



**THE ECONOMIC IMPACT OF ADVANCING POPULATION DIGITAL COMPETENCE IN
THE ERA OF THE DIGITAL ECONOMY**

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Abstract

This article examines the economic necessity of enhancing digital literacy among the population in the context of the digital economy, its impact on human capital, and its effectiveness at both macro and micro levels. The study provides a scientifically grounded analysis of how digital skills affect labor productivity, employment rates, and innovative development. Comparative analyses drawing on the experience of developed and developing countries are presented, and practical recommendations are formulated. According to the DataReportal 2025 report, internet penetration in Uzbekistan has reached 89.0%; the export volume of IT Park residents grew to USD 620 million in 2024.

Keywords: Digital economy, digital literacy, human capital, innovation, labor market, employment, economic efficiency, e-government, information technologies.

INTRODUCTION

The economy of the 21st century has undergone a fundamental transformation, entering a new phase shaped by digital technologies – the digital economy. In today's era of globalization, the digital economy is advancing rapidly and becoming the primary driver of economic systems. This process is directly linked to the accelerated development of information and communication technologies, the expansion of internet connectivity, advances in artificial intelligence, and the integration of innovative solutions such as big data and cloud technologies.

Today, enhancing digital literacy has become a priority of state policy in many countries. Uzbekistan has likewise identified the transition to a digital economy as a strategic national priority. Under the



"Digital Uzbekistan – 2030" strategy, the country has set a target of growing IT service exports to USD 5 billion and training more than 300,000 IT specialists by 2030.

LITERATURE REVIEW AND METHODS

Issues of digital economy and digital literacy occupy an important place in contemporary directions of economic theory. This subject is directly linked to human capital theory, which regards knowledge and skills as the primary source of economic development.

Digital literacy is defined as an individual's ability to effectively use information and communication technologies, and to search for, analyze, and apply information in a digital environment. These skills are considered core competencies required for successful participation in the modern economy.

According to World Bank reports, the widespread adoption of digital technologies can accelerate economic growth by 1.5 to 2 times. However, for these opportunities to be realized effectively, the population must possess an adequate level of digital literacy. D. Tapscott [1] emphasizes in his work "Digital Economy" that digital technologies are penetrating all sectors of the economy and shaping a new economic model. OECD reports [3] recognize digital skills as a critical driver of economic growth. G. Becker's [13] human capital theory substantiates that investments in education and skills development lead to higher economic returns. In the contemporary context, this theory is being enriched with the dimension of digital skills, acquiring new relevance as digital technologies permeate all spheres of economic activity.

RESULTS AND DISCUSSION

Digital infrastructure and usage indicators in Uzbekistan have grown considerably. At the beginning of 2025, 32.7 million people are using the internet, representing 89.0% of the total population. This remarkable progress reflects the cumulative effect of sustained government investment in digital infrastructure, the rapid expansion of mobile broadband networks, and targeted state programs aimed at closing the digital divide. Notably, Uzbekistan's internet penetration rate now surpasses both the Central Asian regional average of 78.0% and the global average of 68.0%, positioning the country among the digitally advancing economies of the world. The growth in connectivity has been accompanied by improvements in internet quality: average mobile internet speed reached 37.82 Mbps, while fixed broadband speed rose to 79.06 Mbps as of early 2025 (Ookla, 2025). These developments indicate that Uzbekistan is transitioning from mere connectivity expansion toward quality-driven digital access, laying a stronger foundation for productivity gains and broader economic participation across all regions of the country. Furthermore, the number of mobile connections reached 33.81 million – exceeding the total population – which suggests that a growing share of citizens relies on multiple devices for daily economic and social activities. This trend underscores the deepening integration of digital tools into everyday life, reinforcing the argument that sustained investment in digital literacy is now more economically justified than ever before.

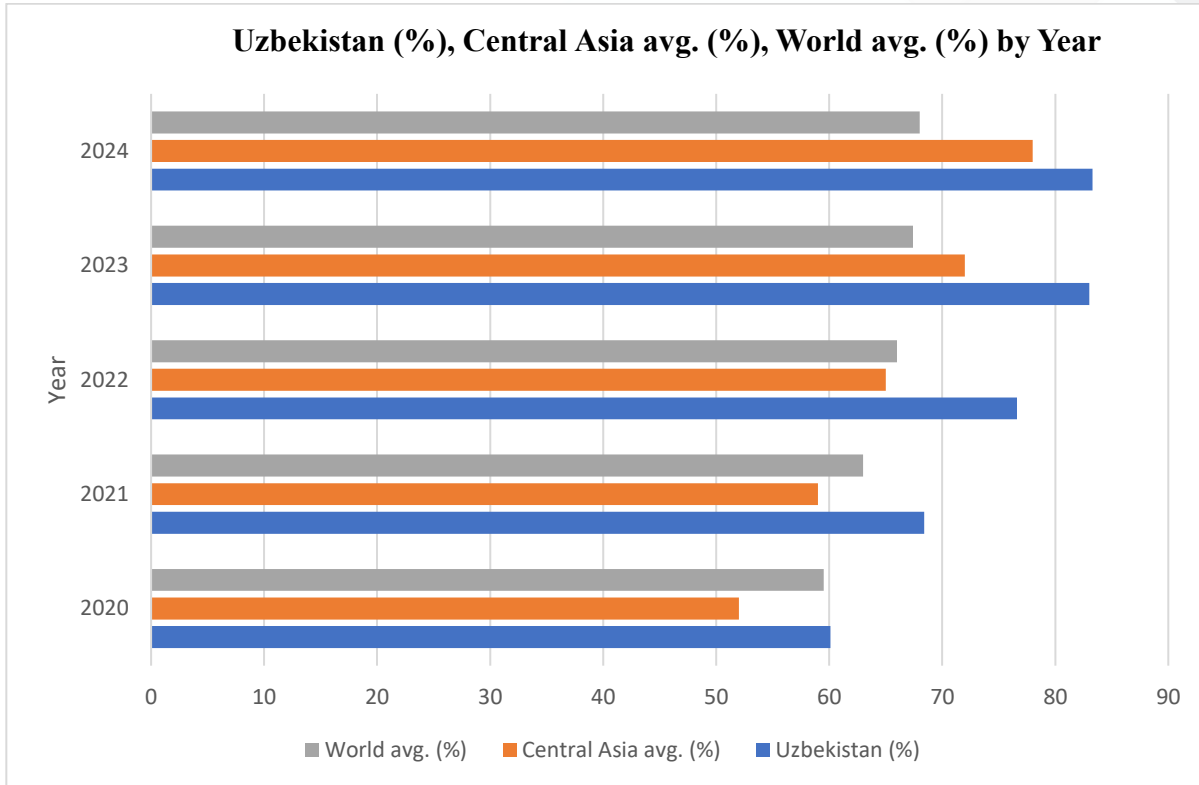


Fig. 1. Internet Penetration in Uzbekistan¹

Internet penetration in Uzbekistan grew from 60.1% to 83.3% between 2020 and 2024 — an increase of 23.2 percentage points over five years. This indicator is significantly higher than the Central Asian average (78.0%) and the global average (68.0%). In particular, the growth rate exceeded 8 percentage points per year during 2020–2022. However, in 2023–2024 the growth amounted to only 0.3 percentage points, suggesting that the market is approaching saturation. The remaining 16.7% of the population that is still offline presents a continuing challenge, concentrated primarily in rural and remote areas.

The data for 2024–2025 vividly illustrate the pace of digital development in Uzbekistan. The number of internet users rose from 29.52 million to 32.7 million, while penetration increased from 83.3% to 89.0% — meaning 3.18 million new users were added in a single year. The number of mobile connections stood at 33.81 million, exceeding the total population, indicating that many individuals use multiple devices. Social media users grew from 8.70 million to 11.7 million. Mobile internet speed (37.82 Mbps) and fixed broadband speed (79.06 Mbps) confirm the ongoing improvement in infrastructure quality.

¹ DataReportal Digital 2024–2025: Uzbekistan; Central Asia averages — ITU 2025; World averages — ITU World Telecommunication/ICT Indicators Database.



Table 1. Digital Coverage Indicators in Uzbekistan²

Indicator	2024	2025
Number of internet users	29.52 mln	32.7 mln
Internet penetration	83.3%	89.0%
Mobile connections	33.81 mln	—
Social media users	8.70 mln (24.6%)	11.7 mln (31.7%)
Online payment users	39.3% (of internet users)	—
Average mobile internet speed	—	37.82 Mbps
Fixed broadband speed	—	79.06 Mbps

According to IT Park statistics, Uzbekistan's IT exports have been growing rapidly since 2017 — a direct result of state policies aimed at raising digital literacy. The total revenue of IT Park residents exceeded USD 1 billion for the first time in 2023, representing a 1.9-fold increase compared to 2022.

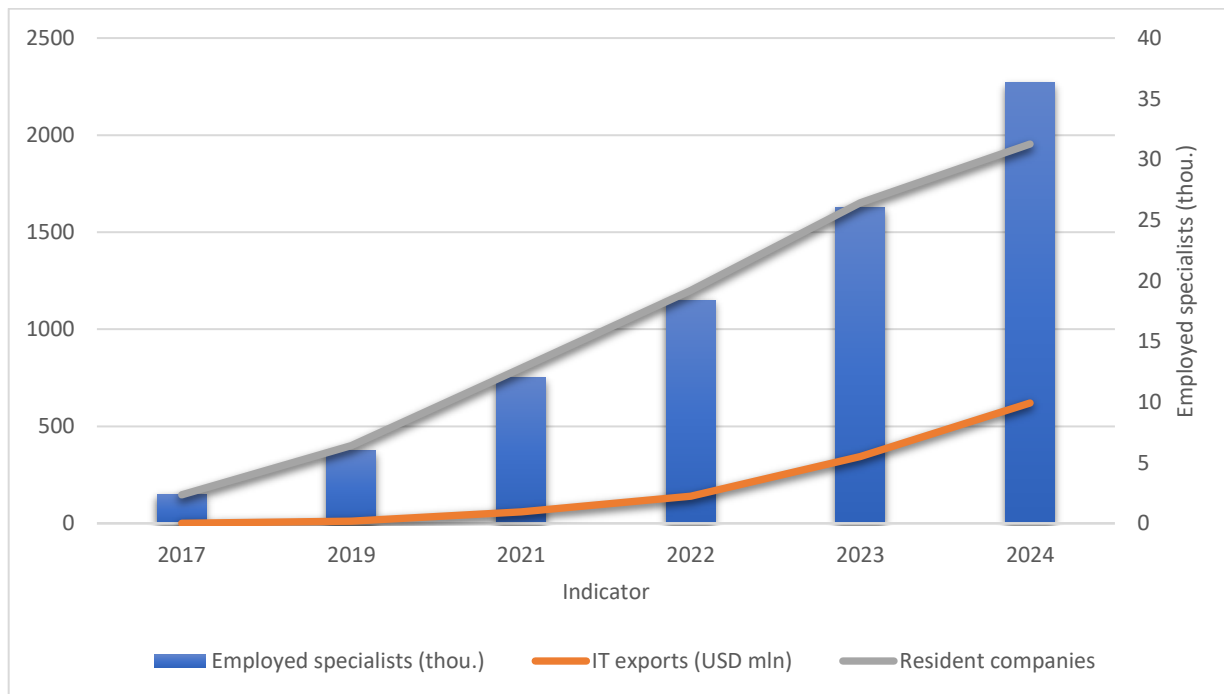


Fig.2. Key Performance Indicators of IT Park Residents³

² DataReportal Digital 2024 and 2025: Uzbekistan; Ookla Speedtest Global Index, 2025.

³ IT Park Uzbekistan annual reports 2017–2024; bne IntelliNews;



It is also worth noting the regional dimension of IT sector development. In 2023, the average monthly salary in the IT sector in Tashkent was 16.2 million soums, compared to 7.2 million soums in the regions – a 2.3-fold gap. While 73% of IT Park's affiliated educational institutions are located outside the capital, 95% of IT employment remains concentrated in Tashkent.

According to the Statistics Agency of the Republic of Uzbekistan, the ICT services market more than quadrupled between 2020 and 2024. Digital services account for over 80% of the total market volume.

Table 2. ICT Services Market Volume in Uzbekistan⁴

Indicator	2020	2021	2022	2023	2024
ICT services market (trln UZS)	13.85	17.76	24.51	39.06	56.17
Annual growth rate (%)	—	+28.2%	+38.1%	+59.4%	+43.8%

The ICT services market expanded from 13.85 trillion soums to 56.17 trillion soums between 2020 and 2024 – a 4.06-fold increase. The highest annual growth rate was recorded in 2022–2023, at 59.4%. Although the rate moderated to 43.8% in 2024, the absolute increment remains at a record level – an additional 17.11 trillion soums in a single year. The fact that digital services account for over 80% of the total market signals an accelerating digital transformation of the economy, with digital literacy playing a decisive role in driving demand.

Table 3. International Comparison of Digital Development Indicators⁵

Country	Internet coverage, 2024	IT exports, 2023	AI Readiness, 2025	E-gov GTMI, 2025
Uzbekistan	83.3%	\$344 mln	62nd	9th
Kazakhstan	91%	\$1.2 bln	47th	28th
Russia	91%	—	31st	—
India	52%	\$254 bln	33rd	Top-10

The international comparison simultaneously reveals Uzbekistan's strengths and areas for improvement. In terms of e-government development (GTMI, 9th place), Uzbekistan significantly outpaces Kazakhstan (28th place), reflecting a major achievement in the digitalization of public administration. However, in IT exports (\$344 million), the country trails Kazakhstan (\$1.2 billion) by a factor of 3.5. Internet coverage (83.3%) remains below the levels of Kazakhstan and Russia (both at 91%). In terms of AI readiness (62nd place), Uzbekistan lags behind India (33rd) and Kazakhstan (47th). This comparison clearly identifies the areas requiring additional effort.

⁴ Statistics Agency of the Republic of Uzbekistan, 2025. URL: <https://stat.uz>

⁵ DataReportal 2024–2025; Oxford Insights AI Readiness Index 2025; World Bank GTMI 2025; IT Park UZ 2024.



First, digital literacy directly influences the structural transformation of the labor market. As traditional occupations contract in the modern economy, new roles — developers, data analysts, IT specialists — are expanding. Population segments with low digital literacy risk being unable to adapt to these changes and may be left behind by economic processes, giving rise to labor market imbalances and social inequality.

Second, digital literacy plays a significant role in raising economic efficiency. The use of digital technologies in enterprises and organizations reduces production costs, saves time, and optimizes management processes.

Third, digital literacy is a key factor in the development of innovative activity. In 2024, Uzbek start-ups attracted more than USD 124.7 million in investment (IT Park, 2024). Furthermore, digital literacy contributes to improved efficiency in public administration: Uzbekistan advanced from 80th place in 2020 to 9th place globally in the World Bank's Government Technology Maturity Index (GTMI) by 2025.

CONCLUSION

Enhancing digital literacy among the population in the context of the digital economy has become a strategic driver of modern economic growth. The findings of this study confirm that digital skills increase labor productivity by 20–30%, create new employment opportunities, and accelerate innovative activity, thereby strengthening national competitiveness.

Uzbekistan has achieved notable progress in this area in recent years. Internet coverage rose from 52% to 89%, IT exports grew from USD 0.6 million to USD 620 million (IT Park, 2024), and the ICT services market expanded from 13.85 trillion soums to 56.17 trillion soums (Statistics Agency, 2025). Furthermore, Uzbekistan climbed from 80th to 9th place in the World Bank's GTMI e-government efficiency index, securing a position among global leaders.

At the same time, challenges remain. The digital divide between the capital and the regions, and between urban and rural areas, is still pronounced: average IT salaries in Tashkent are 2.3 times higher than in the regions, and 95% of IT employment is concentrated in the capital. In conclusion, investments in digital literacy represent not merely a social priority but a strategic commitment with high economic returns. Accordingly, state policy in this domain must be implemented in a systematic, continuous manner that accounts for regional balance — only then can the full potential of the digital economy be realized.

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