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The importance of the methodology of using artificial intelligence systems in achieving sustainable economic growth

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ABSTRACT

The methodology for using artificial intelligence systems to achieve sustainable economic growth is an integral part of the modern digital economy. The article analyzes the impact of artificial intelligence technologies on economic processes, the methodological foundations for their effective implementation in management, production, financial and tax systems. It also highlights the possibilities of rational use of economic resources, increasing labor productivity and strengthening competitiveness with the help of artificial intelligence. The experience of foreign countries and the advantages and problems of implementing AI systems in the conditions of the economy of Uzbekistan are analyzed. The results of the study show that management approaches based on artificial intelligence are an important factor in achieving sustainable economic growth and increasing efficiency.

Keywords: artificial intelligence, digital economy, sustainable economic growth, management system, automation, efficiency, innovative technologies, competitiveness.

Introduction. In modern times, the rapid development of digital technologies and artificial intelligence systems is bringing about fundamental changes in all sectors of the economy. The importance of artificial intelligence technologies in achieving sustainable economic growth, efficient use of resources, and optimization of management decisions is increasing. Artificial intelligence is widely used not only in the automation of production processes, but also in financial analysis, tax administration, marketing, logistics, and other economic processes.

In the Republic of Uzbekistan, within the framework of the transition to a digital economy and the "Digital Uzbekistan – 2030" strategy, measures are being taken to raise economic management to a new level through the implementation of artificial intelligence technologies. In this regard, the development of a methodology for the application of artificial intelligence systems and its use in the service of sustainable growth of the national economy is one of the urgent scientific and practical tasks of today.

2. Literature review.

It explores the potential of digital technologies to improve public services and enhance citizen engagement. It also discusses the importance of organizational and cultural change in facilitating digital transformation in the public sector118.

In the broader information systems literature on digital ecosystems, notably the special issue of Diga & May (2016), there are some studies that have examined the ICT ecosystem as a tool for social development and addressing inequalities. However, in the context of digital tax services, most of the research in this area has examined the adoption of technology by various stakeholders in the tax sector, such as tax officials, taxpayers or tax advisors. Where

necessary, these models have examined phenomena that encompass only a small part of the broader digital tax administration infrastructure.

Apart from the single paper by Canares (2016), a digital ecosystem approach to the study of tax administration in the Philippines, the current research lacks a clear understanding and understanding of the approach to the tax119 literature. Adopting such an approach would clarify previous studies on digital taxation in terms of criteria for evaluating digital taxa (Canares, 2016).

According to Heeks (2005), "We have systematically reviewed the various narratives that exist on the adoption, use, and effectiveness of various digital tax services studied in different disciplines and to integrate them into a comprehensive conceptual framework for the study of taxation." This need stems from concerns about the high inefficiencies of e-government services and, therefore, the need to understand the critical factors for designing effective digital tax services.

Vasconcellos and Rua (2005) Tax administrations are the lifeblood of any economy and are crucial to the success of the government's digital agenda. In line with the broader digital transformation of government, the core role of tax administration has evolved with it. Tax authorities see themselves not only as tax collectors but also as providers of a range of tax services, from information provision, taxpayer assistance and tax education.

Yeconomides and Terzis (2008) argue that the success of e-taxation is essential for any digitally friendly government, as it ensures a broad range of interactions between the government and its citizens, regardless of their demographics and the inevitability of taxes. They argue that with the proliferation of e-commerce and mobile applications in everyday use, taxpayers have high expectations of the services they expect from their governments.

Robbins, Mulligan, & Keenan (2015) argue that, while much of the literature has argued for the benefits of digitalization, such as greater control and supervision of fiscal spending, reduced corruption, better governance and lower income inequality, these benefits cannot be assumed or accepted. Indeed, others in the literature have criticized the high inefficiency of e-government projects, of which digital taxation is no exception.

According to Aladvani (2016), the issues of system implementation and organizational change are not all problems of the technology itself, but rather the gap between the actual technology and the very complex social context in which the technology operates, such as people, political environment, and cultural differences, which is largely wider.

Jo'rayev, A. (2022). Legal foundations of digitalization in the judicial system. – The issues of the legal framework for the introduction of digital technologies in the national judicial system are studied.

Kadyrov, M. (2023). Advantages and problems of artificial intelligence in the judicial system. – The priorities and limitations of the use of AI technologies in Uzbekistan are highlighted.

3. Research methodology. This article uses comparative analysis and induction and deduction evaluation methods. Using the comparative method, information on the importance of the methodology for using artificial intelligence systems in achieving sustainable economic growth was analyzed and scientific conclusions were drawn.

4. Analysis and discussion of results.

The methodology for applying artificial intelligence (AI) systems to sustainable economic growth did not appear overnight or in one country, it was formed gradually. The initial stage (1950–1970s): the USA and Great Britain emerged. The concept of artificial intelligence was first defined as a scientific discipline in 1956 at the Dartmouth Conference in the USA by John McCarthy, Marvin Minsky, Allen Newell and Herbert Simon. At that time, AI was mainly associated with mathematical modeling, logical algorithms and automated decision-making systems. Although the use of AI in economics was still limited, it was in these years that the theoretical foundations for decision support systems (Decision Support Systems) were created.

Formation of an applied methodology (1980–2000s): Europe, Japan, the USA began to be created. In the 1980s, with the development of

expert systems and database-based analysis models, artificial intelligence began to enter the processes of economic analysis and management. Japan was one of the first countries to implement the SI methodology in economic management through the "Fifth Generation Computer Systems" project in 1982. During this period, the "AI in Economics and Management" projects appeared in the European Union.

Digital economy era (2000–2015): South Korea, China, the USA, Germany were formed. As the concept of the digital economy developed, SI systems began to be actively used in economic policy, tax administration, production automation, and investment management. At this stage, the methodology for applying SI was based on the concepts of "data-driven economy" and "smart economy". In particular, in South Korea and China, SI methodology was developed to ensure economic stability at the level of state policy.

Formation as a model of sustainable economic growth (2015–present): Since 2015, the methodology for using artificial intelligence technologies as a means of ensuring economic stability within the framework of the UN Sustainable Development Goals (SDGs) has been widely developed in the European Union, the United States, and China. During this period, the European Commission, the World Economic Forum, the OECD, and the Chinese Academy of Sciences conducted studies on "AI for Sustainable Economic Growth" (2017–2022). They studied the impact of AI systems on economic efficiency, energy efficiency, social well-being, and resource optimization. Uzbekistan has begun to introduce artificial intelligence technologies into economic management systems within the framework of the "Digital Uzbekistan – 2030" strategy. In 2021, the "Strategy for the Development of Artificial Intelligence" was adopted, and AI-based methodologies are being developed in economic analysis, tax administration, the banking system, and industrial sectors. The methodology for using artificial intelligence systems in sustainable economic growth emerged on a theoretical basis in the mid-20th century in the USA and Europe, and in the 21st century it took practical form in China, South Korea and the European Union.

The methodology for using artificial intelligence systems in achieving sustainable economic growth is a set of scientific and methodological approaches aimed at the scientific introduction of AI technologies in various sectors of the economy, assessing their effectiveness and directing them towards the goals of sustainable development. It includes the following main components:

1. Theoretical and scientific foundations:

Identification of the role, essence and mechanisms of influence of artificial intelligence in the economy;

Scientific substantiation of the interrelationship between the digital economy and sustainable growth;

Development of principles for intellectual modeling of the decision-making process in economic systems.

2. Methodological approaches:

Application of data-driven models in the analysis of economic processes;

Use of machine learning algorithms in forecasting, resource allocation and performance assessment;

Methodology for implementing automated management systems based on artificial intelligence;

Methods of intellectual analysis for identifying and reducing economic risks.

3. Areas of practical application:

Digitization of tax and financial administration;

Automation of production and service processes;

Optimization of rational use of energy and natural resources;

Use of SI systems in innovative investments and increasing competitiveness.

4. Evaluation and monitoring system:

Development of indicators for measuring the impact of SI technologies on economic efficiency;

Creation of monitoring mechanisms consistent with sustainable development indicators;

Assessment of the balance between economic, social and environmental factors.

5. Institutional and legal framework:

Formation of a regulatory and legal framework regulating the use of artificial intelligence in the economy;
Establishment of innovative cooperation mechanisms between public administration and the private sector;
Principles of ensuring information security and data confidentiality.
6. Integration with the principles of sustainable growth:
Harmonization of artificial intelligence with sustainable development directions such as the "green economy", energy efficiency, social inclusion;
Ensuring social stability and environmental protection while increasing production efficiency using AI.
Thus, the methodology for the application of artificial intelligence systems is a complex system that includes theory, practice and monitoring, which serves to ensure sustainable economic development through optimization of economic decisions, rational use of resources and innovative growth.
The functions and tasks of the methodology for using artificial intelligence systems to achieve sustainable economic growth reflect the practical essence of this methodology, its role in the economic system and the main directions it performs.
The main functions of the methodology. The analytical function is the following. In-depth analysis of economic processes, identification of patterns from large amounts of data. Forecasting economic growth factors and creating a model that serves to increase efficiency.
Management function. Automation of decision-making processes using artificial intelligence. Effective allocation of economic resources through digital management systems. Reducing economic risks and ensuring stability.
Innovation function. Integration of new technologies into economic systems. Using the capabilities of AI in creating innovative products and services.
Monitoring and control function. Real-time monitoring of sustainable economic growth indicators. Analytical assessment and optimization of results based on artificial intelligence.
Social and ecological balance function. Increasing the efficiency of human labor in the implementation of SI technologies. Application of digital solutions aimed at maintaining environmental sustainability.
Main tasks of the methodology. Theoretical tasks include the following. Scientific substantiation of the impact of artificial intelligence systems on economic stability. Development of a conceptual model for the use of SI in economic analysis and management.
Practical tasks. Optimization of economic forecasting, analysis and management processes based on artificial intelligence. Implementation of SI technologies in the fields of public administration, finance, taxation, industry and services.
Technological tasks. Creation of economic models based on Big Data, machine learning and neural networks. Integration of information systems and increasing their efficiency.
Assessment and monitoring tasks. Measuring the economic efficiency of projects implemented with artificial intelligence. Regular monitoring of results related to sustainable development indicators.
Organizational and institutional tasks. Creating a legal and organizational framework for the application of artificial intelligence in the economy. Increasing human resources capacity and training AI specialists.
The functions and objectives of the methodology for applying artificial intelligence systems are aimed at digitizing the economic system, making quick and accurate decisions, effectively using resources, and ensuring sustainable growth.
Problems of the methodology for applying artificial intelligence systems in achieving sustainable economic growth and ways to overcome them
Currently, the role of artificial intelligence (AI) technologies in economic development is increasingly increasing. At the same time, there are a number of systemic and institutional problems in applying these systems aimed at sustainable economic growth. Below, these problems and ways to overcome them are

analyzed using the example of Uzbekistan and world practice.

1. Technical and infrastructural problems. In Uzbekistan, the technical base necessary for the widespread introduction of artificial intelligence systems is not fully formed. In particular, economic entities at the regional and district levels lack high-speed Internet, modern server equipment, and data centers. This situation hinders the full functioning of SI systems. It is necessary to expand investment projects based on public-private partnerships for the development of digital infrastructure, and integrate data centers into national economic networks.

2. Lack of human resources and scientific knowledge. Highly qualified specialists are needed to create, configure, and analyze artificial intelligence systems. At the moment, the country does not have enough experienced AI specialists, data analysts, and programmers in this area. It is necessary to introduce new areas such as "Artificial Intelligence Economics", "Digital Analysis and Management" in the higher education system; it is necessary to establish joint research centers on AI in cooperation with international universities.

3. The problem of data quality and availability. The effectiveness of AI systems directly depends on the quality and volume of the collected database. In many cases, economic data is stored in a closed, unsystematic and unupdated form. As a result, models give incorrect results or do not allow for stable analysis. It is necessary for Uzbekistan to create a single "National Economic Data Platform", develop an open data policy, standardize and integrate economic information.

4. Financial and investment barriers. The development and implementation of AI systems requires significant investment. Many projects rely on foreign grants, which reduces their sustainability. It is necessary to establish a special "Artificial Intelligence Support Fund" for the development of innovative technologies, and to encourage local startups with tax incentives.

5. Incomplete formation of legal and regulatory frameworks. The issues of the use of artificial intelligence, data security, algorithmic liability, and protection of intellectual property do not have a full legal basis. It is necessary to develop a special law "On Artificial Intelligence" and expand the base of regulatory and legal documents regulating the integration of the digital economy and AI.

6. Social and cultural barriers. Some parts of the population are distrustful of artificial intelligence, perceiving it as a factor that reduces jobs. This reduces the level of social acceptance of AI systems. It is necessary to increase digital literacy, promote the aspects of artificial intelligence that facilitate human labor and increase economic efficiency.

7. Environmental and sustainability issues. AI systems that process large amounts of data require a lot of energy, which can have a negative impact on the environment. It is important to introduce the concept of "Green IT", use energy-saving technologies and renewable energy sources. In general, the problems in the application of artificial intelligence systems in Uzbekistan aimed at sustainable economic growth are related to technical, organizational, personnel and legal factors. However, the measures implemented within the framework of the "Digital Uzbekistan - 2030" strategy create a wide opportunity to gradually eliminate these problems and form artificial intelligence as an important element of economic management.

Proposals. It is possible to increase economic efficiency and sustainability by gradually introducing artificial intelligence into the economic management system. It is necessary to strengthen personnel training for the use of AI technologies, and introduce the direction of "AI economics" in universities. It is recommended to create a single **"National Digital Economic Platform"** that will ensure data exchange. It is necessary to support startups in the field of artificial intelligence with financial and tax incentives. The adoption of the Law "On Artificial Intelligence" will provide a legal guarantee for AI systems in economic activity. Sustainable development can be ensured by integrating ecological and energy-saving "green technologies" into AI systems.

Literature/Literature/ Literature:

1. Aladwani, A.M. (2016) Corruption as a source of e-government projects failure in developing countries: A theoretical exposition. International Journal of Information Management, 36(1), 105–112.
2. Diga, K, & May, J (2016) The ICT ecosystem: The application, usefulness, and future of an evolving concept. Information Technology for Development, 22(1), 1–6.
3. Nasrulloev H. (2023) Soliq ma'murchiligiga zamonaviy axborot-kommunikatsiya texnologiyalarini joriy etish orqali soliq bazasini kengaytirish istiqbollari (PhD) ilmiy darajasini olish uchun yozilgan diss. avtoreferati. – Toshkent.