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MODERN INFORMATION AND COMMUNICATION TECHNOLOGIES AS A KEY DRIVER OF DIGITAL DEVELOPMENT

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Abstract

This article examines the role of modern information and communication technologies (ICT) and digital innovations in driving sustainable economic growth and social transformation in Turkmenistan during the Era of Revival of the New Epoch of the Powerful State. Drawing on strategic initiatives, including the Concept for the Development of the Digital Economy in Turkmenistan for 2026–2028 and national legislation governing virtual assets and cryptocurrency mining, the study highlights key priorities for building a competitive digital economy. It analyzes the expanding application of digital systems, e-commerce, e-government, digital education, telemedicine, and artificial intelligence across public administration, business, and social sectors. Special attention is given to strengthening digital infrastructure, modernizing material and technical bases, reforming science and education, and training qualified specialists and digitally literate youth capable of supporting long-term national competitiveness.

Keywords: information and communication technologies, digital economy, digital transformation, artificial intelligence, e-government, e-commerce, digital infrastructure, virtual assets, human capital, Turkmenistan

In the Era of Revival of the New Epoch of the Powerful State, our country is achieving strong growth across all sectors of the economy. In recent years, the reforms undertaken to develop the digital system and introduce advanced innovative technologies across the national economy have contributed to sustainable economic growth. The successful implementation of the specific objectives set out in the adopted programmes for the coming years will undoubtedly further strengthen the country’s economic potential. Around the world, new concepts such as digital technologies, the digital economy, smart

cities, digital systems, artificial intelligence and digital education are emerging, while digital transformation is reshaping virtually every area of internet-based business.

As Gurbanguly Berdimuhamedov, National Leader of the Turkmen People and Chairman of the Halk Maslahaty of Turkmenistan, has noted: “Important tasks lie before us: introducing new innovative technologies into various sectors of our country’s economy, creating a competitive digital economy and a well-functioning electronic industry, and bridging the digital communications gap between urban and rural areas. These tasks require improvements in the quality and reliability of information and communication systems, including information services and supporting infrastructure, as well as the fullest possible use of human intellectual potential” [1, p. 193].

The widespread adoption of innovative digital technologies and advanced scientific and technical solutions in our country is essential to the successful implementation of reforms across all areas of society and to the continued improvement of people’s living standards.

The main objective of the Concept for the Development of the Digital Economy in Turkmenistan for 2026-2028 is to develop digital infrastructure, create favorable conditions for the effective development of public institutions and all sectors of the economy, and enhance the country’s competitiveness by incorporating advanced production technologies into economic practice and the legal framework.

International experience shows that the transition to an economy based on digital technologies requires time, resources and highly qualified information and communication technology specialists. Reforming the relationships among the state, society, education, science and business is also essential to the development of this field. In this regard, particular importance attaches to drafting the relevant regulatory legal acts, developing modern management systems and providing state support for scientific research. Since education and science play a crucial role in the development and active adoption of new technologies, our scientists, engineers and other specialists have important responsibilities of national significance. This, in turn, makes the active involvement of higher education institutions in the country’s digital economic development essential.

Clearly defining the pathways that will enable Turkmenistan to join the leading countries in this field, together with the mechanisms for implementing them, is vital to the effective delivery of these initiatives and the development of a digital environment. Efforts to advance the digital economy also create a need to train highly qualified specialists equipped to serve in the country’s modern public administration system. More broadly, drawing on the experience of other countries in developing the digital economy requires substantial reform of the science and education systems, rapid development of the electronics industry, and the active involvement of entrepreneurs in establishing knowledge-intensive industries.

The functioning of a digital economy depends on the simultaneous digital transformation of society, business and government. The pace of economic digitalization

must go hand in hand with the training and retraining of personnel for the country's new economic era. The growing demand for digital literacy reflects society's transition from an industrial model to one based on knowledge.

The adoption and development of the digital economy create broad opportunities to enhance knowledge through information exchange and to generate new, modern jobs in high-tech industries. Accordingly, the development of skilled personnel and scientific and educational capacity is identified as one of the key priorities in the transition to a digital environment [2, pp. 7-9].

We live in an era in which technology and digital systems are becoming increasingly integrated into every aspect of life. As the world changes, human society undergoes corresponding transformations. These developments are fundamentally changing the expectations placed on young people in terms of professional training and require them to take a new approach to work in their chosen fields. To be a generation worthy of its time, young people must keep pace with change and make this one of their goals. Guided by this principle, young people in the Era of Revival of the New Epoch of the Powerful State-young people who are proficient in digital technologies, think creatively, put forward constructive proposals, and are ready to create, build and invent-are working diligently across the national economy and contributing to the country's progress.

One of the key long-term strategic priorities for the development of the country's digital system is to improve its performance through the introduction of modern technologies. As a new component of contemporary economic development, the digital system is intended to ensure that society's information needs are fully met through the use of digital technologies. In this context, the development of a high-tech, innovation-driven digital economy is regarded as one of the foundations of sustainable national economic growth. Digital technologies are currently being introduced across various sectors of the national economy, building on innovation and making use of the extensive opportunities offered by the internet.

For the digital economy to function effectively, it is essential to ensure the proper operation of areas such as supply systems, e-business and e-commerce. These help reduce costs in manufacturing and services, enable businesses to respond quickly to market changes, and increase flexibility. The adoption of innovative technologies based on the latest scientific advances, together with the use of best practices, also makes it possible to modernize the material and technical infrastructure of the various sectors of the national economy.

Today, information and communication technologies (ICT) play a particularly important role in the development of society. The rapid progress of science and technology is bringing the collection, storage, processing and sharing of information to a new level. This, in turn, is creating opportunities for digital systems to be used more widely and developed across a range of sectors.

Information and communication technologies play a vital role in the development of digital systems. They enable the automated processing of data and facilitate the

exchange of information between different systems. As a result, management processes become more efficient across various sectors, while the quality of services improves.

The widespread use of digital technologies in public administration is driving the development of e-government. These systems allow citizens to access a range of public services online. They speed up service delivery, simplify document management and make administrative processes more transparent.

In education, the use of information and communication technologies improves the effectiveness of the learning process. Digital learning resources, interactive platforms and online education systems broaden the learning opportunities available to schoolchildren and university students. Distance learning also enables people living in different parts of the world to access high-quality education.

The importance of information and communication technologies in healthcare is also growing. Electronic medical records, the expansion of telemedicine services and the digital storage of medical data all help improve the quality of healthcare. Digital technologies also enable doctors to obtain information about patients' conditions more quickly and accurately.

The widespread use of digital technologies in the economy creates new economic opportunities. E-commerce platforms, digital payment systems and online services have become an integral part of economic activity. They accelerate business processes and facilitate access to new markets.

In Turkmenistan, targeted efforts are under way to regulate virtual assets and introduce mining technologies. The convergence of virtual assets, financial technologies and artificial intelligence is shaping a new stage in the development of the digital economy, within the framework of the relevant legislation of Turkmenistan. These areas encompass the creation, storage and circulation of virtual assets, cryptocurrency mining, and the use of artificial intelligence in financial analysis.

Turkmenistan has adopted a law regulating relations concerning virtual assets and cryptocurrency mining. The law governs relations arising from the creation, issuance, storage, placement, use and circulation of virtual assets in Turkmenistan, and establishes the legal, economic and organizational framework for these activities.

Thus, the use of advanced intelligent technologies opens up new opportunities for Turkmenistan's economic development. Their adoption can increase productivity, reduce costs, support the development of new economic sectors and contribute to sustainable growth. Achieving these benefits requires favorable conditions for innovation, investment in human capital and the development of infrastructure. Active cooperation among the government, businesses and research institutions will help unlock the potential of artificial intelligence and support the country's prosperity amid global change.

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