ON SOME ASPECTS OF DIGITALIZATION IN THE CONTEXT OF THE CORONAVIRUS PANDEMIC

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***Abstract**: The scientific material represents the results of the conducted research that reflects the key digital changes in the economy, including the digitalization of managerial accounting, business, e-commerce and industrial sectors, as well as the sphere of cryptocurrencies and the labor market. The driving force of these processes in the face of global COVID-19 pandemic is regarded – The principal of the digital transformation under the COVID-19 paradigm; The digital lag in different countries; Robotics and technologies; New technology startups and Risks and threats to digital development.*

***Key words**: digitalization of the economy, digital transformation, coronavirus pandemic, COVID-19 paradigm.*

JEL Codes: *D22, H25, H26, L25, O17.*

INTRODUCTION

In the XXI century the world moved into a new era of functioning. A digital revolution has come to the forefront. The beginning of the century we are living in is closely associated with an active introduction of digitalization processes into the modern economy. These processes are based on the rapid development of digital technologies and the use of the new digital tools of the fourth industrial revolution. These progressive patterns have influenced almost all spheres of life. Over the past half century, progress in the field of digitalization has been growing exponentially – almost no sphere of public life has remained untouched by digital transformation.

The embedding of globally competitive digital technologies into the economy continues. Such technologies as telecommunications, advanced manufacturing, artificial intelligence and VR systems, the Internet of Things are forming the world full of bright new ideas and opportunities. In addition, the modern digital processes are accompanied by the deglobalization and recession of the economy due to the COVID-19. The global pandemic has also been the pushing driver for digitalization as it has uncovered the relevance and practical significance of the issues of digital transformation.

1. The principal of the digital transformation under the COVID-19 paradigm

The pandemic of COVID-19 contributed a lot to big changes in everyday life of many people living on this planet. It also gave a push to shifts in economic and social life in many countries. One of the striking consequences of COVID-19 is the introduction of digital technologies in different domains.

Due to the restrictions on movement and social distancing measures, businesses and consumers had to actively develop digital solutions in order to survive in these new realities. That is linked to the transition of business to a remote format. It allowed consumers to make online purchases and get more data on the spread of the virus. What is more, digital transformation contributed to the transition to the online environment of such

fields as medicine and education. This tendency can be connected not only with the urgent need in such technologies under the modern conditions, but also with the creation of a massive material base for the widespread use of digital tools around the world.

In Digital Economy Report 2021 UNCTAD identified core trends of digitalization and the most interesting thing here is that most of them are directly related to the pandemic consequences.[1]

The first digital tendency that occurred due to COVID-19 is linked to remote work and use of communication technologies. More and more people started to work remotely using video conferencing services and messengers. The demand for the use of programs such as Microsoft Teams, Skype, Cisco's Webex and Zoom has dramatically increased. As for the global examples, in China, the use of remote work services from WeChat, Tencent and Ding increased significantly at the end of January 2020, when restrictions related to COVID-19 came into force.

It is important to note that the use of online platforms stimulated the development of cloud technologies for data storage and analysis, increases the demand for renting such services from technology companies (Amazon Web Services, Microsoft, Tencent and Alibaba). The crisis also contributed to the transition of schools and universities to a distance learning format. Digital tools and online trainings allow teachers and teachers to stay in touch with students.

The second trend can be attributed to the negative impact on some digital platforms. The pandemic had a dramatic impact on Internet traffic due to the fact that most activities increasingly took place online. Moreover, global Internet bandwidth rose by 35 percent in 2020, the largest one-year increase since 2013.

Furthermore, the crisis caused by the spread of COVID-19 has had a negative impact to digital platforms mainly in the field of movement and travel. This group includes services related to transportation (Uber, Bottom), as well as rental services (Airbnb, Booking.com). This trend reflects the general decline in the travel and tourism industries during the pandemic.

The next trend relates to changes in consumer habits. COVID-19 led to an increase in electronic sales. For example, in the USA there is an increase in online sales in the field of food delivery, pet food. A significant increase affected some items of medical products. The world's largest online retailer Amazon has decided to hire an additional 75 thousand employees due to an increase in the number of orders during the COVID-19 pandemic.[2]

The European Union Agency for Cybersecurity believes that the growth of electronic sales contributes to accelerating the digital transformation of enterprises, especially medium and small businesses, forced to expand its online presence in order to survive in the current conditions. Medium and small businesses account for 99% of all companies in Europe. Although 77% of such enterprises have their own websites, only 17% sell goods over the Internet. At the same time, about 41% of Europeans are concerned about the security of online payments.

Another area where there is an increase in user activity is streaming services. The closure of theaters and cinemas attracted a new audience for streaming services and video

[1] UNCTAD Digital economy report 2021: Cross-border data flows and development: from whom the data flows. - New York, USA: United Nations Conference on Trade and Development, 2021. 238

[2] Department of International and Regional Cooperation of the Joint Venture of the Russian Federation Digital technologies and cybersecurity in the context of the spread of COVID-19. - Moscow, Russia: Accounts Chamber of the Russian Federation, 2020. 41.

hosting Netflix, HBO, Youtube and others. The closure of schools also contributes to an increase in demand in this area, as children and teenagers spend more time at home.

Changes in the behavior of society that occurred during the spread of COVID 19 will have long-term consequences. Many organizations and users will use digital solutions more actively, since during the crisis they will develop a certain habit for this.

2. The digital lag in different countries

The use of data and digital platforms provides countries with additional opportunities to overcome development challenges. At the same time, despite the rapid development of technologies, significant digital gaps remain. The crisis caused by COVID-19 demonstrated the existing stratification both between countries and within them.

The publications prepared by UNCTAD show that there are significant limitations in various areas related to digital technologies in the least developed countries. They concern every domain starting from the technologies in the field of payments and ending with the qualification of employees.

The digital lag between states is particularly evident in the field of education, where students' opportunities to use online learning services can vary significantly depending on the availability of a home computer and Internet access, the level of family income and the degree of readiness of schools.

According to the Program for International Student Assessment, in such countries like Denmark, Slovenia, Norway, Poland, Lithuania, Iceland, Austria, Switzerland and the Netherlands 95% of students can use a home computer, while for Indonesia this figure is only 34%.

Among low-income countries, more than 75% do not offer any form of distance learning. But even when the governments of such countries take measures to organize online education, they do not cover the majority of students, since only 36% of the inhabitants of these countries have access to the Internet.

The digital lag also exists within countries: in the US, every student from an economically prosperous school has access to a home computer, but only 3 out of 4 students from disadvantaged schools have this opportunity. In Peru, these figures are 88% and 17%, respectively. In Mexico, 94% of students from well-off families have access to the Internet, while in disadvantaged families this figure is 29%. Obviously, the isolation conditions have exacerbated these problems.[3]

Given the increasing role of high-quality Internet access as the digitalization of society and the economy continues, the COVID-19 pandemic will undoubtedly push governments to take new measures to eliminate the digital lags in the form of public investment in infrastructure.

3. Robotics and technologies

The new coronavirus has led to an increase in practical interest in robots and artificial intelligence. The task of technology is to cope with a massive shortage of personnel in healthcare, production, and supply chains as well as to facilitate social distancing.

The pandemic has caused unprecedented demand for digital technologies in the field of healthcare and has revealed successful solutions, such as screening the population, tracking infection, prioritizing the use and allocation of resources. Robotic assistants in the field of

[3] Kravchenko, N. & Ivanova, A. (2021) Spread of the COVID-19 In Russia: Regional Peculiarities. Reg. Res. Russ. 11. 428-434.

healthcare are becoming increasingly popular especially in Asia. In China, they deliver medicines to patients and collect garbage. In Jiangsu Province, robots based on 5G technology were brought to the streets. They move independently in crowded places, faces are recognized, temperature is measured remotely, tracking up to 32 people at the same time.

Singapore scientists have invented a remote-controlled cleaning robot using a laptop or tablet, capable of washing and disinfecting hard-to-reach surfaces – under tables and beds. The device is undergoing testing in various institutions and public places.

Drones have also become very popular after the beginning of COVID-19. In China, they can determine the body temperature of a person even on his balcony and report data to a medical institution. Drones illuminate construction sites, inform the population in remote settlements about the situation in the country, deliver food.

Artificial intelligence technologies are also widely used in the fight against coronavirus. In China, medical institutions use tomogram analysis systems based on artificial intelligence, which allows you to quickly distinguish ordinary pneumonia from pneumonia caused by COVID-19. Public transport in Chinese cities is equipped with smart thermometers and face recognition systems of a masked person. In Australia, the neural network previously developed for the detection of oncological diseases can be used to diagnose COVID-19 coronavirus infection. Any medical institution the world will be able to use the technology for free by registering on the developers' website. The technology will allow doctors analyzing lung scans obtained as a result of computed tomography to check the diagnosis in real time.

4. New technology startups

In order to find new methods of combating COVID-19, many countries have launched state programs for the selection and financing of startups offering innovative developments in the field of diagnosis and treatment of a new coronavirus, as well as solutions to related problems.

The German government held a specialized hackathon, which attracted 42 thousand participants and more than 800 projects. The startup company DOCYET has created an online chatbot that analyzes data on the physiological indicators of the user, conducts a risk assessment and offers options for remote consultations.

The British Space Agency has created a fund of 2.6 million pounds to finance projects and startups, applying high-tech developments and achievements of the space industry to solve the most urgent problems of the national health system in the context of a pandemic, such as the use of drones to deliver diagnostic tests and medical personal protective equipment or the use of satellite data for control of new outbreaks. Some developments are already being used, for example, when monitoring compliance with social distancing using satellite data GPS and artificial intelligence.

The Duke University Clinical Research Institute (USA) has launched an online platform on which information is collected on a voluntary basis from medical professionals directly involved in the treatment of infected patients and the fight against the effects of coronavirus, in order to create a high-quality database on effective precautions and ways to protect medical personnel, on the impact of COVID-19 on patients, on during trials of drugs and treatment methods. The advantage of this approach is openness and the scale, since previously obtained data on these issues do not have no confirmation either based on limited research.

5. Risks and threats to digital development

The coronavirus outbreak has forced many people around the world to work and study at home, and businesses and institutions – to transfer their activities to an online environment. Cybercriminals actively use these difficult circumstances to find new illegal ways to earn money. They are expanding and diversifying their activities, taking advantage of the atmosphere of fear and uncertainty. In this regard, in the current conditions, the need for international cooperation in countering such crimes has become even more pronounced. Differences between countries in approaches to the regulation of virtual space should not be an obstacle in working together.

The Information Security Doctrine of the Russian Federation (approved by Decree of The President of the Russian Federation No. 646 of December 5, 2016) gives the following definition of information security: it is a state of personal security, society and the state from internal and external information threats, which ensures the realization of human and civil rights and freedoms, decent quality and standard of living of citizens; information security sphere. The information sphere is understood as a set of information, objects of informatization, information systems, sites in the information and telecommunications network Internet, communication networks, information technologies, entities whose activities are related to the formation and processing of information, the development and use of these technologies, providing information security, as well as a set of mechanisms for regulating relevant public relations.

In a narrower sense, it is interpreted in Western countries (primarily the USA, UK) virtual environment security as a state of security of networks, computers, programs and data from hacking, damage or unauthorized access. For these purposes, the concept of cybersecurity is most often used („cyber" – connected to computers and the Internet).

One of the key characteristics of cybersecurity is the rapid and constantly evolving nature of threats. In a rapidly changing world during the COVID-19 pandemic, this is especially clear. International organizations (Interpol, Europol, European Commission, Group responding to computer incidents within the institutions, institutions and bodies of the European Union (abr. CERT-EU) in contact with each other monitor criminal activity in cyberspace, raise awareness of political decision makers, as well as citizens, and are ready to coordinate their actions if necessary.

Due to the fact that COVID-19 is changing the situation in the law enforcement sphere, Interpol (International Criminal Police Organization) has published an assessment of the global threat of crime and policing for its 194 member countries. The report, intended only for law enforcement agencies, is based on expert knowledge and will be updated regularly as new threats emerge. It describes the „life cycle of crime", as well as best practices and measures to mitigate the consequences of crimes related to COVID-19.

In particular, it is noted that the types of crimes are constantly evolving, using the features of online behavior and new needs of citizens in the context of the COVID-19 epidemic. Since one third of the world's population is currently it is in one form or another of isolation, changes in the structure of crime have already made themselves known. The Interpol report identifies global threats caused by COVID-19, including in the field of cybersecurity:

a. Malicious domains. Cybercriminals create thousands of websites every day that contain the words „coronavirus", COVID-19, various variations of the spelling of these terms and use them to conduct spam campaigns, phishing, malware distribution or hacking of management and control servers.

b. Malicious software (software). Cybercriminals are taking advantage of the popularity of coronavirus reports to disguise their activities. Malicious, spyware and Trojan virus programs are usually presented under the guise of interactive maps and websites about the coronavirus. Spam messages also force users to click on links that download malware software for computers or mobile devices.

c. Extortion. Cybercriminals expose the servers of hospitals, medical centers and government agencies to attacks and extortion. Institutions at the forefront of the fight against coronavirus, facing with unprecedented health risks, they are now also facing another threat – from cybercriminals. Their access to vital files and systems is blocked until a ransom is paid. Because in a health crisis, hospitals cannot allow their systems to be blocked, they are forced to pay criminals. Blocking the work of hospitals and their critical systems not only delays operational medical activities, which are so necessary during a pandemic, but can also directly lead to deaths.

Cybercriminals are likely to seek to use an increasing number of new methods of attack, as more and more employers introduce remote operation and establish remote connection to their systems for employees.

In addition to exclusively digital crimes, against the background of the pandemic, pre-existing problems that have moved to an electronic format are also becoming more acute. The attackers very quickly adapted the known fraud schemes to new conditions to benefit from the crisis associated with the COVID-19 pandemic.

d. Sale of counterfeit medical products via the Internet

As the demand for personal protective and hygiene products grows exponentially, criminals seek to make a profit by selling low-quality or counterfeit goods, such as surgical masks, disinfectants, antiviral and antimalarial drugs (including non-existent COVID-19 drugs), vaccines, test kits for analysis for coronavirus.

e. Financial fraud

Since surgical masks and other medical supplies are in great demand, but they are difficult to find in retail stores, fake stores, websites, social media accounts allegedly selling these goods have appeared on the Internet. But after the payment is transferred, the goods are not sent to the buyer. Interpol assisted in identifying 30 cases of fraud related to COVID-19 in Asia and Europe, which led to the blocking of 18 bank accounts of fraudsters and the freezing of more than 730 thousand US dollars. Interpol also released notification alerting the police in all 194 member countries about this in the form of crimes.

Interpol helps member countries investigate cyber-attacks on hospitals and mitigate their consequences. To support global efforts to combat this critical threat, the organization has issued a notice warning the police of all 194 member countries about the increased threat of cyber-extortion. In addition, Interpol generates a list of suspicious Internet domains, related to COVID-19, conducts their further analysis and evaluation, and interacts with the relevant countries to take action. Interpol is working around the clock to support police officers in its member countries as they face unprecedented challenges. Interaction is carried out through a secure global communication system, as well as a color-coded notification system that allows countries around the world to exchange warnings and requests for information.

CONCLUSION

First, The COVID-19 epidemic hasten the structural change process by accelerating digitalization. Rapid expansion of food, durables, apparel, and other product sales online may have an impact on offline sales as well as inflation. Travel agencies and automakers

may experience a decline in domestic and international travel as a result of the growth of videoconferencing and telecommuting. As the importance of the digital economy rises, more fixed capital linked with tangible assets may become obsolete, while growing usage of digital technology may result in higher investment in extra intangible capital.

Second, The fact that change is occurring faster than anticipated is perhaps the most significant lesson to be learned from the COVID-19 disaster. Faster adapting nations or individuals will have a competitive advantage. As a result, adaptability and change acceptance policies are even more crucial than previously. In the post-COVID era, nations who are too sluggish to adapt and are locked on a development path will fail.

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