифрові канали. Відповідно, цифрові технології мають потенціал для стимулювання більш інклюзивного та сталого зростання шляхом стимулювання інновацій, підвищення ефективності та покращення послуг. Вони також є важливим інструментом, який допомагає країнам протистояти та оговтатися від пандемії COVID-19. Цифрові технології використовуються для стабілізації соціально-економічних процесів в умовах сучасних глобальних викликів: високої інфляції, енергетичної та продовольчої кризи, негативних наслідків російської військової агресії в Україні.

Ключові слова: *цифрові технології, цифрова економіка, електронна комерція, стійкість економіки*