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Utilization of artificial intelligence in enterprises and its efficiency

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Abstract: This article provides information about the concept of "Artificial intelligence", which has become a topical issue today, the importance and economic effect of its introduction. The economic impact of introducing artificial intelligence (AI) into the economy will also be analyzed. The effectiveness of AI technologies in the areas of production processes, service industries, and economic resource management will be studied, as well as their role in changing the labor market and workforce, and creating new jobs.

Keywords: Artificial intelligence, digital economy, e-government, automation, economic efficiency, data analysis, technological innovations, competitiveness, social protection, cybersecurity.

Introduction: It is well known that modern artificial intelligence consists of algorithms and software systems designed to perform various tasks, and it executes a range of functions that the human mind is capable of, based on the data entered into its information base. In addition, artificial intelligence encompasses programs that handle complex analyses and large datasets, and it is regarded as an "intelligent" technology with the ability to think logically, consistently, and make recommendations. Experts consider artificial intelligence as a key factor in the Fourth Industrial Revolution.

In Uzbekistan, becoming one of the leading innovatively developed countries by 2030 through informatization and the development of the digital economy has been set as a priority goal. In the "Year of Science, Enlightenment and Digital Economy Development", large-scale reforms were implemented in the field of information technology and digitalization, and several important programs were adopted.

The decrees of the President of the Republic of Uzbekistan “On Measures for the Wide Implementation of the Digital Economy and E-Government” and “On Additional Measures to Automate the Procedures for Providing State Social Services and Assistance to the Population” are aimed at accelerating the process of digitalization in the country and introducing modern technologies into the socio-economic sectors.

As a result of recent measures taken to implement informatization and advanced technologies in various fields, significant potential has been formed in the fields of ICT and artificial intelligence in Uzbekistan. In this regard, it is worth noting the activities of the Ministry of Innovative Development, organizations within its system, scientific research centers in the field

of ICT, higher education institutions and their talented graduates, as well as technoparks and several private sector organizations.

Moreover, a number of important projects are being implemented in the field of artificial intelligence and modern information technologies. For instance, the "Smart School" program is being introduced in the city of Fergana; an online platform for monitoring the condition of Monterra agricultural fields is being launched in the Andijan region; "Smart City" is being developed in Nurafshon, Tashkent region; and "Safe City" and "Digital Tashkent" projects are being implemented in the capital, Tashkent.

Literature Review

The functionality and popularity of artificial intelligence (AI) are growing day by day. AI applications have significantly advanced over the past few years and have found their use in nearly every business sector.

Artificial intelligence is a term used to describe machines that perform cognitive processes similar to those of humans, such as learning, understanding, reasoning, and interacting. It can take various forms, including technical infrastructure (i.e., algorithms), part of a production process, or a final consumer product. AI has the potential to fundamentally transform the way modern societies live.

At the core of AI lies machine learning, which involves training algorithms to make predictions or decisions based on data. This includes a broad set of techniques that enable computers to learn from data and draw conclusions without being explicitly programmed for specific tasks.

1. The Use of Artificial Intelligence in Enterprises and Its Economic Efficiency.

Artificial intelligence significantly contributes to automating business processes, increasing labor productivity, and reducing costs. In particular, companies in the USA and Europe effectively use AI-based analytics systems for market analysis, forecasting consumer needs, and automating financial calculations. In Uzbekistan, large companies such as "UzAuto Motors" and "Aloqabank" have begun integrating AI technologies, accelerating the process of digital transformation.

2. The Role of AI Technologies in Production Processes.

The use of AI in manufacturing enterprises allows for achieving high efficiency. For example, Germany's Siemens company has reduced production errors by 30% through the use of intelligent robotics. In Uzbekistan, "Uzbekistan Airways" has started applying AI in aircraft maintenance services, which plays a crucial role in early detection of technical failures and improving efficiency.

3. AI and the Issue of Personnel Training.

Studies show that to effectively utilize artificial intelligence, it is necessary to train qualified specialists. In the United States, leading universities such as MIT and Stanford offer specialized AI courses. In Uzbekistan, institutions like "IT Park" and the Tashkent University of Information Technologies have launched dedicated programs aimed at preparing professionals in the field of AI.

4. The Impact of AI in Marketing and Customer Service.

AI also improves efficiency in marketing and customer service. China's Alibaba Corporation has introduced automated customer service via chatbots. In Uzbekistan, "Beeline Uzbekistan" has launched a virtual operator based on AI technology, enabling faster customer support services.

5. The Role of AI in Security and Risk Management.

AI plays a vital role in ensuring cybersecurity and analyzing financial risks within enterprises. For example, JP Morgan Bank utilizes AI to identify credit risks and prevent financial errors. In Uzbekistan, "Kapitalbank" has implemented programs using AI technologies to combat fraud and enhance security.

METHODOLOGY

The purpose of this study is to analyze the economic efficiency of implementing artificial intelligence (AI) in enterprises, to explore the advantages and disadvantages of using AI, to examine the significance of AI in the modern economic system, and to identify directions for its further development and formation.

In the process of exploring the topic scientifically, statistical analysis, logical reasoning, as well as analysis and research methods were used. Various sources and scholarly articles were reviewed as part of the study.

DISCUSSION AND RESULTS

Artificial intelligence is widely used in automating production processes, data analysis, customer relations, and strategic decision-making.

AI is a system that performs specific tasks by conducting independent and intelligent actions based on the analysis of its environment. Such systems may be based on software that helps recognize voice and images, operates in the virtual world like Google's search engine, or functions as embedded technology in self-driving cars or robots.

The main types and methods of artificial intelligence include:

- Machine Learning – This method allows computer systems to improve their performance

through experience.

- Deep Learning – This method utilizes neural networks to analyze large volumes of data and detect complex patterns.
- Natural Language Processing (NLP) – This technique enables computers to understand and generate human language.

AI is being applied across various fields:

- Politics – AI is used in political processes, including election campaigns, public opinion analysis, and decision-making in governance.
- Medicine – AI is applied in early disease detection, choosing appropriate treatment methods, and monitoring patients.
- Economy – In the economic sector, AI is used for optimizing business processes, conducting market analysis, and improving customer service.
- Agriculture – In agriculture, AI is utilized for remote sensing of land, and analyzing soil and crop conditions.

Artificial intelligence technologies are being applied in many areas of human activity, and their importance continues to grow. In the future, the use of AI is expected to expand further, bringing both new opportunities and challenges.

An overview of AI domains and their characteristics is presented in Table 1.

Table 1.
Artificial Intelligence Domains and Their Descriptions

№	Domain	Description
1	Automation and Optimization of Production Processes	Robotic lines reduce labor intensity, improve product quality, and increase production volume.
2	Data Analysis and Decision-Making	Artificial intelligence analyzes big data to help evaluate market trends, customer needs, and production efficiency.
3	Customer Interaction and Service	Service is accelerated through chatbots and virtual assistants, increasing customer satisfaction.
4	Inventory and Logistics	Artificial intelligence analyzes supply and demand to optimize inventory levels.
5	Machine Learning and Forecasting	Enables accurate calculations for marketing and demand forecasts.
6	Enhancing Employee Efficiency	Artificial intelligence analyzes employee performance and provides suggestions to improve efficiency.
7	Decision-Making and Strategic Planning	Artificial intelligence assists in market analysis and developing financial strategies.
8	Finance and Banking System	-Fraud detection -Credit rating evaluation - Investment forecasting
9	Logistics and Supply Chain	- Autonomous transport vehicles - Warehouse automation - Optimization of delivery processes

Artificial intelligence has become a vital technology in improving enterprise efficiency, reducing costs, and creating innovative products in today's world. With the help of AI, business processes are being automated, customer service quality is improving, and the ability to adapt to market demands is expanding.

This article discusses the areas of AI application in enterprises, its effectiveness, and future prospects.

The directions and criteria for evaluating the effectiveness of implementing artificial intelligence in enterprises are presented in Table 2.

Table 2.

Directions and Criteria for Evaluating the Effectiveness of AI Implementation in Enterprises

№	Evaluation Area	Evaluation Criteria
1	**Economic Efficiency**	- Reduction of production and operational costs - Increase in production volume - Growth in income and profit
2	**Operational Efficiency**	- Acceleration of work processes - Increase in employee productivity - Higher level of automation
3	**Strategic Efficiency**	- Increased market competitiveness - Development of innovative products and services - Quick adaptation to customer needs

The implementation of artificial intelligence (AI) technologies creates tremendous opportunities for modern enterprises by improving operational efficiency, reducing costs, and opening up new market segments. However, this process is accompanied by a number of challenges and obstacles.

For AI to function effectively, large volumes of high-quality data are required. In order for AI algorithms to produce accurate and reliable results, the collected data must be complete, consistent, and properly structured. Additionally, tasks such as data processing, cleaning, and directing it to appropriate models are also critically important. Many companies, however, lack sufficient expertise in collecting and managing data, which complicates this process.

For example, in industrial automation, working with real-time data streams is essential. If the data is of low quality or improperly structured, AI algorithms may make incorrect decisions.

A second major issue is the high cost of software and technical infrastructure. Implementing and maintaining AI systems requires significant investment. For instance, studying AI and building models demand substantial computing resources, including high-performance servers and graphics processing units (GPUs). Moreover, developing AI-based software requires specialized professionals, further increasing expenses. As a result, small and medium-sized businesses may find it difficult to adopt such technologies.

To effectively utilize AI capabilities, companies must have continuous modernization and a robust technical support system in place.

The third critical issue is the need to improve employee qualifications.

In enterprises where artificial intelligence (AI) technologies are implemented, traditional work methods change, and new skills become necessary. Existing staff must regularly attend training courses to be able to work with these technologies. This, in turn, requires both time and financial resources.

For instance, in the field of marketing, when AI-powered automated analysis systems are introduced, employees must learn how to operate and interpret results using these new technologies. If sufficient attention is not given to professional development, employees may be unable to use AI systems effectively, which can negatively affect overall company performance.

In the future, the development of AI technologies will encompass several new directions.

Firstly, the integration of AI with the Internet of Things (IoT) will be of great importance. IoT devices collect various data, and AI can analyze this data to propose optimal decisions. For example, in industrial settings, IoT sensors can gather data from production processes,

and AI algorithms can use this data to suggest efficient management models. This plays a crucial role in automating production and improving product quality.

Secondly, the advancement of collaborative robotics—robots working alongside humans—is expected to grow. While robotic automation is already underway in many sectors, in the future, AI-powered robots will be able to operate effectively in collaboration with humans. For example, in healthcare, surgical robots can assist specialists during operations, while in logistics, robots can automate warehouse management. This not only boosts efficiency but also allows for more rational use of human resources.

Thirdly, AI will be instrumental in developing smarter business strategies.

Today, companies strive to make data-driven decisions, and AI plays a vital role in improving this process. In the financial sector, for example, AI algorithms can analyze market trends and recommend the most profitable investment options. Additionally, in retail, AI can analyze customer purchasing habits and generate personalized marketing strategies.

To better understand the challenges of implementing AI technologies and their future development, we will analyze the example of Beeline, one of the largest telecommunications companies in Uzbekistan, which places particular emphasis on integrating AI and digital technologies into its operations.

Challenges Faced by Beeline in Implementing Artificial Intelligence

1. The Need for Large Volumes of High-Quality Data

Beeline uses AI technologies to provide quality services to its subscribers and identify their needs. For example, AI analyzes data to offer personalized recommendations to customers. However, the success of this process depends on the availability of large amounts of high-quality data. If the data is poorly structured or insufficiently clean, AI algorithms may produce inaccurate results.

2. High Costs of Software and Technical Infrastructure

Beeline extensively applies AI technologies to enhance its network and automate services. For instance, the company launched an AI-based virtual assistant chatbot called Victoria. This bot can automatically respond to customer inquiries, provide service information, and resolve issues. However, building and maintaining such systems requires substantial investment in technical resources and high-performance servers, resulting in significant costs.

3. The Need for Employee Training and Upskilling

The implementation of AI technologies demands that Beeline employees adapt to new working methods. For example, operators who previously only provided direct customer support now need to learn how to work alongside AI systems. Additionally, the introduction of automated systems powered by AI may lead to the reduction of traditional job roles, necessitating retraining and professional development for staff.

Beeline's Future Development Through Artificial Intelligence

1. Integration of AI with IoT (Internet of Things)

Beeline is working not only in mobile communication but also on "smart city" projects and IoT technologies. The company plans to improve internet services and optimize transportation systems through IoT devices. AI will analyze real-time data collected from these devices to ensure more efficient resource management.

2. Development of Collaborative Robotics

In the future, Beeline intends to further develop AI technologies to utilize robotic services. For instance, virtual assistants could be created to predict customer needs in advance and automatically offer relevant solutions and services.

3. Smart Business Strategies

Beeline is leveraging AI to refine its business strategies. For example, AI can analyze user traffic data to automatically enhance internet speed, optimize tariff plans, and offer personalized services.

Through the implementation of AI technologies, Beeline aims to improve service quality and boost business development. However, the process also involves challenges such as ensuring data quality, covering technical costs, and enhancing employee skills. In the future, by integrating IoT, robotics, and smart business strategies, Beeline seeks to increase its competitiveness and introduce innovative solutions — which will not only benefit the company but also create vast opportunities for societal advancement.

In the Presidential Decree of the Republic of Uzbekistan "On Additional Measures to Automate the Procedures for Providing Public Social Services and Assistance to the Population", it is emphasized that modern technologies, including artificial intelligence (AI), should be effectively utilized within the "Unified Social Protection Registry" information system. As is well known, from now on, the review and assignment of applications for social benefits will be carried out through this unified registry. As a component of the "e-Government" system, the Unified Social Protection Registry serves as an interdepartmental integration

platform, and the data provided by the relevant institutions can be managed using AI technologies.

Moreover, international practice shows that in social programs, AI can utilize data from various legally authorized sources when forming databases, such as: national ID systems, population registries, tax databases, healthcare, banking, and insurance companies, retail and marketplace buyers, mobile network operators, as well as data on utility payments, debt history, credit reports, and user activity on social networks.

When introducing artificial intelligence into the social and other sectors, data privacy, storage, and management of personal information are of critical importance. Ethical aspects of AI usage are currently at the forefront of attention in the USA, the United Kingdom, the European Union, and leading international organizations. Key concerns include the protection of human rights, personal data, and the risks of AI being used for political or disruptive purposes.

Some countries, such as China and Russia, have faced criticism for allegedly using AI and ICT to restrict personal freedoms and pursue political objectives. Therefore, when developing the legal framework for AI application, special attention must be paid to these concerns.

In implementing AI and ICT, it is essential to maintain a balance between protecting personal data and privacy rights and ensuring national security. Creating clear legal safeguards will help build public trust and ensure responsible use of AI technologies across all sectors.

The use of artificial intelligence (AI) enables enterprises to enhance operational efficiency, accelerate and automate production processes. It serves as a critical factor for increasing competitiveness, reducing costs, and achieving long-term success. The implementation of AI technologies in enterprises contributes to the optimization of production, improvement in decision-making systems, and efficient use of resources.

To ensure widespread adoption of AI, it is essential to develop a comprehensive strategy through collaboration between the public and private sectors. This strategy should include the formation of a legal framework that regulates the implementation of AI across economic sectors, social services, and public administration. Additionally, it is crucial to guarantee security, ethical compliance, and transparency in the use of AI. For enterprises, enhancing data processing systems and creating favorable conditions for efficient use of digital data is key to maximizing the benefits of AI implementation.

This process requires the establishment of data exchange mechanisms between government bodies and the private sector, the acceleration of digitization processes, and the development of AI-driven information systems. It is also necessary to support scientific research and the commercialization of innovative developments in the field of AI. This will create opportunities for enterprises to adopt new technological solutions, improve competitiveness in domestic and international markets, and attract investment.

Particular attention must be given to training qualified professionals and improving employee knowledge and skills in AI. In order to effectively implement AI technologies in enterprises, it is necessary to develop targeted programs for professional development, establish educational systems that combine theoretical and practical knowledge, and strengthen international cooperation.

The widespread use of AI in enterprises plays an important role in developing the digital economy, creating new jobs, and increasing overall productivity. Therefore, it is vital to promote the application of AI in entrepreneurship, manufacturing, and service industries through a set of comprehensive measures carried out jointly by public institutions and private enterprises. AI contributes to enhancing operational performance across sectors, accelerating production, and enabling process automation. Consequently, this helps enterprises increase competitiveness and achieve sustainable long-term growth.

AI also allows enterprises to reduce operational costs and improve service quality. It enables the automation of production processes, supports data-driven strategic decision-making, and allows organizations to adapt quickly to changing market conditions. All of this contributes to stable economic growth and enhanced competitiveness.

However, the implementation of AI raises ethical concerns and the need for upskilling the workforce. As the labor market shifts towards demand for new skill sets, certain job positions may be eliminated due to automation. In such a scenario, retraining human resources and adapting them to the new technological environment becomes a priority.

CONCLUSION

In conclusion, artificial intelligence is a dynamically evolving system that, despite certain limitations, holds vast potential for development. Addressing and overcoming these limitations can lead to a new phase of progress. In the near future, AI is expected to become an inseparable part of our lives, much like the internet and other digital technologies. At the same

time, inequalities may emerge between developed and developing countries in terms of AI development and implementation. Furthermore, considering the system's potential vulnerabilities to cyberattacks and cybersecurity threats, additional protective measures are required.

To use AI effectively, it is crucial to apply its capabilities wisely, resolve existing challenges, and ensure balanced and secure integration into the economy, social sectors, and public administration.

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