



# The Growth of ICT indicators in the Digital Economy of Uzbekistan

**Maftuna Samieva\***

Assistant teacher, Tashkent state university of economics,  
[maftunasamiyeva087@gmail.com](mailto:maftunasamiyeva087@gmail.com)

**Muxlisa Madyarova**

Assistant teacher, Tashkent state university of economics,  
[muxlisamadiyorova@gmail.com](mailto:muxlisamadiyorova@gmail.com)

## ABSTRACT

The article scrutinizes the latest work and research on the digital economy and its core base – ICT infrastructure. Moreover, the digital economy scope of Uzbekistan has been evaluated based on national and international indicators in depth. The article concludes that accelerating the process of digital transformation is inevitably urgent despite the annual growth of national and international scores.

CCS CONCEPTS • Digital Economy • International Ratings • Telecommunications

## Keywords:

ICT, Indicators, Internet Access, Investment, Mobile Connectivity

## 1 Introduction

The widespread use of information and communication technologies, particularly Internet technologies, has led to the formation of global information society and digital economy. This fundamental process is based on a deep digital transformation of each country's economy and social sphere.

The digital economy, understood as using information and communication technologies (ICT) by the state, business, and society, is subject to ceaseless changes. The number of Internet users is growing, the catalog of available public online services is increasing, and new business models are being made. In consequence, the digital economy constitutes an important component of the contemporary economic landscape [1].

Today, the issue of developing the digital sector of the economy has been raised to the state level of importance in Uzbekistan, and a wide range of measures are being taken in this sphere, in particular, the introduction of electronic document management systems, the

development of electronic payments and the regulatory framework for e-commerce. At the same time, the digital economy operating on information and technology platforms is rapidly developing, which necessitates the creation of new models of such platforms [2]. This rapid development and enhancement can be seen in the statistical data.

## 2 Literature Review

A unified approach to the definition of the concept of "digital economy" at the international level has not yet developed due to the complex and dynamic nature of this phenomenon. Studies note the penetration of elements of the digital economy into the entire economy and state that it can no longer be described as a separate part or subset of the traditional economy [3]. It also points out that the digital economy is broader than e-commerce and e-business: it includes entrepreneurship, communication, and service provision in all sectors, including transport, finance, manufacturing, education, healthcare,

\* Place the footnote text for the author (if applicable) here.

agriculture, retail, media, entertainment, and digital business.

Thus, the digital economy is an economic activity based on digital technologies. The distinctive features of the digital economy include not only the large-scale use of new digital technologies, such as artificial intelligence, predictive analytics, additive technologies, and the Internet of things but also the involvement in the economic circulation of the accumulated arrays of digital data on the subjects and processes of economic activity. At the same time, the development of individual traditional sectors of the economy is uneven, the boundaries between adjacent areas are blurred, new previously non-existent areas of activity are being created, and fundamentally different business models are emerging [3]. The digital transformation of the economy plays an important role in accelerating the pace of global economic development, increasing labor productivity in existing industries, creating new markets and industries, and achieving sustainable inclusive economic growth. At the same time, the digital transformation of the social sphere becomes a powerful catalyst and a factor in strengthening inclusiveness, thanks to it, connections between different communities are established faster and more efficiently, and information, ideas, and products are exchanged [4]. On the basis of the traditional manufacturing industry and by integrating Internet + digital technology into the digital economy after industrial transformation, it not only reduces the professional needs of traditional machine operators, logistics, transportation, and equipment maintenance, but also creates new products and services, promotes engineers such as data analysis robot coordinators and new professional production such as on-site service engineers, and provides more employment opportunities. Now all countries in the world are standing at the threshold of the fourth industrial revolution [5]. Research on the digital economy is still in its infancy, and its related concept definition, statistical classification, calculation, and comprehensive evaluation index system, are not mature enough. Therefore, there are relatively few theoretical studies and mechanical tests on

digital economic development and urban economic growth [6]

### 3 Data And 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 problems of digital transformation, the factors affecting it and the prospects for further development were identified.

The study was carried out on the basis of statistical data on the development of the digital economy, and research materials by foreign and domestic authors. The data processed in this article is mainly obtained from a statistical committee of Uzbekistan and official scholar websites.

### 4 Analysis And Results

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.

Studying the majority of these indicators, one can conclude that significant progress has been made 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 sums, 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 sums according to the government statistics.

**Table 1.** Dynamics of growth in the volume of services in the sphere of "information and communication" in the GVA in 2016-2020 (trillion sums).

	2016	2017	2018	2019	2020
<b>GDP, incl.</b>	242,5	302,5	406,6	510,1	580,2
<b>Gross value added of industries, incl.</b>	220,1	267,7	361,1	464,9	535,8
<b>"Information and communications" sphere</b>	4,4	5,7	7,0	7,4	8,8

Source: [www.stat.uz](http://www.stat.uz)

**Table 2.** Dynamics of growth in the volume of services provided by the type of economic activity "information and communication" in 2016-2020 (trillion sums).

	2016	2017	2018	2019	2020
<b>Services — total, incl.</b>	97,1	118,8	150,9	193,7	218,9
<b>Growth rate (in %)</b>	114,7	110,7	108,9	113,2	102,3
<b>"Information and communications" sphere</b>	6,3	8,2	10,3	10,9	12,9
<b>Growth rate (in %)</b>	114,6	121,3	115,9	108,3	115,3

Source: [www.stat.uz](http://www.stat.uz)

**Table 3.** Dynamics of changes in the volume of investments in fixed assets and by type of activity "Information and communication" in 2016-2020 (trillion sums)

	2016	2017	2018	2019	2020
<b>Total investments in fixed assets, of which</b>	49,5	60,7	107,3	134,0	202,0
<b>in the type of activity "information and communication"</b>	1,2	1,9	0,9	2,1	4,8
<b>Foreign investments and loans, of which</b>	10,8	16,2	31,4	52,6	86,6
<b>in the type of activity "information and communication"</b>	0,8	1,5	0,5	1,2	2,0

Source: [www.stat.uz](http://www.stat.uz)

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 increased 4 times from 1.2 to 4.8 trillion sums, including the volume of foreign investments and loans increased 2.5 times from 0.8 to 2 trillion sums.

From the aforementioned tables, the telecommunications infrastructure is developing dynamically. The length of the installed fiber-optic communication lines increased almost 3.8 times from 17.9 to 68.6 thousand kms, by the end of 2021 it is planned to almost double their length and bring it 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%.

**Table 4.** Dynamics of development of telecommunication infrastructure

	2016	2017	2018	2019	2020
Total length of fiber-optic communication lines (thousand km)	17,9	20,3	26,6	36,6	68,6
Number of mobile base stations (thousand units)	17,7	20,0	24,1	26,1	31,7

Source: <https://mitc.uz/ru/stat/2>

It can be noted 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, \$11 million plant was built for the production of optical fiber cables with a capacity of 50 thousand km of cable per year, which will meet both domestic needs and supply cable products for export.

Since 2016, the number of mobile subscribers has increased by 20% to 25.4 million people, and the number of Internet users has almost doubled to 22.5 million people.

**Table 5.** Dynamics of indicators of growth in the number of users (million people)

	2016	2017	2018	2019	2020
Number of mobile subscribers	20,6	21,4	22,8	23,6	25,4
Number of internet users	12,1	14,7	20,0	22,0	22,5

Source: <https://mitc.uz/ru/stat/2>

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, the study says.

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).

**Table 6.** Dynamics of changes in the speed and cost of Internet services

	2016	2017	2018	2019	2020
International network bandwidth (Gbps)	54,98	110,0	1200	1200	1200

The cost of tariffs for Internet services for providers (dollars per 1 Mbps)	91,5	30,3	10,1	5,9	4,3
---	------	------	------	-----	-----

Source: <https://mitc.uz/ru/stat/2>

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 Gbps. 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.

In accordance with a government decree dated 2021 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 [7].

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 [8]

**Table 7.** 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 place occupied, 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.

**Table 8.** The Mobile Connectivity Index of Uzbekistan in 2017-2021

	2017	2018	2019	2020	2021
Mobile Connectivity Index	35,86	42,09	43,05	46,99	50,85
Place in the ranking (out of 170 countries)	142	135	133	130	127

Source: <https://www.mobileconnectivityindex.com>

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 five years, Uzbekistan has improved its performance in this index from 35,86 to 50,85 and approached the world average of 50.

Taking into account the experience of combating the pandemic, in 2021 it is planned to expand digitalization in the healthcare sector, and 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.

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 to increase labor productivity, reduce costs, as well as increase productivity and profits.

## 5 Conclusion

Without a doubt, the growth of ICT and digital infrastructure warrants the enhancement of the digital economy. The tables above show that the factors affecting the digital economy of Uzbekistan have gradually increased over the past years from 2016 to 2021. International indicators of Uzbekistan have also gone up simultaneously. However, this growth is below the average compared to other countries. Therefore, accelerating the process of digital transformation is highly necessary, and this necessity is becoming more urgent year by year. The pandemic showed that the country has the potential to enhance digitalization, but political focus and accumulative support are required for further development.

## References

1. M. Moroz, "The Level of Development of the Digital Economy in Poland and Selected European Countries: a Comparative Analysis", *Foundations of Management*, Vol. 9 (2017), ISSN 2080-7279 DOI: 10.1515/fman-2017-0014
2. Ismoilova G., Nabieva F., Khadjieva N., Shaislamova M. "Creating a Robust ICT

- base for the Digital Economy”* (2019) International Conference on Information Science and Communications Technologies: Applications, Trends, and Opportunities, ICISCT 2019, art. No. 9011898.
3. Ковалев, М. М. Цифровая экономика – шанс для Беларуси: моногр. / М. М. Ковалев, Г. Г. Головенчик. – Минск: Изд. центр БГУ, 2018.– 327 с. – Режим доступа:  
<http://elib.bsu.by/bitstream/123456789/194207/2/55-18.pdf> – Дата доступа: 20.03.2020.
  4. Анализ текущего состояния развития цифровой экономики в России. М.: Институт развития информационного общества, 2018. – 166 с.
  5. L. Lu, J. Guan, X. Wu “*Factors Influencing the Development of Digital Economy in Local Areas of China Based on Big Data Statistics*” Hindawi, Wireless Communications and Mobile Computing, Volume 2022, Article ID 5034867, 6 pages,  
<https://doi.org/10.1155/2022/5034867>
  6. Jiao, S.; Sun, Q. Digital Economic Development and Its Impact on Economic Growth in China: Research Based on the Perspective of Sustainability. Sustainability 2021, 13, 10245. <https://doi.org/10.3390/su131810245>
  7. <https://www.gazeta.uz/ru/2021/04/29/internet/>
  8. <https://www.gazeta.uz/ru/2021/05/05/research/>