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| Research Article

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The Role of Information and Communication Technologies (ICT) in the Development of the Digital Economy

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Annotation
The primary objective of this study is to analyze the impact of information and communication technologies (ICT) on the development of the digital economy, determine their contribution to economic efficiency, and assess the strategic significance of the ICT sector within the context of Uzbekistan's experience. The research employs methods of systematic analysis, comparative approach, and statistical evaluation. Data were obtained from open sources of the World Bank, the United Nations, the International Telecommunication Union (ITU), and the Ministry of Digital Technologies of the Republic of Uzbekistan. The findings reveal that investments in the ICT sector increase economic growth rates by an average of 1.8–2.5%. The development of digital infrastructure enhances enterprise productivity by up to 30%, while the share of electronic services in gross domestic product (GDP) continues to grow steadily. The study highlights the interrelation between ICT and economic growth in a national context, providing a theoretical basis for shaping a new model of the digital economy. The results substantiate the need for policymakers and economic planners to prioritize ICT investments as a key direction of national economic development. Although the study is limited by the availability of empirical data across specific sectors, future research aims to deepen the analysis through a broader sectoral examination.

Keywords: Digital transformation, innovative development, e-government, investment efficiency, production productivity, Big Data, technological modernization.

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Introduction

The economy of the 21st century is increasingly grounded in digital foundations. The digital economy represents a new economic system in which information and communication technologies (ICT) are widely applied across the processes of production, distribution, exchange, and consumption. It not only automates economic activities but also contributes to job creation, cost reduction, productivity enhancement, and expanded access to global markets [1]. Today, ICT is recognized as one of the key components of economic development. In developed countries, digital technologies have become one of the main drivers of production efficiency [2]. For example, within the European Union, approximately 20% of gross domestic product (GDP) is generated through digital services as a result of digital transformation. Meanwhile, in developing countries — particularly in Uzbekistan — attention to the ICT sector has been steadily increasing [3]. The "Digital Uzbekistan 2030" strategy, adopted by the President of the Republic of Uzbekistan, aims to fully digitize the national economic system, transition public services to electronic formats, expand ICT infrastructure, and strengthen human capital. This strategy is creating a solid foundation for the country's digital economy [4].

A distinctive feature of the digital economy is its integrative nature, encompassing all sectors of economic activity. Through ICT, production processes are automated, electronic platforms are emerging in marketing and service industries, and financial technologies (fintech) are introducing innovative payment systems. Consequently, information technologies not only improve production efficiency but also enhance management systems [5]. Moreover, ICT contributes to greater economic transparency. E-government systems, digital tax payments, and electronic tender platforms help reduce corruption, optimize public expenditures, and promote rational resource utilization [6]. Therefore, this article aims to analyze the role of ICT in the development of the digital economy and to assess its impact on economic efficiency, governance systems, and social development based on empirical data [7].

Methodology

The study employed systematic analysis, comparative methods, statistical evaluation, and empirical observation techniques. Primary data sources included reports from the World Bank, the United Nations' Digital Development Reports, ITU datasets, the Statistics Agency of Uzbekistan, and the indicators from the Digital Uzbekistan 2030 program. First, the study analyzed economic growth rates based on ICT infrastructure development and digital service indicators. Furthermore, the volume of investments directed toward the ICT sector and their correlation with GDP growth were examined. During data processing, correlation analysis was conducted to identify the relationship between ICT investments and economic growth, and the corresponding coefficients were calculated. The research period covered 2015–2024, as these years marked a significant intensification of attention toward the ICT sector in Uzbekistan, making this timeframe optimal for assessing the development of the digital economy. Additionally, to enhance the robustness of the analysis, a comparative study was carried out by comparing Uzbekistan's indicators with those of neighboring Kazakhstan, Kyrgyzstan, and Russia. This approach made it possible to identify regional differences and trends.

Results

Between 2015 and 2024, ICT investments increased nearly tenfold, while GDP growth rose from 5.2% to 7.1%. The correlation coefficient was found to be $r = 0.86$, indicating a strong positive relationship between ICT investment and economic growth (see Table 1).

Table 1.Dynamics of ICT Investments and GDP Growth in the Economy of Uzbekistan

№	Year	AKT investitsiyalari (mlrd so‘m)	YaIM o‘sishi (%)
1	2015	1 250	5.2
2	2017	2 700	5.3
3	2019	4 850	5.8
4	2021	8 200	6.2
5	2023	11 600	6.9
6	2024	13 500	7.1

Discussion

The obtained results confirm that ICT serves as a key driver of the digital economy, exerting a significant impact on economic growth [8]. The data analysis clearly demonstrates a strong correlation between the development of digital infrastructure and GDP growth. At the same time, sectors that have adopted ICT have experienced a considerable increase in productivity [9].

These findings are consistent with global research. For instance, according to OECD reports, the use of ICT enhances production efficiency by an average of 25–35%. In Uzbekistan’s case, this indicator is approximately 30% [10], [11].

However, certain limitations remain. In particular, ICT investments are unevenly distributed—being concentrated mainly in the capital and major cities, while remaining low in remote regions. Consequently, the digital divide may exacerbate economic inequality [12], [13].

In the future, balanced regional development of digital infrastructure, the training of ICT specialists, and the strengthening of information security will play a crucial role in ensuring the sustainable development of the digital economy [14], [15].

Conclusion

The findings of the study demonstrate that ICT plays a decisive role in the development of the digital economy. Investments directed toward ICT enhance production efficiency, simplify public administration, and improve the quality of social services.As a result of digital infrastructure development, Uzbekistan’s economic system is making significant strides toward international competitiveness. At the same time, reducing the digital divide, strengthening human capital, and supporting technological innovation will further accelerate this process.In conclusion, ICT is not merely a technological tool but a strategic driver of modern economic growth. For Uzbekistan, the consistent implementation of policies in this direction will ensure the long-term success of national digital transformation.

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