

# Management Problems of Information Support of Technical and Economic Systems Based on Artificial Intelligence Technologies

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**Abstract:** In the article, the problems of management of the information support of regional technical and economic systems based on the digital technologies of the Industry 4.0 platform are defined and their relevance is justified. With the application of artificial intelligence technologies, some problems related to the effective management of information support in technical and economic systems, including innovative enterprises, were explained. Some aspects of the essence and activity of technical-economic systems and their information support were analyzed. An overview analysis of relevant scientific research works was conducted and the state of problem solving was studied. Digital technologies of Industry 4.0, as well as the main functions of artificial intelligence technologies, and some global development trends related to their application in various fields, were studied. An architectural-technological structure model was proposed based on the application of artificial intelligence technologies of technical-economic systems, as well as information support of innovative-industrial enterprises. In the conditions of the transfer of digital innovations, directions for increasing the sustainable activity of technical-economic systems and innovative enterprises have been determined. The level of importance of industrial-digital technologies applied in the activity of technical-economic systems and innovative enterprises is indicated. Based on artificial intelligence technologies, relevant recommendations were given on the mechanisms for solving the problems of management of the information support of technical and economic systems.

**Keywords:** digital transformation; technical and economic systems; innovative enterprises; information support; artificial intelligence technologies; Industry 4.0 platform

## 1. Introduction

In the era of modern digital transformation, the construction of technical and economic systems, including the information support of innovative industrial production enterprises based on artificial intelligence technologies, and their effective management based on modern digital technologies are considered urgent issues. (<https://president.az/articles/51299>). Artificial Intelligence (AI) technologies are increasingly

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applied in various aspects of the active operation of technical and economic systems and create new opportunities for increasing its effective operation. Effective management of information support of technical and economic systems based on artificial intelligence technologies is of particular importance for decision-making, resource allocation, and general activity [1]. With the application of artificial intelligence technologies, new opportunities and challenges arise to use the potential of information management. For this reason, the presented article is dedicated to the investigation of some problems related to the effective management of information support in technical-economic systems and innovative enterprises using artificial intelligence technologies.

There are various reports and many scientific publications dedicated to the problems of effective management of the information support of technical and economic systems based on artificial intelligence technologies [2-7]. Although most of them are of a general nature, some of them also address specific problems. In order to solve the problems related to the general research work, appropriate mechanisms should be developed taking into account the recommendations of international organizations, as well as the new management models of the Industry 4.0 platform, and the perspectives of the application of new technological components. Although there are enough difficulties in solving the existing problems in this field, there are also opportunities and potential. It is very important to identify these problems and their solutions and include them in the functional cycle. In general, although certain scientific research works are carried out on the regional, international, and global scale in the analysis of the problems of effective management of the information support of technical and economic systems based on artificial intelligence technologies, this field has been poorly researched. There is a great demand for comprehensive deep scientific-technical and practical research in a similar sphere.

*The purpose of the research.* The main purpose of the scientific research conducted in the article is to analyze the issues of effective management of the information support of innovative enterprises acting as a synthesis of technical and economic systems based on artificial intelligence technologies, to develop its conceptual model, as well as the basics of the scientific-methodological approach to the study of prospective development problems. has been processed. In the article, based on the digital technologies of the Industry 4.0 platform, some considerations were given and recommendations were made for increasing the efficiency of the effective management of the information support of innovative enterprises. The study of the functional aspects of the information support of enterprises is included in the list of research objectives. The global development trends related to the application of digital technologies of Industry 4.0, as well as artificial intelligence technologies applied in the activities of innovative enterprises in various fields, were studied. An architectural-technological structural model of information support of innovative industrial enterprises was developed based on the application of artificial intelligence technologies. Features characterizing the level of importance of industrial-digital technologies applied in their activity have been determined. Certain recommendations have been made on the mechanisms for solving the problems of effective management of information support based on artificial intelligence technologies of innovative enterprises.

*Research methods used.* On the basis of artificial intelligence technologies, the following research methods were used in solving the problems of effective management of the information support of enterprises, in studying prospective development directions, in working out their scientific-methodological and theoretical bases: information theory, systematic analysis, correlation analysis, econometric modeling

methods, expert evaluation method, artificial intelligence technologies and methods, algorithmization, ICT tools, and technologies, etc.

*Research methodology.* The appropriate methodological apparatus and approach were used for the synthesis of technical and economic systems based on artificial intelligence technologies, as well as for the determination of the problems of effective management of the information support of enterprises, and prospective development directions. A systematic review of the digital technologies of the Industry 4.0 platform, as well as the technical and technological features of artificial intelligence technologies applied in enterprises, was conducted. Relevant methodological principles have been taken into account in the applications of digital technologies of the Industry 4.0 platform in enterprises.

The requirements of the application of artificial intelligence technologies in the formation of the information support system of enterprises were proposed, and the development of the architectural-technological structural model was taken into account. International economic development trends, requirements of high and modern digital technologies, and the main trends of the Industry 4.0 platform are the basis of the relevant methodological approach in ensuring the sustainability of enterprises.

## **2. An Overview Analysis of Relevant Related Scientific Research Works and the State of Problem**

Despite the importance and relevance of the development of effective management problems of the information support of enterprises as a result of the synthesis of technical and economic systems based on artificial intelligence technologies and the mechanisms for its solution, that field has not yet been properly formed. A systematic multidisciplinary analysis of its conceptual foundations is still lacking in the scientific literature. Therefore, the existing theoretical and practical aspects of the problems of effective management of technical and economic systems of various purposes, including the information support of innovative enterprises based on Artificial Intelligence technologies, should be studied more. It is necessary to study the processing aspects and semantic content of existing concepts in that field, as well as to examine the perspectives and limitations of the transition of production and consumption to a new management scheme. It should be noted that the authors of the articles, like other researchers, have many publications in this field in different years, in different databases, including in different scientific journals indexed in the MECS database [2-12].

In this regard, it should be noted that [2] on the application of artificial intelligence in enterprises and organizations until 2021 in 31 journals of information systems, business, and management, and a systematic analysis of published articles on operations management was carried out. In this work, a conceptual structural model for the application of artificial intelligence in enterprises and organizations is proposed.

[8] is dedicated to the development and implementation of the conceptual model of efficient management of innovative enterprises based on digital twin technologies. A perspective conceptual development model of industrial-economic systems based on innovative digitization processes has been proposed. A SWOT analysis of the process of using digital twins in the management of innovative industrial-economic systems was carried out. The creation of digital twins for the organization and management of the activities of this type of enterprise and the expanded architectural structure of its concept were proposed.

[9] addressed multi-factor authentication issues to improve the security of enterprise resource planning systems. Multi-factor authentication has been developed as a state-of-the-art technology to strengthen the authentication security of user-owned information systems that combine several authentication factors. Here, stratified, random, and purposive sampling methods were used to identify the target group. The dependent variable for the study was limited to privacy, completeness, accessibility, and security rating regarding implementation of use. Independent variables are limited to security, authentication mechanisms, infrastructure, information security policies, vulnerabilities, and user adequacy. Through correlation and regression analysis, vulnerabilities, information security policies, and user training were identified to have a higher impact on system security.

[10] analyzed the methods of identifying cyber threats based on machine learning technology for the information system in real-time. It has been shown that by means of the proposed method, it is possible to independently detect cyber threats to information systems and perform countermeasures to eliminate them, and increase the functional stability of the system operating in real-time.

[11], the features of the application of Big Data technologies in cyber-physical systems and digital manufacturing on the Industry 4.0 platform were investigated. It was noted that digital manufacturing is a new technology based on the use of computers and interconnected modern technologies to manage the entire production process. The application of key technologies such as the Internet of Things, Cloud computing, Machine-to-Machine (M2M) communications, 3D printing, and Big Data in Industry 4.0 is shown in the work.

### 3. Functional Aspects of Information Support of Technical and Economic Systems

The information support of technical and economic systems plays a decisive role in supporting the efficient operation and development of the digital technological economy [12]. It includes various components, technologies, and processes that facilitate the collection, storage, processing, and dissemination of information in systems. These can be attributed to some functional aspects of information support in technical and economic systems. 1. *Data collection and management*. The infrastructure includes mechanisms for collecting and managing relevant data within the region. This involves the creation of data collection systems, data warehouses, and databases that include various economic indicators, market trends, demographic data, and other relevant data sources. 2. *Information exchange and cooperation*. Regional technical and economic systems and innovative industrial enterprises require effective information exchange and collaboration platforms. This includes the development of digital platforms, networks, and communication channels that facilitate the exchange of information and knowledge between different stakeholders such as businesses, government agencies, research institutes, and community organizations. 3. *ICT Infrastructure*. ICT infrastructure is the basis of information support infrastructure. It includes hardware, software, networks, and communications that enable efficient data transfer and processing. This infrastructure includes Internet connection, servers, data centers, communication networks, and other ICT resources necessary for data exchange and processing. 4. *Electronic Government services*. Information provision supports the delivery of e-government services in regional economies. It includes online portals, digital platforms, and electronic systems that enable citizens and businesses to use government services, submit credentials, make

payments, and communicate with government agencies seamlessly and efficiently. 5. *Business intelligence and analytics*. The infrastructure consists of the relevant mechanisms, tools, and technologies for business intelligence and analytics. It includes data analysis software, visualization tools, and statistical models that enable businesses to extract valuable insights from data, make informed decisions, and identify opportunities for growth and development within a regional economy. 6. *Cyber security and data privacy*. Information support should prioritize cybersecurity and data privacy measures. This includes robust security protocols, encryption mechanisms, access controls, and data protection procedures to protect sensitive information and prevent unauthorized access or data breaches. 7. *Increasing skills*. The effective operation of the information support is based on qualified professionals who can manage and use the available resources. This requires ongoing training and capacity-building programs to improve the digital literacy and technical skills of those involved in data collection, analysis, and data management. 8. *Cooperation of interested parties*. Information support should foster collaboration between various stakeholders, including government agencies, businesses, research institutes, and community organizations. This includes creating partnerships, information-sharing agreements, and collaborative platforms to leverage collective knowledge and expertise within the regional economy. Effective management and development of technical and economic systems information support help in better decision-making, policy formulation, and resource allocation in the region [1, 13]. It facilitates the creation of an environment that supports innovation, entrepreneurship, and sustainable economic growth.

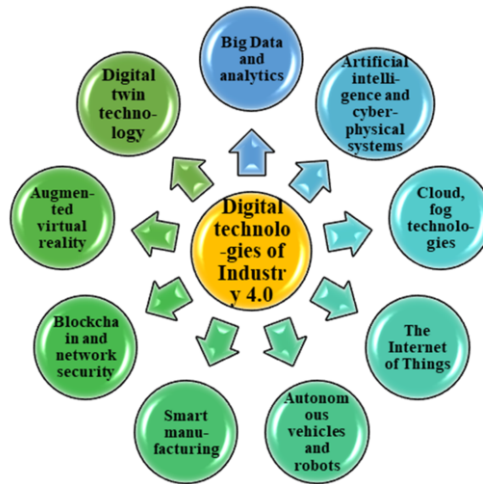
#### **4. Architectural-technological Structural Model of Technical-Economic Systems and Innovative Enterprises Information Support Based on Artificial Intelligence Technologies**

Artificial intelligence expert systems, machine learning, robotics, natural language processing, machine vision, speech recognition, etc. have some basic functions [6].

Industry 4.0 offers new perspectives on how manufacturing can use new technologies to create value with maximum output and minimum resource use. The digital technologies of the Industry 4.0 platform applied in technical and economic systems can be given as in Figure 1.

Each of the indicated technologies has characteristic features of the application in the operation of technical-economic systems, including industrial-innovative enterprises [12, 14]. Their application at different levels leads to obtaining different results. In this sense, their choice should be justified.

The application of artificial intelligence technologies, which is one of the main digital technologies of the Industry 4.0 platform, in the information support of technical-economic systems and innovative enterprises, and the development of a conceptual model of modern information support based on it are particularly important issues. Regarding the situation related to the application of artificial intelligence technologies in the world, it can be noted that some notable functional development trends related to the application of artificial intelligence technologies on a global scale include: 1) *Research and development*. Many countries are investing heavily in AI-related research and development to foster innovation. Countries such as the United States, China, Canada, and the European Union have launched relevant funding programs to support AI research, encourage collaboration between academia and industry, and attract AI best practices.



**Fig.1.** Digital technologies of Industry 4.0 applied in technical-economic systems and innovation enterprises (Compiled by the authors based on the analysis of scientific literature)

2)*Diagnostics and medical processes.* Artificial intelligence is revolutionizing healthcare by enabling advanced diagnostics, personalized medicine, and effective therapeutic care. AI-powered systems can analyze medical images, detect diseases, assist in surgical procedures, and improve drug discovery processes. Artificial intelligence is also being used to improve telemedicine services and remote patient monitoring.

3)*Finance and banking.* The financial industry uses artificial intelligence for tasks such as anomaly detection, risk assessment, trading, and customer service. AI-powered chatbots and virtual assistants are being used to provide personalized financial advice. Natural language processing algorithms are used for sentiment analysis and market forecasting.

4)*Logistics management and routing.* Artificial intelligence technologies are transforming the transportation sector with advances in autonomous vehicles, route optimization, and traffic management. Self-driving cars and trucks are being tested and implemented in the logistics management of different countries. Artificial intelligence algorithms are used to optimize transport networks, reduce congestion and improve safety.

5)*Production systems and robotics.* Artificial intelligence is driving automation and optimization in the manufacturing industry. Robots and cobots equipped with artificial intelligence capabilities are used for tasks such as assembly, quality control, and predictive maintenance. AI-powered algorithms analyze production data to optimize processes, minimize downtime and increase productivity.

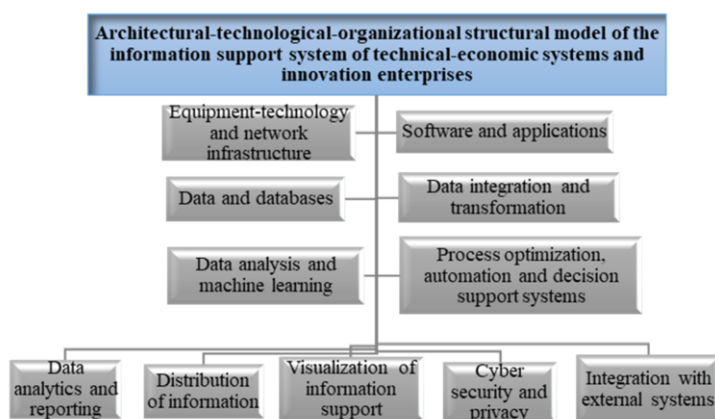
6)*Customer services.* AI-based chatbots and virtual assistants are increasingly dominating customer service. These AI systems can provide fast and personalized responses, manage customer inquiries and assist with transactions. Natural language processing and machine learning algorithms allow chatbots to continuously improve their interactions with customers.

7)*Smart cities.* Artificial intelligence technologies are being used to build smart cities to improve infrastructure, energy management, and public services. AI-powered systems can optimize energy use, monitor and manage traffic flow, improve waste management, and enhance public safety through video analytics and predictive policing.

8)*Social impact.* Artificial intelligence is also used for social services and humanitarian purposes. It is applied in disaster response and management, access to health care in remote areas, and environmental protection. AI-powered solutions help in wildlife conservation, climate change research, and disaster risk assessment.

In addition to presenting numerous opportunities, the introduction of artificial intelligence technologies also raises regulatory considerations. Ensuring data privacy, addressing issues of bias and fairness, and creating transparent and accountable AI systems are critical to its responsible implementation.

In general, the widespread adoption of artificial intelligence technologies in various sectors around the world is increasing the scope, driving transformative changes, and creating new opportunities for innovation, efficiency, and social development. The architectural-technological structure model of technical-economic systems and information support of the enterprise is composed of structures and components that make up the system that is important for the collection, storage, processing, and distribution of information within the organization. This model describes the main elements and their relationships in the information support system.



**Fig. 2.** Architectural-technological conceptual organizational structure model based on the application of artificial intelligence technologies of the information support system of technical-economic systems and innovation enterprises *(Compiled by the authors based on the analysis of scientific literature)*

Based on the application of technical-economic systems and artificial intelligence technologies in the information support of the enterprise, the architectural-technological conceptual structure model can change depending on the specific goals of the organization. The proposed architectural-technological structure model and its constituent elements can be given as in Figure 2.

Based on the application of artificial intelligence technologies in technical-economic systems and enterprises' information support systems, the following can be attributed to the essence and content of the architectural-technological structural model: 1) Equipment-technology infrastructure. 2) Software and applications. 3) Data and databases. 4) Network infrastructure. 5) Data integration and transformation. 6) Data collection, integration, storage, and management. 7) Data analytics and reporting. 8) Data analysis and machine learning. 9) Visualization of information support. 10) Decision support systems. 11) Optimization and automation of processes. 12) Continuous learning and improvement. 13) Cyber security and privacy. Integration with external systems.

The architectural-technological structural model of the information support system can change depending on the specific requirements of the innovative enterprise. It is important to implement the system in a way that aligns with organizational goals and supports effective information management and decision-making processes [7]. It is important to note that the specific application of artificial intelligence technologies in

technical and economic systems and innovative enterprises will depend on factors such as industry, organizational structure, available resources, and strategic goals [2-4]. Each organizational structure must adapt the model to its specific needs and take into account the expected consequences of using artificial intelligence technology.

## **5. Directions for Improving the Sustainable Activity of Technical and Economic Systems and Enterprises in the Conditions of the Transfer of Digital Innovations**

Artificial intelligence technologies play an important role in promoting the sustainable operation of technical and economic systems and innovation enterprises. Enterprises can improve their economic-environmental performance, and resource efficiency and contribute to sustainable development by using artificial intelligence [2, 3]. Artificial intelligence-powered systems can optimize energy consumption in businesses. By analyzing real-time data from sensors and smart devices, AI algorithms can identify patterns of energy wastage, and recommend energy-saving measures and automated control systems for efficient energy management. This helps reduce energy consumption, reduce carbon emissions, and lower operating costs. Additionally, AI technologies are helping waste management and recycling efforts. Artificial intelligence algorithms can analyze data to identify waste generation patterns, optimize waste collection routes and improve recycling processes. In addition, AI-powered image recognition systems can sort and separate recyclable materials. This facilitates efficient recycling practices and can reduce the amount of waste sent to landfills.

Artificial intelligence technologies also help in sustainable supply chain management. Artificial intelligence algorithms can analyze supply chain data to identify opportunities for waste reduction, carbon footprint reduction, and sustainable sourcing practices. By optimizing shipping routes, minimizing packaging waste, and ensuring the use of essential resources, businesses can improve their supply chain sustainability performance.

Artificial intelligence technologies support sustainable product design and development. Machine learning algorithms can analyze data about customer preferences, market trends, and environmental impact to inform product design decisions. AI-powered simulations and optimization models can help identify environmentally friendly materials, reduce product lifecycle impacts, and improve the overall sustainability performance of products.

Artificial intelligence technologies enable businesses to monitor and manage their environmental impact. Sensors and monitoring systems powered by artificial intelligence can analyze data on air quality, water quality, and other environmental parameters in real time, detect anomalies, and provide early warning systems to reduce potential socio-economic-technical-environmental risks. Artificial intelligence algorithms can evaluate different scenarios, assess environmental impacts and make recommendations for sustainable decision-making. This helps innovative businesses align their strategic and operational decisions with sustainability goals [4, 5].

In general, artificial intelligence technologies are applied in many technical and economic sectors to optimize the use of resources and minimize environmental impacts [1, 7]. Artificial intelligence algorithms can analyze data from sensors, satellite images, and weather patterns to provide a real-time factor in certain processes. This includes optimization of production/service processes. This leads to an increase in production productivity, a decrease in resource consumption, and minimization of environmental



pollution. Artificial intelligence technologies facilitate the transition to a circular economy by ensuring efficient use of resources and waste management. Artificial intelligence algorithms can identify product reuse, remanufacturing, and recycling opportunities. By optimizing logistics processes, predicting demand for recycled materials, and supporting circular business models, businesses can contribute to a more sustainable and resource-efficient economy.

Many industrial-digital technologies play an important role in increasing efficiency, productivity, and competitiveness in the operation of technical-economic systems and innovation enterprises [3, 4, 12]. The main industrial digital technologies widely used by innovative enterprises are 1)Internet of Things (IoT). 2)Artificial intelligence and machine learning technologies. 3)Big Data Analytics. 4)Robotics and automation. 5) Augmented Reality and Virtual Reality, 6)Cloud computing. 7)Digital Twin.

The aforementioned Industrial-digital technologies improve the performance of enterprises in various sectors. By using these technologies, businesses can improve efficiency, productivity, and innovation, gain better operational results, and a competitive advantage in the marketplace. The application of digital technologies that are able to correctly assess the specific needs of enterprises and align with the relevant business objectives is very important in the current era (Table 1).

**Table 1.** The level of importance of industrial digital technologies applied in the operation of technical-economic systems and innovative enterprises (Source: 2021. *Top-15 digital technologies in the industry.* <https://issek.hse.ru/news/494926896.html>)

| Rating | Digital technologies                               | Significance index |
|--------|--|--------------------|
| 1.     | Industrial robots                                  | 1                  |
| 2.     | Artificial intelligence                            | 0,86               |
| 3.     | Machine learning                                   | 0,68               |
| 4.     | Digital prototyping                                | 0,56               |
| 5.     | Sensors  | 0,42               |
| 6.     | Wireless technologies                              | 0,3                |
| 7.     | Blockchain technologies                            | 0,21               |
| 8.     | Big Data   | 0,2                |
| 9.     | Virtual and augmented reality                      | 0,12               |
| 10.    | Automation of product/service production processes | 0,09               |
| 11.    | Computer (machine) vision                          | 0,03               |
| 12.    | Smart contracts                                    | 0,03               |
| 13.    | Industrial Internet of Things                      | 0,03               |
| 14.    | Digital twins                                      | 0,02               |
| 15.    | Smart factories and plants                         | 0,01               |

As it can be seen from the table, the main digital innovative technologies are Industrial robots, Artificial intelligence, and Machine learning.

## 6. Conclusion

Currently, the artificial intelligence technologies of the Industry 4.0 platform are of particular importance in the effective management of technical-economic systems and information support of innovative enterprises. Real-time data monitoring and analysis,

predictive maintenance, intelligent automation, supply chain optimization, improved product quality and customization, intelligent resource management, application of digital twin technology, information-based decision-making, innovative enterprises have higher productivity, minimal costs, improved products, etc. such issues should be resolved. Modern technologies of Industry 4.0 open up new opportunities for the future of production in technical and economic systems, including innovative enterprises. These provide businesses with new opportunities to remain competitive in the digital environment. Effective management of information support in technical and economic systems based on artificial intelligence technologies creates both new opportunities and new problems. Addressing issues related to data quality, privacy, scalability, trust, and collaboration are critical to harnessing the full potential of AI in information management. By overcoming these difficulties, regional-economic-technical systems can improve decision-making and optimize resource allocation. As a result, the application of artificial intelligence technologies in the activities of technical and economic systems and innovative enterprises changes the way enterprises operate and provides efficiency, innovation, and competitive advantage. By leveraging AI-powered analytics, automation, and decision-making systems, enterprises can optimize manufacturing/service operations, improve customer experiences, reduce risk, and drive sustainable growth in a dynamic business landscape. The application of artificial intelligence technologies in the operation of technical-economic systems and innovative enterprises can increase sustainability by improving energy management, waste reduction, supply chain sustainability, sustainable product design, environmental monitoring, and decision-making. By integrating artificial intelligence into their operations, businesses can achieve greater resource efficiency, reduce negative environmental impacts and further contribute to a more sustainable future.

*Results and discussion.* Effective management of technical and economic systems, including the information support of enterprises, requires the wide application of artificial intelligence and other digital technologies. Despite the acceptance of the results of such a development trend on a global scale, there is still a need to discuss this problem at the regional and national level and to accept and use it by large population groups. Digital twin, artificial intelligence, Internet of Things, etc. on the basis of digital transformation technologies such as increasing the efficiency of the management of the information support of enterprises, developing recommendations on strengthening the prospective development directions of the enterprise, should form the basis of future discussions and research. Development of enterprises based on digital technologies, effective management, development, and further improvement of the conceptual structure model of effective management of its information support should be included among the main directions of future research. The improvement of the effective management of the information support of enterprises should be stimulated by modern ICT solutions corresponding to the Industry 4.0 platform. The justification of raising the level of effective management of its information support by means of digital technologies such as artificial intelligence and machine learning, big data analytics in enterprises should also be the subject of research discussion in the form of the benefits that these technologies can bring.

*Contributions.* Effective management of the information support of innovative enterprises based on artificial intelligence technologies can give a serious impetus to sustainable development and increase of the stability of the digital economy. Accordingly, relevant recommendations and proposals were developed based on the

study of the characteristics of the formation of the information support of innovative enterprises based on artificial intelligence technologies.

An architectural-technological structure model was proposed based on the application of artificial intelligence technologies for information support of innovative industrial enterprises. 1)Hardware, technology, and network infrastructure, 2)Software and applications, 3)Data and databases, 4)Data integration and transformation, 5)Data analysis and machine learning, 6)Process optimization, automation, and decision support systems, 7)Data analytics and reporting, 8)Visualization of information support, 9)Cyber security and privacy, 10)Integration with external systems, etc. such structural elements have been determined.

The level of importance of industrial-digital technologies applied in the activity of innovative enterprises has been determined. The solutions to the problems of the application of artificial intelligence technologies, which are the digital technology trends of the modern era, can be considered as a tool or mechanism for investigating the solutions to existing problems in the development of enterprises. By using artificial intelligence technology, it is possible to increase the efficiency of innovative enterprises, their effective management, and sustainable development. The proposals presented in this direction can lead to effective results for more stable and sustainable innovative enterprises based on artificial intelligence technologies.

The interaction of the proposed main components of the digital platform environment can be considered an improved conceptual structural model of the information support of enterprises. This can have a positive effect on increasing the operational efficiency of the enterprise and decision-making issues for its effective management.

*The usefulness of the obtained result and application in practice.* The problems of effective management of information support of technical and economic systems based on artificial intelligence technologies and prospective development directions can be applied in the development of other regional enterprises and in the development of solution mechanisms and options.

The analysis of the results of the application of artificial intelligence technologies in the efficient management of the information support of enterprises can serve as a platform for a comprehensive assessment of the activities of other enterprises in general. The application of artificial intelligence technologies in the improvement and effective management of enterprises' information support provides a basis for making appropriate management decisions. The proposed methodological and conceptual approach to efficient management of enterprises based on artificial intelligence technologies can be applied in other regional and sectoral enterprises.

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