

THE IMPORTANCE OF INFORMATION TECHNOLOGIES IN THE DEVELOPMENT OF A NATIONAL ECONOMY

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Abstract. *This article analyzes the role and significance of information and communication technologies (ICT) in the financial advancement of developed and developing countries. It examines the use of information technologies in various fields, such as commerce, and evaluates the position of IT in the global market. The paper also discusses Uzbekistan's transition to a digital economy and the impact of information technologies on the export system.*

In conclusion, the article provides insights into the role of IT across all sectors.

Keywords: *Information technologies, digitalization, innovation, economic growth, e-government, digital economy, IT companies, technological modernization, artificial intelligence, e-commerce, technoparks, startups, Digital Uzbekistan.*

Annotatsiya. *Ushbu maqolada rivojlangan va rivojlanayotgan davlatlarda moliyaviy jihatdan yuksalishda axborot kommunikatsiya texnologiyalarining o'rni va salmog'i, turli xil sohalarda masalan, tijoratda axborot texnologiyalaridan foydalanish, jahon bozorida ITning o'rni tahlil qilingan. O'zbekistonning raqamli iqtisodiyotga o'tishi, axborot texnologiyalarining eksport tizimiga ta'siri ko'rib chiqiladi. Xulosa sifatida, ITning barcha sohalardagi o'rni haqida ma'lumot berilgan.*

Аннотация. *В данной статье анализируется роль и значимость информационно-коммуникационных технологий (ИКТ) в финансовом развитии развитых и развивающихся государств. Рассматривается применение информационных технологий в различных сферах, например, в коммерческой деятельности, а также место IT на мировом рынке.*

Особое внимание уделено переходу Узбекистана к цифровой экономике и влиянию информационных технологий на систему экспорта. В качестве вывода представлена информация о роли IT во всех отраслях.

In today's globalized society, it is impossible to imagine life without the Internet. Nearly all sectors—food production, commerce, business, finance, education, and others—cannot be effectively managed without information technologies. At the same time, promoting the integration of information technologies across all fields provides significant advantages: it reduces distances, stabilizes teaching and learning processes, and enables societies to remain aligned with modern technological advancements. In the 21st century, one of the key drivers of global economic development is the widespread adoption of information and communication technologies (ICT). ICT directly influences macroeconomic indicators by increasing production efficiency, optimizing financial markets, enhancing transparency in public administration, and improving the quality of services. While these processes are well-established in developed nations, they are rapidly accelerating in developing countries.

Developed countries actively utilize high-speed Internet, cloud computing, artificial intelligence, big data analytics, and the Internet of Things (IoT). These technologies reduce production costs, enable real-time economic monitoring, and optimize expenditures in both the public and private sectors. In countries such as the United States, Japan, the European Union, and South Korea, FinTech has become an integral part of the financial system. As a result, transaction costs have decreased, access to financial services has improved, economic transparency has increased, and international capital flows have strengthened. In many developed economies, the digital economy accounts for 30–40% of GDP. This proportion is largely shaped by the IT industry, e-commerce, digital service exports, and automated production systems. Developing countries—such as Uzbekistan, Kazakhstan, India, Indonesia, and Vietnam—consider ICT as a key driver of economic modernization. Its impacts are increasingly visible across various sectors, including banking, education, healthcare, transportation, and more.

These changes have contributed to higher efficiency, the creation of new jobs, and several other positive factors. ICT has also significantly expanded access to financial services in developing markets. New concepts and tools such as mobile banking, online payment systems, and digital wallets have emerged. Examples in Uzbekistan include Click, Payme, Zoomrad, and Xazna applications. In other words, economic digitalization has enabled individuals to manage their finances online. This process also facilitates the inclusion of low-income users in the financial system. In recent years, e-commerce has been growing at a rate of 20–30% in developing markets. This growth stimulates new forms of entrepreneurship, strengthens the competitiveness of small businesses, and increases the monetization of domestic markets.

Automation, artificial intelligence, and robotics significantly enhance labor productivity, thereby boosting the efficiency of national economies. These technologies contribute to cost reduction, the creation of new economic sectors, and improved global competitiveness.

Let us now examine the economic impact of ICT in the case of Uzbekistan:

Uzbekistan has accelerated its transition toward a digital economy in recent years. Key developments include:

- the adoption of the “Digital Uzbekistan – 2030” strategy;
- the digital transformation of more than 90% of public services;
- the annual growth of export volumes generated by IT Park residents;
- the expansion of the e-commerce sector.

As a result, state budget revenues are increasing, international investments are growing, and the demand for IT specialists continues to rise. Information technologies serve as a major driver of economic development. In developed countries, they ensure high levels of economic efficiency and financial stability, while in developing countries, they stimulate modernization, financial inclusion, and the emergence of new markets. Effective use of ICT enhances national competitiveness, strengthens international integration, and supports macroeconomic stability. As evidence, it is worth considering the Presidential Decree of the Republic of Uzbekistan that approved the “Digital Uzbekistan — 2030” strategy and outlined measures for its effective implementation. Uzbekistan is actively developing the digital economy and introducing modern information and communication technologies across all sectors—particularly in public administration, education, healthcare, and agriculture. Comprehensive initiatives are underway to improve the e-government system, expand the domestic market for software products and IT services, establish IT parks throughout the regions, and supply the sector with qualified professionals.

More than 220 priority projects have been launched within this framework. Additionally, Uzbekistan is implementing the “Digital Tashkent” comprehensive program, which includes the creation of a geoportal integrated with over 40 information systems, the development of digital management systems for public transportation and communal infrastructure, and the digitalization of social services with the aim of further extending this model to other regions. It is known that item 138 of the State Program “Year of Science, Enlightenment, and Digital Economy Development” mandated the development of the “Digital Uzbekistan — 2030” program and the adoption of a corresponding Presidential Decree. The program focuses on expanding digital technologies in telecommunications, public services, real-sector industries, healthcare, state cadastre, and other fields. It outlines measures to approve the “Digital Uzbekistan — 2030” program, enhance the technical infrastructure of e-government, develop human capital, improve ICT training systems, transform public services into digital formats, strengthen the national information ecosystem, and ensure transparency and openness in public administration. It also includes goals to increase civic participation, ensure information security and data protection, designate a single authorized body for digital economy and e-government governance, and introduce deputy positions responsible for digital technologies and e-government in ministries, agencies, and local administrations. These objectives were fulfilled through the Presidential Decree PF-6079 “On the Approval of the ‘Digital Uzbekistan – 2030’ Strategy and Measures for Its Effective Implementation,” signed on October 5, 2020. Under this Presidential Decree:

- the “Digital Uzbekistan – 2030” strategy and its implementation “roadmap” were approved;

- programs for the digital transformation of regions and sectors for the period 2020–2022 were also adopted.

Within the framework of the 2020–2022 digital transformation agenda, the following objectives were established:

- increasing the level of Internet connectivity in residential areas, including expanding broadband access ports to 2.5 million, constructing 20,000 kilometers of fiber-optic communication lines, and developing mobile communication networks to raise coverage from 78% to 95%;

- introducing more than 400 information systems, electronic services, and other software solutions across various socio-economic development sectors;

- organizing training on the fundamentals of computer programming for 587,000 individuals, including 500,000 young participants within the “One Million Coders” project;

- implementing over 280 information systems and software products to automate management, production, and logistics processes in real-sector enterprises;

- assigning relevant higher educational institutions to enhance digital literacy and ICT competencies among regional governors, public sector employees, and organizational staff, ensuring that 12,000 specialists receive training in information technologies and cybersecurity.

What is a digital economy? The digital economy is understood as an integrated system in which economic, social, and cultural interactions are carried out through the adoption of digital technologies. In essence, the digital economy represents the transformation of the traditional economic model by creating and implementing new technologies, platforms, and business models into everyday life. In recent years, extensive regulatory measures have been undertaken to accelerate the development of the digital sector.

A number of normative legal acts have been signed by the President to support and expand the digital economy. Because the implementation and promotion of the digital economy constitute a strategic priority in the nation's long-term development plans, a wide range of initiatives has been introduced. As part of these efforts, new electronic document management systems are being deployed, electronic payment services are being expanded, and the legal framework for e-commerce is being strengthened. Additionally, digital infrastructure and digital commerce are being developed, and comprehensive digital transformation is being introduced across all branches of the economy. Among the recent achievements in digital transformation is the advancement of contactless interaction between citizens, entrepreneurs, and government agencies. To support this process, a new version of the Unified Portal of Interactive Public Services has been launched, along with the virtual reception portal "business.gov.uz" for handling entrepreneurs' appeals addressed to the Prime Minister. A specialized "Digital Trust" Fund has been established to implement the most promising and strategically important projects aimed at developing the digital economy, as well as measures for the creation and deployment of blockchain technologies. To ensure substantial savings in time and labor resources during the review and approval of draft normative-legal documents by all relevant ministries, agencies, and local executive authorities—using electronic digital signatures and enabling simultaneous public and expert discussions—a unified electronic platform, "project.gov.uz," has been introduced. To support the digitalization of technological and business processes, production, logistics, and the sales of finished products, modern "IT Parks" equipped with advanced infrastructure have been established throughout the country. The free operation of companies working in the field of crypto-assets and blockchain technologies has also been enabled. To train specialists proficient in modern programming technologies, the "One Million Coders" initiative was launched, and the educational portal uzbekcoders.uz was created to organize training sessions within the project.

Improving telecommunications and electronic infrastructure plays a crucial role in the development of the digital economy. Indeed, the higher the level of Internet usage among the population, the more efficiently the digital economy—including the e-government system—functions. In 2018, Internet users in Uzbekistan accounted for 46 percent of the total population, while by 2021 this figure exceeded 60 percent. From a practical standpoint, digitally advanced countries demonstrate both higher GDP volumes and larger per capita GDP indicators. In this regard, focusing on the development of the digital economy in Uzbekistan serves one core objective: improving the population's living standards, increasing real incomes, and stimulating entrepreneurship and national economic growth. "Our task is not only to improve the quality of goods and services through digital technologies and reduce excessive costs. Digitalization is also one of the most effective tools in combating the most disturbing and destructive phenomenon that concerns me deeply—corruption," stated the President. These words highlight the significance of digitalization not only as a catalyst for efficiency and resource optimization, but also as a powerful mechanism for reducing corruption and informal economic activities.

Uzbekistan has created favorable conditions for the accelerated introduction of modern information and communication technologies, the "e-government" system, and various information systems across socio-economic sectors, while simultaneously modernizing telecommunications infrastructure. Information technologies, computers, and software are designed to make human labor easier, enable efficient work and learning, and create new opportunities—thus requiring new knowledge and skills. In recent years, the Uzbek economy has undergone substantial transformation—becoming more open, dynamic, and innovation-driven.

However, it must be recognized that under the conditions of global economic integration and rapid technological growth, Uzbekistan's future economic development is unimaginable without advancing information and communication technologies, particularly the digital economy. Unfortunately, the country currently faces two major challenges in this field: underdeveloped telecommunications infrastructure and a shortage of qualified specialists. To address these issues, numerous decrees and resolutions have been adopted, and various development projects are being implemented. A digital economy cannot exist without modern ICT and global Internet technologies. The concepts of "digital economy," "ICT," and "Internet" are deeply interconnected. ICT acts as a catalyst for economic growth by enhancing productivity in both the public and private sectors, creating new opportunities, and increasing overall efficiency. In recent years, artificial intelligence (AI) has introduced profound changes in the global economy. Technologies once seen only in science fiction now operate in real-world economic systems—ranging from manufacturing to service delivery. The influence of AI on the economy is broad and complex, spanning labor markets, competitiveness, and innovation.

Technologically advanced nations have also achieved high economic indicators, and the transition to the fourth industrial revolution provides vast opportunities for both developed and developing countries. These processes are particularly impactful during the emerging Fourth Renaissance, characterized by rapid advancement in science and technology. Over the next decade, information technology and AI will remain key drivers of development in economic, geopolitical, and defense sectors. One of the most significant effects of AI on the economy is the transformation of the labor market and the acceleration of automation. Robots and automated systems are increasingly used across various sectors—from automobile assembly to customer service—leading to a reduction in certain types of jobs. For example, in the automotive industry, robots are replacing workers while enabling the rapid production of high-quality goods.

However, this process is not solely about job displacement. AI also creates new industries and new professions. Highly skilled specialists are needed to develop and operate new technologies. As a result, new employment opportunities are emerging in fields such as data science, robotics, artificial intelligence, and network security. Therefore, although AI is reshaping the labor market, it is essential to manage this process effectively and adapt the education system to new requirements. Another major impact of AI is its contribution to productivity growth. AI technologies allow for the rapid analysis of large datasets, more efficient business decision-making, and automation of production processes. For instance, through the use of robots and intelligent systems, the efficiency of manufacturing lines increases significantly. At the same time, companies can reduce operational costs, save time, and improve product quality by leveraging artificial intelligence. All these factors contribute to stimulating economic growth.

The integration of new technologies also enables economic diversification and the creation of high value-added products. These processes help reduce economic disparities between countries. The long-term impact of AI on society is expected to be positive across many sectors, including manufacturing, education, healthcare, and public safety. However, as the adoption of artificial intelligence accelerates and automation continues to penetrate the labor market, many traditional job roles are projected to be replaced. According to the World Economic Forum (WEF), by 2025 AI is expected to displace nearly 85 million jobs. Most of these positions involve routine and/or repetitive tasks, such as data entry, assembly-line production, or basic customer service operations. Nevertheless, relieving human workers from monotonous tasks allows them to shift their focus toward more creative, analytical, and

intellectually stimulating activities enabled by the emergence of AI technologies. The WEF report also predicts that artificial intelligence will help create around 97 million new jobs by 2025 in fields such as data science, robotic process automation (RPA), and software engineering.



When discussing the development of startup projects, it is essential to highlight the significant role of information and communication technologies (ICT). Startups are small and medium-sized enterprises built upon innovative ideas and designed to introduce new products or services to the market. The success of startup projects largely depends on the technologies they employ and the innovative nature of their business models. The advancement of ICT enables startups to grow rapidly and expand into the global marketplace. One of the key advantages of ICT is the effective operation of digital platforms and crowdfunding systems for attracting investments. Startups, especially in their early stages, utilize digital platforms to raise public funds. This provides them with opportunities to showcase their ideas to the world and establish connections with global investors. Cloud technologies also offer startups cost-effective and efficient access to high-quality services, as well as reliable data storage and processing capabilities. This allows startups to manage their resources more efficiently and optimize operational costs. For instance, emerging startups can run their businesses using cloud-based servers and storage systems without incurring substantial expenses. The success of many startups is closely tied to the innovativeness of mobile applications and digital services. Developing services on mobile platforms, selling products digitally, and establishing communication with customers enable startups to enter new markets. ICT significantly facilitates access to global markets—through the Internet, startups can offer their products or services worldwide. The widespread availability of the Internet and the use of digital marketing tools provide major advantages, particularly for startups with limited resources, in establishing their presence on global platforms. In recent years, the Government of Uzbekistan has placed strong emphasis on advancing information and communication technologies. Numerous initiatives have been implemented to support the development of the digital economy and provide financial and technological assistance to startup projects. These transformations contribute not only to fostering innovative ideas and technologies but also to enabling the overall digital transformation of the economy. For example, Uzbekistan’s “Digital Uzbekistan 2030” strategy aims to support ICT through the development of e-government systems, the creation of digital platforms, and the introduction of incentives for startups. Additionally, the establishment of specialized incubators and technoparks significantly contributes to the growth of the digital economy and the expansion of startup ecosystems.

E-Government is a system that organizes interactions between government institutions, citizens, and business entities in a digital format using information and communication technologies (ICT). Its primary objectives are to simplify public services, enhance transparency, build trust, and modernize governance. E-Government encompasses both “internal” and “external” processes and communications, supported and powered by relevant ICT tools. Through communication networks, including the Internet, it enables electronic processing, transmission, and dissemination of information, providing citizens with services via digital channels and informing them about the activities of public authorities. In essence, e-Government is an organizational, legal, and technical framework that ensures government bodies deliver public services to individuals and legal entities using ICT, while facilitating inter-agency electronic collaboration. Legal and Regulatory Basis: The e-Government system in Uzbekistan is implemented in accordance with the country’s laws on “Informatization” and “Electronic Government,” as well as the Decree of the President of the Republic of Uzbekistan dated June 27, 2013, titled “On Measures to Further Develop the National Information and Communication System of the Republic of Uzbekistan,” along with other legislative acts. The e-Government system leverages ICT to provide public services, ensure inter-agency collaboration, and implement a structured set of organizational, legal, and technical measures to improve governance efficiency and accessibility for both citizens and businesses.

Major Implemented Projects:

- Unified Interactive Public Services Portal (my.gov.uz);
- Open Data Portal (data.egov.uz);
- Regulatory Draft Review Portal (regulation.gov.uz);
- “License” Information System Suite (license.gov.uz);
- Information System for Automating the Operations of “Single Window” Centers.

Authorities and Institutions Responsible for E-Government Implementation:

■ Cabinet of Ministers of the Republic of Uzbekistan – ensures the implementation of unified state policy in the field of e-Government.

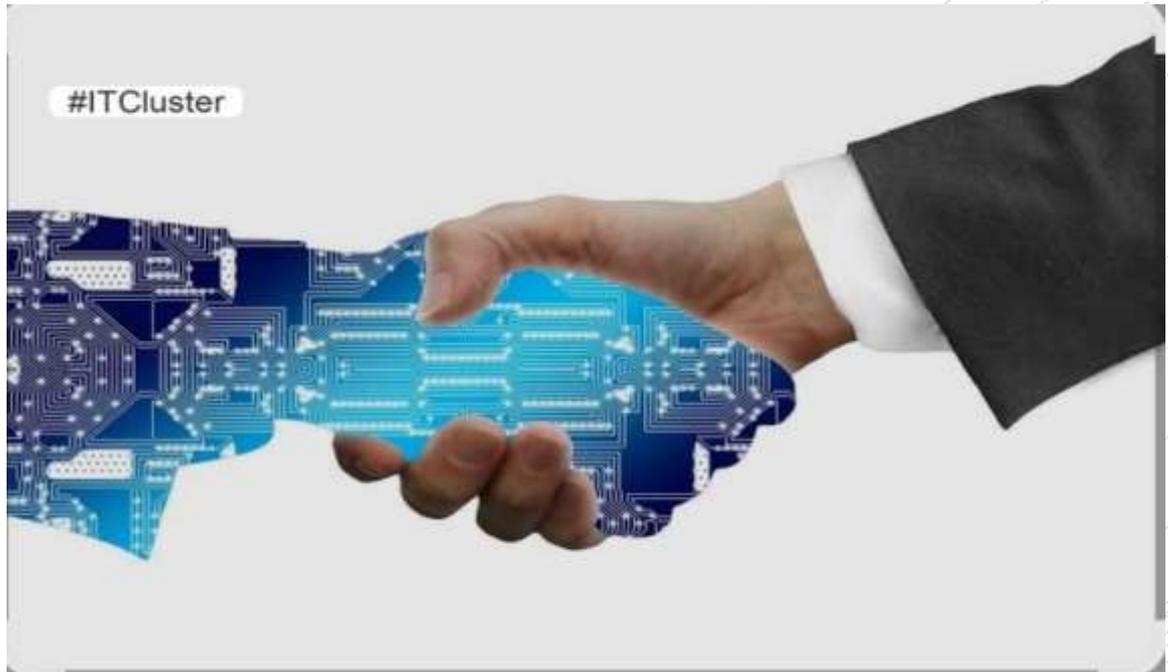
■ Ministry for the Development of Information Technologies and Communications – the authorized body responsible for implementing unified state policy in e-Government.

■ Center for the Development of the “Electronic Government” System – provides regulatory and methodological support for e-Government projects, develops and integrates information systems, resources, and databases used in public authorities.

■ State authorities – participate in the implementation of unified state policy in the field of e-Government.

Conclusion: Information and communication technologies (ICT) are a critical factor in the successful development of the digital economy and startup projects. In countries like Uzbekistan, the advancement of ICT plays a key role in implementing innovations, diversifying the economy, and supporting startups. Developing technological infrastructure and providing digital services and platforms create new opportunities for startups, enabling them to establish a presence in the international market. The role of ICT continues to grow, serving as a strong driver for the country’s digital economy. Artificial Intelligence (AI) further enhances economic impact by analyzing data, making predictions, and supporting informed decision-making. AI’s influence on the economy is substantial and complex: while it generates new opportunities, it also introduces challenges. Innovations and automation increase efficiency and foster the creation of new industries; however, they may also lead to job displacement and greater social

inequality. Successful AI implementation requires governments and companies to carefully develop strategies, enhance the education system, and manage the social effects of emerging technologies to ensure balanced and sustainable economic development.



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