

DIGITALIZATION OF THE ECONOMY DURING A PANDEMIC: ACCELERATING THE PACE OF DEVELOPMENT

Shoakhmedova Nozima Xayrullaevna¹, Khashimova Dilyora Pakhritdinovna²,
Belalova Guzalkhon Anvarovna³

¹Associate Professor, Tashkent State University of Economics. E-mail: Nshoaxmedova@gmail.com

²Senior Lecturer, Tashkent State University of Economics. E-mail: hdiyora72@gmail.com

³Senior Lecturer, Tashkent State University of Economics. E-mail: belalovag@yandex.ru

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ABSTRACT: The spread of COVID-19 contributes to changing economic and social life in many countries. One of the most striking consequences of the current pandemic can already be called the accelerated introduction of digital technologies in a variety of areas. This article is devoted to the issues of digitalization of the economy of both countries and the world as a whole in the context of the coronavirus pandemic. Changes in the development trends of the digital technology market in the people's Republic of China are analyzed.

KEYWORDS: COVID-19, Industry 4.0, Remote work, Online platforms, Digital economy, Internet of things.

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I. INTRODUCTION

The digital future has been talked about for a long time, but it was the pandemic that significantly accelerated its approach. In the new, socially isolated reality, technology has become a lifeline for millions of people. Everywhere in the world, people who were forced to stay at home connected to Netflix ordered deliveries through Amazon and talked through the Zoom app. In the US, before the crisis, less than 5% of grocery purchases were made via the Internet, and now this figure has grown to 10-15%. According to Zoom, the highest usage of this application for videoconferencing in April exceeded the December figures by thirty times.

Of course, some of these indicators may decrease after the end of the self-isolation regime. But the changes taking place in the field of distance work, training and shopping are striking. Recently the Executive Director of Microsoft Satya Nadella said: "In two months, we have seen a digital transformation of a two-year scale."¹ The role that tech giants played during the crisis is directly reflected in the rising stock prices of these companies, as investors bet on their business models. At the moment, the "five" technology giants' shares account for more than one-fifth of the total market value of the S&P — 500 index—a record in terms of capitalization concentration.

The crisis, according to FT experts, not only strengthened the market influence of companies but also allowed them to show that they can be responsible "corporate citizens". The pandemic has helped to highlight the benefits of these digital platforms both socially and economically, helping to combat misinformation about the coronavirus pandemic and cope with the e-commerce boom. And many governments have begun to turn to tech giants for help in developing applications to track people's contacts, to avoid the spread of the virus.

It is obvious that nothing will limit the growth of the sector in the near term. Moreover, the larger players in the industry are using the crisis to become even bigger. Statistics show that they are hunting for lucrative deals at record speeds after 2015. In particular, Amazon's expansion seems to know no bounds: the e-commerce giant is in talks to buy Zoox, a company specializing in the production of cars with an Autonomous control system, and at the same time British regulators had to approve Amazon's investment in Deliveroo, which is engaged in a food delivery service, for fear of bankruptcy of this startup.

All this writes the FT, poses difficult challenges for politicians, even though many of them have tried in every possible way to restrain the dominance of large online platforms. Such a policy, known as "TECHLASH", has

¹ Source: <https://habr.com/ru/company/microsoft/blog/500556/>

become more difficult to implement, even as the need for proactive measures has increased. However, according to FT experts, regulators will need to develop a balanced response. In their view, one of the areas that have long needed to be reformed is competition law. For example, in the United States, the standard of antitrust law has not changed since the 1980s and remains focused on consumer compensation.

In the world of digital services, the focus should shift to market structure and corporate concentration. In this respect, the EU is ahead of the US. In April last year, a report commissioned by the EU called for lowering the barrier to applying antitrust laws so that they apply to "dominant players" as well. Most recently, the European Commission has started a public discussion of the main package of measures for regulating digital platforms. European commissioners have long sought greater control over how companies use consumer data.

In a sign that us lawmakers want to follow the example of Brussels, Democrats and Republicans are pushing bills to ensure that any data collected to fight the pandemic cannot be used for other purposes. However, the FT notes that an additional factor in disputes over the regulation of companies in the growing tension between the US and China.

And a technological cold war could spur Washington's drive to nurture its own national "Champions." While this factor, and the way the pandemic has strengthened the image of tech companies, may be an obstacle to consolidated measures to curb their influence, lawmakers should fear that the current tech giants will become so dominant that they will destroy the next generation of brash and unconventional competitors.

II. LITERATURE REVIEW ON THE TOPIC

The author of the article “General misunderstanding of the digital economy” claims that despite the huge number of events and publications devoted to the digital economy, “... the content of the absolute majority of them is disappointing, and many of them are also irritating. The reason for this is... incompetence,... so the task of giving an exhaustive, concise definition is practically insoluble.” We absolutely disagree with this statement, especially if we consider the date of publication.²

Evtyanova D. V., Tiranova M. V. mean by digital economy “automated management of the economy based on advanced information technologies; a way based on effective information management of the production system” [1].

McKinsey defines digitalization as actions using digital technologies that aim to increase productivity and accelerate economic growth. [2] The development of digital technologies in the enterprise contributes to increasing productivity in several areas (table 1).

Table 1: Ways to Improve Productivity in the Enterprise as a Result of the Use of Digital Technologies [3]

№	Direction of productivity improvement	Characteristic
1	Process optimization	Digital technologies increase the efficiency of enterprise value chain management
2	Access to new markets	Increase the ability to access and occupy individual niches. Possibility of global market coverage. Automation of research data on the needs of customers
3	Innovative product	Increase the efficiency of research processes in the field of marketing, advertising and product promotion. New models of process management. New methods of interaction with clients
4	The increase in professional activity	Development of remote work and employment. Specialization as part of the technological process

In 2017 Ruman Bukht and Hicks Richard from the Institute for global development (UK) published an article “Defining, Conceptualizing and Measuring the Digital Economy” [4], which analyzed the existing at that time in foreign publications interpretation of the concept of "digital economy", since the publication of the first cited work on this topic.

² Source: http://spkurdyumov.ru/digital_economy

N. Karimov, Sh. Saydullaev propose to digitalize the securities market of the Republic of Uzbekistan and believe that the financial, in particular, the stock market should become the main driving force of the country's economy. [5]

In our opinion, digitalization is an activity based on innovations, more specifically, information technologies. In our view, the pandemic has had a positive impact on the development of digitalization of the world's economies, thereby accelerating the introduction of new innovative technologies in everyday life.

All scientific work and research in the field of forecasting the effects of a pandemic on the economy are not accurate, because no one knows how long this pandemic can continue. Thus, in our opinion, the forecast of the impact of coronavirus on the development of digitalization of the economy cannot be accurately predicted, since the second wave of coronavirus is expected and its long existence.

III. DATA SOURCE AND RESEARCH METHODOLOGY

Analysis and synthesis, scientific abstraction deduction, classification, generalization, comparative, theoretical interpretation, and analytical methods were used in the methodology of this article, as a result of the bibliographic study, the direct and indirect factors affecting them and the prospects for further development were identified.

The information used in the article is mainly obtained through official and non-official sources: the official web pages UNCTAD, scientific articles, reports and data of Ministry of information and technology development and communications of the Republic of Uzbekistan.

IV. ANALYSIS AND RESULTS

Today, the world is on the verge of new global changes. The innovations that entered our lives with the advent of the Fourth Industrial Revolution (Industry 4.0) – the wider use of information and telecommunications technologies, the use of the Internet by about 60% of the world's population (this figure has increased against the background of the COVID-19 coronavirus pandemic), robotics and artificial intelligence technologies, the Internet of Things (IoT – Internet of Things), big data (Big Data) and digitalization resulting from all of the above, opens up new opportunities for us. These opportunities are now more than ever revealing themselves.

Due to the coronavirus infection that started in China at the beginning of this year and the Declaration of the virus (COVID-19) as a pandemic by the World Health Organization on March 11, millions of people in their homes and offices began to use digital platforms more actively. The worldwide coronavirus pandemic is similar to the “Black Swan” phenomenon (a term used by the American economist and writer Nassim Talebi in his book “The Black Swan. The Impact of the Highly Improbable” - meaning a global phenomenon that is difficult to predict and has an impressive influence).³ This time, the appearance of a new type of coronavirus epidemic has caused a global debate on the topic of digitalization of the economy and various spheres of activity, and the acceleration of the transition to a digital economy.

At the moment, the “Black Swan” phenomenon, in addition to opening the way to changes in the economy at the global level, can also change our behaviour – change both people and organizations. Against the background of the pandemic, heads of government are abandoning international face-to-face meetings, preferring conferences in Skype, Zoom and other similar programs; business, education and other various fields are switching to an online platform. As a result of working in remote workplaces and video conferences, increased use of connectivity services, and millions of people working outside the office from home, costs are significantly reduced. Experts believe that in the fight against the pandemic, fast delivery without people and contact fully demonstrates its advantages. Service robots, self-service stores without sellers, and so on – form a new direction and help reduce the risk of infection. The spread of infection in the world, isolated many cities in America, Europe and Asia and seriously affected the development of digital technologies in the economy. Fearing infection with the virus, people and companies now prefer offline trading to its online counterpart, which increases the share of e-Commerce.

The current situation leads to a great demand for online applications and digital technologies, and this, in turn, makes it necessary to exist and build a sustainable infrastructure in the countries of the world. So, thanks to the transition of millions of people to the home mode of work, the need for connection services is rapidly growing,

³ Source: https://en.wikipedia.org/wiki/The_Black_Swan:_The_Impact_of_the_Highly_Improbable

the volume of content transmitted over the Internet is increasing, which makes it necessary to develop infrastructure.

At the moment, authorized bodies, private companies and scientists are trying to find new ways to fight the virus. In China, police used drones to track people who were not wearing masks in areas at risk of infection, and Internet giants (Google, Facebook, Amazon, etc.) launched a campaign to combat fake information related to the virus. The Canadian company “BlueDot” collects information from all over the world about cases of new infections and using artificial intelligence tries to predict the presence of infected people in new territories in China and other countries of the world. The American startup “AIME” (Artificial Intelligence in Medical Epidemiology – Medical and Epidemiological Artificial Intelligence) has been using the capabilities of artificial intelligence for analyzing and predicting epidemics since 2015.

China's fight against coronavirus in real-time has shown the world the power of modern technologies and super apps (special mobile applications that combine several services). At the end of December 2019, cases of infection that broke out in China began to decrease by February, thanks to the country's mobilization and the use of all possible means to combat the virus. The use of artificial intelligence applications by major Chinese companies such as Baidu, Alibaba, Alipay and others has led to significant effects. More than 50% of requests received by the medical system were transferred to an online format since carriers of the virus could transmit it during a visit to a doctor. For this purpose, a connection to a high-speed 5G network was created and widespread use of the telemedicine system began. At the same time, medical applications that connect patients with doctors and pharmacies, as well as applications that give useful tips on fighting the virus, were made available for use. What is happening demonstrates that the mitigation of the damage caused by epidemics is possible thanks to information technologies, including the Internet-digitalization has changed the approach of mankind to the diagnosis and monitoring of many diseases.

As part of government restrictions on movement and social distancing measures, businesses and consumers are actively embracing digital solutions to continue operating remotely. Digitalization contributes to the transition to an online environment of medicine, work, and education, allows you to make online purchases, get more data about the spread of the virus, and share information about research. The development of this trend speaks not only about the urgent need but also about the material base created for the widespread use of digital technologies.

Compared to the situation of the global financial crisis in 2008, over the past 12 years, the number of Internet users has grown from 1.6 to 4.1 billion, and the number of smartphones used in the world has reached 3.2 billion.

At the same time, the share of Internet users in the global population has increased from 23% to 54%, the number of people using online shopping services has doubled, and the volume of retail trade on the Internet has grown from 1 to 3.8 trillion us dollars.

In matters of digitalization, it is important to study the experience of foreign countries. Here we should cite China as an example: after all, this is a country that has huge financial and human resources and claims to be a technological leader thanks to the active promotion of modern technologies in everyday life. Digitalization of the Middle Kingdom is a key driver of national economic development.

It is the digitalization has helped China in the fight against coronavirus. In particular, we have developed a system for quantitative analysis of medical images using artificial intelligence, which helps in the diagnosis of pneumonia caused by a coronavirus. This system recognizes people with fever or without a medical mask. A mobile app has been launched that determines whether a user has been in close contact with infected people over the past 14 days and whether they have symptoms of infection. On the streets of cities - robots-patrol, robots-sprayers. And self-driving cars deliver food and medicine. By the way, the use of artificial intelligence is the best indicator of digital development.

The conditions of the pandemic have once again proved the importance of digital technologies. Education, public services, public administration, trade, and service are largely dependent on information technology. Services that had not been provided remotely for many years became available online in a matter of days.

Of the six main trends in digitalization that UNCTAD notes in the context of the COVID-19 crisis, three are directly related to the widespread acceleration of the transition to the digital economy:

Remote work and use of communication technologies

Due to the spread of COVID-19 in the world, more and more people work remotely using video conferencing services and messengers. The demand for using programs such as Microsoft Teams, Skype, Cisco's Webex and Zoom has increased.

In China, the use of remote work services from WeChat, Tencent, and Ding increased significantly in late January 2020, when restrictions related to COVID-19 came into effect. (Fig. 1)

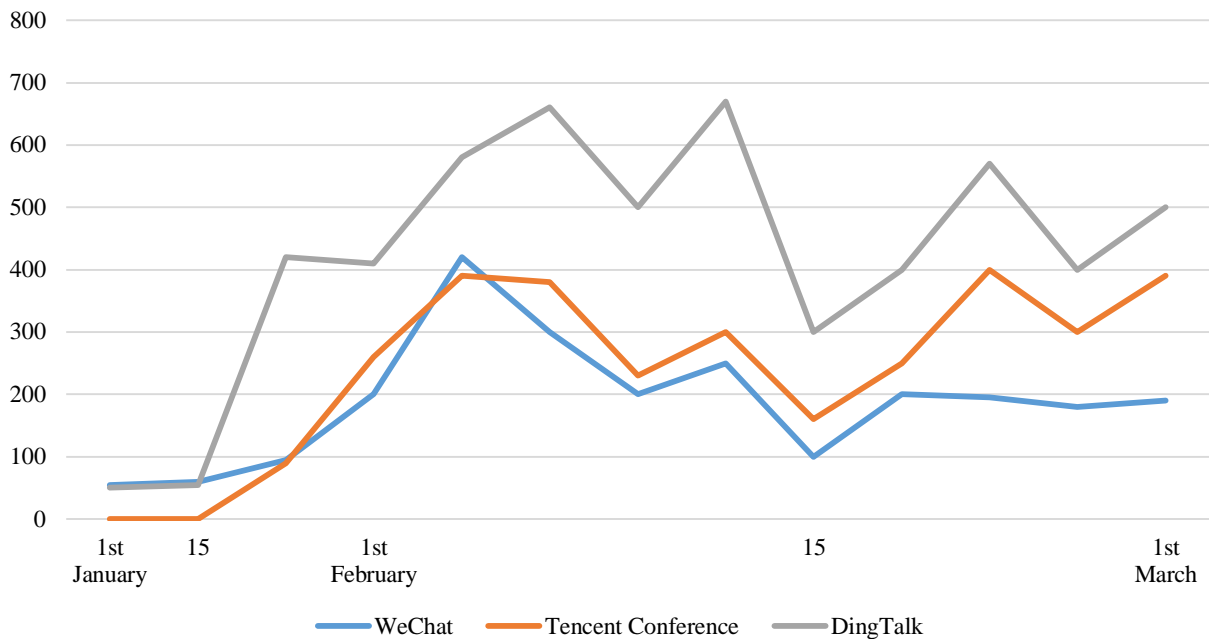


Figure 1: Downloading apps for remote work in China⁴

The use of online platforms encourages the development of cloud technologies for data storage and analysis and 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 distance learning. Digital tools and online training allow teachers and educators to stay connected with students.

Negative impact on some digital platforms

The crisis caused by the spread of COVID-19 has had a negative impact on digital platforms, mainly in the field of movement and travel.

This group includes services related to transportation (Uber, Lyft, Didi Chuxing), as well as services for renting housing (Airbnb, Booking.com). This trend reflects the overall decline in the travel and tourism industries during the pandemic.

Changing consumer habits

At the same time, the spread of COVID-19 has led to an increase in electronic sales. For example, in the United States, there is an increase in online sales in the delivery of food and pet food. Significant growth was related to certain items of medical products. According to Pacvue, there has been a surge in requests related to the purchase of hand sanitizers and antibacterial soap.

Amazon, the world's largest online retailer, has decided to hire an additional 75,000 employees due to an increase in the number of orders during the COVID-19 pandemic. A special Fund of \$ 25 million has been established "to alleviate the situation of partners, in particular, truck drivers and seasonal freelancers".

Chinese online retailer JD.com reported an increase in sales of food products by 215% to 15 thousand tons for a period of ten days in late January – early February 2020. (compared to the same period last year).

The European Union Agency for Cybersecurity believes that the growth of electronic sales contributes to the acceleration of digital transformation of enterprises, especially small and medium-sized businesses, which are forced to expand their online presence in order to survive in the current conditions. Medium and small businesses

⁴ Source: Sensor Tower data

account for 99% of all companies in Europe. Although 77% of these businesses have their own websites, only 17% sell products 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 represented by streaming services. The closing of theatres and cinemas has attracted a new audience for streaming services and video hosting services Netflix, HBO, Youtube, and others. The closure of schools also contributes to the increase in demand in this area, since children and adolescents spend more time at home.

Most digital solutions are offered and supported by a relatively small number of major platforms created in the US or China. For example, the UNCTAD report "Digital economy 2019" notes that Google accounts for 90% of the entire Internet search market, Facebook accounts for two – thirds of the social media market, and Amazon accounts for 40% of the global retail market. Accelerating the pace of digitalization helps to strengthen their positions in the markets. The network benefit effect, as well as their ability to track, extract, and analyze information, gave these companies an advantage. Subsequently, the data obtained can be transformed into digital knowledge and monetized in various ways.

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

Digitalization of the economy in Uzbekistan in the context of the coronavirus pandemic

Over the past 10 years, the ICT market in Uzbekistan has changed significantly through the implementation of projects to modernize and develop the telecommunications network throughout the country. In particular, digital intercity stations have been installed in all regional centers of the Republic, fiber-optic cables and digital radio relay lines have been laid on long-distance and intra-regional communication lines, television and radio transmitters have been modernized and installed, and a CDMA wireless radio access system has been introduced. The level of coverage of digital telecommunications networks in cities and regional centers of the Republic has reached 100%. The level of coverage of rural localities by telecommunications networks is 90%, including digital networks 52%. The telecommunications system of Uzbekistan has direct international channels in 28 directions with access to 180 countries of the world while using fiber-optic and satellite systems.

The transition to the digital economy is a step towards improving the state's economic condition. Some elements of it are already successfully functioning in Uzbekistan. Today, taking into account the digitization of documents and communications, allowing electronic signatures, communication with the state is also moving to a virtual platform.

It is now necessary to join the General information and technological flow of updates and try to effectively implement them in practice in all social and economic spheres. There are all opportunities for making technological progress - a decent level of education, a large number of young people who, with proper training, will compete with any "digital giant". In this regard, in the Address, the President of Uzbekistan sets a task to make a radical turn in the development of the "digital economy", namely: to form an electronic platform of scientific achievements, a base of domestic and foreign scientific developments, to fully digitalize the spheres of construction, energy, agriculture and water management, transport, Geology, health, education, cadastral and archival Affairs. Take special control over the implementation of digital labelling and online sales registers. Complete the development of the "Digital Uzbekistan-2030" program.

The global transition to digitalization will inevitably lead to the unrecognizability of many sectors of the economy. Currently, this process is expanding in Uzbekistan, which will undoubtedly entail changes in the technological structure and production chains. In the near future, our lives will change beyond recognition, and the task of everyone involved in this process is not to miss this technological turn, it is important to build your own priority niches for digital innovation, where you can not only achieve independence in the domestic market but also become recognized in the world community at the lowest cost. This is the only way the state can strengthen its position in the global market for data processing and storage services.

The positive effect of COVID-19

Fortunately, advances in the field of IT have solved many of the problems faced by humanity during the world quarantine. Even before the start of the global pandemic in 2020, Uzbekistan declared the "Year of science, education and the digital economy", and the quarantine regime accelerated the implementation of tasks and digitalization in the country. It is worth noting that the integration of the population of Uzbekistan into the IT

world has accelerated several times, which could not have happened in “peaceful” times. The positive effects of coronavirus in the field of IT we can include:

- Development of electronic currency exchange, non-cash payments, Internet banking and online purchases, which, in turn, will reduce the use of cash and may become a barrier to the growth of the “shadow economy”. Reducing the use of cash in settlements can also slow down the spread of the coronavirus;
- The emergence of demand for IT services, which may attract the attention of foreign companies. For example, Yandex and Aliexpress have already increased their weight in the market of Uzbekistan due to an increase in demand among the "self-isolated" population of the country;
- Increasing the involvement of young people in IT entrepreneurship and developing their skills;
- Optimization of banks, firms' document flow, submission of documents to Universities, online shopping market;
- Completing the transition to the third industrial revolution (digitalization of public life);
- The emergence of new types of services and the creation of new jobs;
- Launch of online clinics;
- Implementation of the Digital Tashkent project";
- Finally, during the quarantine period, according to experts, the environment is well cleaned of debris and exhaust gases.

At the same time, for successful digitalization of the country, a number of factors must be taken into accounts, such as the availability and speed of the Internet, network congestion and prices for fares. According to Speedtest Global Index, in the world ranking, the speed of Uzbekistan's wired Internet with an indicator of 26.5 Mbit/s ranks 95th, and mobile Internet with a speed of 10.09 Mbit/s ranks 133. This is three times less than the average (Global average for April 2020) speed of wired (74.64 Mbit/s) and mobile (30.47 Mbit/s) Internet in the world. Given that the total population of the country is 34 million, of which 22 million are active Internet users, there may be failures and reduced network speed, especially during the quarantine period, when many have switched to remote work or training. Perhaps one of the main problems faced by the population of Uzbekistan during self-isolation is the inability to use the full potential of video communication programs Skype and Zoom due to the speed of the Internet. During the period of quarantine, citizens' dissatisfaction with the low quality of Internet services and the price list of mobile operators increased, as the main load falls on the mobile Internet (19 million users). In December 2019, Picodi analyzed the cost of 233 providers of unlimited wired Internet in 62 countries, in this list, Uzbekistan ranked 11th in the rating “100 MB/s tariff”, with a cost of 51.22 us dollars. In the second list, “Internet for \$ 20 per month” Uzbekistan occupies one of the last positions, offering only 20 MB/s for 20 us dollars.⁵

V. CONCLUSION

The coronavirus pandemic has given a powerful impetus to the mass introduction of digital technologies into everyday life. It is already obvious that the changes that this trend will bring to the socio-economic system will be unprecedented.

Ongoing social exclusion measures in most countries of the world have forced a significant part of global trade in goods and services to go online. The world is likely to see further explosive growth in the capitalization of online service providers in the near future, against the backdrop of falling positions of companies in the commodity industries. Consumption patterns will change dramatically. A significant share of work and education will also go to the distance format.

On the one hand, these changes will make human life even more convenient. Broad horizons for the development of humanity opens up the opportunity to provide themselves with the necessary needs without leaving home, to use robotics to perform several “non-prestigious” or dangerous tasks, to obtain the necessary information about the main socio-economic trends in the format of open data, to treat diseases and counteract their spread using remote interaction technologies, the use of artificial intelligence and big data analysis.

The current crisis in connection with COVID-19 will be a harbinger of one of the largest reformat of the political and socio-economic structure in modern history. Digital technologies will play a leading role in it, and almost no country in the world will be left out of it.

⁵ <http://www.mitc.uz/ru/news/view/1346>

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