Some Problems of the Formation of the New Generation Digital Economy based on Artificial İntelligence Technologies

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This paper is dedicated to defining the problems of forming the New generation regional and National digital economy based on artificial intelligence methods and technologies, studying their conceptual solution mechanisms, and analyzing the infrastructure-institutional features. The relevance of the formation of the New-generation digital economy in the world economic system is justified. The necessity and importance of preparing a New-generation digital economy strategy in the regional and national aspects was noted. It has been shown that the next-generation digital economy Strategy includes artificial intelligence, Big Data, the Internet of Things, etc. such as other directions considered necessary for the development of the digital economy. The conceptual directions of the formation of the New- generation National digital economy and its sectors have been determined. An overview analysis of relevant scientific research works was conducted and the state of problem solving was studied. The features of the formation of the economy of artificial intelligence are analyzed, and the functional principles of its formation are given schematically. Based on scientific analyzes and generalizations, the components, types, and areas of artificial intelligence were developed. The effects of the application of the latest ICT and artificial intelligence technologies on the socio-economic process and the environment were analyzed. The socio-economic effects of digital transformations, as well as the application of digital artificial intelligence technologies in the management of the main economic processes, were investigated. The features of the formation of economic sectors on artificial intelligence technologies have been investigated. Forecasts on the development prospects of the artificial intelligence market have been explained. Some common features of the New-generation digital economy and the problems of applying artificial intelligence-based technologies in its formation are analyzed. New-generation digital economy sectors formed based on artificial intelligence have been identified, and relevant recommendations have been made for its transition to the stage of innovation-based development on the Industry 4.0 platform.

Keywords: *Digital economy, New-generation digital economy, Technological innovation, Artificial Intelligence technologies and methods, Digital economy sectors based on Artificial Intelligence, Industry 4.0 platform*

DOI: 10.24818/issn14531305/28.3.2024.04

1 Introduction

The dynamics of changes in the economic landscape of the modern world show the necessity of creating a new generation digital economy. This transformation period is marked by the reshaping of the industrial sphere and other economic sectors based on the application of advanced high technologies, digitalization, the redefinition of business paradigms, and the formation of innovative strategies that lead to cardinal positive changes in the global economic ecosystem [1]. Therefore, the sector of high technologies is being developed to increase the efficiency and competitiveness of the economy, to achieve faster development of the non-oil and gas sector, and to eliminate the existing dependence on the export of oil and gas resources in the economy. This issue is of great importance in the direction of the implementation of the tasks of the UN in the field of sustainable development [2] until 2030. This economy, characterized as a new generation, provides economic growth and

development as a result of the special application of digital technologies, which are the main driving force of economic growth and development in some countries. The digital economy offers users, businesses, services, and products the ability to easily and quickly access, and overall better experiences. The digital economy is constantly evolving and has a significant impact on various economic, social, and cultural fields.

In modern times, the application of new-generation digital innovative technologies in increasing the stability of the economy is one of the most urgent issues. At the same time, the study of the economy of these technologies is also of special importance on a global scale. In the digitization of the economy, the study of the problems and characteristics of the formation of the National technological economy based on the methods of Artificial Intelligence (AI), which is one of the most modern digital technologies of the new generation, is considered very relevant. In this regard, the formation of the appropriate methodological apparatus and approaches for determining the conceptual aspects of the formation of the New Generation National digital economy and its sectors is considered to be an important issue.

It is no coincidence that during the period covered by the Strategy of the Republic of Azerbaijan on information security and cyber security for 2023-2027, along with the organization of the formation and maintenance of the register of information security and cyber security risks, as well as the prevention of threats related to information aggression and distortion of facts, violation of national values it is intended to achieve the strengthening of activities for the development of modern digital technologies that can buy, as well as technologies based on artificial intelligence [3]. All this necessitated the study of some actual problems of the formation of a new generation digital economy at the national and regional levels.

2 Relevance and setting of the problem

In the current era of rapid development of digital innovation, science, and high technology, the economy is developing rapidly in unison with other fields. Such continuous development of the economy has led to the rapid expansion of the volume and processing of economic data. The emerging new generation Various sectors of the National digital economy have been formed and are moving forward to develop even more rapidly. Other economic sectors expanded even more, which made it difficult to manage regional and national economies in the old traditional ways. Thus, since economic management plays an important role in economic development, it greatly affects its correctness [4]. Therefore, economic management processes should be based on scientific foundations and digital technologies. Thus, the application of digital technologies in the economy and its management has created opportunities and conditions for solving many problems. The integration of economic management with artificial intelligence, one of the most modern of these technologies, can make economic management more intelligent and science-based. This will promote the progress of economic management technology. At the same time, it can strengthen the scientific character of economic management policy and develop the general and newest sectors of the New Generation National digital economy.

Artificial intelligence can help people analyze huge amounts of economic data, ensure the accuracy and comprehensiveness of economic data analysis, and provide an accurate basis for economic management policy formulation. Artificial intelligence technology can increase the efficiency of economic management and make economic management policy more scientific, thereby helping the development of regional and national economy and ensuring healthy and sustainable development of the economy. Artificial intelligence technology can promote economic development, especially in high-tech industries. It can not only

improve the production efficiency of the high-tech industry but also promote technological progress. In addition, the integration of artificial intelligence and economic management can help managers to scientifically manage economic activities and ensure the proper functioning of the economy.

As economic development is continuous and fast, people's living standards will also improve. To ensure the efficiency of economic development, many scientists and researchers have conducted many studies on the application of digital technologies [5-7] in its operation [4-13]. In addition, in research on the complex development of artificial intelligence and economic management, there are certain scientific innovations in the study of the impact of artificial intelligence technology on economic development and the application of machine and deep learning methods in the economic field of artificial intelligence technology. The essence of posing this problem, whose relevance is not in doubt, is to develop a methodological approach to integrate the problems of the formation of a new generation economy with artificial intelligence technologies based on a complex study of the general aspects of economic processes and to give relevant recommendations.

3 Analysis of scientific research works related to the state of processing of the problem

Regarding the state of the problem, it should be noted that [14] is devoted to the application of artificial intelligence in the field of economics. It has been shown that the history of the application of artificial intelligence in economics is long-term and that it is a developing field. Economists have been dealing with AI since its inception, albeit with varying degrees of focus across time and space. In this study, the approaches to its development through the application of various Artificial Intelligence methods such as machine learning, deep learning, neural networks, expert systems, and knowledge-based systems in the fields of economy were investigated. It has been shown that the discussion about artificial intelligence in economics is concentrated around the problems of economic calculation and social planning proposed by F. Hayek years ago. To analyze the history of the application of Artificial Intelligence in the sub-fields of the economy, appropriate searches were made. Also, some results on the use of artificial intelligence in the economy on time, space, and sub-fields are presented. Authors dealing with Artificial Intelligence in economics have also been characterized by this. In addition, the quality of institutional affiliation was noted. It has been reported that there is a positive correlation between the economy and Artificial Intelligence. An attempt was made to find the nature of the relationship between Human Development Index and Artificial Intelligence research.

[15] shows relevant economic examples in the spheres of artificial intelligence. Here, the specific economic regularities affected by Artificial Intelligence are analyzed: 1) "homo economy" enters the global economy stage of "machina ekonomika" (from Homo economics to machine economy); 2) The division of labor and specialization model is further accelerated by the micro-division of labor created by artificial intelligence; 3) Application of artificial intelligence leads to the next level of information asymmetries; 4) Machine labor based on information and artificial intelligence should be understood as new factors of production; 5) The economics of AI networks can lead to market dominance and unwanted externalities. These issues are based on prospective institutional economics. It also serves to combine the results obtained in economics and computer science. Research shows that institutional issues are highly relevant where artificial intelligence exists.

[16, 17], the issues of application of Big Data analytics and cloud technologies in supply chain management, which is one of the main economic processes, were analyzed. [18] Dedicated to the development of a new hybrid method based on data analysis for

predicting returns on artificial intelligence and robotics index. In [19], the issues of agent-based computer-economic modeling of macro-regional economic structural change controlled by the spread of micro-based technological innovations were considered. Here, it introduces an agent-based computer-economic modeling approach to the input-output analytical framework and proposes an extension to simulation models of technological innovation behavior.

All this shows that, despite the modernity and relevance of the development of the problems of the formation of the New Generation National technological economy based on artificial intelligence technologies and the development of its solution mechanisms, that field has not yet been formed in the necessary manner. A systematic multidisciplinary analysis of its conceptual foundations is still lacking in the scientific literature. Therefore, to better understand its content, the existing theoretical and practical aspects of the problems of forming a New Generation technological economy based on Artificial Intelligence technologies should be analyzed more deeply. It is necessary to study the processing aspects and semantic content of the existing concepts in that field, as well as to study the perspectives and limitations of the transition of production and consumption to a new management scheme.

4 About some general features of the formation of the New-generation digital economy

The new generation digital economy is characterized by the new deep economic transformation of the world, in other words, the new economic era, the reshaping of industry and other economic spheres based on technological advances, innovation, and digitization, the redefinition of business models, and the wide application of innovative paradigms moving towards the development of society [8, 13, 20].

At the heart of the next-generation digital economy is the pervasive power of digitization and innovation. The rapid adoption of high-speed Internet, mobile devices, and cloud computing has created a complex information and communication network spanning the globe. This digital ecosystem facilitates real-time communication, global collaboration, and instant access to information.

The rapid spread of high-speed Internet, ubiquitous mobile connectivity, and cloud computing have solved the problem of interconnectivity. This digital ecosystem enables real-time communication, global collaboration, and instantaneous dissemination of information.

Artificial Intelligence, which encompasses machine learning, natural language processing, and robotics, is at the heart of this new technological era. Artificial intelligence technologies are driving automation, improving decision-making, and ushering in the era of autonomous systems. From smart homes and virtual assistants to precision healthcare, artificial intelligence is at the forefront of innovation. From autonomous cars and smart cities to predictive analytics and virtual assistants, AI is also a catalyst for innovation.

In the next-generation digital economy, data is the basis of progress. The ability to collect, analyze, and derive key insights from vast data sets drives business strategies. Companies use data to understand consumer behavior, personalize experiences, and power decision-making processes.

Data is the most valuable asset in the new-generation digital economy. The ability to collect, analyze, and extract key insights from huge data sets is part of business strategies. Organizations use relevant data to understand consumer behavior, personalize offers, and make effective choices.

The new generation digital economy is developing on open innovation ecosystems that connect start-ups, collaborative innovation systems, corporate innovation research laboratories, enterprises, academic circles, and government agencies. These dynamic environments encourage creativity and accelerate the development of advanced technologies [20].

Sustainability is a central principle of the next-generation digital economy. Green technologies, renewable energy sources, circular economy models, and eco-oriented manufacturing practices are driving the transition to a more sustainable and ecologically-technologically responsible future. As institutional and technological barriers fall, entrepreneurship accelerates. Venture capital accelerates the further growth of emerging technologies with innovative solutions. This dynamism drives innovation and competition.

E-commerce and digital marketplaces have made significant progress in connecting products and services. These platforms offer personalized experiences and allow businesses to tap into a global customer base. They offer personalized experiences and allow businesses to tap into a global customer base. Flexibility and remote working have become the norm in world practice. Technology enables individuals to work from anywhere, which is causing a rethinking of traditional work structures.

As the digital landscape expands, the issue of cybersecurity and reliability becomes paramount. Strong encryption, biometric authentication, and normal cybersecurity measures are critical to protecting individuals and organizations.

The next-generation digital economy seeks to bridge the digital divide by ensuring that the benefits of technology are accessible to all. Initiatives focus on providing Internet access to underserved regions and promoting digital literacy. Bridging the digital divide is an important issue. The next-generation digital economy seeks to bridge the digital divide by ensuring that the benefits of technology are accessible to all. Initiatives focus on providing Internet access to underserved regions and promoting digital literacy.

5 National technological foundations of the formation of the new generation digital economy

The rapid development of technologies and the emergence of advanced artificial intelligence models create a great need to create new standards for the production and service spheres. It is very important to develop new rules and procedures in this area. To more efficiently organize the production and service process within enterprises, organizations should define a single plan of artificial intelligence strategy. Statistics show that the artificial intelligence market was valued at $136 billion in 2022 and is expected to grow at a CAGR of 37.3% from 2023 to 2030.

The guidelines recommended by the World Economic Forum for the use of artificial intelligence-based solutions can be considered as one of the important steps towards the formation of the ecosystem. They can also provide useful opportunities for institutions that want to acquire artificial intelligence solutions, as well as make an important contribution to the formation of standards in those processes at the next stages, and to the activities of government agencies that carry out regulatory control.

A solid foundation has been created for turning into an internationally important energy, transport-logistics, and communication hub, the region's largest and most dynamic economic space and the center of interest of strategic investors, its integration into the global value chain and the transition to an innovation-based development stage on the Industry 4.0 platform.

Following the mentioned trends, it is planned to prepare a Digital Economy Strategy in the country according to the Action Plan of the "Socio-economic Development Strategy of the Republic of Azerbaijan in 2022-2026" [21] approved by the Decree of the President of the Republic of Azerbaijan dated July 22, 2022. According to preliminary information, the New Generation Economic Strategy of Azerbaijan will contribute to the economy by 2030 by covering the state, private and civil society. This strategy will support economic growth in Azerbaijan on 9 main projects and 69 activities within these projects.

The implementation of the strategy is aimed at 1) strengthening business transformation and increasing potential in Azerbaijan in the

new era, 2) building a model enterprise and new generation technological centers that envisage the wide application of 4th Industrial Revolution technologies, 3) creating digital twins and 4) wide deployment of regional new generation artificial intelligence. implementation, 5) promoting entrepreneurship in relevant fields, 6) supporting convenient business and information infrastructure, etc. will create a serious new technological ground for development in such areas. The strategy also includes the preparation of new generation Industry 4.0 platforms that are fluent in the Azerbaijani language and host Azerbaijani content, increase the possibilities of applying artificial intelligence in the country by protecting Azerbaijan's cultural wealth, promote economic growth, stimulate the creation of jobs and industries based on new digital technology, etc. aims to implement fundamental directions such as 1585/the next meeting of the working group on the preparation of the national economic strategy was held. The conceptual directions of the formation of the new generation digital economy at the national and regional level in the initial form 1) Grounds for the formation of the New Generation technological economy; 2) Main task and goals; 3) Broad application of basic digital technologies and innovations; 4) It can be expressed as preliminary results and prospective expectations (Figure 1).

The New Generation Economy Strategy prepared in Azerbaijan includes "Big Data", artificial intelligence, "Internet of Things", digital marketing, the application of drone technologies, and other directions considered necessary for the development of the digital economy. For their successful and sustainable implementation, preparation of infrastructure, institutional, and human resources in terms of cyber security is also a necessary issue. To achieve the goals set in the field of cyber security, the necessary regulatory and legal framework should be prepared. The analysis of the considered issues shows that in modern times, it is considered relevant to develop a conceptual approach to the formation of the New generation technological economy and its sectors based on Artificial Intelligence technologies. In this regard, the main task and purpose of the presented research work is the formation of an appropriate methodological apparatus for developing the strategic conceptual, scientific-theoretical bases of the New Generation National technological economy based on artificial intelligence technologies, defining its characteristics, and determining the mechanisms for its realization.

6 Aspects of the new generation digital economy and the impact of digitalization on economic growth

The digital information economy, formed after the industrial stages of economic development in recent years, is one of the promising directions for the development of the national economies of different countries in the global digital space.

Fig. 1. Conceptual aspects of the formation of the New Generation National digital economy *(compiled by the authors)*

In the role of the main prerequisites for the formation and rapid development of a new type of public economic relations [22]: 1) globalization of the world economy; 2) integration of world capital markets; 3) transnationalization of innovative production; 4) transformation of business methods; 5) increasing the competitiveness and differentiation of companies; 6) innovativeness of the organizational structure; 7) application of digital technologies; 8) activation of e-business and electronic commerce, etc. such processes are performing. The scale of the development process of the digital information economy can be compared to the 2nd industrial revolution of the 18th and 19th centuries, which radically changed the whole world, stimulated economic growth in many countries, and changed the development paradigm itself.

As is known, there is a positive relationship between digitization processes and economic growth [13]. The study of this relationship is characterized by the results of studies on 1) the level of individual countries, 2) the level of an enterprise, and 3) the study of the cause-and-effect relationship between digitalization and economic growth. The directions of digitalization's impact on economic growth can be mentioned as direct and indirect. The direct impact includes creating new jobs, developing human capital, increasing the efficiency of resource allocation, etc. can be attributed. The indirect effect can be attributed to increasing the efficiency and speed of financial transactions, additional investment increases allocated to research and experimental design works, increasing the general productivity of enterprises, and the application and dissemination of knowledge and innovations throughout the world.

The necessity of the development of the high-tech sector at the national level is indicated in the socio-economic development strategies of Azerbaijan in 2022-2026, as well as in the appropriate implementation projects of digital transformations based on global trends, challenges and opportunities for the long term ahead (https://president.az/az /articles/view/56723).

The development of digital technologies more rapidly than any innovation in human history has led to the concept of the digital economy. From the end of the last century [23], the digital economy is a theory, scientific direction, applied economy, and is able to characterize the improvement of the socio-economic well-being of individuals and society, the interaction of the individual with business, as well as the change in the technology of interaction with business. The digital economy is built based on numerous technologies and technological platforms that are integrated and interact with each other. The importance of the digital economy on a global scale is enormous.

Relevant organizations can benefit from its production and service delivery faster and more efficiently. The digital economy can strengthen the economic growth of the most diverse countries in the modern era. It has become an inevitable model for developing and developed economies of the world, a driving force for development and national innovative strategies.

Developing countries lag behind developed countries in terms of the level of existing infrastructure and financial resources needed to transition to a digital economy. In addition, creating the necessary database that can be used by organizations to assess the transition to a digital economy in most developing countries also leads to many challenges.

The digital economy typically includes activities such as e-commerce, digital marketing, digital financial services, digital content production, software, computer games, cloud services, etc. [24].

The digital economy fully encompasses economic and commercial activities that use digital technologies and electronic communications as a new generation and innovative economy. With its constant evolution and significant impact on various fields, the Digital Economy is a new and innovative economy leading the global economy to digitization.

The digital economy has significant impacts on various economic, social, and cultural areas, including changes in the way people work and interact with each other, encouraging more flexible and remote work arrangements, and increasing global connectivity. The digital economy is also affecting education, healthcare, entertainment, and other sectors.

7 Issues of formation of a digital economy based on artificial intelligence

As artificial intelligence technologies develop, the specific economy of the relevant field also emerges. Accordingly, new economic relations and institutional conditions are formed. At this time, attention should be paid to the functional principles and characteristics that form some basic economic relations (Figure 2).

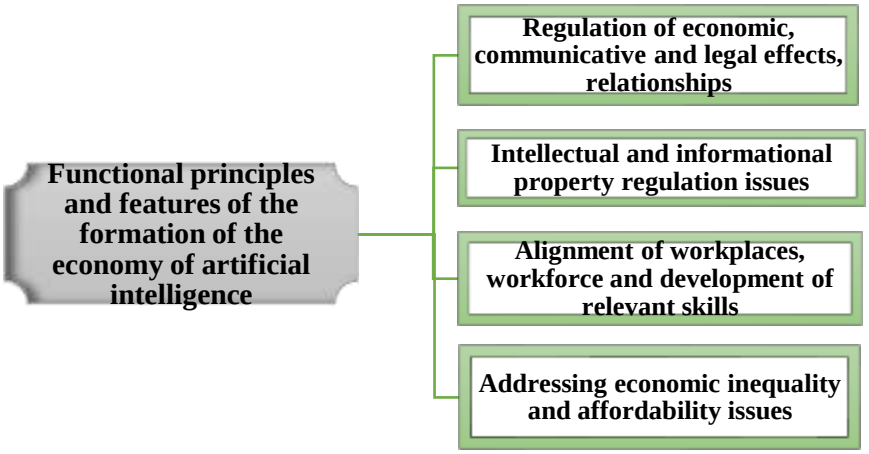

Fig. 2. Functional principles and features of the formation of the digital economy based on artificial intelligence *(Compiled by the authors based on the analysis and systematization of scientific literature)*

As artificial intelligence becomes more integrated into economic activities, emerging ethical and legal considerations take precedence. Issues such as privacy, data protection, algorithmic bias, accountability, and transparency need to be carefully addressed. New rules and guidelines must be developed to ensure responsible and ethical use of AI, protect the rights of individuals, and prevent any potential abuse or harm.

The rise of artificial intelligence technologies has raised concerns about potential job changes and the need for workforce adaptation. Artificial intelligence can both automate certain tasks and processes but also create new job opportunities and require a change in the skills of the workforce. Governments, educational institutions, and business structures must collaborate to provide reskilling and upskilling programs to equip workers with the necessary skills to thrive in an AI-driven economy.

The adoption of AI technologies has the potential to exacerbate economic inequality if access and benefits are not equitably distributed. It is necessary to ensure that AI technologies are accessible to all enterprises, regardless of their size or financial resources. In addition, efforts should be made to bridge the digital divide and prevent marginalized communities from further marginalization in the AI economy.

Artificial intelligence technologies are based on data and knowledge. This is where more intellectual property rights and data issues arise. As AI systems create relevant innovations, questions arise about who owns the resulting intellectual property. Clear frameworks and regulations must be established to regulate data ownership, protection, and sharing to facilitate innovation while protecting individual and organizational rights.

In general, artificial intelligence is a global phenomenon. International cooperation is very important for its development and regulation. Governments, businesses, and research institutes should work together to set standards, share best practices, and address global challenges related to AI, such as security, privacy, and ethical considerations. International cooperation can promote innovation, prevent fragmentation, and provide a coordinated approach to the development and application of artificial intelligence. By the way, let's remind that one of the main economic processes is the development of effective mechanisms for solving supply-logistics issues, as well as [17] the assessment of its impact on the economic, social, and environmental environment by providing technological support to supply chain management through artificial intelligence and cloud technologies. can also be implemented. The economic, ecological, and social effects of the application of modern ICT and artificial intelligence technologies in the management of the supply chain in the relevant field are great [17].

Artificial intelligence, cloud, etc. in supply chain management in economic processes. the structural elements of the economic impact of the application of technologies can be expressed as in Figure 3.

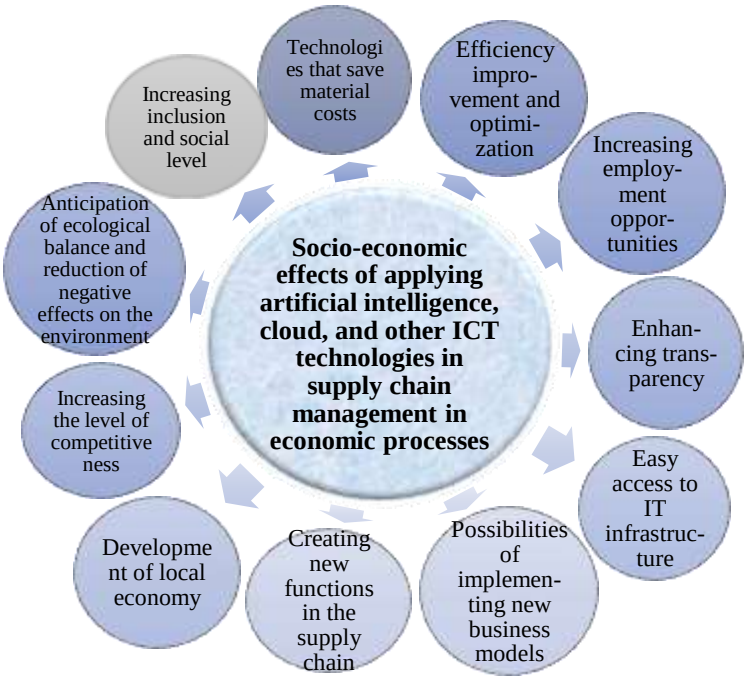

Fig. 3. Socio-economic effects of applying artificial intelligence, cloud, and other ICT technologies in supply chain management in economic processes *(Compiled by the authors based on the analysis and systematization of scientific literature)*

As can be seen, the application of modern digital technologies creates additional potential opportunities for obtaining a synergistic effect in economic processes.

8 The main types, areas, and components of artificial intelligence technologies in the economy

The goal of artificial intelligence systems and technologies is mainly to imitate human intelligence. They use different approaches and algorithms to achieve their goals. As a result of scientific analyzes and generalizations, various subfields, types, technologies, and approaches to artificial intelligence can be expressed in a synthesized form as shown in Figure 4. As it is known, Alan Turing's intelligence test became a turning point in the field of artificial intelligence [26]. Thus, the

intelligence test confirms traditional theological positions and those expectations from mathematical results about the possibility of intelligent machines [25-27].

Artificial intelligence is the technological study of how machines can do better than what humans do now.

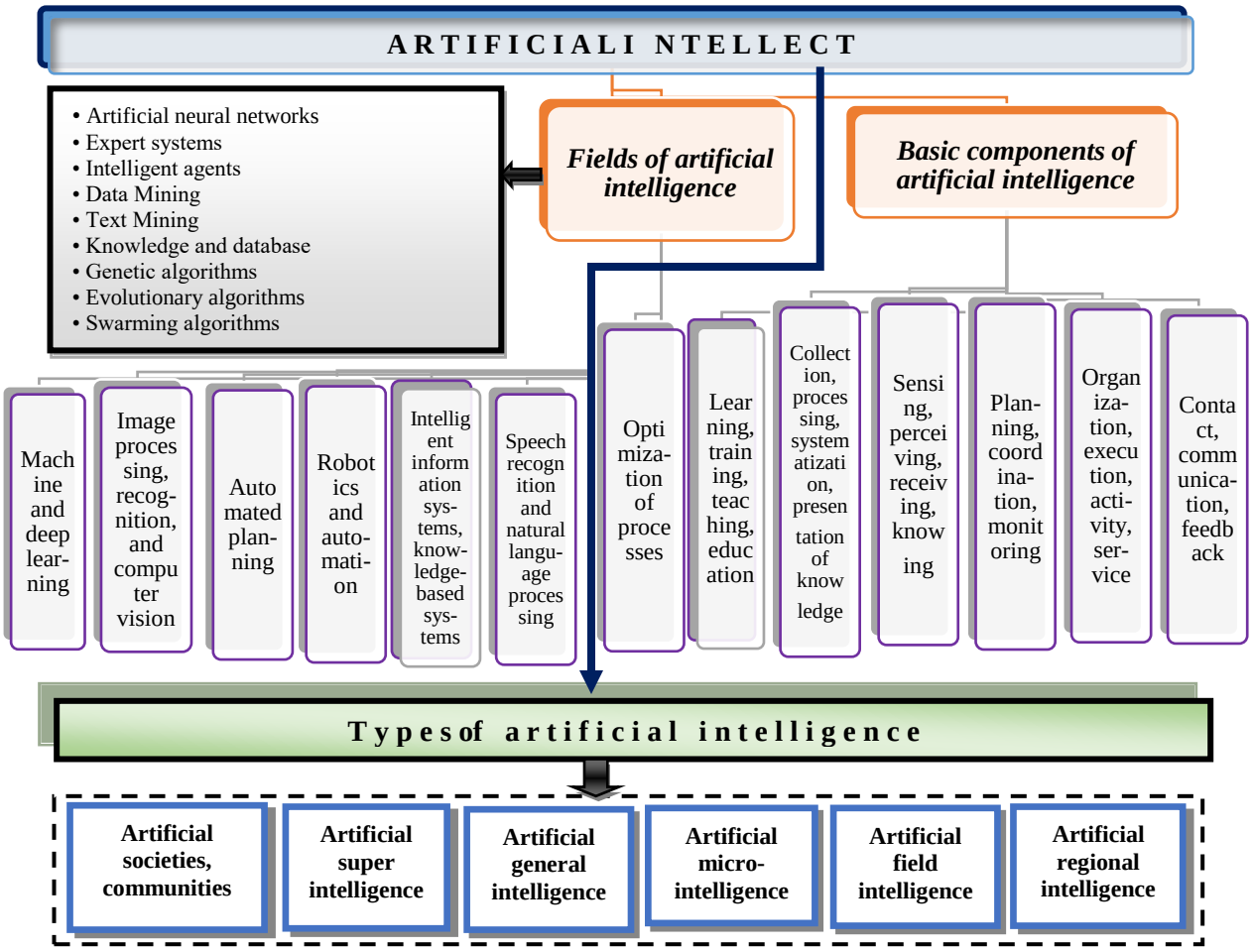

Fig. 4. The main types and components of artificial intelligence technologies *(Compiled by the authors based on the analysis and systematization of scientific literature)*

Artificial limited or micro-intelligence, sometimes called weak artificial intelligence [27], is a form of artificial intelligence in which machines exhibit intelligence in a specific domain, such as chess playing, sales forecasting, film production, language translation, and weather forecasting. Artificial general intelligence, sometimes called strong artificial intelligence, deals with machines working at the same level as humans. It refers to machines that can solve a range of complex problems in various fields and can autonomously manage their thoughts, concerns, feelings, strengths and weaknesses, and tendencies. Although these remain the main goals of artificial intelligence, they are also known to be difficult to achieve [26].

9 Artificial intelligence-based technologies in the formation of the new generation digital economy

The rapid development of artificial intelligence technologies has led to transformative changes in various sectors, including the economy. His ChatGPT-type systems, of particular relevance to the modern era, are advanced language models that have the potential to transform decision-making processes in economic systems. This

language model offers a powerful tool for economic analysis with the ability to understand and analyze large amounts of data. By processing and extracting valuable insights from diverse economic data sets, this technology can help policymakers, economists and business people make informed decisions. Its natural language processing capabilities enable it to interpret complex economic data.

Artificial intelligence technologies give decision-makers new tools and opportunities to anticipate economic trends and make agile decisions. By continuously analyzing market data, consumer behavior, and industry dynamics, AI technologies can make valuable predictions. This enables businesses to identify emerging opportunities, optimize resource allocation, and adapt strategies to changing market conditions, thereby increasing operational efficiency and competitiveness.

In the economy, AI-powered chatbots and virtual assistants play an important role in customer engagement. These intelligent agents can make personalized recommendations, answer queries, and offer customized assistance to customers. Using natural language processing and machine learning algorithms, it can understand customer preferences, analyze past interactions, and deliver personalized experiences. As a result, customer satisfaction increases and business structures drive economic growth by building stronger relationships with their customers.

Artificial intelligence technologies help generate innovation and ideas in the economy. It generates new ideas, suggests alternative solutions, and facilitates problem-solving processes by simulating human-like conversations and brainstorming sessions. This fosters a culture of innovation that allows entrepreneurs to discover new ways, overcome challenges, and manage technological advances. Artificial intelligence technologies are enabling creative thinking and collaboration that drive economic growth through innovation. With the ability to process large amounts of data and provide intelligent insights, artificial intelligence technologies are improving decision-making processes in the economy. It serves as a valuable decision-making tool for individuals and organizations, aiding in risk assessment, scenario modeling, and strategic planning. Artificial intelligence technologies can analyze complex variables, evaluate potential outcomes, and offer recommendations based on historical data and market trends. As a result, it is easier to make decisions based on more accurate information, better allocation of resources, increased efficiency, and improved economic results.

10 Features of the formation of new generation digital technological economic sectors on artificial intelligence technologies and development prospects

The use of artificial intelligence technologies can increase profitability by an average of 38% by 2035 and lead to economic growth of 14 trillion dollars in 16 business areas. Currently, 4% of companies have implemented artificial intelligence systems, 21% have started or plan to start a pilot project in the near future, and 25% have medium and long-term plans. Globally, the application of artificial intelligence technology has enabled companies to earn approximately 3.9 trillion dollars.

By 2035, AI technologies in 16 sub-industries will be capable of increasing economic growth rates by an average of 1.7%. At the same time, information technologies and telecommunications (4.8%), manufacturing (4.4%), and financial services (4.3%) will show the greatest increase in added value. Such solutions in the fields of construction, education, and hotel business will increase the profitability of the activity the most [28, 29]. In 2030, due to the active use of artificial intelligence, the global GDP will increase by 14% or 15.7 trillion US dollars. More than half of the increase will be due to labor productivity in 2016-2030. The remaining part of the profit will be obtained due to the increase in consumer demand through the improvement of products through

artificial intelligence. China (26% GDP growth in 2030) and North America (14.5% GDP growth in 2030) or $10.7 trillion in global growth. An increase in GDP will also be possible due to the application of artificial intelligence algorithms in customer relationship management (CRM) systems.

Regarding the new generation of digital technology economy sectors formed based on artificial intelligence, it can be noted that the rapidly applied and developing digital technology is reshaping artificial intelligence industries, economies, and the structure of our daily lives. As a result, the emergence of next-generation economic sectors is accelerated. Those sectors based on artificial intelligence are at the forefront of innovation, efficiency, and transformational potential, a platform where human-machine collaboration leads to high progress [30].

Artificial intelligence technologies are transforming healthcare by enabling accurate diagnosis, drug discovery, and personalized treatment plans. Machine learning algorithms analyze medical data for early disease detection, while artificial intelligence-powered robotics assist in surgeries. Telemedicine, wearable health technology, and AI-powered drug research are changing the way we approach healthcare.

In addition, the intersection of artificial intelligence and finance, commonly referred to as Fintech, is democratizing financial services. Artificial intelligence algorithms power robo-advisors for investment management, enhance fraud detection, and optimize trading strategies. Decentralized finance and blockchain technologies are also reshaping the financial landscape.

Artificial intelligence is also driving the development of autonomous vehicles and changing the face of transportation. Self-driving cars, drones, and delivery bots are becoming an integral part of urban mobility, offering safer and more efficient transportation options.

In parallel, manufacturing is being revolutionized by artificial intelligence-driven automation. Smart factories use artificial intelligence to optimize production, predict maintenance needs, and reduce waste. Collaborative robots (cobots) work alongside human workers, and additive manufacturing also enables rapid prototyping.

Artificial intelligence technologies require an improved approach to education. Artificial intelligence personalizes education through adaptive learning platforms and intelligent systems. It adapts educational content to the needs of individual students, making learning more accessible and effective. Virtual classrooms and distance learning technologies are becoming mainstream.

Artificial intelligence plays an important role in the optimization of renewable energy sources. Smart grids manage energy distribution efficiently, and AI-based predictive maintenance ensures the reliability of renewable energy infrastructure. Sustainability goals are bolstered by AI's ability to reduce energy waste.

AI is influencing content creation with news article-generating chatbots, AI-powered music, and deep learning-based art. Content recommendation algorithms personalize user experiences and enhance engagement across various media platforms.

With artificial intelligence, the precision of agriculture is also increased. Precision agriculture uses artificial intelligence and IoT sensors to optimize crop management, reduce resource use, and increase productivity. Autonomous drones equipped with artificial intelligence, machinery, and other technical means monitor and manage farms. Artificial intelligence also helps in the detection of deficiencies, defects, and diseases related to agricultural products, and in the analysis of ecological purity of product.

Artificial intelligence also helps in space exploration, autonomous navigation, data analysis, and mission planning for spacecraft and the overall development of space technologies. It supports Earth observation and climate monitoring from space. With the increasing impact of artificial intelligence, ethical considerations, and governance mechanisms are also being formed. Developing AI ethics, regulatory frameworks, and transparency measures are

critical to ensuring the responsible application of AI.

11 Conclusion

The directions of formation of the New generation regional and National digital technological economy based on artificial intelligence technologies have dynamic potential. The ability of AI technologies to analyze, predict outcomes, automate tasks, and improve personalization is driving innovation and progress in various economic sectors. To fully exploit this potential, stakeholders across those sectors need to collaborate, invest in education and research, and prioritize AI practices. By doing so, one can help develop a digital future that is not only technologically advanced but also inclusive and beneficial to society as a whole.

The emergence of a new generation of digital economic sectors supported by artificial intelligence marks the emergence of a transformative change in the global economy. However, it is important to thoughtfully manage the future based on artificial intelligence, to solve the current problems. The next-generation National digital economy is an extraordinary and transformative force that presents many opportunities and challenges. Embracing innovation, sustainability, and inclusion to its full potential is key to driving the direction of future economies. Artificial intelligence technologies offer a range of functions that contribute to economic development, decision-making processes, and innovation. They have great potential to accelerate economic growth, promote innovation, and improve overall efficiency in various sectors. Artificial intelligence technologies will create new opportunities for mastering and using the unique characteristics of the economy and will pave the way for more sustainable, sustainable, and innovative-based effective economic development.

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