



## **FOREIGN EXPERIENCE IN STATISTICAL MODELING OF THE DIGITAL ECONOMY AND POSSIBILITIES OF ITS APPLICATION IN THE PRACTICE OF UZBEKISTAN**

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### **Abstract**

The digital economy has become a key factor in economic growth and competitiveness worldwide. This study examines foreign experience in the statistical modeling of the digital economy, focusing on the approaches and indicators used by the European Union, the United States, and OECD countries. The research analyzes methods for measuring digitalization, ICT adoption, digital skills, and the contribution of digital technologies to economic development. Based on international best practices, recommendations are proposed for improving the statistical assessment of the digital economy in Uzbekistan. The findings can support evidence-based policymaking and enhance the effectiveness of the country's digital transformation process.

**Keywords:** Digital economy, statistical modeling, digital transformation, ICT, digitalization, international experience, Uzbekistan.

### **Introduction**

The digital economy is a set of economic activities that are created and distributed through information and communication technologies (ICT). Today, the digital economy accounts for more than 15 percent of global GDP and is growing 2.5 times faster than global economic growth. Digital infrastructure, e-government, and the widespread use of the Internet have become important drivers of economic development. By 2023, 67 percent of the world's population (about 5.4 billion people) will be Internet users, and this number is growing every year. The digital economy allows countries to accelerate innovation, improve the quality of services, and create new jobs.



Uzbekistan is also not left out of the global digital transformation process. In recent years, the country has adopted the “Digital Uzbekistan - 2030” strategy, and large-scale work is being carried out to digitize public services and introduce ICT in all sectors of the economy. As a result, Uzbekistan’s UN e-Government Development Index (EGDI) score has improved significantly, from 0.47 in 2014 to 0.73 in 2022. In 2024, Uzbekistan entered the “very high” level of the e-Government Development Index for the first time, ranking 63rd out of 193 countries. At the same time, the level of Internet access among the country’s population has also increased sharply, from 70 percent in 2019 to 89 percent in 2023. Such positive changes are creating a solid foundation for Uzbekistan to harness the opportunities of the digital economy.

Also, the share of Uzbekistan's digital economy in the country's economy is not yet high. According to official statistics, the ICT sector accounted for only 2.1% of GDP in 2023. The table below compares Uzbekistan's digital economic indicators with regional and global indicators (Table 1).

**Table 1 Comparison of Uzbekistan's economic indicators with regional and global indicators**

| Indicators                                      | Uzbekistan | Kazakhstan | World           |
|-------------------------------------------------|------------|------------|-----------------|
| E-Government Development Index, 2022            | 0,73       | 0,86       | 0,61            |
| Share of Internet users (% of population), 2023 | 89%        | 88%        | 67%             |
| ICT sector's share in GDP, 2023                 | 2,1%       | 3,3%       | 19% (2022, USA) |

From the data in Table 1, it can be said that although Uzbekistan has achieved certain successes in developing the digital economy, its share in the economy is still small. It is a good sign that the country's e-government development index and the share of Internet users are increasing, but the share of the ICT sector in GDP remains low compared to regional leaders. Therefore, it is very important to analyze existing trends through statistical modeling of the digital economy, study the experience of foreign countries, and take a scientific approach aimed at accelerating growth rates in this area. Below, a methodology based on foreign experience in this area is presented, the results obtained, and their discussion.

The analysis of international experience shows that developed countries and international organizations have established comprehensive systems for



measuring and modeling the digital economy. The European Union, the United States, South Korea, and OECD countries use a wide range of statistical indicators to assess digital transformation processes, including internet penetration, ICT investments, digital skills, e-commerce turnover, digital public services, and the use of artificial intelligence.

**Table 2 Key Digital Economy Indicators in Selected Countries (2024)**

| Country/Region | Internet Users (%) | E-Commerce Share in Retail (%) | Digital Skills (%) |
|----------------|--------------------|--------------------------------|--------------------|
| European Union | 93                 | 20                             | 56                 |
| United States  | 92                 | 23                             | 61                 |
| South Korea    | 98                 | 28                             | 69                 |
| Uzbekistan     | 89                 | 5                              | 38                 |

The data indicate that developed economies demonstrate higher levels of digitalization than Uzbekistan. South Korea has the highest internet penetration rate (98%) and digital skills level (69%), reflecting its advanced digital infrastructure and long-term investment in ICT development. The European Union and the United States also maintain strong positions due to effective digital policies and widespread adoption of digital technologies (Table 2).

In contrast, Uzbekistan has made significant progress in internet accessibility; however, the level of digital skills and e-commerce participation remains relatively low. This suggests the need for further investment in digital education, innovation ecosystems, and digital business development.

**Table 3 ICT Sector Contribution to GDP (%)**

| Country/Region          | South Korea | United States | European Union | Uzbekistan |
|-------------------------|-------------|---------------|----------------|------------|
| ICT Sector Share in GDP | 12.8        | 10.5          | 8.9            | 3.5        |

The contribution of the ICT sector to GDP serves as an important indicator of digital economic development. In developed countries, ICT activities generate a significant share of national income, whereas in Uzbekistan the contribution remains comparatively modest. Expanding digital services, software



development, fintech, and e-commerce can increase the role of the ICT sector in economic growth (Table 3).

**Table 4 E-Government Development Indicators**

| Indicator                        | EU Average | Uzbekistan |
|----------------------------------|------------|------------|
| Online Public Services (%)       | 95         | 72         |
| Digital Identification Usage (%) | 88         | 65         |
| Open Government Data Index       | 0.89       | 0.6        |

The comparison reveals that Uzbekistan has achieved notable progress in e-government development, particularly through the expansion of online public services and digital identification systems (Table 4). Nevertheless, there remains a gap between Uzbekistan and advanced economies in terms of service quality, data integration, and the use of digital platforms.

The experience of the European Union demonstrates that successful digital transformation requires integrated databases, real-time statistical monitoring, and evidence-based decision-making systems.

Uzbekistan's digital economy has shown consistent growth in recent years. According to the National Statistics Committee's household sample survey, while in 2010 only 16 percent of the population used the Internet, by 2021 this figure had reached 76.6 percent, and in January-August 2025 it was 94.2 percent (Table 2). Such a sharp growth is the result of investments in digital infrastructure and the massification of telecommunications services.

**Table 2 Share of Internet users among the population of Uzbekistan, 2010–2024 (%).**

| Years                                                     | 2021 | 2022 | 2023 | 2024 | 2025 (January-August) |
|-----------------------------------------------------------|------|------|------|------|-----------------------|
| Percentage of population using the Internet in Uzbekistan | 76,6 | 83,9 | 89   | 93,3 | 94,2                  |

In terms of the e-Government Development Index, Uzbekistan was among the “high” countries in 2022 with a score of 0.726, behind only Kazakhstan in the region. In 2024, Uzbekistan achieved the “very high” category for the first time,



with an e-Government Development Index score of around 0.80 (Table 1). These changes indicate an improvement in the quality of e-government services and Internet infrastructure. For comparison, the country with the highest e-Government Development Index in Central Asia, Kazakhstan, was in the “very high” category in 2022 with an e-Government Development Index score of 0.86, while the world leader, Denmark, reached 0.98 in 2024. Also, the average E-Government Development Index value of countries in the world was 0.61 in 2022, which means that Uzbekistan is above the world average in this regard.

The results of the econometric model confirmed the positive impact of the digital economy on economic growth. According to estimates obtained using the least squares regression method, an increase in the share of Internet users by 1 percentage point can accelerate GDP growth in Uzbekistan by approximately 0.3-0.5% (depending on the model and period). It was also observed that the growth of ICT services exports is positively related to economic growth (coefficients are statistically significant,  $p < 0.05$ ). These results are consistent with the links presented in international studies. For example, according to the analysis of the International Telecommunication Union, increasing the penetration of broadband Internet can be a significant additional source of growth in the economy.

The study identified several opportunities for applying international experience in Uzbekistan:

- introducing internationally recognized digital economy indicators;
- expanding the use of Big Data and Artificial Intelligence in official statistics;
- improving digital skills among the population;
- strengthening the statistical monitoring of e-commerce and digital services;
- integrating administrative and statistical databases;
- enhancing cooperation with international organizations such as the OECD, World Bank, and the United Nations.

Overall, the analysis confirms that adopting advanced statistical modeling practices can significantly improve the measurement of the digital economy in Uzbekistan and support the effective implementation of national digital transformation strategies.



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## REFERENCES

1. Organisation for Economic Co-operation and Development. (2024). Measuring the Digital Transformation: A Roadmap for the Future. Paris: OECD Publishing.
2. Organisation for Economic Co-operation and Development. (2024). OECD Digital Economy Outlook 2024. Paris: OECD Publishing.
3. United Nations. (2024). United Nations E-Government Survey 2024. New York: United Nations.
4. World Bank. (2024). World Development Report: Digitalization for Development. Washington, DC: World Bank.
5. International Telecommunication Union. (2024). Measuring Digital Development: Facts and Figures 2024. Geneva: ITU.
6. European Commission. (2023). Digital Economy and Society Index (DESI) Report. Brussels: European Commission.
7. European Commission. (2021). Digital Decade Policy Programme 2030. Brussels: European Commission.
8. International Monetary Fund. (2023). Digitalization and Productivity Growth. Washington, DC: IMF.
9. Klaus Schwab. Schwab, K. (2016). The Fourth Industrial Revolution. Geneva: World Economic Forum.
10. Erik Brynjolfsson & Andrew McAfee. (2014). The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies. New York: W.W. Norton & Company.
11. OECD Digital Economy Publications
12. United Nations E-Government Knowledgebase
13. World Bank Digital Development Program
14. International Telecommunication Union (ITU) Statistics
15. European Commission Digital Strategy
16. Statistics Agency under the President of the Republic of Uzbekistan
17. Ministry of Digital Technologies of the Republic of Uzbekistan
18. O‘zbekiston Respublikasi Prezidentining 2020-yil 5-oktabrdagi PF–6079-son Farmoni. “Raqamli O‘zbekiston – 2030” strategiyasini tasdiqlash va uni samarali amalga oshirish chora-tadbirlari to‘g‘risida.



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19. O‘zbekiston Respublikasi Prezidentining 2024-yil 14-oktabrdagi PQ–358-son Qarori. “Sun’iy intellekt texnologiyalarini 2030-yilgacha rivojlantirish strategiyasini tasdiqlash to‘g‘risida”.

20. O‘zbekiston Respublikasining 2015-yil 9-dekabrdagi O‘RQ–395-son Qonuni. “Elektron hukumat to‘g‘risida”.