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Trends in the Development of the Digital Economy in Republic of Uzbekistan

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Abstract: This article examines the relevance of articles related to the development and popularization of information and communication technologies, as well as the digital world in all areas of our life from the moment we spend our time to our money management skills. In addition, the article provides information on the basic principles of the digital economy, increasing efficiency and creating “digital enterprises”. And also, information and other high technologies have become an integral part of everyday life, almost the entire world population. ICT penetrates and influences even the most remote and underdeveloped regions of the planet, becoming a key factor in the development, innovation and prosperity of economies. Security issues in IT have become the object of attention of many companies specializing in information security.

Key words: Information and communication technologies, digitalization, HR, human capital, modern management, digital economy, big data, artificial intelligence, neurotechnologies, quantum technologies, Internet of things.

The government of Uzbekistan has included a digital economy program in the strategic development plan of the republic. The goal, which is the formation of a full-fledged digital environment and digital field in the republic. It is the “digitalization” of the economy that will allow the country in the shortest possible time to solve the issue of global competitiveness and national security.

As the President of Uzbekistan Sh. Mirziyoyev said, “... we should start developing in 2019 the National Concept of the Digital Economy, which provides for the renewal of all spheres of the economy based on digital technologies, and on this basis, implement the Digital Uzbekistan 2030 program. The digital economy is the provision of a digital space for all spheres of the country's life.

The main objective of the program is to create legal, technical, organizational and financial conditions for the development of the digital economy in the country and its subsequent integration with the digital economies of foreign countries.

The digital economy will ensure GDP growth by at least 30% and sharply reduce corruption. In the country, a course has been taken to develop a program for the country's transition to a digital format in the economy. The stages of this program will last until 2030. ICT is associated with the development of technological computing, the solution of big data problems (BigData), the development of new analytical tools (NextGenerationBI). In 2017, in the index of information and communication development among 176 countries, Uzbekistan ranked 95th and the share of information technology in the country's GDP is only 2.2%. For comparison: in South Korea - 9%, Japan - 5.5%, China and India - 4.7%.

Information and other high technologies have become an integral part of everyday life, almost the entire world population. ICT penetrates and influences even the most remote and underdeveloped regions of the planet, becoming a key factor in the development, innovation and prosperity of economies. Security issues in IT have become the object of attention of many companies specializing in information security. The Internet and wireless networks will lead to ubiquitous sensor networks. Entire industries will change, and the boundaries between some industries will disappear.

Cisco's examples of successful Internet of Everything implementations in the public sector seem insignificant at first. For example, in Finland, municipal services equipped garbage containers with full sensors connected to the network, which made it possible to schedule the movement and routes of utility vehicles so that the container was picked up exactly at the moment when it was close to full. At the same time, the volume of the container, and fuel, and the resource of garbage trucks, and the labor of public utilities are saved, which

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reduced the cost of garbage collection by 40%. Google Corporation is actively working on the project of an operating system for connected devices and systems - the "Internet of Things".

Such systems can be both coffee makers and smart cars. In France, sales of “smart bikinis” began for 149 euros. The bathing suit has a built-in ultraviolet sensor that communicates via Bluetooth with a smartphone, and a special application warns the owner when it is necessary to apply a new layer of sunscreen. You can purchase a beach towel with a similar sensor. And this is only the beginning of a fundamental transformation of the global information and economic space.

The components of the digital economy include e-commerce, the e-government system, the introduction of “smart” technologies in production processes, the creation of “Smart City”, “Safe City” systems, etc., as well as the widespread use of “Internet of things” technologies.

The Internet of Things, smart homes, 3D printers, self-driving cars, Tesla Model S and digital commerce are fundamentally changing business processes, have a significant impact on regulatory policy and social fabric. The Internet of Things is already becoming the Internet of Everything - Internet of Everything The Internet of Everything, based on an ecosystem with billions of interconnections, provides a significant increase in wealth for every person, community and business. The Internet of Things (IoT) is the largest market and will only gain momentum. In the Republic of Uzbekistan, complex information systems have been created to provide interactive services in the field of public procurement - "Purchases", taxation - "Tax", licensing and permit procedures - "License", for customs clearance of goods - "Customs", to ensure the collection, processing, systematization and storage of information on planning, the progress of the state budget execution - "Budget".

The systems “Pension provision”, “Education”, “Utilities”, “Notariat-2” were developed and implemented - for the collection, processing, systematization and storage of information about the activities of the courts, their decisions, the execution of court decisions, as well as information about the activities of the notary , “Government bodies” - to provide summary statistical information to state bodies.

In the Program "Unified system of interdepartmental electronic interaction on the collection of debts on executive documents". In the Republic of Uzbekistan, an e-government development strategy has been adopted, a number of projects have been implemented to introduce "smart" and "safe" cities and regions based on the processing of big data and the introduction of the Internet of things, as well as intelligent surveillance and monitoring systems in public places.

According to the Decree of the President of the Republic of Uzbekistan Sh. Mirziyoyev “On measures for the widespread introduction of the digital economy and e-government”, the share of the digital economy in the GDP of Uzbekistan is planned to be doubled by 2023, and the share of electronic public services should be increased to 60% by 2022. Digital knowledge training centers will open in all regions of Uzbekistan. The document provides for the accelerated formation of the digital economy with a doubling of its share in the country's gross domestic product by 2023.

All healthcare institutions, schools, pre-school education organizations, villages and mahallas should be connected to high-speed Internet in 2020-2021. The share of electronic public services is planned to be increased to 60% by 2022. The resolution provides for the development of "digital entrepreneurship" with an increase in the volume of services in this area by 2023 by three times and bringing their exports to $100 million

Widespread introduction of digital technologies is planned at all stages of the education system. Until 2022, digital knowledge training centers will open in all regions of the country as part of the Five Initiatives project. The Ministry for the Development of Information Technologies and Communications is designated as the authorized body in the field of development of the digital economy and e-government.

The National Agency for Project Management under the President retains the authority to introduce crypto assets and blockchain technology. Under the Ministry for the Development of Information Technologies and Communications, two new institutions will be established: “Electronic Government Project Management Center”; Center for Digital Economy Research. Digital technologies in the agricultural sector and the management of the development of geoinformation technologies have been developed.

According to the beginning of 2020, the share of e-commerce in Uzbekistan's GDP was 1.9%, in particular, the share of the ICT sector in GDP was 1.6%, the share of the content and media sector was 0.2%, and the share of e-commerce was 0.1%. In 2019, the total volume of services provided in the field of ICT

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reached 10.6 trillion Uzbek soums, or increased by 104%. The volume of services in the field of communication and informatization grew to $176 million.

In addition, the following other important indicators can be cited:

– The volume of computer and software services for 2019 increased by 119% and amounted to 1.078 billion UzS;

– Export of software products and services increased to $15.8 million;

- Significantly increased the amount of wages in the field of information and communication technologies. Currently, in this area, the average salary is 4 million soums (the average salary in the republic is 2.3 million soums);

– The number of enterprises with the participation of foreign capital is also consistently growing: at the end of 2019, their number amounted to 269 units.

– In 2019, the Ministry implemented 9 major projects for a total of $177.5 million according to the projects included in the Investment Program. – Based on foreign direct investment – projects worth $97.14 million; - On the basis of foreign loans secured by the state - projects in the amount of $53.38 million; - At the expense of enterprises' own funds - projects worth $26.93 million. In 2019, work was done in the ICT sector in a number of important areas.

By registering websites in the national segment of the Internet under the “UZ” domain, work was launched to provide beneficial services to consumers, educate young people online and provide services to the population through electronic services. Also, fruitful work was done in the field of online payment: for example, in 2019, 299.3 million transactions worth 6.5 trillion soums were carried out through online payment systems.

In order to develop contactless forms of communication between the population and entrepreneurs on the one hand, and state bodies on the other hand, a new version of the Unified Interactive Portal of Public Services was developed. Today, 176 types of electronic public services are provided through the Single Portal, 15.1 million applications have been received. This, in turn, makes it possible to significantly reduce the costs and time of the population.

In the system of the Unified Portal of State Interactive Services, 176 types of public services are currently provided to the population. At the end of 2019, 15.1 million applications were processed. More than 4.4 thousand state bodies and organizations and over 30 thousand users are currently connected to the Unified Interdepartmental Electronic System of Performing Discipline.

In 2019, work was also carried out to develop the telecommunications infrastructure. Thus, the total throughput in the international Internet network has reached 1,200 Gbit/s, and through the switching centers the speed has reached 750 Gbit/s.

Thus, the download bandwidth increased by 76.6%. From January 1, 2020, tariffs for operators and providers for Internet services were reduced by 34%, thereby amounting to 56.0 thousand soums. The number of Internet users has grown to 22 million, including 19 million mobile Internet users. Backbone telecommunications were expanded at 237 facilities throughout the republic, and telecommunications equipment was modernized. Thus, the bandwidth of backbone telecommunications in the regions is 200 Gbit/s., in the regions - 40 Gbit/s.

Also, during the implementation of the project for the construction of fiber optic communication lines, 10.0 thousand kilometers of fiber optic lines were built, and thus their total length is 36.6 thousand kilometers. In order to develop mobile communication networks, 2017 mobile communication base stations were installed.

Thus, their total number exceeded 26 thousand, and the coverage of the population with mobile communications reached 96%, and the level of broadband coverage to the mobile Internet network - 70%.

In the course of implementing work to expand the coverage of connection to broadband communications, operators and providers installed 786,000 ports, and thus the total number of ports for connecting to broadband Internet reached 1.9 million.

In order to increase the attractiveness of service, tourism, trade and catering facilities, business entities, telecommunications operators and providers in public places, places of pilgrimage, railway stations, airports, tourist sites, as well as at all facilities of the Tashkent metro, installed over 685 thousand Wi-Fi points for Internet access.

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The degree of development of the digital economy in the country, which is directly related to the level of development of information and switching technologies (ICT), is usually assessed by various indicators: the share of the digital economy in GDP, the amount of investment in the ICT industry, Internet speed, its coverage of the country's territory and accessibility for use by the population , the level of development of e-commerce, the share of public services in the e-government system, the provision of organizations with specialists in the field of ICT, etc. In addition, indicators in international ratings that assess the degree of development of information technologies in the country are important.

Significant progress has been made in many of these indicators in Uzbekistan since 2016. Thus, the gross value added created in the field of services in the field of "information and communication" has doubled since 2016 from 4.4 to 8.8 trillion soums, and the volume of services provided by the type of economic activity "information and communication" has increased by 2 times from 6.3 to 12.9 trillion soums.

Dynamics of growth in the volume of services in the sphere of "information and communication" in the GVA in 2016-2020

	2016	**2017**	**2018**	**2019**	**2020**
GDP, *including.*	242,5	302,5	406,6	510,1	580,2
Gross value added of industries, including	220,1	267,7	361,1	464,9	535,8
Gross value added of industries	4,4	5,7	7,0	7,4	8,8

Source: State Committee data

Dynamics of growth in the volume of services provided by type of economic activity "information and communication" in 2016-2020 (trillion soums)

	2016	**2017**	**2018**	**2019**	**2020**
Services - total, including	97,1	118,8	150,9	193,7	218,9
rates of growth (in %)	*114,7*	*110,7*	*108,9*	*113,2*	*102,3*
spheres "informatization and communication"	6,3	8,2	10,3	10,9	12,9
rates of growth (in %)	*114,6*	*121,3*	*115,9*	*108,3*	*115,3*

Source: State Committee data

The development of the ICT industry was facilitated by the growth in the volume of investments in fixed assets by the type of activity "information and communication", which in the period 2016-2020 grew 4 times from 1.2 to 4.8 trillion rubles. soums, including the volume of foreign investments and loans increased by 2.5 times from 0.8 to 2 trillion soums.

Dynamics of changes in the volume of investments in fixed capital and by type of activity "information and communication" in 2016-2020 (trillion soums)

	2016	**2017**	**2018**	**2019**	**2020**
Total investments in fixed assets, of which	49,5	60,7	107,3	134,0	202,0

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in the type of activity "information and communication"	1,2	1,9	0,9	2,1	4,8
Foreign investments and loans, of which	10,8	16,2	31,4	52,6	86,6
in the type of activity "information and communication"	0,8	1,5	0,5	1,2	2,0

Source: State Committee data

The telecommunications infrastructure is developing dynamically. Almost 3.8 times from 17.9 to 68.6 thousand km. the length of the laid fiber-optic communication lines has increased, by the end of 2021 their length is planned to almost double and increase to 118.6 thousand km. The number of mobile base stations increased by 1.8 times from 17.7 to 31.7 thousand units, in 2020 alone, more than 5,600 new mobile telephone exchanges were installed and launched.

The expansion of the network of mobile base stations made it possible to create conditions for the provision of services (to increase the coverage) of mobile communications for 98% of the country's population, including high-speed communications up to 90%.

The researchers note that the expansion of the network of mobile communication stations is due to the installation of new stations that ensure the operation of 3G / 4G networks, and projects have also been implemented in Tashkent to install 15 base stations of the fifth generation - 5G.

In order to create its own production base and import substitution, in the Jizzakh free economic zone, with the assistance of the Republic of Korea, a $11 million plant for the production of fiber optic cables with a capacity of 50,000 km was built. cable per year, which will meet both domestic needs and supply cable products for export.

Dynamics of development of telecommunication infrastructure

	2016	2017	2018	2019	2020	2021	2022
Total length of fiber-optic communication lines (thousand km)	17,9	20,3	24,5	36,6	46,6	81,7	118
Number of mobile base stations (thousand units)	17,7	20,0	24,1	26,1	31,7	45,9	49,6

Source: https://mitc.uz/ru/stat/-Mininfocom

Total length of fiber-optic communication lines (thousand km)

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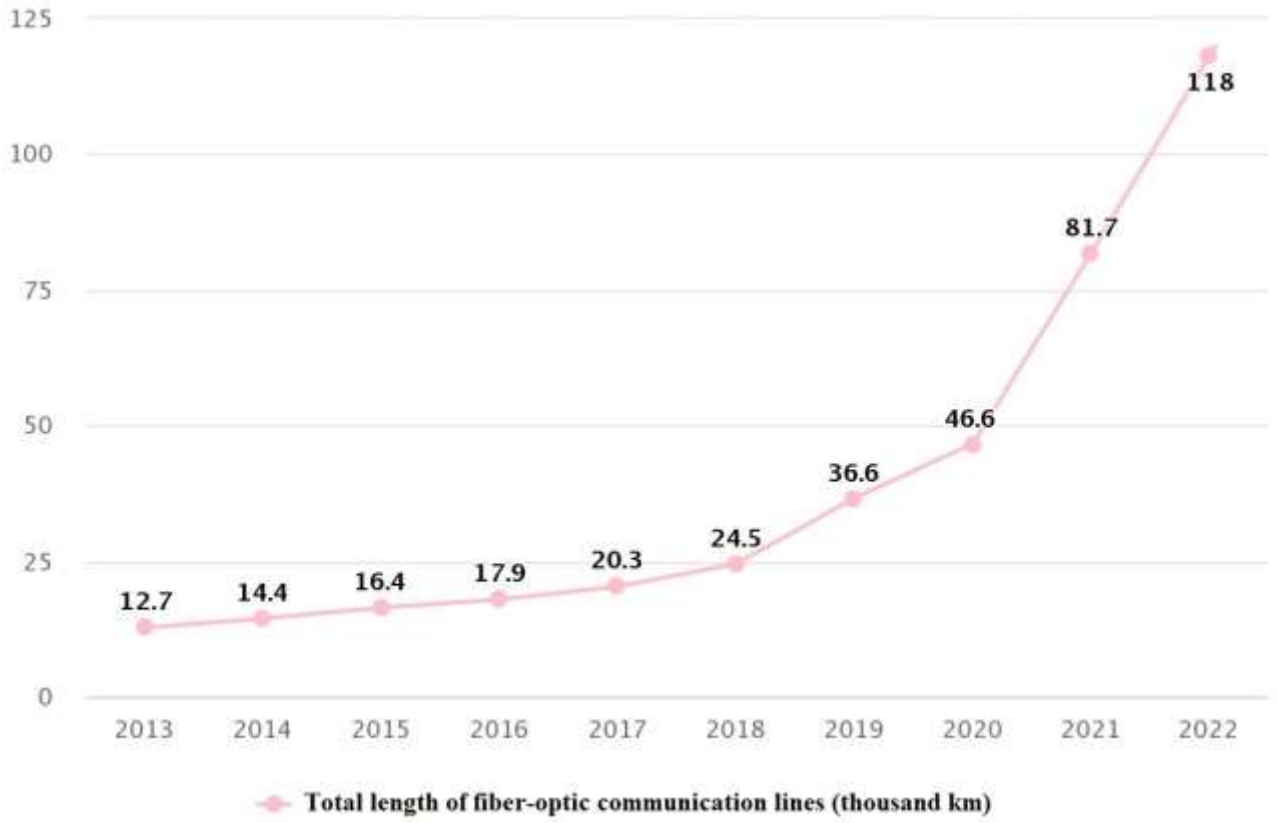
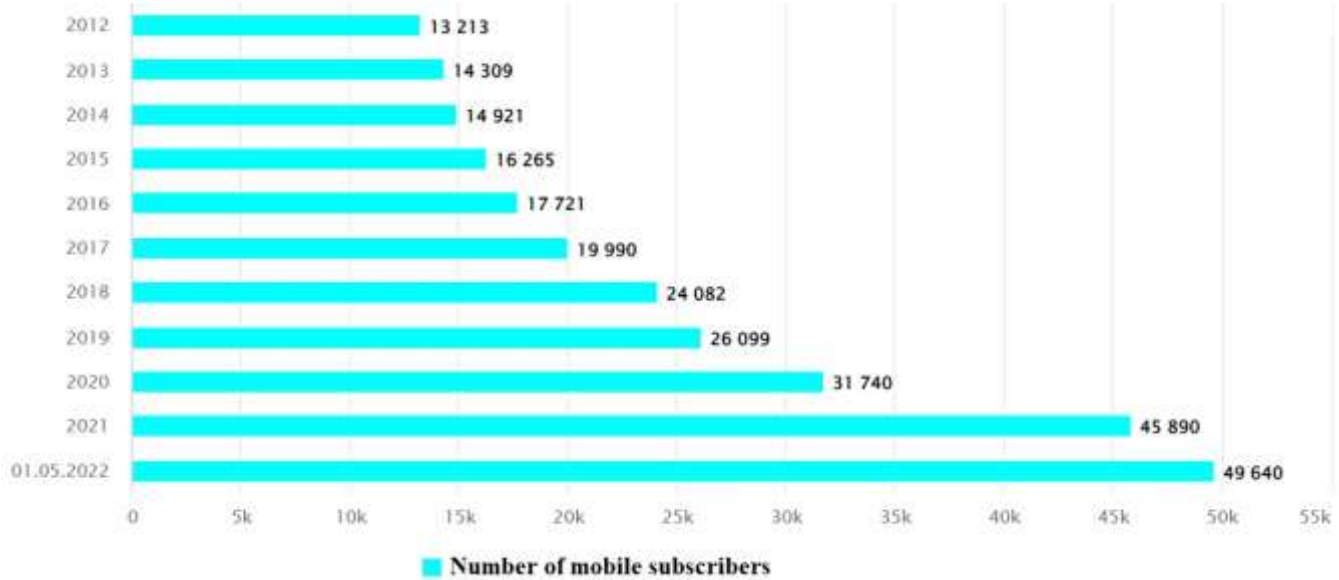


Source: https://mitc.uz/ru/stat/-Mininfocom

Number of mobile base stations (thousand units)



Source: https://mitc.uz/ru/stat/-Mininfocom

Количество абонентов мобильной связи с 2016 года выросло на 30% до 30,2 миллиона человек, 2016 года а число пользователей интернетом — почти в 2 раза до 27,2 миллиона человек.
Динамика показателей роста числа пользователей *(млн человек)*

Quantity	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Mobile subscribers	20,6	21,4	22,8	23,6	25,4	29	30,2

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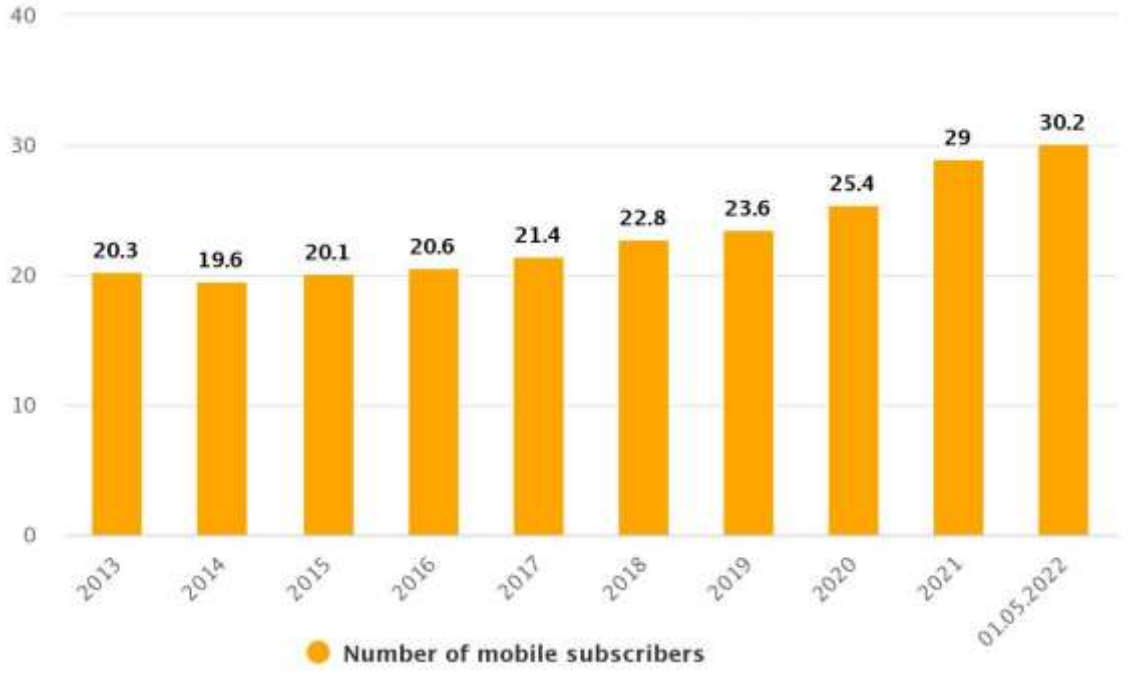
Internet users	12,1	14,7	20,0	22,0	22,5	24,7	27,2



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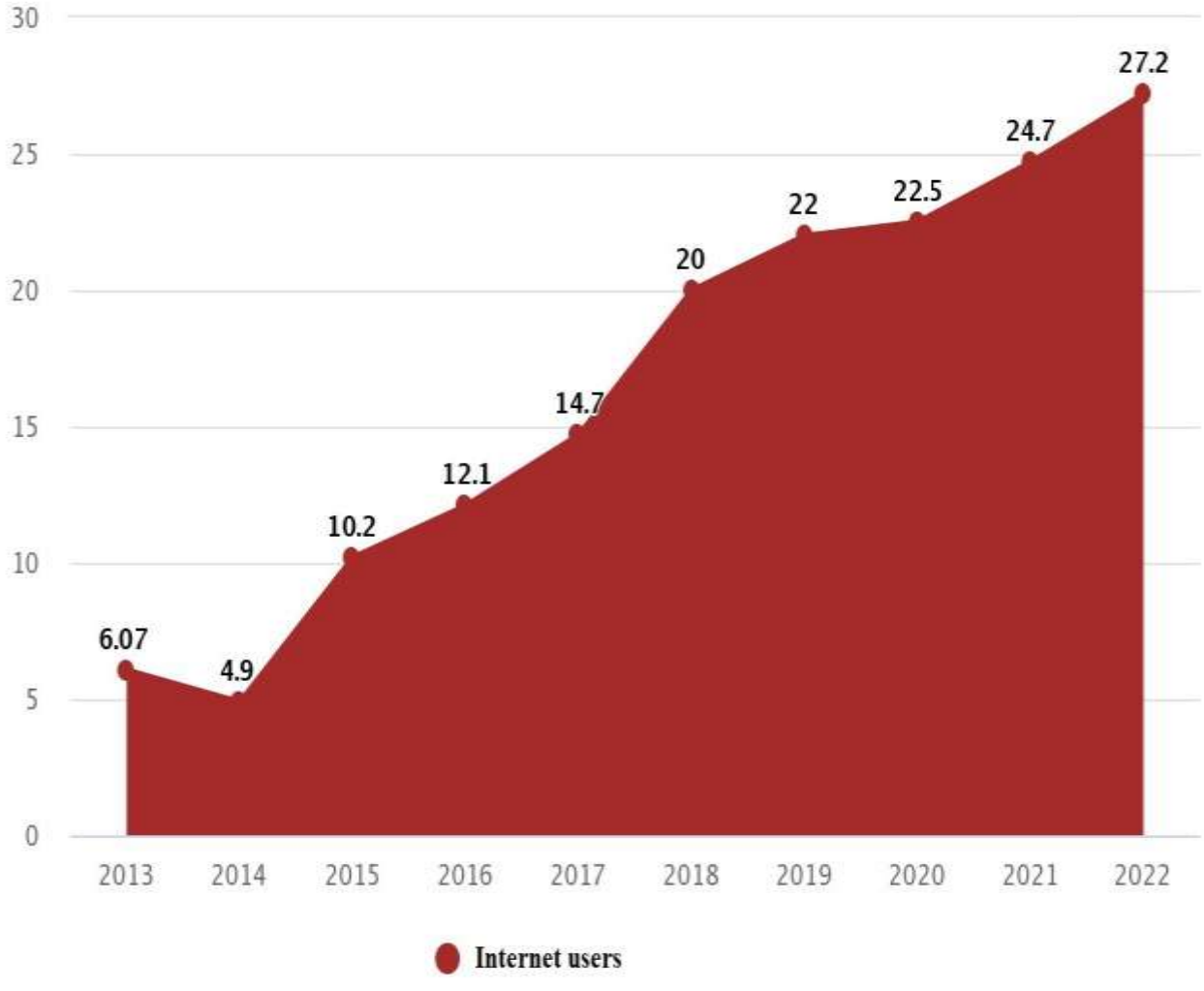
Internet users



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Source: https://mitc.uz/ru/stat/-Mininfocom

The number of installed broadband Internet access ports is growing annually, which provides subscribers with a continuous connection to it for transmitting and receiving information at high speeds.

In 2020, about 1 million additional ports were installed, in total since 2018 the number of ports has grown from 1.2 to 3.2 million, and by the end of 2021 it is planned to bring this figure to 3.9 million, which will significantly expand subscriber access opportunities wired connection to broadband internet.

To date, all kindergartens, medical institutions, as well as more than 8,000 schools (80% of the total) have received access to high-speed Internet. In 2021, it is planned to provide access to the network of all schools, as well as mahalla gatherings of citizens (about 10 thousand gatherings).

The growth in the number of users of mobile communications and the Internet was facilitated not only by the development of ICT infrastructure, but also by the reduction in the cost of using the Internet while increasing its speed, the researchers note. Since 2016, the capacity (speed) of the international data transmission network has been increased by almost 22 times - from 55 to 1200 Gb / s. At the same time, the cost of tariffs for Internet services for providers decreased by 21 times from 91.5 to 4.3 dollars per 1 Mbps.

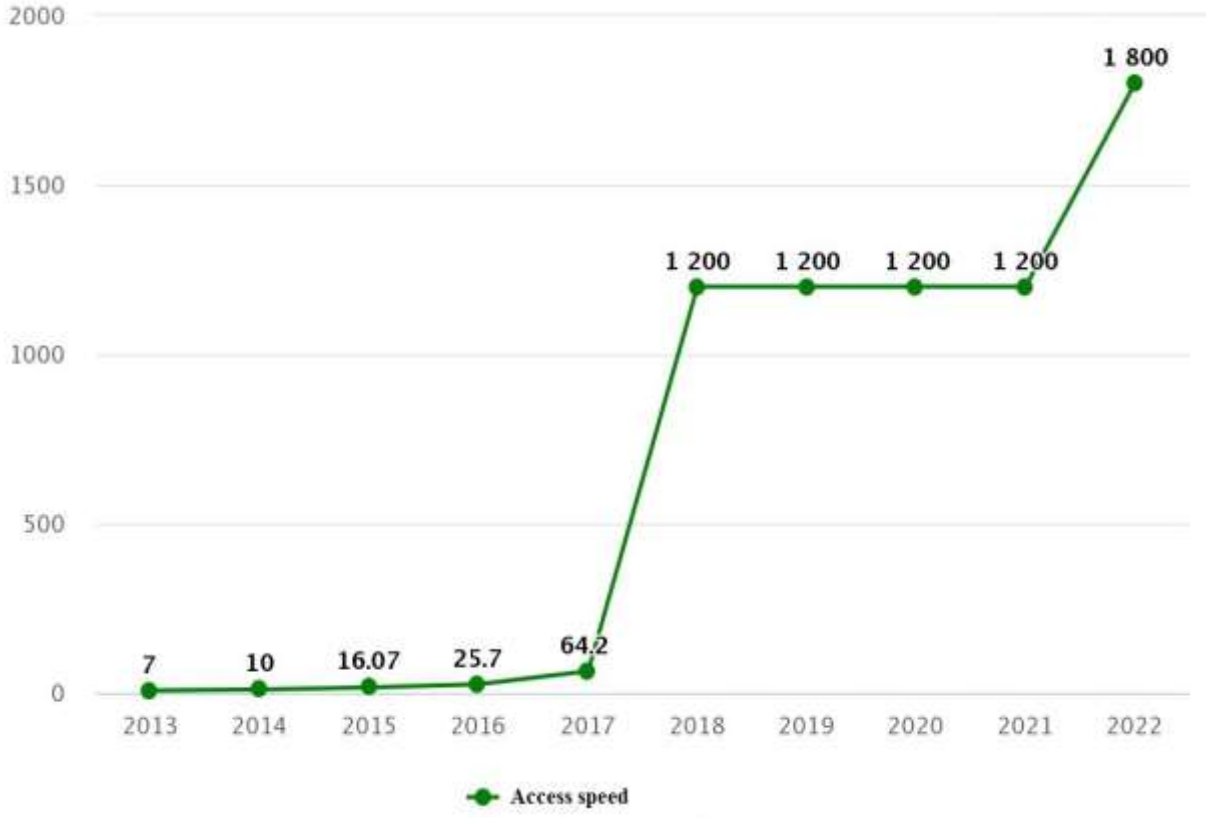
Dynamics of changes in the speed and cost of Internet services

	2016	2017	2018	2019	2020	2021	2022
International network bandwidth (Gbps)	25,7	64,2	1200	1200	1200	1200	1200
The cost of tariffs for Internet services for providers	91,5	30,3	10,1	5,9	4,3	4,3	4,3

Source: https://mitc.uz/ru/stat/-Mininfocom

In accordance with a government decree dated April 17, Uzbektelecom, together with the American Winncom Technologies, is implementing a project to modernize the packet switching center in the amount of almost $26 million this year, which will expand its bandwidth to 1800 Gbps.

Bandwidth of the international data network (Gbps)



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Source: https://mitc.uz/ru/stat/-Mininfocom

The speed of the Internet for consumers has also increased. Since 2018, the speed of broadband Internet for subscribers has increased from 10.11 to 36.85 Mb/s, and for mobile Internet subscribers from 9.97 to 13.89 Mb/s.

Dynamics of Internet speed indicators in Uzbekistan (in Mb/s)

	2018	2019	2020
Broadband (fixed) Internet speed indicators	10,11	22,49	36,85
Mobile internet speed indicators	9,97	9,51	13,89

In 2018, the full coverage of the population with digital television was also completed, this figure in 2016 was only 68%.

Conditions for the development of e-commerce have been created. In accordance with the presidential decree of May 14, 2018 “On measures for the accelerated development of electronic commerce”, in order to stimulate business entities in the field of electronic commerce, the National Register of e-commerce entities e-tijorat.uz was created.

It includes, on a voluntary and free basis, legal entities and individual entrepreneurs whose income from the sale of goods and services through e-commerce is at least 80% of the total volume of goods and services sold by them. At the same time, they will be payers of a single tax payment at a rate of 2%.

It is worth noting the success of Uzbekistan in international ratings to assess the development of information technology in the country. In these ratings, along with the occupied place, an index is indicated, which takes into account several parameters at once, reflecting the state of development of this area.

One of these is the Telecommunication Infrastructure Index-TII, which is formed on the basis of the following indicators per 100 inhabitants of the country: the number of users of the Internet and fixed telephone lines, as well as subscribers to mobile communications, wireless broadband and fixed broadband networks. Since 2016, Uzbekistan has improved its performance on this index from 0.246 to 0.472.

The ICT Development Index (IDI), which was last compiled by the International Telecommunication Union at the end of 2017 among 176 countries of the world. The IDI index consists of 11 statistical indicators that reflect the accessibility to ICT, the degree of their use and practical skills in the use of ICT by the population. A new methodology for compiling the IDI index is currently being developed. In the latest ranking of the IDI index, Uzbekistan rose by 8 positions compared to 2016 and took 95th place (index - 4.9) among 176 countries of the world.

The Global Cybersecurity Index is also compiled by the International Telecommunication Union and assesses the level of government commitment in five areas: legal measures, technical measures, organizational measures, capacity development and international cooperation. Since 2016, Uzbekistan has improved its performance in this ranking from 0.1471 to 0.666 and has risen from 93rd to 52nd place among 175 countries.

The Mobile Index is compiled by the International Association of Mobile Operators (or "GSMA Association"), which also includes all mobile operators in Uzbekistan. The index shows the degree of development and use of the mobile Internet. The index measures performance in more than 170 countries against the key drivers of mobile internet adoption: infrastructure, accessibility, consumer readiness, content and services.

	2016	2017	2018	2019	2020	2021
Mobile Index	36,9	40,7	44,5	46,8	46,99	50,85
Place in the ranking (out of 170 countries)	134	132	127	124	123	121

Source: GSMA Mobile Connectivity Index

The index helps the mobile communications industry determine where to focus its efforts in order to drive wider adoption of the mobile internet. Over the past four years, Uzbekistan has improved its performance in this index from 36.9 to 50.85 and approached the world average of 50.

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The E-Government Development Index (EGDI) is compiled by the Department of Economic and Social Affairs of the UN Secretariat based on the indicators of three sub-indices: the development of online public services, telecommunications infrastructure and human capital development. In terms of this index, Uzbekistan has improved its performance from 0.54 to 0.67 since 2016 and ranks 87th in the ranking among 193 states.

In order to create conditions for citizens to receive public services in electronic format, in 2017 Uzbekistan launched a new version of the Single Portal of Interactive Public Services (Single Portal, SPIGU - my.gov.uz), which is a single electronic platform for citizens and entrepreneurs to access obtaining public services and the necessary information on them. At present, the number of types of services provided at the SPSI has reached more than 300 in 20 areas.

In the future, it is planned to increase the share of public services provided in electronic format to 60% by 2022 and to 80% by 2025, as well as to raise it to 50th place in the e-Government Development Index by 2025.

Long-term plans for the development of the digital economy

By a presidential decree dated October 5, 2020, the Digital Uzbekistan-2030 Strategy was approved, which provides for the implementation of over 280 projects for the digital transformation of regions and sectors of the country's economy in the next two years.

Target indicators of the Strategy "Digital Uzbekistan - 2030"

№	Name of indicator	Unit of measurement	Current state	Goals by year		
				2022	2025	2030
1	The length of the fiber-optic communication line network in the republic	thousand km	41	70	120	250
2	The level of high-speed Internet coverage of the regions of the republic	%	67	74	85	100
3	The level of high-speed Internet provision of social facilities	%	45	100	100	100
4	Level of provision of households with broadband Internet access	%	67	74	85	100
5	The level of provision of settlements with a network of broadband mobile communications	%	78	100	100	100
6	E-Government Development Efficiency Indicator in the International Ranking of the E-Government Development Index	points (between 0−1)	0,66	0,70	0,75	0,86
7	The share of e-government services provided through the Unified Interactive Portal of Public Services in relation to public services provided by public service centers	%	34	60	70	90

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8	The share of e-government services available through mobile devices compared to e-government services on the Unified Interactive Public Services Portal	%	5	30	42	60
9	Share of transactional services provided through the Unified Interactive Portal of Public Services	%	25	45	60	75
10	The share of large businesses that have implemented an enterprise resource management system (ERP)	%	20	40	65	100
11	Number of users of online banking services (legal entities and individuals)	million units	10	15	17	20
12	The number of start-up projects included in the programs of incubation and acceleration of technoparks of software products and information technologies	things	50	250	700	2 300
13	The number of quotas for admission to higher and secondary specialized educational institutions for training personnel in the field of information technology	thousand	7	12	15	20

In the near future, the task was set to double the share of digital services in the country's GDP.

In the next two years, it is planned to attract about $2.5 billion for the development of digital infrastructure. It is planned to launch three large new data centers in the cities of Tashkent (expanding by 5 PB and bringing it up to 10 PB), Bukhara and Kokand (by 50 PB each), as well as further expansion of the fixed telecommunications network and modernization of the mobile network. As a result, households will have access to the Internet at a speed of at least 10 Mbps in each settlement.

Taking into account the experience of combating the pandemic, in 2021 it is planned to expand digitalization in the healthcare sector, complete the implementation of electronic polyclinic and telemedicine systems in the regions. The digital transformation of the banking sector will continue, including automated control systems and financial technologies. For the digitalization of agriculture, more than $600 million will be attracted to introduce modern agricultural technologies and innovative solutions.

More than 120 universities operate in Uzbekistan, each of which is introducing a digital learning module and opening incubation centers. A program for the development of IT education was adopted, aimed at creating a new system of vertical education. In 2020, the One Million Programmers program was launched, providing free training in programming skills, under which more than 130,000 students are trained.

Educational IT centers are being created in the regions of the country, more than 100 of them have already been opened, more than 85 thousand students have been trained in them. In 2021, it is planned to open an additional 200 such centers.

For IT companies until 2028, benefits are provided on the basis of extraterritoriality (benefits in IT parks: income tax - 7.5%, corporate and social tax - 0%, customs payments for the import of goods and services - 0%).

In conclusion, the study can be noted that the experience of foreign countries shows that the digital economy is developing simultaneously in a wide range of areas and cannot be built by a limited number of

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companies, even if they are endowed with special powers and resources. Therefore, the main role in the digital economy should be played by private business with a strong entrepreneurial and innovative approach, and the state should create the infrastructure and conditions for private initiative.

The state can stimulate the digitalization of economic processes by the following actions:

- act as an organizer of common technological platforms that unite various organizations, or as a regulator that directively establishes requirements for the use of certain technological solutions, since without synchronization of the implementation of standard technological solutions in entire segments of the economy, their wide distribution is impossible;
- constantly improve the existing regulatory framework governing the development of the digital economy, and do this in a dialogue mode and taking into account the opinions of users, developers and service providers who in practice will encounter new types of objects and subjects of information legal relations that require legal registration;
- become a participant in the overall process of digitalization of relations, including by developing the e-government system and the list of public services provided in electronic format;
- stimulate and encourage the introduction of information systems, e-services and tax incentives for the development of digital technologies, as well as cross-border online trade in organizations;
- train in the required quantities personnel both IT-specialists and programmers themselves, as well as qualified users who are able to use constantly updated digital technologies;
- ensure security against cyber threats, as well as confidence for all entities involved in the digital economy to some extent that the data they collect, store and use is protected from possible criminal acts;
- expand international cooperation and create attractive conditions for the inflow and introduction of advanced information technologies in all areas of economic activity. “According to the theory of K-cycles (Kondratiev), humanity is going through the fifth technological order, characterized by the development of electronics, robotics, computing, laser and communication technology, and is approaching the sixth, which will be based on NBIC - convergence or on the unification and synergistic strengthening of the achievements of nano-, bio-, information and cognitive (cognitive) technologies. “In this regard, in order to keep up with technological development, it is necessary not only to be a consumer of innovative products produced in other countries, but to create them yourself or participate in international cooperation chains for their production”.

At the same time, the main thing is that the development of ICT in the country, including affordable high-speed Internet, should keep pace with the interest of businesses to introduce digital technologies into various production processes in order to increase labor productivity, reduce costs, as well as increase production and profits.

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