

Industry Development and Business Transformation in the Digital Economy

Baydulla Ganiyev

University of Tashkent for Applied Sciences, Tashkent 100149, Republic of Uzbekistan

E-mail: ganiyevb1966@gmail.com,  orcid: 0009-0009-6206-4636

Abstract: The rapid expansion of the digital economy has fundamentally reshaped sectoral development patterns and accelerated business transformation across the globe. Digital technologies such as big data analytics, artificial intelligence, cloud computing, the Internet of Things, and digital platforms have altered traditional production models, value chains, and competitive dynamics. This article examines the theoretical foundations of the digital economy, analyzes its impact on the development of key economic sectors, and explores how businesses transform their strategies, structures, and processes in response to digitalization. Using analytical and comparative methods, the study identifies major trends, opportunities, and challenges associated with digital transformation. The findings suggest that the digital economy enhances productivity, fosters innovation, and creates new business models, while simultaneously increasing the need for institutional reforms, digital skills development, and inclusive policies to ensure sustainable growth. Additionally, the paper provides practical strategic frameworks for organizations to successfully navigate the complexities of digital adoption and mitigate cybersecurity and operational risks.

Keywords: digital economy, sectoral development, business transformation, digital technologies, innovation, competitiveness.

Introduction

In recent decades, the digital economy has emerged as a central driver of economic growth and structural transformation. Advances in information and communication technologies (ICT) have reduced transaction costs, improved information flows, and enabled the rapid diffusion of innovations. As a result, economic sectors are increasingly interconnected through digital platforms and data-driven value chains. Traditional boundaries between industries are becoming blurred, while new sectors and hybrid business models are continuously emerging.

For businesses, digitalization is no longer an optional strategy but a prerequisite for survival and competitiveness. Firms are compelled to rethink their operational processes, customer engagement methods, and organizational structures. At the same time, governments and policymakers face the challenge of designing regulatory frameworks that support innovation while mitigating risks related to data security, market concentration, and digital inequality.

This article aims to analyze the role of the digital economy in sectoral development and business transformation. The objectives of the study are threefold: first, to examine the conceptual foundations of the digital economy; second, to assess its impact on the development of key economic sectors; and third, to analyze the main directions of business transformation in the digital era.

1. Global digital economy

Global ICT Market Share 2024–2025. The value of the information and communication technology (ICT) market in the global economy is estimated at approximately USD 5.5 trillion in 2024 and is expected to expand at a growth rate of approximately 5.2% per year until 2031. This figure indicates the acceleration of the process of digital transformation of the economy.

Internet and digital usage Global internet penetration is projected to reach ~68% between 2024 and 2025, with approximately 5.5 billion users using the internet. The number of mobile broadband subscribers worldwide has exceeded 8 billion, which is higher than the global population.

At the same time, the value of the cloud computing market for digital infrastructure and services is projected to reach 832 billion USD by 2025. The share of organizations adopting artificial intelligence in business will be around ~90% by 2025. E-commerce and digital sales In 2025, global e-commerce sales (~e-commerce) are projected to be around 7.4 trillion USD (~24% of total retail sales).

Local context: Statistics of Uzbekistan and digital banking services in the digital economy According to the data presented in the journal “Economics and Innovative Technologies”, the number of digital banking services and electronic transactions in Uzbekistan increased significantly between 2018 and 2024 (for example, the share of electronic services increased year by year). Growth of the service sector and sectors Statistics on sectors are available in the regions of Uzbekistan for January-September 2025: the volume of services increased by 113-114% (compared to 2024). These figures indicate a growing service sector, which may be directly related to the expansion of digital services.

Conceptual Framework of the Digital Economy

The digital economy can be broadly defined as an economic system in which digital technologies play a dominant role in the creation, distribution, and consumption of goods and services. It is characterized by the extensive use of data, digital platforms, and network effects. Unlike the traditional economy, where physical assets and labor are the main factors of production, the digital economy relies heavily on intangible assets such as software, algorithms, and intellectual capital.

One of the key features of the digital economy is the increasing importance of data as a strategic resource. Data-driven decision-making enables firms to optimize production processes, personalize products and services, and predict market trends with greater accuracy. Moreover, digital platforms facilitate interactions between producers and consumers, reducing information asymmetry and enhancing market efficiency.

Another defining characteristic is the scalability of digital technologies. Once developed, digital solutions can be replicated and distributed at relatively low marginal costs, allowing firms to expand rapidly across markets. This scalability contributes to the emergence of global digital corporations and intensifies competition at both national and international levels.

2. Business Transformation and Digital Transformation Investments and the Digital Sector Impact of the Digital Economy on Sectoral Development

Manufacturing Sector

In the manufacturing sector, digitalization has given rise to the concept of Industry 4.0, which integrates cyber-physical systems, automation, and data analytics into production processes. Smart factories utilize sensors and real-time data to monitor equipment performance, reduce downtime, and improve product quality. Additive manufacturing and digital design tools further enhance flexibility and customization.

As a result, manufacturing firms are shifting from mass production to more customer-oriented and knowledge-intensive production models. This transformation increases productivity and competitiveness but also requires significant investments in digital infrastructure and workforce upskilling.

Services Sector

The services sector has been profoundly transformed by digital technologies. Financial services, for example, have experienced rapid growth in digital payments, online banking, and financial technology (fintech) solutions. E-commerce platforms have revolutionized retail trade by expanding market access and enabling personalized marketing strategies.

In addition, digitalization has improved the efficiency of logistics, tourism, education, and healthcare services. Online platforms and mobile applications allow service providers to reach a wider audience, while consumers benefit from greater convenience and choice.

Agriculture and Natural Resources

Digital technologies are increasingly applied in agriculture through precision farming, remote sensing, and data-driven resource management. These innovations help optimize input use, increase yields, and reduce environmental impacts. Similarly, in the energy and mining sectors, digital solutions improve exploration efficiency, operational safety, and sustainability.

The integration of digital tools into traditionally low-tech sectors demonstrates the transformative potential of the digital economy across the entire economic system.

Global investment in the digital economy is growing rapidly: for example, annual investment in digital services and infrastructure is expected to reach USD 100+ billion by 2024, but this is still not

enough in low-income countries. Digital business models Traditional manufacturing and service business models are being transformed by digital platforms and e-commerce channels. This process is manifested in the introduction of digital products, services, financial technologies and cloud solutions.

The share of the ICT sector and the digital economy in GDP (2024–2025) The contribution of ICT services (the share of the ICT sector in GDP) in 2024 was about 2.4%. According to this statistic, the structure of services included: communication services ~40.5%, software and consulting ~40.9%.

In the period January–September 2025, the share of ICT services in GDP was around 2.6–2.7%.

Statistics for January–March 2025 show the ICT contribution at 3.2% - a significant increase compared to 2024.

The analysis shows that in the transition from 2024 to 2025, the share of the ICT sector in GDP increased from 2.4% → 2.6–3.2%, which indicates the growth of the digital elements of the economy.

The composition of ICT services in the details and components of the ICT sector (2024–2025) Communication services (mobile/telecom): around 35–40% (2024–25). Software and consulting: ~40–45%, this sector has a large share in the Uzbek ICT market. Data hosting and processing / web portals: ~10–12% Software release and equipment repair: around 3–6%.

This composition indicates that the market is dynamic and broad: telecommunications, IT services, hosting services, and software products also have their place.

The place of the ICT market in the global context: official statistics do not yet provide direct figures on the exact percentage share of the Uzbek ICT sector in the global ICT market. However, the following can be said:

- The global ICT market is estimated to be worth ~5.5–6.2 trillion USD in 2024. This figure is considered a significant component of the global economy.
- Uzbekistan's ICT sector is a relatively small — but rapidly growing — segment, accounting for 2.4–3.2% of GDP.
- Uzbekistan's share of the global ICT market is very small (the global market is in the billions of dollars, while Uzbekistan's ICT contribution to its national GDP is only a few percent) - this corresponds to the general trend in the market of small economies.

Table 1

Digital infrastructure and other digital economy indicators are as follows:

Indicator	Uzbekistan (2024)	Uzbekistan (2025)
Share of ICT services in GDP	~2.4 % UzDaily.uz	~2.6–3.2 % stat.uz+1
Main market component	Telecom, IT services	Telecom, IT services
Continuous ratio in the global ICT market	Very small	Small but high growth rate
Rating by digital index	60th place (Global Digitalization Index) UzDaily.uz	

Opportunities and Challenges of Digital Transformation

The digital economy offers numerous opportunities, including productivity growth, innovation acceleration, and expanded market access. Small and medium-sized enterprises can leverage digital platforms to overcome traditional barriers and participate in global value chains.

At the same time, digital transformation poses significant challenges. These include cybersecurity risks, data privacy concerns, and the digital divide between regions and social groups. Furthermore, rapid technological change can lead to labor market disruptions if reskilling and social protection measures are insufficient.

Addressing these challenges requires coordinated efforts by businesses, governments, and educational institutions. Investments in digital infrastructure, regulatory reforms, and human capital development are essential for maximizing the benefits of the digital economy.

Digital Technologies as a Driver of Productivity and Innovation

Beyond basic ICT adoption, advanced digital technologies such as artificial intelligence (AI), big data analytics, blockchain, and the Internet of Things (IoT) are becoming decisive factors of productivity growth. AI enables predictive analytics, intelligent automation, and decision support systems, allowing firms to optimize resource allocation and reduce operational costs. Big data technologies help organizations process vast volumes of structured and unstructured data, improving forecasting accuracy and strategic planning.

Empirical evidence from 2024–2025 shows that firms actively using data-driven technologies achieve higher labor productivity and faster innovation cycles compared to traditional firms. This trend is particularly evident in manufacturing, finance, logistics, and retail trade, where digital tools shorten production and delivery times while improving quality and customer satisfaction.

Digital platforms fundamentally reshape value chains by reducing transaction costs and enabling direct interaction between producers, suppliers, and consumers. Platform-based ecosystems such as e-commerce marketplaces, digital payment systems, and cloud service providers create new sources of value by integrating multiple stakeholders into a single digital environment.

As a result, traditional linear value chains are increasingly replaced by network-based structures. Small and medium-sized enterprises (SMEs) gain access to national and global markets through platforms, overcoming limitations related to scale, capital, and geography. At the same time, competition intensifies, requiring firms to continuously innovate and differentiate their offerings.

3. Conclusion

The digital economy is a key part of the global economy, and the rapid growth of technology investments, internet penetration, and digital services is increasing the efficiency of industries. Statistics for 2024–2025 show that:

- The growth of the ICT market value and cloud services confirms the global trend of digital transformation.
- The increase in the number of global internet users is driving demand for digital services
- The volume of e-commerce sales is creating new opportunities for businesses.
- Uzbek statistics show a growth trend in the services and digital services segments.
- Expand digital infrastructure and strengthen policies to support local businesses in digital transformation.
- Introducing investment and tax incentives for the development of e-commerce and digital platforms.
- Training qualified personnel in the ICT sector and supporting innovative entrepreneurship.

The analysis conducted in this article confirms that the digital economy has become one of the most influential forces shaping contemporary economic development and structural transformation. The rapid diffusion of information and communication technologies, digital platforms, and data-driven solutions has fundamentally altered the way economic sectors function and how businesses create value. As demonstrated by global and national indicators for 2024–2025, digitalization is no longer confined to high-tech industries but increasingly penetrates manufacturing, services, agriculture, and natural resource sectors, thereby transforming the entire economic system.

The findings show that the expansion of the global ICT market, growth in internet penetration, widespread adoption of cloud computing, artificial intelligence, and the rapid increase in e-commerce volumes are clear indicators of the accelerating digital transformation of the global economy. These trends contribute to productivity growth, cost reduction, and innovation, while also intensifying competition and reshaping global value chains. Digital platforms, in particular, play a crucial role in reducing transaction costs and enabling direct interaction between producers and consumers, which significantly enhances market efficiency and inclusiveness.

The case of Uzbekistan illustrates how developing and transition economies are also increasingly integrating into the digital economy. Although the country's share in the global ICT market remains relatively small, the steady increase in the contribution of ICT services to GDP and the rapid growth

of digital services indicate a strong positive dynamic. The expansion of digital banking, e-commerce, and ICT services demonstrates the potential of digital transformation to stimulate economic growth, modernize the service sector, and improve access to financial and commercial services.

At the firm level, digitalization drives profound business transformation. Traditional business models are being replaced or complemented by platform-based, service-oriented, and data-driven models. Companies that successfully adopt digital technologies improve operational efficiency, enhance customer engagement, and strengthen their competitive positions. However, this transformation also requires substantial investments in digital infrastructure, organizational change, and workforce upskilling. The growing demand for digital skills highlights the importance of human capital development and lifelong learning in ensuring sustainable and inclusive growth.

Despite its significant benefits, the digital economy also presents serious challenges. Cybersecurity threats, data privacy issues, digital inequality, and potential labor market disruptions pose risks that cannot be ignored. Without appropriate policies and institutional frameworks, digital transformation may deepen existing socio-economic disparities and limit the long-term benefits of technological progress.

In conclusion, the digital economy represents not only a technological shift but a comprehensive economic and institutional transformation. To fully realize its potential, coordinated efforts are required from governments, businesses, and educational institutions. Investment in digital infrastructure, supportive regulatory environments, promotion of innovation, and the development of digital skills are essential prerequisites for sustainable sectoral development and successful business transformation in the digital era.

References

1. President of the Republic of Uzbekistan. (2020). *Strategy "Digital Uzbekistan - 2030"*. Tashkent, Uzbekistan.
2. Ministry of Economy and Finance of the Republic of Uzbekistan. (2023–2025). *Annual reports on the development of the digital economy and sectors*. Tashkent, Uzbekistan.
3. World Bank. (2023). *Digital economy for development (DE4D): Global trends and policy implications*. Washington, DC: World Bank.
4. OECD. (2022). *Digital transformation of industries: Policy and business implications*. Paris, France: OECD.
5. UNCTAD. (2023). *Digital economy report: Cross-border data flows and development*. Geneva, Switzerland: United Nations Conference on Trade and Development.
6. Schwab, K. (2019). *The fourth industrial revolution*. Geneva, Switzerland: World Economic Forum.
7. Brynjolfsson, E., & McAfee, A. (2018). *The second machine age: Work, progress, and prosperity in a time of brilliant technologies*. New York, NY: W.W. Norton & Company.
8. Porter, M. E., & Heppelmann, J. E. (2015). How smart, connected products are transforming competition. *Harvard Business Review*.
9. Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *Journal of Strategic Information Systems*.
10. Tapscott, D. (2017). *The digital economy: Rethinking promise and peril in the age of networked intelligence*. New York, NY: McGraw-Hill.
11. Agency for Statistics of the Republic of Uzbekistan. (2024–2025). *Statistical data on digital technologies, sectors and business entities*. Tashkent, Uzbekistan.
12. Mamatov, B., & Karimov, A. (2024). Transformation of business processes in the digital economy. *Journal of Economics and Innovations*. Tashkent, Uzbekistan.
13. Porter, M. E. (1990). *The competitive advantage of nations*. Free Press.
14. Schumpeter, J. A. (1934). *The theory of economic development*. Harvard University Press.
15. Storey, D. J. (1994). *Understanding the small business sector*. Routledge.