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CHAPTER 36
STRENGTHENING THE PROCESS OF DIGITALIZATION AND THE IMPLEMENTATION OF ARTIFICIAL INTELLIGENCE (AI) DURING THE PERIOD OF STRUCTURAL TRANSFORMATION OF THE ECONOMY

Gulshen Yuzbashiyeva, Kamran Abdullayev

INTRODUCTION

The current stage of global economic development is characterized by uncertainty, unpredictability, and profound structural changes. The rapid development of digital technologies is significantly transforming modern economic systems. In this process, the importance of the implementation of digital technologies, artificial intelligence (AI), and intensive innovative development in increasing economic productivity, developing innovative potential, and strengthening the global competitiveness of states is increasing, as confirmed by numerous studies. This stems from the fact that the increasing influence of digitalization and artificial intelligence (AI) processes is one of the main factors in increasing the efficiency and effectiveness of economic systems, ensuring sustainable economic growth and national development. A number of scholars also note the importance of developing digital infrastructure and human capital in the process of economic modernization. The development of digital skills and innovation ecosystems is considered a key factor in ensuring sustainable economic growth in the context of technological transformation. The development of information and communication technologies leads to the formation of new models of economic growth and the transformation of traditional sectors of the economy.

Contemporary research also highlights the growing role of artificial intelligence technologies as a key priority and driver of economic growth. Artificial intelligence technologies make it possible to automate complex analytical processes, optimize production systems, and improve the efficiency of management decision-making in both the public and private sectors of the economy. This is driven by the need to increase labor productivity and efficiency, optimize business processes, and create new sources of economic growth and development. The digital economy is becoming one of the key factors in enhancing the competitiveness of states in the context of

globalization. According to researchers, the introduction of digital technologies contributes to increased labor productivity, the development of innovation, and the formation of new markets. For Azerbaijan, the digital transformation of the economy is an important element of the strategy for diversifying the economy and reducing dependence on the oil sector. In recent years, the country has been implementing large-scale programs to develop digital infrastructure and introduce modern technologies. This importance stems from the fact that the country's economy is based on the energy sector. Despite significant progress in the study of the digital economy, the relationship between digital transformation processes and structural changes in economies focused on the use of natural resources remains insufficiently studied. In particular, there is a need for further research into the role of digital technologies in diversifying national economies and generating new sources of economic growth in countries with resource-based economies, where structural transformation is a prerequisite for long-term sustainable development. In such countries, the introduction of digital technologies can contribute to economic diversification, the development of high-tech industries, and a reduction in dependence on natural resources. In this context, the development of the digital economy and the introduction of artificial intelligence technologies are viewed as important tools for modernizing the national economy and increasing its technological sophistication. Therefore, as noted above, digital transformation and the introduction of AI are of particular importance. In this regard, for Azerbaijan, digital transformation of the economy and the introduction of artificial intelligence technologies are becoming one of the strategic areas for modernizing the country's economy and implementing structural transformation. The role of the state is becoming increasingly important in this process. In recent years, state policy has been aimed at developing digital infrastructure, implementing e-government, supporting innovative projects, and creating a favorable environment for the development of the information and communications technology sector.

36.1. Theoretical Foundations of Digitalization of the Economy and the Implementation of Artificial Intelligence (AI) in the Process of Structural Transformation of the Economy

As is well known, structural changes facilitate the shift of labor to more productive sectors and areas of activity, increase the complexity of the economy, diversify exports, enhance economic efficiency and productivity, and increase the share of services in the Gross Domestic Product (GDP). This is

important because if intellectual resources are absent or ineffective, economic development will be extensive or stagnant, and overall economic efficiency will be low. Similarly, if funding for the intellectual sphere is low (or below the threshold), this will lead to a crisis in the intellectual sphere and its degradation. To ensure effective development based on innovation, it is important to promote the selection and consolidation of the most productive results. Therefore, let's consider the main conceptual foundations, strategic documents, and key goals of economic policy [1]:

The main conceptual foundations of economic policy:

– State-led social-market model: economic policy is based on a social-market approach, where the state retains a leading role in macroeconomic management, provides social protection, and encourages private initiative, markets, and competition. This model presupposes a balance between state regulation and free enterprise.

Strategic documents as a theoretical basis – economic policy is justified not only politically, but also strategically by the basis of national documents:

"National Priorities for Socioeconomic Development: Azerbaijan 2030" is a long-term vision for the country's development. It is based on the idea of sustainable, innovative, and inclusive growth, strengthening economic sovereignty, and diversifying the economy through market mechanisms and structural reforms.

– "Strategy for Socio-Economic Development for 2022-2026" – the main directions for the implementation of economic policy. This strategy contains four main directions for the development of theory in the long term: macroeconomic stability (ensuring sustainable economic growth and preventing internal and external shocks), economic diversification (development of the non-oil sector, strengthening the role of private business, integration into global value chains), development of the human capital (investment in education, innovation and digitalization as the basis for growth), social and sustainable development (increasing well-being, reducing inequality, environmental sustainability);

– trategic roadmaps for the national economy and 11 economic sectors (four strategic goals have been selected: increasing fiscal sustainability and establishing a sustainable monetary policy; implementing reforms related to privatization and state-owned enterprises; developing human capital;

[1] Brynjolfsson E., McAfee A. The Second Machine Age: Work, Progress and Prosperity in a Time of Brilliant Technologies. New York: W. W. Norton & Company, 2016.

developing a favorable business environment for the purpose of diversification, improving the quality of management and coordination).

The main goals of economic policy:

− macroeconomic stability: ensuring sustainable GDP growth rates, curbing inflation, strengthening foreign exchange reserves, and budgetary discipline. The importance of the interrelationship between economic policy objectives: macroeconomic stability, growth, and sustainability is emphasized;

− diversification of the economy: reducing dependence on the oil and gas sector and expanding the role of non-oil sectors of the economy (industry, agriculture, services, logistics), which is related to the global economic reality) is the main theoretical principle;

− development of the private sector and entrepreneurship: support for SMEs as a center of economic growth and employment, with the creation of institutional structures, one-stop services, grants and start-up initiatives – these measures reflect the theoretical focus on a flexible, competitive economy with an active private sector;

− innovation, digitalization and human capital: digitalization as a key growth driver – digitalization of public services, improvement of workforce skills and development of innovation;

− social stability and inclusiveness: the theoretical basis is the concept that economic growth should be inclusive (with social protection, poverty reduction and strengthening of social infrastructure) [2].

The priorities identified by the government are aimed at ensuring economic growth and development, which is the primary goal of macroeconomic policy. However, it should be noted that growth is not for the sake of growth, but rather growth aimed at ensuring sustainable and high-quality development, reducing resource dependence and increasing the complexity of the economic structure. As is well known, economic development is aimed at the application of energy-saving and knowledge-intensive technologies and techniques, not at increasing the use of human, natural, and material resources, but at their efficient use to improve performance. Computerization, knowledge, and digitalization create the foundations for modern socio-economic-environmental development and create the foundations for new, qualitative growth and development, leading to a change in the economic structure.

"Digitalization of the economy is the process of integrating digital technologies into various areas of socio-economic activity. It includes the use

[2] Development: ICT Development Index 2023. Geneva: ITU, 2023.

of information systems, big data analysis, cloud technologies, and intelligent algorithms."

The strengthening of innovation is changing the entire economic landscape, with competition becoming the primary driver of economic growth and development. A high-quality sector structure and organizational changes that enhance this quality, efficiency, and productivity are essential. At the same time, it would be advisable to increase spending on research and development, promote the growth of publications on many key technologies, and increase the number of domestic and international patents, with the aim of increasing research in digitalization (Industrial Revolution 4.0 technologies, the development of artificial intelligence) and environmental conservation (reducing emissions, accelerating decarbonization, and expanding hydroelectric and nuclear energy). All this is taking place in a context of uncertainty, unpredictability, confrontation, inequality, and the intensification of local wars and sanctions [3].

All of these projects will facilitate effective structural change. Structural change is one that leads to qualitative shifts in the relationships that influence and interact with one another. Structural change is long-term, while structural shifts can characterize both short and long periods of time. A structural shift depends on the period in which the structural change is considered. The implementation and development of innovation are possible with a certain level of intellectual development, with a certain level of interaction between the material and intellectual sectors of the economy, and with a certain level of resource distribution (labor, capital, knowledge, natural resources) between the material and intellectual sectors of the economy.

“According to modern research by international organizations, the digital transformation of the economy contributes to a significant increase in the efficiency of managing economic processes and the acceleration of innovative development.”

In recent years, Azerbaijan has been pursuing an active public policy to develop digitalization and implement AI in order to increase the sustainability of the country’s economic development. Electronic government services, digital platforms, and automated management systems are being actively introduced. One of Azerbaijan’s achievements in the field of digitalization is the creation of an e-government system, which facilitates the receipt of a wide range of government services online. In recent years, Azerbaijan has been

[3] European Commission. Digital Economy and Society Index (DESI) Report. Brussels, 2023.

actively developing the information and communications technology (ICT) sector. State policy is aimed at forming a digital infrastructure, developing e-government, and supporting innovative projects. An important element of this system is the activity of the State Agency for Public Service and Social Innovations (ASAN service), which implements innovative solutions in the field of public administration. Also, in the process of digital transformation, the activities of the Ministry of Digital Development and Transport of the Republic of Azerbaijan play an important role, coordinating the development of information technology, telecommunications infrastructure, and innovative projects. The development of digital technologies also contributes to increasing the transparency of government institutions and improving interaction between the state, business, and society.

Research shows that the development of the ICT sector has a significant impact on the country's economic development and contributes to the formation of new economic sectors. According to scientific research, the digitalization of the Azerbaijani economy contributes to increased efficiency of public administration and improvement of the quality of public services. The introduction of electronic government services and digital platforms, which increase the accessibility of government services for the population and businesses, plays an important role in the development of the digital economy [4].

In today's environment, artificial intelligence technologies are becoming a key factor in economic development. "They enable the automation of complex analytical processes, the processing of large volumes of information, and the making of more effective management decisions. Modern artificial intelligence technologies are becoming a key factor in the innovative development of the economy. The use of intelligent systems allows for increased production efficiency, optimization of logistics processes, and improvement of management quality.

In Azerbaijan, artificial intelligence technologies are gradually being introduced into various sectors of the economy, including the financial sector, transport, energy and agriculture. The use of artificial intelligence in the economy of Azerbaijan opens up new opportunities for the development of various sectors, including: the financial sector; transport and logistics; energy; healthcare; agriculture; education. For example, in the banking sector, artificial intelligence is used to analyze financial data, manage risks and automate customer service. In the energy sector, intelligent systems make it possible to

[4] OECD. Digital Economy Outlook 2023. Paris: OECD Publishing, 2023.

optimize the processes of extraction and distribution of energy resources. Digitalization of the financial sector contributes to the development of the fintech industry and increased efficiency of banking services. In addition, the use of digital technologies contributes to the development of innovative start-ups and the formation of the country's technological ecosystem. Moreover, the introduction of artificial intelligence technologies contributes to the development of the start-up ecosystem and innovative entrepreneurship.

The digital transformation of the economy is also having a significant impact on employment structures and the labor market. The development of automation and intelligent technologies is changing the skill requirements of workers. On the one hand, the automation of production processes may lead to job losses in traditional sectors of the economy. On the other hand, new professions related to software development, data analysis, and digital systems management are emerging. (One of the paradoxes of AI.) In these circumstances, the importance of education and training is growing. Universities and research institutions play a vital role in developing the human capital necessary for the development of the digital economy. For Azerbaijan, the development of educational programs aimed at training specialists in information technology, programming, and artificial intelligence is an important task.

One of the key elements of the digital economy is the development of artificial intelligence technologies, which make it possible to automate information processing, analyze large amounts of data, and make optimal management decisions. According to K. Schwab, the development of digital technologies is an important element of the fourth industrial revolution, which is radically changing the structure of the global economy. Digitalization creates the conditions for the development of the so-called platform economy, within which interaction between producers and consumers is carried out through digital platforms and online services [5].

The development of the digital economy is one of the key factors in enhancing the competitiveness of countries in the global economy. According to international studies, countries that actively invest in digital infrastructure, innovation, and human capital (HC) development demonstrate higher rates of economic growth. In particular, the experience of countries such as Estonia, South Korea, and Singapore demonstrates that a comprehensive public policy on digitalization contributes to the emergence of high-tech industries, the

[5] Schwab K. The Fourth Industrial Revolution. Geneva: World Economic Forum, 2016.

development of startup ecosystems, and improved public administration efficiency. In this context, the development of the digital economy in Azerbaijan is also viewed as a strategic direction for economic diversification and increased resilience.

The state plays a key role in this process, as the effective development of the digital economy is impossible without its active support. Azerbaijan is implementing a number of strategic initiatives aimed at developing an innovative economy and introducing modern technologies. Key areas of state policy include: developing digital infrastructure; supporting technology startups; stimulating scientific research; developing innovative ecosystems; and improving the regulatory framework. A key element of the state strategy is the development of technology parks and innovation centers. One such project is the Azerbaijan High-Tech Park, which promotes the development of startups and the introduction of innovative technologies. Furthermore, the state actively supports the development of digital skills and increasing digital literacy among the population. State digital transformation programs are aimed at raising the technological level of the economy and strengthening its competitiveness in the global market.

The current economic policy is based on a combination of traditional macroeconomic theory and modern strategic approaches aimed at diversification, sustainable growth, and development of the human capital, supported by state strategies and international benchmarks. National strategic documents play a key role, forming the theoretical and practical foundation of economic reforms. These approaches have ensured the adaptation of the national economy to global challenges and laid the foundation for long-term sustainable growth and development.

36.2. Statistical Analysis of the Development of the Digital Economy in Azerbaijan

The development of the digital economy in Azerbaijan has been characterized by steady positive dynamics in recent years. One of the main indicators of the development of the digital economy is the growth of the information and communication technology (ICT) sector, which has demonstrated sustainable development in recent years. For example, statistics show that in 2024, the revenues of the ICT sector reached approximately 3.2 billion manat**,** which is 12.5% more than in the previous year. The share of the ICT sector in the structure of the country's GDP increased to 1.8%, which indicates the gradual growth of the digital economy in the development of the national economy. In 2025, the production of goods and services in the ICT

sector reached 1.75 billion manat in the first nine months, which reflects the sustainable positive dynamics of the industry's development. In 2025, the growth rate of the ICT sector reached approximately 8.5%, which exceeds the growth of a number of traditional sectors of the economy. Statistics show significant growth in the ICT sector of Azerbaijan. According to research, the development of digital technologies contributes to an increase in the share of the non-oil sector in the structure of the economy.

Expansion of digital infrastructure. One of the key factors in the development of the digital economy is population access to internet services. In 2025, internet penetration in Azerbaijan reached almost 89% of the population, and the number of network users exceeded 9 million people. Moreover, the number of mobile connections is more than 12 million people. The expansion of internet infrastructure is associated with the implementation of the national project "Online Azerbaijan", aimed at providing high-speed internet throughout the country. In addition, the expansion of internet infrastructure contributes to the growth of the number of users of digital services and the development of e-commerce. All this creates favorable conditions for the development of digital services and e-commerce.

Development of broadband internet. Expansion of broadband access plays an important role in the formation of the digital economy. The average internet speed in Azerbaijan has increased almost fourfold – from 17.2 Mbps in 2020 to 66 Mbps in 2024. The number of broadband internet users has also grown significantly – from 1.1 million in 2020 to more than 2.2 million in 2024. The development of the digital economy also has a positive impact on the innovative activity of enterprises and increased competitiveness of the national economy.

The Role of the Digital Economy in Economic Diversification. The development of the digital economy is seen as an important tool for diversifying Azerbaijan's economy. Currently, the digital economy accounts for approximately 2.8% of the country's non-oil GDP and approximately 2% of employment in the service sector. These figures indicate a gradual strengthening of the role of digital technologies in the country's economic development [6].

The development of the digital economy in Azerbaijan is characterized by the steady growth of the ICT sector, the expansion of internet infrastructure, and the active implementation of electronic government services. State policy

[6] UNDP. Digital Transformation and Sustainable Development. New York, 2022.

is aimed at diversifying the economy and reducing dependence on the oil sector through the development of high-tech industries. State initiatives, including the development of e-government and the implementation of national digitalization programs, contribute to the improvement of the efficiency of public services and the transparency of public administration. These trends indicate that digital technologies are becoming an important factor in the modernization and structural transformation of the Azerbaijani economy. Artificial intelligence and other digital technologies are becoming key priorities for the country's innovative development with the aim of increasing competitiveness, economic sustainability, and accelerating the process of structural transformation[7].

CONCLUSIONS

Digitalization and the introduction of artificial intelligence technologies play a key role in the structural transformation of the Azerbaijani economy. The use of modern digital technologies In Azerbaijan, digital transformation contributes to increased production efficiency, the development of innovative industries, the formation of new economic models, and the determination of economic growth trends. Digital transformation represents an opportunity to reduce dependence on natural resources, diversify the national economy, and create the foundations for sustainable economic development through intensive, innovative economic growth.

Economic policy is based on a combination of traditional macroeconomic theory and modern strategic approaches aimed at diversification, sustainable growth, and development of the human capital, supported by state strategies and international benchmarks. National strategic documents play an important role, forming the theoretical and practical basis for economic reforms.

Azerbaijan's economic policy was based on modern theories, but was applied selectively and adaptively, rather than systemically; sustainability was achieved primarily through financial reserves and the role of the state, rather than through endogenous sources of growth.

The main contradiction of the 2000-2025 period is between short-term macro-stability and long-term structural transformation. The main theoretical conclusion is that the economy was resilient to crises, but insufficiently transformed for post-oil development. Successful implementation of digital transformation policies requires addressing a number of structural challenges. These include developing digital infrastructure in rural and remote regions,

[7] United Nations. E-Government Survey 2022. New York: United Nations, 2022.

expanding educational programs in information technology, and improving the regulatory framework for digital innovation[8].

International experience shows that countries that actively invest in digital technologies, innovation ecosystems, and human capital development achieve higher levels of economic competitiveness. Therefore, the long-term success of Azerbaijan's digital transformation will depend on the effective coordination of technological, institutional, and educational reforms.

The study's results demonstrate that sustainable economic development in Azerbaijan is only possible through a transition from a resource-based model of economic stabilization to an "endogenously diversified and institutionally inclusive model" of economic development. This transition, in other words, involves a transition from a resource-based model to an endogenously diversified model, where sustainability is fostered through technological sophistication, inclusive institutions, innovation in the real sector, human capital development, and the adoption of digital technologies. The key idea is that sustainability is achieved not through reserves and rent, but through the economy's ability to continually create new, complex products. Further development of digital infrastructure, investment in education and research, and the creation of a favorable institutional environment for innovation will play a key role in ensuring the long-term sustainability and competitiveness of the country's economy.

SUMMARY

The article "Strengthening the Process of Digitalization and Implementation of Artificial Intelligence (AI) during the Period of Structural Transformation of the Economy" notes that in the context of global digital transformation, the implementation of digital technologies and artificial intelligence is becoming one of the main factors in structural changes in the economy. The purpose of this article is to analyze the role of digitalization and artificial intelligence technologies in the process of structural transformation of the economy of Azerbaijan and assess their impact on the sustainable economic development of the country. The methodological basis of the study is based on modern economic theories, coupled with the theory of endogenous economic growth, the theory of structural transformation of the economy, and the concept of digital economy development. The article applies methods of system analysis

[8] World Bank. World Development Report 2021: Data for Better Lives. Washington: World Bank, 2021.

(allowing to consider digital transformation as a complex socio-economic process), comparative analysis (to compare digital economy development indicators with global trends), and statistical analysis (based on the use of national statistics and analytical reports). Institutional analysis (allows to assess the role of public policy and strategic programs in the development of the digital economy).

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Information about the authors:
Gulshen Yuzbashiyeva
Doctor of Economic Sciences, Professor,
Head of Department of "Theoretical Basis of Economic Policy",
Institute of Economics of the Ministry of Science and Education
of the Republic of Azerbaijan
115 H. Cavid Ave., Baku, AZ1143, Azerbaijan
Kamran Abdullayev
Doctor of Economic Sciences, Associated Professor,
Department of Service Sphere,
Institute of Economics of the Ministry of Science and Education
of the Republic of Azerbaijan
115 H. Cavid Ave., Baku, AZ1143, Azerbaijan