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The Role of Information Technologies in The Digital Economy of The Republic of Tajikistan

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Abstract: Industrial enterprises are forced to enter the digital economy and compete in the global market, as well as the diversity of products and services, which is characterized by a short production period. The article analyses the role of information technology in the development of the country's digital economy, the existing opportunities and computerization of the economy, the speed of the Internet, the use of infrastructure facilities in the development of the economy. The main purpose of the article is to present the importance of information technology in the digital economy of the Republic of Tajikistan, the trends and opportunities for computerization, which are technologies in business, quick and easy access for consumers to domestic and global markets, information about goods and services. The article analyses the role of information technology in the development of the country's digital economy, the existing opportunities and computerization of the economy, the speed of the Internet, the use of infrastructure facilities in the development of the economy. The main purpose of the article is to present the importance of information technology in the digital economy of the Republic of Tajikistan, the trends in computerization and the opportunities that technologies open up in business.

INTRODUCTION

The digital economy is a new concept in the economy that creates conditions for the transformation of e-commerce and new digital entrepreneurship. It is well known that the 21st century is the century of information and communication technologies, and all the activities of society are moving to automated and online management. Along with the advanced countries, which in 2020 will be at the highest level of use and management of information technologies, the Republic of Tajikistan is at the middle level of use. However, for the transition to a digital economy, the results of advanced countries and the introduction of information and communication technologies in the economy will be studied. One of the key components of the economy is entrepreneurship and the transition to a digital economy, which will provide significant opportunities for small and medium-sized businesses, but there is no guarantee that all e-commerce entrepreneurs will necessarily achieve

significant results. The penetration of the digital economy into the country's economy opens up access to constant and global competition.

The best way is security and the prevention of possible errors in this area, and the relationship between business risks and opportunities offered by information technology (Berisha-Namani, 2004). Some sources believe that the first digital companies were SABER, an American airline ticketing system in 1960, Ceefax launched in the UK in 1974, and Amazon.com, launched in 1995 by Jeff Bezos and Alibaba. 1999 Jack Ma and PayPal.com cjk in 2006. In the Republic of Tajikistan, Alif Capital, established on April 29, 2014, is a digital company.

Initially, data from digital companies was provided to customers through computer networks and directories and received applications. From an economic point of view, customers save time, and in economic terms, saving time is one of the most important factors for progress. Like other activities of enterprises, the supply of goods and products, and the

increase in the number of buyers, will be better and more widely organized.

The introduction of information and communication technologies (ICT) into the economy has created new opportunities for development and expansion of activities, such as the introduction of innovations in trade, the introduction of a single trade, awareness of global trade and the implementation of their participation in trade and company activities. In addition, it provides access to the network infrastructure for economic activity, the ability to close the existing gap, bring entrepreneurs and clients to the global market, training programs to promote the economy, and receive information about the economy remotely.

Also, the entry of ICT into the state economy will stimulate manufacturing enterprises and introduce them into the business process, as they can create special business websites for the enterprise. Sites post photos and videos of their activities in order to attract domestic and foreign buyers and entrepreneurs of the country to sell their products. The development of ICT in the activities of industrial enterprises and commercial markets will provide other approaches, such as ensuring the quality of a clean environment and their income, trade competition. In this regard, in recent years, companies around the world have been improving their business and introducing new business models. Commercial marketplaces that do not meet customer needs or are not available if selected, customers may connect and use other e-commerce marketplaces. Although the use of e-commerce or international trading markets in the Republic of Tajikistan is not very popular among merchants and entrepreneurs, in the past two years, entrepreneurs have opened their store pages on social networks and are doing their business better. Citizens, on the other hand, learn about their activities and products through social networks and participate in the purchase of goods and products. The development of Internet technologies and their use in the economy is rapidly increasing competition, introducing customers to new markets in the modern world, expanding the free trade of enterprises and connecting them to the world market.

The purpose of the article is to present the trends in the development of the digital economy, e-commerce, computerization, which have maximally changed the economy of the Republic of Tajikistan. The main goal of modern enterprises is healthy

competition in the e-commerce markets and filling customers, thereby gaining access to the digital economy. In addition, the purpose of the image is the digital economy, the ability to use the Internet for e-commerce, the implementation of the digital economy strategy, and the simplification of goods and services for buyers.

DEFINITION OF THE DIGITAL ECONOMY AND COMPUTERIZATION

A digital economy based on digital technologies, where we are more familiar with the meaning of trading in online markets and the world wide web (Beqiri E., 2013).

If we look at this definition, then the digital economy is impossible without the development of technology, and there is a need to increase knowledge about the use of information technologies in the economy and their inclusion in business activities. If you look at the UN analysis on telecommunications companies, the progress of information technology in the country does not seem to be very developed. In the above ranking for 2018-2020, he takes 131-133rd place, that is, in the middle. Users of Internet sites or global networks are increasingly targeted by citizens with unnecessary interests, wasted time and making new friends, while developed countries in recent years have used the Internet and global networks only to promote their activities and achieve their goals. In the last two or three years alone, some citizens have benefited from the use of Internet sites and global networks and are conducting public surveys for their use. This type of activity is mainly trained by young people working in mobile companies and developing mobile service applications for various services.

An economy capable of providing quality ICT infrastructure and mobilizing the potential of ICT consumers, businesses and governments (Berisha-Namani, 2011 & McKeown, P., 2009). In an increasingly competitive free trade world, it is important for any sector of the economy to use information technology in production, management or other business processes. In this regard, the Republic of Tajikistan should introduce more digital technologies into business. Since the business environment and the business itself is constantly changing, entrepreneurs must be able to access the

necessary information in a timely manner so that their ignorance of new laws does not prevent them from doing so.

At the same time, information technology and computer systems must support the growth, change and development of digital commerce (B-S. Aferdita, B-N. Mihane, 2017). The introduction of information technology in itself affects society, the economy, and computer systems manage and control the state of automated systems. The digital economy is closely linked to digital technologies (David L.Anderson, 2000).

The analysis showed that without the introduction of information technologies into the economy, the introduction of the digital economy into the activities of economic management is impossible. Because the activities of the digital economy cannot be imagined without the availability of advanced technologies, high-speed Internet, and the necessary knowledge of information technology. Therefore, for the state, first

of all, it is necessary to study the experience of advanced countries in the development of the digital economy and the introduction of modern technologies into society.

It should be noted that the Republic of Tajikistan lags behind the leading countries of the world in the development of information technologies and their implementation in the digital economy. Although the Republic of Tajikistan has been analyzing the use of information technologies since 2003, in 2003 the information technology use index was equal to zero and was included in the international rating in connection with the adoption of laws and decisions in the field of ICT. Since 2005, the index has risen to 0.0090. In 2010-2018, the information technology use index has been steadily growing, and in 2020, the information technology use index in the Republic of Tajikistan has increased by 0.0429, more detailed information on the development of information technology in the world is shown in Figure 1.

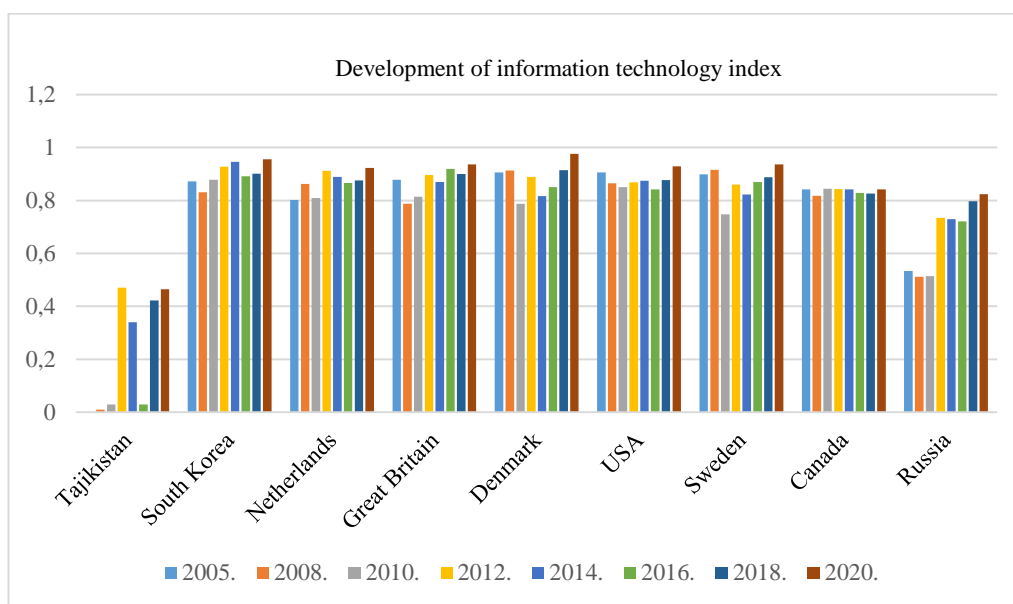


Figure 1. Development of the information technology index of the Republic of Tajikistan in comparison with the countries of the world (UN E-Government Survey, 2020).

High-speed Internet is also required for activity in the digital economy through information and communication technologies, which is of great concern in our country.

Figure 1 shows that the use of information technology in the country is developing more slowly than in developed countries, which depends on

several factors: the first factor is the underdevelopment of information and communication technologies and the low speed of the Internet.

Although the number of Internet users in the Republic of Tajikistan is growing, low Internet speed is an obstacle to doing business. According to the

Global Speedtest Index, which analyzes the speed and performance of Internet connections around the world, the average Internet speed in Tajikistan increased by 32.96 Mbps over the year, which is 3.28% more than in October 2020. However, it is the

lowest in Central Asia, with the exception of Turkmenistan.

In terms of Internet speed, the countries of Central Asia - Kazakhstan (62.04 Mbps), Kyrgyzstan (50.64 Mbps), Uzbekistan (46.94 Mbps), Tajikistan (32.96 Mbps) and Turkmenistan (3.91 Mbps).

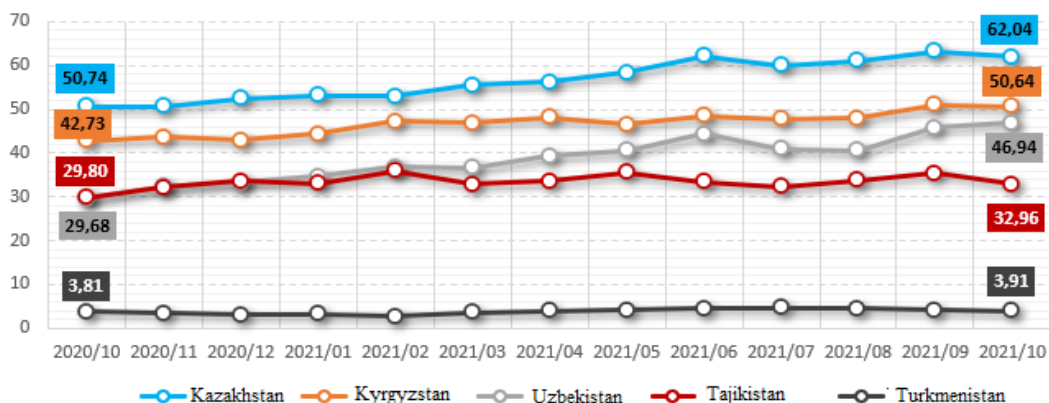


Figure 2. Fixed Internet speed in CA countries. October 2021 (Mbps to Skunda) (Speedtest Global Index. Global Median Speeds December, 2021).

Another influential factor in the development of information technology in the country is individual Internet users, who are at a low level in Tajikistan. Although the Republic of Tajikistan has been participating in this process since 1999, it has not yet achieved good results. Until 2017, this type of activity of citizens of the country was 21.96% among the

countries of Central Asia, and over the past 4 years there has been no progress in this area. According to this indicator, Tajikistan is ahead of Turkmenistan by 0.71%, behind Kazakhstan by 63.85%, from Uzbekistan by 48.44% and from Kyrgyzstan by 16.23%.

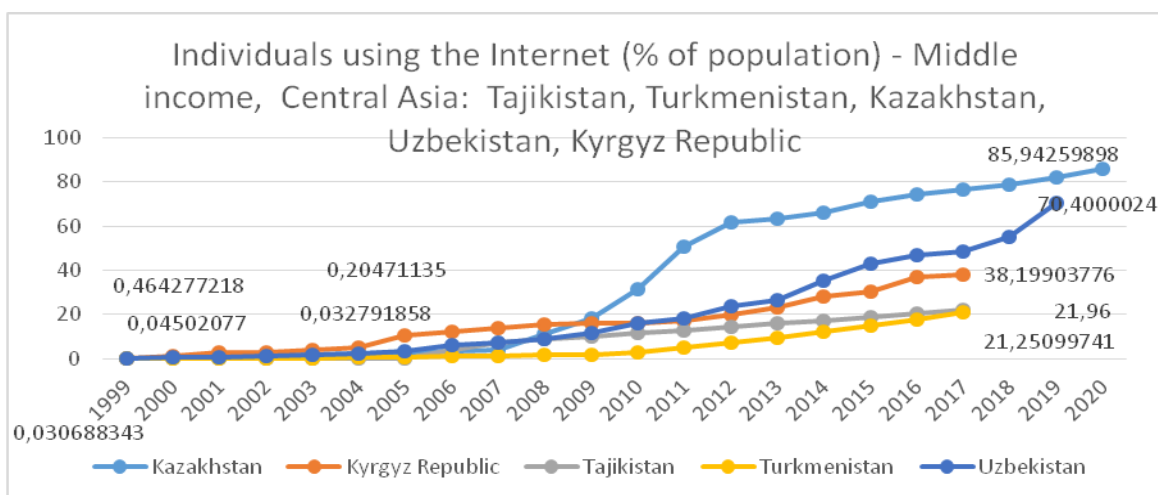


Figure 3. Individuals using the Internet (% of population) - Middle income, Central Asia (Individuals using the Internet (% of population), 2020).

Another factor in the failure of the digital economy in the Republic of Tajikistan is the high cost of the Internet, which is higher than in Central Asia, with the exception of Turkmenistan. The cost of 1

Mbit of Internet per month in Tajikistan is \$19.8. USD, Kyrgyzstan up to USD 3.48, Uzbekistan USD 16.5, Kazakhstan USD 9.8 and Turkmenistan allocate USD 165.5 per month on average.

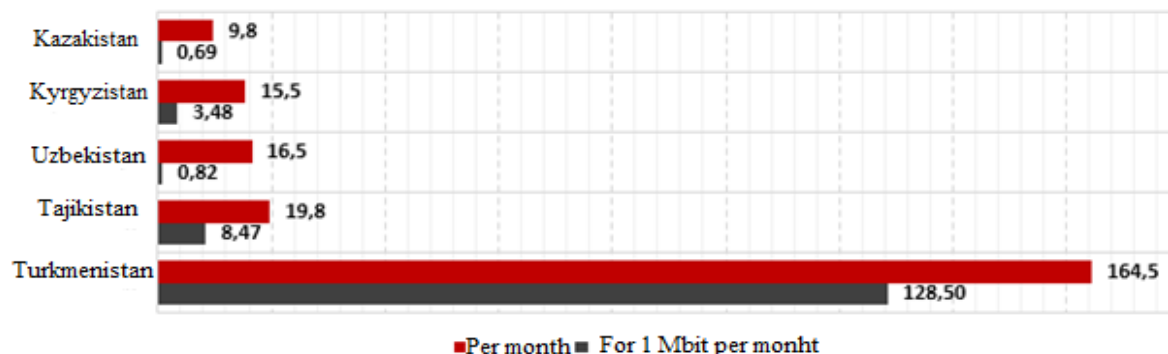


Figure 4. Average prices for fixed broadband internet in CA countries. 2020-2021 in USD (Speedtest Global Index. Global Median Speeds December, 2021).

The computerization of the economy is integrated in a modern way with the organization of personnel, management, information technology, materials and financing for high quality and low cost production, excellent services and a clean environment.

The concept of computerization is presented in different definitions and includes the simplification of all economic activities of enterprises through information technology. Under the concept of computerization can be attributed to the automation of enterprises, various material and social companies, electronic payments.

In general, the definitions are given in different terms, the main concepts of the digital economy and computerization are the use of information and telecommunication technologies and automation of the management of state economic activities, the

protection of economic data, mobile services, research and development and other economic issues.

In the Republic of Tajikistan, the concept of computerization is more significant in electronic payments and mobile services. If we consider electronic payments over the past two years, they have grown at a high pace, and in general, the number of payment cards in 2020 amounted to 2931 thousand units, compared to 2019, this figure is 28.3%. Of the total volume of card payments, 58.2% are cards of the National Payment System (NPS) "National Card", 14.4%, prepaid transport cards "CityKart", 8.4% transport cards "CityKart-National Card", 8.4 % Payment cards of internal systems of financial organizations account for 6.2% of cards of international payment systems (VISA, Mastercard and UnionPay) and 4.4% of payment cards of customers (UnionPay-NPM "National Card").

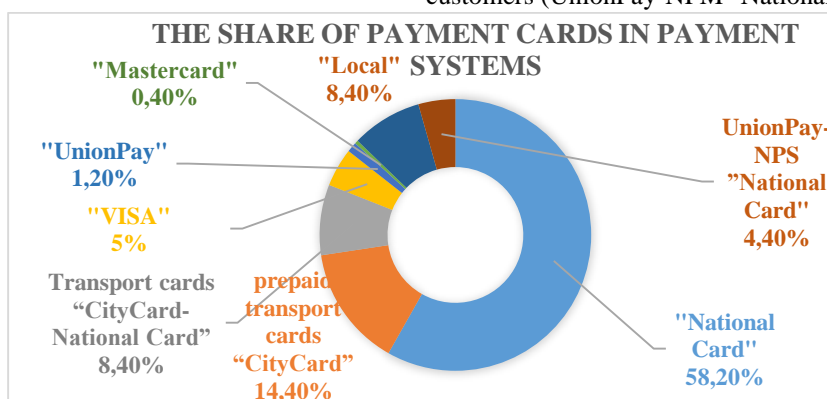


Figure 5. The share of payment cards in payment systems in the Republic of Tajikistan (Payment Cards Market, 2021).

INFORMATION TECHNOLOGY TRENDS

Information technologies are widely used in all spheres of economic and social life, especially in production, circulation of scientific and commercial results, management and maintenance of various operations. Entrepreneurs have realized that it is impossible to succeed in business without the dissemination of information and the promotion of goods and products, so the introduction of ICT into their activities will be significant.

Increasing productivity and reducing costs in developed countries is based on the use of computers in industrial robotics, the rapid growth in the production of microelectronic equipment and the computerization of administrative work (Keneneth C. Laudon, Jane P. Laudon, 2000).

The launch of the new Gosuslugi portal in 2021 was developed by Dmitry Chernyshenko in Russia for

Gosuslugi. Currently, up to 75.5 million Russian citizens are registered on the portal, which is 175 million more than in 2020, and almost a quarter more than in 2019. On average, more than 5 million people a day use the platform through the site, and each of them has access to 550 thousand types of electronic services. In the process of the spread of the pandemic, the capabilities of the portal expanded and such services became popular among the population, such as processing payments for children, and due to a sharp increase in the number of requests from citizens, the rating of the site increased. essential.

A trend in the development of information technologies has formed in the Republic of Tajikistan, mainly in the context of the information infrastructure for electronic services, which is 8.4% more than in the reporting year 2019. The trend of installing ATMs in 2020 was 369 units, cash withdrawal terminals - 163 units, QR codes - 2962 units and terminals at trade and service points - 286 units, which is more than in 2019.

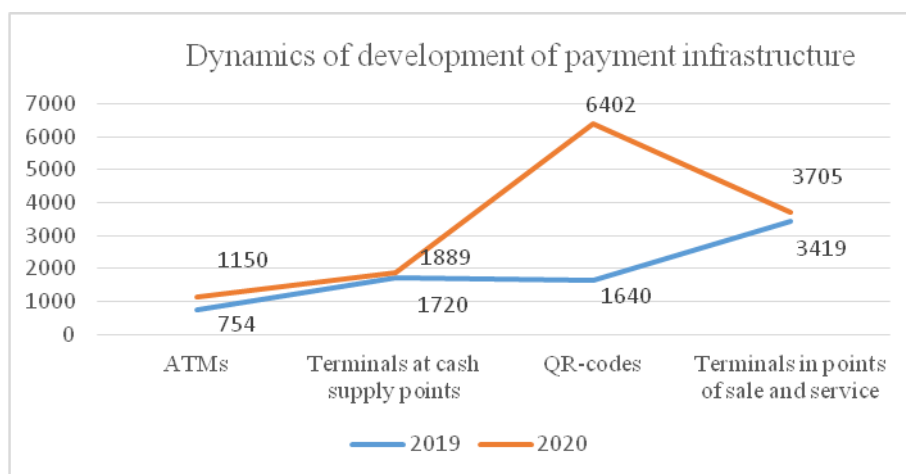


Figure 6. Dynamics of development of payment infrastructure for acceptance and servicing of payment cards (units) (Payment Cards Market, 2021).

TELEGRAM MONETIZATION

Another trend in the development of the digital economy in the country is the widespread use of social networks, which are actively used by citizens. While in the past social media was only used for entertainment and travel, businesses and individuals

have taken over these sites since the outbreak of Covid-19. Although the use of these sites has been carried out in the country since 2015, no analysis of the development of information technology in the country has been recorded for unknown reasons or due to the lack of users. The current usage of social networking sites in 2021 is as follows.

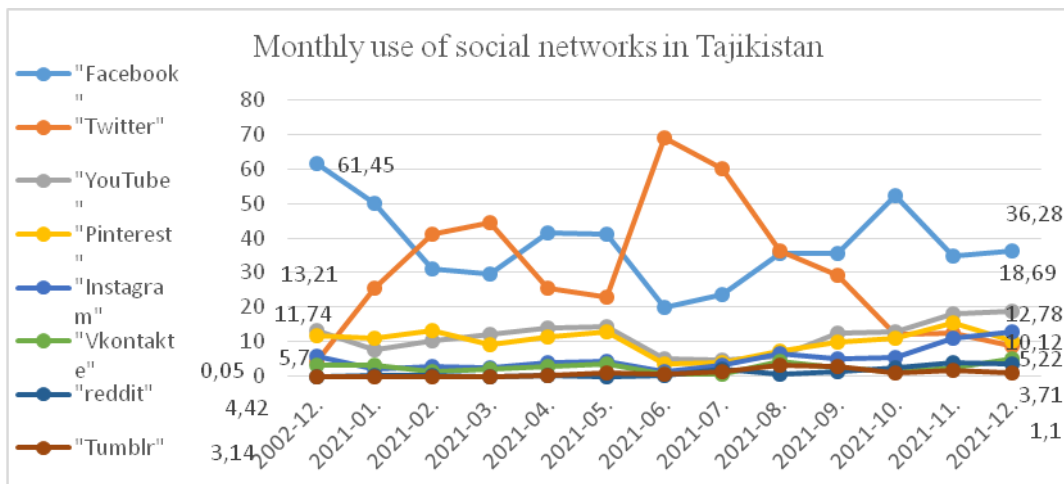


Figure 7. Use of social networking sites by citizens (Social Media Stats in Tajikistan – January, 2022).

Another Telegram trend that Pavel Durov expressed on his personal network is the distribution of the messenger to such an extent that it needs to be monetized. Telegram with its capabilities is considered among commercial companies and advanced users, for whom it becomes a project for additional funding planning, and all current (basic) platform features remain free. Messenger also has an advertising platform through which Telegram users

can post information, ads, and posts for a fee. Together with access to data, Durova suggested that in the future, along with paid stickers, free stickers should also be introduced. Despite the paid service, the number of its users in the world is growing day by day and their number has increased from 35 million in 2014 to 550 million in 2021. The analysis below shows that in 2021 the number of Telegram users will increase by 150 million compared to 2020.

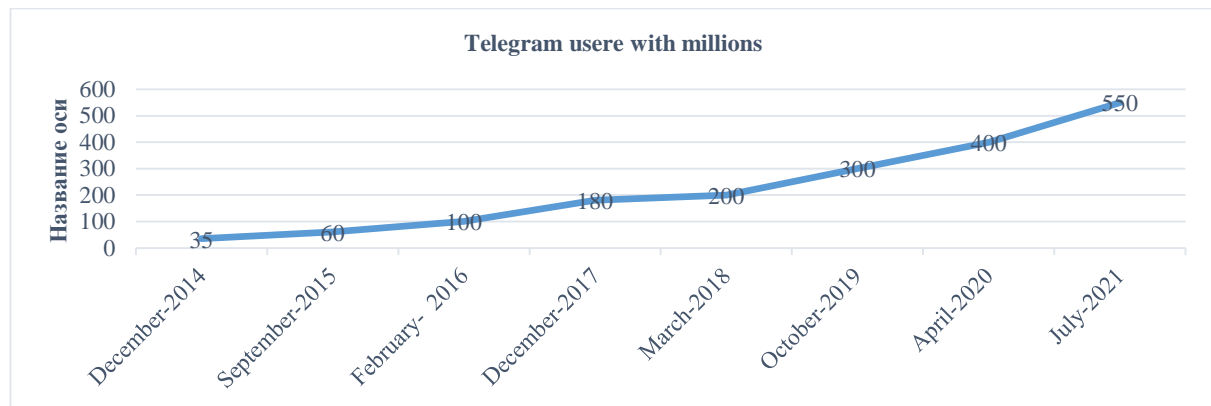


Figure 8. Number of Telegram users by millions (Number of monthly active Telegram users worldwide from March 2014 to April 2020 (in millions)).

The digital economy platform for commerce and entrepreneurship should be developed by the Ministry of Economic Development and Trade of the Republic of Tajikistan, by submitting by the end of 2021 a full version of a single digital platform for small and medium-sized businesses, which is part of a long-term plan for national economic development. The main objective of the platform is to save the

entrepreneur's time, provide information in digital format, facilitate the activities of entrepreneurs and collect all information related to the business. The Ministry of Economic Development and Trade of the Republic of Tajikistan should present this platform as follows: it is about creating an integrated business ecosystem, which should work on the principle of a "single window".

5G STANDARDS

The 5G standard is another area of information and communication technologies that has become widespread in the development of the digital economy in 2021 with the introduction of fifth-generation mobile communications. The new technology has been explored by advanced countries and its users have already reached 340 million people. This standard basically provides three important things: high-speed Internet, stable communication, and the ability to connect a large number of devices at the same time. The introduction of the new 5G communication standard will make it possible to quickly introduce the digital economy in many areas, create smart cities, develop Internet products and other new technologies.

The development trend of the 5G standard on the territory of the republic is not developed due to the low speed of the Internet. Because among the country's cellular companies, only three cellular companies, tcell.tj, Megafon.tj and ZET-Mobile, have contributed to the provision of 5G, but their activities have not yet been effective. ZET-Mobile was launched in Dushanbe on Sadriddin Aini, Ahmadi Donish streets, Rudaki crossing and 91st 5G district, but was not effective due to lack of technical equipment and low internet speed.

Despite the lack of significant development of the digital economy in the Republic of Tajikistan, with the existing capabilities of information technology, computer programs and community automation, existing mobile companies have developed telephone programs that facilitate the service of entrepreneurs and customers. In addition, the Tax Committee under the Government of the Republic of Tajikistan has created a single portal covering all taxation and tax activities.

The basis for the development of the digital economy in the Republic of Tajikistan is:

- Cost reduction for production, tourism, services, marketing and distribution of resources;
- Improving the protection of automated systems and the security of modern society;
- Creation of e-commerce markets and their connection to mobile applications;
- Development of special applications for e-commerce and business on mobile phones;
- Creation of a single trading platform in the domestic and foreign markets.

The trends being discussed, the future computerization of trade at the state level, thanks to which it is possible to fully integrate into the digital economy, and based on these developments, the economy can be integrated into a single global trading system.

ELECTRONIC COMMERCE

E-commerce is part of the digital economy based on the development of information and communication technologies, and in modern times is one of the most active areas of the economy of any country. ICTs are an important factor in trade and bring countries closer to the e-commerce single market. Therefore, it can be concluded that information technology is a key factor in e-commerce, as it can ensure the activities of entrepreneurs and merchants, the quality of use and transparency in the market. If an enterprise sufficiently defines information technology for e-commerce in a competitive market with appropriate software designations, it can organize and collect the data, information necessary to develop new products and services.

E-commerce through email, voicemail, videoconferencing, database-based conferencing, teleconferencing, and electronic data interchange enables the Internet to connect and bring instant change to the marketplace, economy, society, politics, and delivery of products, services, and consumers. At the same time, the rules of European and national competition are applied, thanks to which small businesses have every opportunity to enter new competitive markets on fair terms, etc. (O. Lazarev, 2019).

Also, e-commerce tools meet the following requirements:

- optimization of business processes (production, marketing, distribution, sales, payments, etc.).
- Improvement of relations (with the population, customer, supplier, distributor, etc.).
- Improvement of business services (banks, agencies, advocacy, accounting, etc.) (Beqiri E, 2013).

The key elements that enable the practice of e-commerce are: global infrastructure, communication with suppliers, communication with buyers and customers, communication with intermediaries. Thus, Internet connectivity allows businesses to quickly conduct analytics, create websites and advertise their products, track consumer behavior,

conduct video conferences to bring changes to the digital economy, and hold auctions.

The founder of e-commerce in the Republic of Tajikistan is Alif Sarmoya, which was first established in 2014 under the name Alif Capital. In 2015, this company developed a program for running its business. In 2016 it received a license for issuing microloans, in 2017 it became a national card for clients, in 2018 it became Alif.mob, People's Card, Hello Card and Alif.online e-wallet, in 2020 with the help of Amazon Web Service started offering its infrastructure with a hybrid cloud infrastructure, partnered with Visa to develop an ecosystem of digital platforms, and in 2021 will launch alif.business internet banking developed by the Swiss company ImmuniWeb, where it was evaluated and presented.

INNOVATORS OF COMPUTERIZATION IN THE DIGITAL ECONOMY

Fast modern technologies play an important role in the development of the digital economy. The development of computerization in the digital economy is mainly reflected in the use of information systems for strategic planning and analysis, especially in the implementation of national economic strategies. The computerized system consists of a series of information and control systems to enforce laws and make appropriate decisions in the digital economy. The development of these systems initially required strategic planning by top managers (top management) with the main goal of facilitating access to important information, especially information that has been identified as important success factors for the enterprise (David L. Anderson, 2000). In the scientific article, the topic of the digital economy changes mainly in terms of studying the theoretical and methodological foundations, administrative and legal aspects of the implementation and development of the digital economy (Svitlana F., Volodymyr L., Anastasiia D., Vitaliy B., Serhiy R., 2021, Elina L. Sidorenko, Pierre von Arx, 2020, Narcyz R., Piotr S. & Heinz R., 2019 & Report for the G20 Digital Economy Task Force SAUDI ARABIA, 2020).

The aforementioned e-commerce mainly covers the purchase and sale of goods and products over the Internet, and includes customer service, business cooperation between entrepreneurs, and the organization of electronic auctions. The concept of e-commerce has spread among people in two senses: e-

commerce and Internet commerce, but in fact, e-commerce is a part of Internet commerce.

Based on the introduction of information technology in e-commerce, such functionalities as ordering by catalogs and tariffs, connecting Internet applications to the operating system, self-registration of users, the ability to sell a variety of goods via the Internet, ordering according to standard schemes, reports and financial documents) and make online payments. One result of the progress of the digital economy is the introduction of e-commerce models that:

- 1) B2B = Business-to-Business - ("Business-to-Business");
- 2) B2C = Business-to-Consumer ("Business (company) - consumer");
- 3) C2C = consumer-to-consumer;
- 4) C2B = Consumer-to-Business - ("Company-consumer");
- 5) B2G = business for government;
- 6) E2E = Exchange-to-Exchange

The term e-commerce was first coined in 1977 by Louis Gerstner. Louis Gerstner, then CEO of IBM, defined e-commerce as the transformation of key business processes with the help of Internet technologies. Today, "e-commerce" is carried out in two forms: the first is the implementation of the concept within the framework of strategic management and direct communication, and the second is carried out with a definition that describes the business, mainly online. An e-commerce system is a business model in which business processes, business information exchange and business transactions are automated using information systems. Most of the solutions use Internet technologies to transfer data and provide web services. The types of e-commerce are identified using the following information.

- M-commerce (Mobile commerce) – trade using mobile services;
- T-commerce (Televigion commerce) - trade using digital interactive television;
- V-commerce (Voice commerce) - voice commerce. These are automated transactions on the Internet that are carried out through voice portals using a computer or phone using voice commands. Voice portals such as brokerage systems can control home devices over the Internet.
- U-commerce (universal commerce) - universal commerce, the ability to conduct business at any time using an electronic device.
- D-commerce (dynamic commerce) is a dynamic pricing that allows traders to achieve the highest level

Turkmenistan								Yes	
Uzbekistan	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

All these factors have enabled e-commerce to expand, change and increase productivity. In addition, communication within a company (intranet) or between companies and consumers over the Internet can help reduce delays in the supply chain. Based on these innovations, the following opportunities for the development of e-commerce in the Republic of Tajikistan and the digital economy are identified, such as: increasing confidence in creating a better image and progress; promotion of goods or services; advertising in more markets and lower costs; answer questions about products or services; filing applications directly from a computer (“online”); reducing customer response time; access to customer requests; improving customer service; the possibility of providing uninterrupted services per day; use of e-mail as a means of marketing (pricing), use of e-mail as a means of communication with customers; submission of documents in electronic form (without paper) and the possibility of conducting external marketing research.

Studies show that in the future, the transition to a digital economy in the Republic of Tajikistan will be better, more accurate and more transparent. Global Internet markets provide opportunities for small and medium businesses in developed and developing countries.

CONCLUSION

The Republic of Tajikistan needs to use and develop information technologies and software in all spheres of society in order to achieve the development of the digital economy in the national economy, improve the living standards of the population, and introduce transparency into the activities of public institutions and private companies. ICT, business automation, economics and e-commerce software are constantly evolving to help trade and enter a competitive global market. Information technology provides an opportunity to increase the efficiency and flexibility of business processes and teamwork. Provide high-speed Internet to mobile operators and companies, industrial enterprises to use modern technology, create a whole new e-commerce structure to develop the digital economy and create a competitive advantage.

We need to be realistic about the future and recognize that e-commerce paves the way for global trade and international competition, so the importance of the digitalization of society and the development of the digital economy is inevitable. The global nature of the digital economy is evolving without limiting the potential of the national economy. Therefore, entrepreneurs and traders, as well as the entire society of Tajikistan, should work in this direction and reap the benefits of the digital economy.

The digitalization of the economy of Tajikistan, expressed in e-commerce, is a key element in the future development of the digital economy. In the coming years, this will increase the efficiency of the “online” economy, i.e. all business transactions (purchases, sales and other related transactions) will be carried out by electronic means.

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