

Research and Perspectives of New Generation Technological Economic Development Problems on the Industry 4.0 Platform

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This paper is dedicated to the study of the problems and prospects of new generation technological economic development on the Industry 4.0 platform. The importance of digitization and cyber security in the technological development of the economy was shown, and the relevance of digital transformation, including the application of artificial intelligence, in economic sectors was justified. Based on the analysis of the relevant scientific research works related to the formation and development of the new generation technological economy, its essence, characteristics, scientific-theoretical and methodological bases of its formation were analyzed. Some main characteristics of the transition of economic relations to a new generation at the international level and the National technological grounds of its formation are indicated. Some conceptual approaches and main supporting principles for the formation of the new generation technological economy based on digital transformations have been proposed. The components of the Economy 4.0 platform are systematized. Prospects for the transition to Industry 5.0 in the new generation of technological economic development and prospective research directions for technological innovations within the framework of the Industry 4.0 paradigm have been determined. Relevant recommendations on the application and development prospects of Industry 4.0 platform technologies in the formation and development of the new-generation technological economy were given.

Keywords: Digital transformation, Digital economy, Technological innovation, Innovative technologies, New-generation technological economic development, Industry 4.0 platform, Industry 5.0 platform

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1 Introduction

Digital innovative technologies are increasingly integrated into other areas of industry, production, consumption, communication, and economy. The global economy is moving from traditional industrial models to the development of technological-innovation-oriented structures. This leads to the formation of economic mechanisms based on new-generation technologies and technological economic development. This emerging economic paradigm is also characterized by the widespread adoption of digital technologies such as Artificial Intelligence (AI), IoT, Big Data, 5G, Cloud, etc., which create unparalleled opportunities for growth, efficiency, and innovation. However, although this type of next-generation technological economic development has many benefits, its formation

and development face unique challenges. Thus, the need to address important issues such as the inequality of access to technology, the displacement of traditional labor markets, and the need for new regulatory mechanisms to manage the legal and security challenges associated with digital transformation has increased. In addition, as the respective country's economies rely more on digital infrastructure, the risks of cyber-attacks and data breaches become more pronounced, which requires the development of strong cybersecurity measures.

The formation of new generation technological economy sectors and technological development are reflected in many State Programs and official documents, where technological development is an important task for Azerbaijan (<https://president.az/az/articles/view/63979>;

<https://president.az/az/articles/view/50474>).

In those documents, considering the great importance of technological development in the field of industrial development and the civil and military-industrial complex, its main goals were defined. It has been shown that technological development, digitalization, cyber security, and application of artificial intelligence - all these should be set as a task before the institutions and society, becoming the signs of daily life in the country.

It is no coincidence that in the Socio-Economic Development Strategy of Azerbaijan

(<https://president.az/az/articles/view/56723>)

technological innovation factors include 1) effective integration of the country's economy into the global value chain, 2) through technological innovations, as well as state strengthening the provision of resources and services in this field with private partnerships, 3) forming the necessary ecosystem for the rapid adoption of technological innovations in the national economy, 4) turning the country into a green energy space and 5) accelerating the processes of environmental health, etc. has been attributed. As you can see, the transition to a new generation of economic development can be characterized by several main technologically innovative trends. These are leading to the emergence of smart factories, autonomous vehicles, and AI-driven services that are redefining traditional business processes as a result of the digitization of industry. At the same time, it enables cooperation and innovative development of the digital economy and its sectors at various levels. Continuity and stability are the basis of economic strategies in the formation of a new generation of technological economy. Governments are integrating the development of next-generation technologies through green, innovative, digital, cognitive technologies and circular economy practices to ultimately balance economic growth with environmental stewardship [1]. In this regard, the formation of the appropriate methodological apparatus approaches, and implementation mechanisms for researching, analyzing, and solving the problems of the

development of the new generation of technological economy is considered one of the important issues.

2 Statement of the problem and analysis of scientific research works related to it.

In the current era of rapid development of digitalization, innovation, science, and high technologies, the economy is developing rapidly together with other areas. Various sectors of the emerging new-generation National digital economy are developing rapidly. In such conditions, the formation and development of the New generation technological economy should be based on relevant scientific and theoretical foundations and innovative digital technologies. The essence of setting this problem, which does not raise any doubts about its relevance, is to study the characteristics of the formation of the new generation technological economy and to determine the directions of development, as well as to develop a conceptual methodological approach in that field and give relevant recommendations.

It is known that the application of digital technologies in the economy and its management has created opportunities and conditions for solving many problems. Many scientists and researchers have conducted some research on this issue [2-8]. It should be noted that the authors of the articles, like other researchers, have some publications in this field in different years, in different databases, including in different scientific journals indexed in the MECS database [8-13]. The requirements for solving the relevant problems in those publications must be considered in the comprehensive formation of the new generation technological economy and in the analysis of development problems. For this reason, despite the fact that the analysis of the above-mentioned problems has been studied to a certain extent in the scientific works of many scientists and specialists, there is still a need for a deeper and comprehensive study of that process, as well as the development of various approaches to solving the problems that have arisen. Therefore, in relation to the state of

development of the considered problem, it should be noted that in [3], a systematic analysis of the literature review on the Industry 4.0 paradigm, which contributes to the development of technological innovation, was carried out. 1) theories based on bibliometric analysis, considering the in-depth review of selected sources and various aspects of the evolution of scientific literature; 2) technologies; 3) methodologies and countries; 4) research fields and sectors; 5) identification of several clusters such as current and future impacts, etc., where scientific discussions are developed, is proposed. In this study, promising research directions for solving those problems in the future related to Industry 5.0 were proposed. In [5], the issues of digitalization and economic growth were considered in the perspectives of new classical and new structural economics. Here, data elements based on the neoclassical general equilibrium model and the new structural general equilibrium model are presented to study the choice of economic growth paths for developing countries. Here, the following results are determined: 1) Regardless of which path of economic growth in accordance with the general equilibrium of developing countries, the rate of economic growth after the introduction of information elements is always higher than before. 2) Finding the optimal way of economic growth by comparing different results of economic growth rates of developing countries in two analytical frameworks.

[6] is devoted to the analysis of the causal relationship between technological innovation and economic development based on the experience of the economy of developing countries. The purpose of the study was to measure the impact of technological innovations on economic growth in developing countries during the period 1990-2018 by applying the Error Correction Model (ECM). Experimental test results showed that technological innovation indicators (for example, education expenditure, number of patents for residents and non-residents, Research and development

expenditure, number of researchers in research and development, high technology export, and scientific and technical research results) GDP with technological innovation. there is a long-term two-way causal relationship between In-depth analysis of that cause-and-effect relationship has led to an increase in economic development in the short and long term.

In [2], dynamic assessment and driving factors of technological innovation efficiency in China are reviewed. The measurement of technological innovation efficiency (TIE), dynamic evaluation, and analysis of its spatiotemporal characteristics were carried out. The efficiency of technological innovation was dynamically calculated based on the improved super-efficiency (super-efficiency SBM-DEA model) model in 30 provinces of China for the period 2011-2019. Then, the spatio-temporal differentiation characteristics and dynamic evolution process of efficiency in provinces were evaluated. Results The top five regions for technological innovation efficiency in China from 2011 to 2019 are Beijing (1.0), Shanghai (0.96), Hainan (0.96), Jilin (0.94), and Tianjin (0.91). has shown that. The regions with the lowest average efficiency were Qinghai (0.77), Ningxia (0.73), and Inner Mongolia (0.73).

[14] conducted an econometric analysis of technological achievements in regional economic development based on Data Envelopment Analysis (DEA). Here, the DEA method was used to measure the transformation efficiency of scientific and technological achievements of universities in 31 provinces and autonomous regions (excluding Hong Kong, Macao, and Taiwan). The Entropy weight-TOPSIS model was used for quality assessment. It was determined that the transformation efficiency of scientific and technological achievements of universities in the mentioned 31 provinces and autonomous regions is effective and the transformation ability of scientific and technological achievements of universities is strong in the regions.

In [15], a conceptual approach to the

formation of a digital innovation economy based on Artificial Intelligence technologies was developed. In this work, the impact of artificial intelligence technologies on transition programs from Society 4.0 to 5.0 was studied. The structure of the world market for artificial intelligence technologies was analyzed according to various indicators. Algorithmic stages of improvement of Delphi expert method for evaluation of innovative perspectives of sub-economic sectors on artificial intelligence were proposed. Initial expert evaluations on innovative perspectives have been processed. The results of the assessment on innovative perspectives of digital economic sectors related to artificial intelligence technologies were interpreted.

In [4], the application features of Artificial Intelligence technology as a technological innovation in accelerating economic development were investigated. [16] analyzed the problems of the digital economy, artificial intelligence, Industry 5.0 era. Here, the main dangers that humanity may face with the massive application of achievements in the field of artificial intelligence to all areas of society have been highlighted. In the end, conclusions were made about the development trends of artificial intelligence and Industry 5.0 in the digitalization period. [17] Digitization and the formation of the new economy 2.0: dedicated to the prerequisites and directions for its implementation. In [7], the role of the digital economy in modern society, the trends and perspectives of using artificial intelligence were analyzed.

Such requirements must be considered in the formation of a new generation technological economy in a complex manner. For this reason, despite the fact that the characteristics of the formation of the new generation technological economy and the analysis of the development problems have been studied to a certain extent in the scientific works of many scientists and specialists, there is still a need for a deeper and comprehensive study of that process, as well as the development of various approaches to solving the problems that have arisen.

3 The essence and characteristics of the new generation technological economy.

The next-generation technological economy, often referred to as the next-generation economy, embodies the transition to sustainable, digital, green, inclusive, and smart economic relations, structures, processes, and product/service production. The new generation technological economy is aimed at modernizing the processes performed in all spheres of society and economy, resulting in the creation of new value of interaction, and improvement by applying digital innovative technologies in all spheres of the economy. As these technologies continue to be deployed and improved around the world, the next-generation technology economy is shaping the future of global development and economic prosperity even more effectively.

The new generation technological economy is based on a transformative transition from a traditionally operating industry, production, and service-based economy to an economy governed by new cognitive technologies with the wide application of digital and innovative, green, inclusive, circular technologies in all areas of society and economic relations corresponding to these processes. This economy is characterized by the deep integration of advanced digital tools, intelligent systems, and the continuous flow of data, reshaping the way businesses, governments, and individuals interact and create value.

The main elements of the formation of the new generation technological economy can be attributed to: 1) Technology-based growth and technological integration. 2) Digital technology and transformation. 3) Wide application of innovations. 4) Data as a fixed asset. 5) Continuity and stability. 6) Ecosystems. 7) Human capital, science, and education. 8) Globalization and decentralization. The main features of the new generation technological economy can be attributed to: 1) Decentralization and distributed networks. 2) Global connectivity and digital platforms. 3) Integration of automation and artificial intelligence. 4)

Cooperation and innovation ecosystems. 5) Personalization. 6) Sustainability and circular economy. 7) Labor dynamics. 8) Regulation mechanisms.

4 Scientific-theoretical and methodological bases of the formation of new generation technological economic development.

The rapid development of technology and its integration into the global economy necessitated the creation of new scientific-theoretical and methodological foundations to guide and understand the processes of new-generation technological economic development. Such mechanisms aim to address the unique characteristics of the interconnected and innovation-driven economy of digitized sectors and the multifaceted challenges and opportunities it presents.

The scientific-theoretical foundations of the formation of the new generation of technological economic development are multidisciplinary in nature [15, 18]. It primarily includes information and digitalization, algorithmization, artificial intelligence, deep and machine learning, intelligent systems, data analytics, cybernetic and organizational management, high generation, nano, space, bio, quantum, energy, material technologies, innovations, cognitive technology, etc. includes the symbiosis of scientific and technological theories. At the same time, it contains the scientific-theoretical foundations of the new generation economy, as well as the principles and signs of the formation of the digital, joint sharing, circular, green, inclusive, intellectual, and technological economy.

It can be attributed to the methodological foundations of the formation of the new generation of technological economic development: Data-based analysis and modeling. Systems analysis thinking and complex adaptive systems. Digital twins and simulations.

Technological and economic processes can be simulated to test development strategies in a controlled environment with digital twin technology that creates virtual copies of

physical systems. This methodology makes it possible to assess the effectiveness and sustainability of innovations before they are implemented on a large scale.

The scientific-theoretical and methodological foundations of the new generation of technological economic development must evolve to consider the challenges of digital transformation, complexity, and sustainability that shape modern economies. These frameworks provide a deeper understanding of how technology shapes economic processes by integrating interdisciplinary knowledge, using data-driven methodologies, and focusing on sustainability. This, in turn, enables the formulation of strategies that promote innovation and sustainability in a rapidly changing global environment.

5 National technological foundations of the formation of a new generation economy.

The formation of a new generation of the global economy means transformative changes in various directions. This transition consists of multifaceted elements that shape the activities of various sectors of society and the economy. Its main aspects, and the stages of technological development characterized primarily by digital technologies, can be noted as in Figure 1.

It should be noted that 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. In order to more efficiently organize the production and service process within enterprises, organizations should define a unified plan of artificial intelligence strategy for the wide application of digital technologies. Statistics show that the artificial intelligence market has been valued at \$150 billion in recent years and is expected to grow at an annual rate of 37.3% from 2023 to 2030 [15].

The guidelines recommended by the World Economic Forum (<https://www.weforum.org>) on the use of artificial intelligence-based

solutions can be considered as one of the important steps towards the formation of the economic 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.

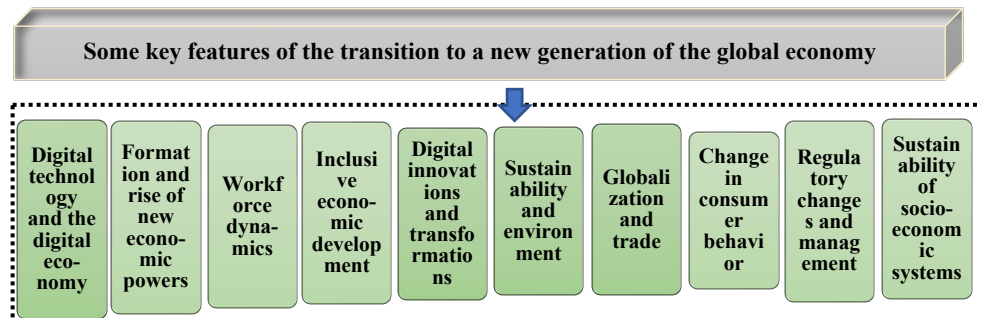


Fig. 1. Some key features of the transition to a new generation of economic relations at the global level (*compiled by the authors*)

At the present time, a solid foundation has been created for the transformation of Azerbaijan into an internationally important energy, transport-logistics, and communication hub, the largest and dynamic economic space of the region and the center of interest of strategic investors, its integration into the global value chain and the transition to the stage of innovation-based development on the Industry 4.0 platform. In accordance with the mentioned trends, it is planned to prepare a Digital Economy Strategy in the country according to the Action Plan of the Social-Economic Development Strategy (<https://president.az/az/articles/view/56725>) of Azerbaijan in 2022-2026. According to preliminary information, the New Generation Economic Strategy of Azerbaijan will make a great contribution to the economy by 2030 by covering the state, private and civil society. This Strategy will initially stimulate economic growth in 69 areas of activity within the framework of 9 main projects. Implementation of the strategy 1)strengthening of business transformation and capacity building in Azerbaijan in the new era, 2)establishment of a model enterprise and new generation technological centers, which envisage wide application of 4th Industrial Revolution technologies, 3)creation of digital twins and 4)regional new generation of artificial intelligence it will create a serious

new technological ground for development in areas such as implementation of wide application, 5)promotion of entrepreneurship in relevant fields, 6)support of convenient business and information infrastructure, etc. The strategy also aims to implement fundamental directions such as the development of new generation Industry 4.0 platforms, increasing the possibilities of applying artificial intelligence in the country while protecting the technological sovereignty of Azerbaijan, stimulating the creation of jobs and industries based on new digital technology, etc. (<https://demokrat.az/az/news/164178>).

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. The main task and purpose of relevant research works to be carried out in this direction should be devoted to developing the strategic conceptual, scientific-theoretical foundations of the New generation National and regional technological economy based on artificial intelligence technologies, defining its characteristics and forming the appropriate

methodological apparatus for determining the mechanisms of its realization.

6 Some conceptual problems of forming a new generation technological economy based on digital transformations.

The new type of economic relations that are being formed at the global, regional, and national levels are initially based on digital

technology and transformations. In this sense, the formation of a new economy driven by digital transformations implies a fundamental re-examination of the management of economic structures and processes. Here we can express some conceptual approach, considerations and suggestions for the development of such an economy by structuring them as shown in Figure 2.

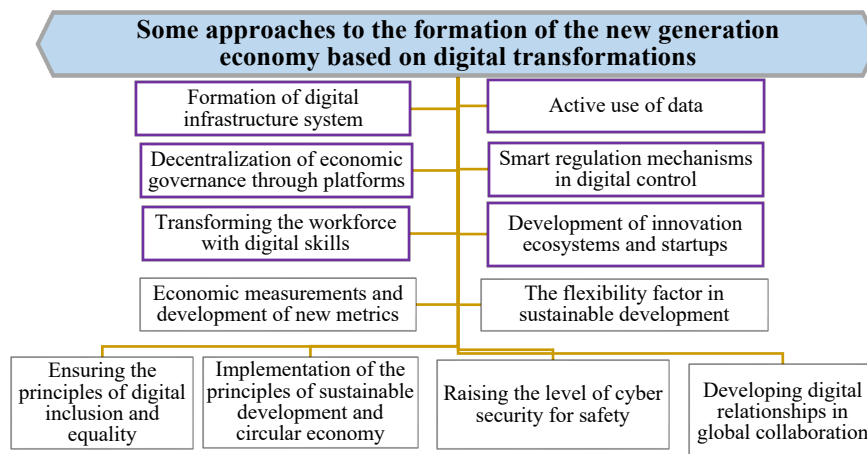


Fig. 2. Some approaches to the formation of a new generation technological economy based on digital transformations (*compiled by the authors*)

Following these conceptual considerations and approaches, the new generation economy creates more favorable conditions for the creation of a more inclusive and sustainable economic system in the future, its development, and the ability to use digital transformations to ensure innovation and sustainability.

7 The main fundamental principles of the formation of the new generation technological economy and the problems of its formation.

The next-generation economy is fundamentally reshaping the way value is created, distributed, and stored globally. Its formation is governed by a unique set of principles that reflect changing technological, social, and economic paradigms. These principles form the basis of a more flexible, innovative, and sustainable economic system adapted to the complexities of the 21st century.

The rapid evolution of digital technology, and

its integration into every area of society, has led to the emergence of what is now called the next-generation economy. This economic paradigm represents a shift from traditional models to new foundations driven by digital transformation, global connectivity, and sustainability.

The next-generation economy is shaped not only by technological advances such as artificial intelligence, big data, blockchain, and automation but also by a deep commitment to promoting innovation, sustainability, and inclusion. Unlike previous economic frameworks that relied primarily on industrialization or service-based models, the next-generation economy thrives on a strong focus on data-driven insights, distributed systems, and collaborative ecosystems. It facilitates global cooperation and decentralized decision-making by being a dynamic system that seeks to balance environmental and social responsibility with technological progress.

In this context, it is very important to define

the basic principles that guide the formation of the new generation economy. These principles include the introduction of innovation, the prioritization of sustainability and resource efficiency, digitization as a strategic resource, and the growing importance of data. These principles will create conditions for the

development of strategies necessary to ensure the transformational potential of the economy and its prospective development. The main supporting principles of the formation of the new generation technological economy can be expressed as in Figure 3.

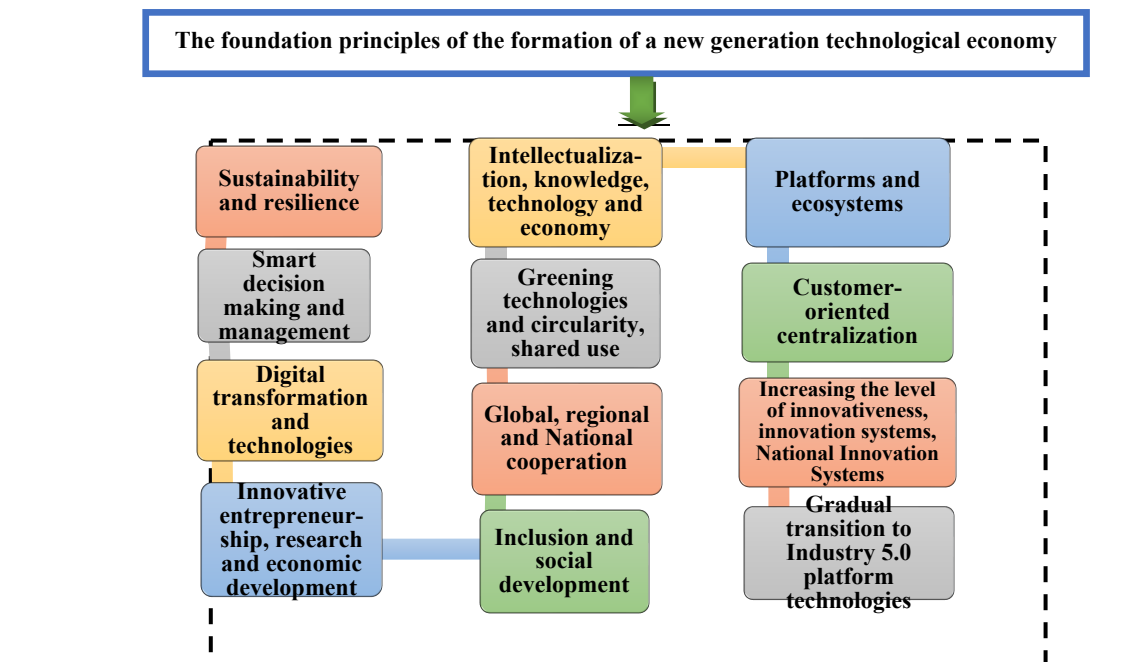


Fig. 3. The foundation principles of the formation of a new generation technological economy (compiled by the authors)

The following can be attributed to some of the main problems of the formation of a new generation technological economy: Technologies such as Digitization and mass connectivity, Digital infrastructure, Internet of Things (IoT), Automation, and artificial intelligence are increasing productivity by automating daily tasks, increasing accuracy, and reducing human errors in various sectors including manufacturing, finance, and customer service. *Decision-making based on artificial intelligence.* Artificial intelligence and machine learning algorithms are increasingly used to analyze large data sets, identify patterns, and make predictive and directional decisions. *Development of digital platforms.* This process is changing traditional business models. Platforms such as e-commerce, social media, and digital marketplaces facilitate interaction between producers, consumers, and service providers,

creating new opportunities for value creation and exchange. *Mutual cooperation in the new economy.* Ecosystems, which are networks of interconnected organizations that cooperate, compete, and collaborate in such beneficial ways, are of great importance. Advances in technology enable the production of highly customized goods and services on a large scale. This mass customization caters to individual customer preferences, increasing customer satisfaction. *Sustainable economic development.* Sustainable economic growth resource efficiency prioritizes sustainable practices including the efficient use of new-generation technological economy resources, waste reduction, and energy conservation. Technologies such as smart grids, renewable energy systems, and green manufacturing processes are central to them. *Circular economy models.* The circular economy, which supports the reuse and recycling of

materials, is attracting attention as a way to reduce environmental impact while maintaining economic growth. Businesses are adopting circular models that extend product life cycles and minimize waste. *Decentralization and blockchain technology.* Such an approach provides a secure, transparent, and decentralized method for recording transactions and managing data. This technology is reshaping fields such as finance, supply chain management, and digital identity verification by reducing the need for intermediaries and increasing trust. *Human capital, workforce transformation, and digital skills development.* The new economy requires a workforce with strong digital skills, including coding, data analysis, and cybersecurity. Education and training systems are evolving to meet these demands by emphasizing STEM (Science, Technology, Engineering, and Mathematics) education and

continuous learning, increasing the flexibility of the workforce. *Global supply chains.* Digital technologies are transforming global supply chains, making them more efficient, transparent, and sustainable. Real-time tracking, predictive analytics, and automated logistics systems are key components of this transformation. *Digital commerce.* The new economy facilitates digital commerce, giving businesses of all sizes access to global markets through e-commerce platforms and digital services. This increases competition and gives consumers more choice, spurs innovation, and lowers prices. *Cyber security and trust.* Building an appropriate cybersecurity infrastructure is required. *Adaptive tuning.* The rapid pace of technological change requires flexible and adaptable regulatory approaches and mechanisms.

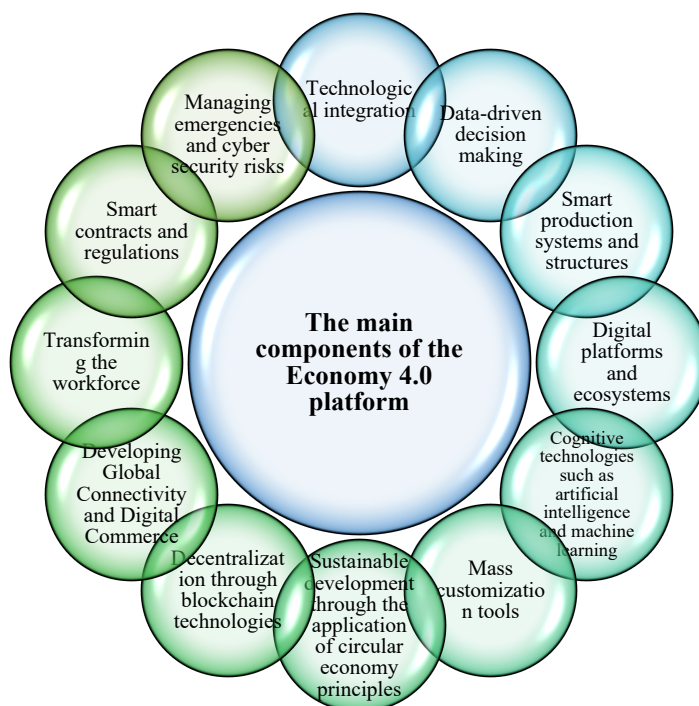


Fig. 4. Main components of the Economy 4.0 platform (*compiled by the authors*)

8 Aspects of the impact of Economy 4.0 platform components on increasing the efficiency of economic development processes.

The Economy 4.0 platform is an extended transformation of the Industry 4.0 platform in all economic sectors and processes based on

the same technological base and similar principles. The term Economy 4.0 denotes the next stage of economic evolution, deeply integrated with the principles and technologies of the Fourth Industrial Revolution (Industry 4.0). It relies on digital transformations to create a highly automated,

data, information, knowledge-based, interconnected, and innovation-driven economy. The main components of the Economy 4.0 platform can be proposed as in Figure 4

9 Prospects of the transition to Industry 5.0 in the new generation of technological economic development.

During the transition to Industry 5.0, products/services will be produced according to the needs of individual customers [3, 19]. Products and services will be developed flexibly, considering digital requirements, and using new production techniques and innovative materials. In some cases, the new product will be a result of the human mind or body. To implement this new paradigm, it will be necessary to introduce new regulatory protocols and new forms of governance [20]. Manufacturing will not only become flexible and elegant, but also automated, digital, and data-driven. Products will be of the highest quality, and affordably priced, and the supply

chain will be optimized to continue production. Therefore, Industry 5.0 will create progress in production, connecting itself with humans, artificial intelligence with physical systems of various companies, etc. on a high-speed basis.

During production, the Internet will use collaborative robots (i.e. cobots) that work synchronously with workers and will mix with the human brain [21]. Industry 5.0 will support increased collaboration between workers and smart systems. This will lead to the creation of higher-value jobs through the combined influence of designers and engineers. Employees will demonstrate the ability to adapt social-behavioral skills such as complex problem-solving and teamwork. They will need to demonstrate advanced cognitive and critical thinking skills. All these capabilities cover the core of sustainable human capital and lifelong learning [3]. Within the Industry 4.0 paradigm, prospective research directions on technological innovations can be presented as in Table 1.

Table 1. Prospective research directions on technological innovations within the Industry 4.0 paradigm

Cluster	Open research questions
Theories	Development of new conceptual approaches or perspectives to examine the transition to Industry 5.0, taking into account the diversity of theories adopted to examine technological innovation under the Industry 4.0 paradigm.
Technologies	Ensuring and describing the absence of human labor, taking into account the technologies implemented by Industry 4.0.
Methodologies	• Development of the best indicators and methodologies to assess the effects of technological innovations within the Industry 4.0 paradigm. • Identifying the strengths and weaknesses of quantitative and/or qualitative methodologies in the study of technological innovation in the context of the Industry 4.0 paradigm.
Research areas and sectors	• Impact of technological innovations on changing innovation approaches in organizations in the context of Industry 4.0 paradigm. • Aspects of the impact of the application of technological innovations within the framework of Industry 4.0 on the internal processes of organizations (for example, logistics, human management, Research and development approaches). • Directions of the impact of Industry 4.0 technological innovations on service sectors (for example, tourism, banking and insurance, healthcare, public administration).
Current and future impacts	• Aspects of the impact of technological innovations on human skills in the context of the Industry 4.0 paradigm. • Changing directions of education systems to meet new challenges. • The extent to which technological innovations in the context of the Industry 4.0 paradigm are redesigning the activities of economic sectors. • The extent to which innovations are truly intelligent and can be self-optimized through integrated data management. • Problems arising from technological innovations within the framework of Industry 4.0. Determining the starting situation and situation for Industry 5.0.

Industry 5.0 will ultimately lead to workers working with machines in a way that enables

both new and future solutions to problems and the production of high-value bespoke products.

9. Conclusion

The next-generation economy is characterized by rapid technological progress, widespread adoption of digital innovation, and digital transformation. Its main goals are sustainability, resilience, and adaptability. To thrive, the economy requires continued investment in science, education, technology, and infrastructure. It is also characterized by a preference for sustainability, digital innovation, inclusion, global cooperation, sustainability, and smart governance. By following these principles, societies can build a more sustainable, prosperous, and just new economy.

The formation and evolution of a new generation of technological economy represents a profound change in how economic systems work and develop. Driven by rapid advances in digital technologies, this economy is characterized by innovation, data-centric operations, and the seamless integration of advanced tools such as artificial intelligence, blockchain, and automation. These technologies are reshaping industries, enabling greater efficiency and promoting new business models, leading to global accelerated economic growth and competitiveness.

However, there are certain problems in the development of the technological economy. Unequal access to technology across regions and socioeconomic groups threatens to exacerbate global inequalities. The displacement of traditional labor markets due to automation is increasing job losses and the need for massive reskilling efforts. The rapid pace of technological adoption is outpacing the development of regulatory mechanisms required to address the legal and security issues arising from the digitization of economies.

The fundamental features of this economic paradigm—data as a key asset, the rise of innovation ecosystems, and increased reliance on global digital connectivity—underline its

potential to create transformative change. At the same time, managing cybersecurity and data privacy risks and ensuring equitable access to technology are critical to sustainable development.

Research shows that while the next-generation technological economy offers great opportunities for innovation and growth, addressing its development challenges will be critical to ensuring that the benefits of this transformation are widely shared and that its risks are effectively managed. Joint efforts between governments, businesses, and societies will be essential to building an inclusive, resilient, and sustainable global economy.

The problems of forming a new generation technological economy and prospective development directions can be applied in the development of other regional economies and their sectors and the development of solution mechanisms.

The analysis of the problems of formation and development of the new generation technological economy can serve as a platform for a comprehensive assessment of the activity of other economic processes in general. The application of artificial intelligence technologies in the improvement of the infrastructure of the new generation technological economy and effective management creates a basis for making appropriate management decisions. The proposed methodological and conceptual approaches related to the analysis of the problems of formation and development of the new generation technological economy can be applied in other regional economies and its sectors.

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