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THE INCREASING ROLE OF ARTIFICIAL INTELLIGENCE IN BUSINESS OPERATIONS

Abstract.

The purpose of this research is to examine the increasing role of artificial intelligence (AI) in business operations and to identify how AI-driven technologies transform decision-making, automation, forecasting, and strategic management. The study applies a statistical analysis of official data sources to assess AI market expansion, enterprise adoption levels, and sector-specific impacts.

The methodology includes evaluating global AI investments, business productivity indicators, and revenue trends, supported by literature on AI applications.

The results show that AI significantly enhances data processing, operational efficiency, personalization, and forecasting accuracy while reshaping business models and organizational strategies. Statistical figures confirm rapid market growth, widespread adoption in marketing, IT, and supply chain functions, and rising revenues from AI-enabled enterprise applications. Findings also indicate that AI serves as an accelerator rather than a replacement for human capability, emphasizing the importance of human–AI collaboration for maximizing value.

Key words: Artificial intelligence; Business operations; Automation; Forecasting; Digital transformation

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Introduction

The rapid advancement of artificial intelligence (AI) has become one of the most transformative forces reshaping contemporary business operations. As global markets become increasingly data-driven, organizations are compelled to adopt AI-enabled systems to remain competitive, enhance efficiency, and respond to rapidly changing customer expectations. AI technologies now influence core business functions, including automation, forecasting, decision-making, customer relationship management, supply chain optimization, and strategic planning. This expansion is supported by substantial global investment initiatives and the growing availability of AI-based enterprise applications across industries.

Despite the increasing integration of AI into business processes, the nature and extent of

its impact vary considerably across countries, sectors, and organizational structures. Understanding these patterns is essential for identifying the economic, operational, and managerial implications of AI adoption. Therefore, the purpose of this research is to analyze the growing economic significance of AI technologies and to evaluate how they transform business practices. The study applies statistical methods and industry data to assess the scale of AI market growth, enterprise adoption trends, and resulting performance outcomes.

Existing research emphasizes that AI enhances operational accuracy, supports real-time decision-making, increases productivity, and facilitates innovation-driven growth. However, business transformation through AI is not limited to automation; it involves rethinking organizational models, redefining human–



machine collaboration, and developing new competencies. By examining these dynamics, this study contributes to a deeper understanding of AI as a strategic asset and provides insights into how businesses can leverage AI to achieve sustainable competitive advantage.

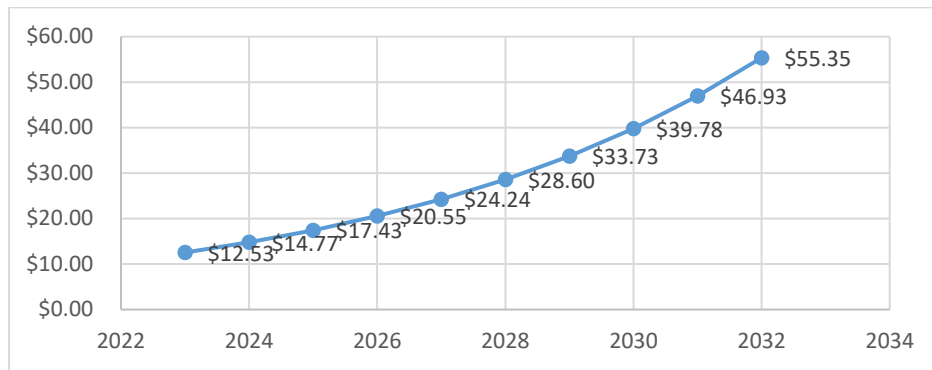
The importance of artificial intelligence in various fields today

Artificial intelligence is an artificial operating system that is expected to exhibit high cognitive functions or autonomous behaviors specific to human intelligence, such as perception, learning, connecting multiple concepts, thinking, reasoning, problem solving, communicating, making inferences and making decisions. It can be defined as a device that perceives its environment and performs actions that maximize the chance of success in a goal. Artificial intelligence aims to enable machines to produce solutions to complex problems like humans. Artificial intelligence is generally implemented when a machine imitates the "cognitive" functions that it associates with other human minds, such as "learning" and "problem solving". Artificial Intelligence is a way for a computer, a computer-controlled robot or a software to think intelligently, similar to the human thinking system. [1 p.15-25] Artificial intelligence is achieved by examining how the human brain thinks and how people learn, decide and work while trying to solve a problem, and then using the results of this study to develop intelligent software and systems. Artificial intelligence is rapidly developing in many areas, from SIRI to personal assistant driverless vehicles that work with voice commands on devices with the iOS operating system. Artificial intelligence is a science and technology based on

disciplines such as Computer Science, Biology, Psychology, Linguistics, Mathematics and Engineering. An important thrust of Artificial Intelligence is the development of computer functions related to human intelligence, such as reasoning, learning and problem solving. Computers are very suitable for mechanical calculations using some fixed programmed rules. These intelligent machines make things easier by performing simple monotonous operations that are not suitable for humans to do correctly and effectively. However, things get a little more difficult in complex problems. Unlike humans, computers cannot perform the processes of perceiving special situations and adapting to new situations. Artificial intelligence aims to improve the behavior of machines in such complex tasks. In addition, many artificial intelligence studies have provided us with a better understanding of our mental behaviors. Humans have interesting approaches to problem solving based on abstract thought, conscious induction and pattern recognition. Artificial intelligence can help us to understand this process by refreshing it again and then to exceed our existing capacity. Today, there are many application areas where artificial intelligence can be used. These areas can be evaluated in a wide range of applications, from military applications such as autonomous control and target detection to the entertainment world such as computer games and robotic animals. It can also be used in areas where large amounts of information must be processed, such as customer behavior and trend detection in banking, healthcare and insurance companies. [2 p.92-94]

The importance of AI and increasing demand for it is reflected in its estimated market size.

Graph 1. Artificial intelligence market size, 2022-2033, billion dollars



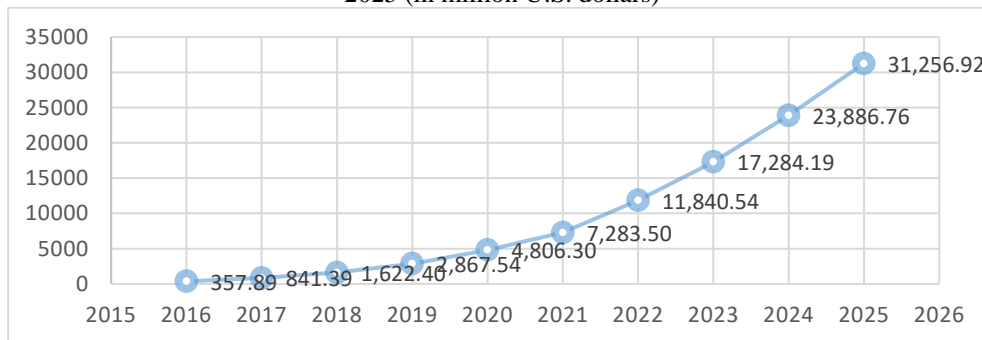
Source: <https://www.precedenceresearch.com/artificial-intelligence-for-it-operations-platform-market>

The graph shows the total market size of artificial intelligence from 2022 to 2033. The expansion of the artificial intelligence market has led to an increase in its role in business operations, and the development of digital technologies has become an important factor in the integration of artificial intelligence into business operations. Accordingly, it is noted that it will exceed \$ 20 billion in 2026, \$ 40 billion in 2030, and \$ 50 billion the following year. The main reason for this is the widespread use of

artificial intelligence in various areas of organization today, including business.

While the previous diagram outlines the overall expansion of the global AI market, it is equally important to examine how this growth translates into concrete financial outcomes within specific business domains. Therefore, the following graph focuses on revenues generated exclusively from artificial intelligence solutions for enterprise applications between 2016 and 2025, offering a more targeted view of AI's economic impact at the organizational level.

Graph 2. Revenues from the artificial intelligence for enterprise applications market worldwide, from 2016 to 2025 (in million U.S. dollars)



Source: https://www.statista.com/statistics/607612/worldwide-artificial-intelligence-for-enterprise-applications/?srsltid=AfmBOoqAe_0dV5RVhIHKEibBShm1n51kg8w_SY1qaB4brj4vT2PpPQxW

The given diagram shows the revenue growth of enterprises using artificial intelligence from 2016 to 2025. Based on the figures and the general trend, it is clear that the amount has increased over time. In 2016, it was \$357.89 million, and in 2020, this figure is expected to reach \$4806.3 million, and by the end of 2025, this figure is expected to reach \$31256.92 million. This figure is expected to increase, especially with the use of process automation,

chatbots and other tools such as analytics programs.

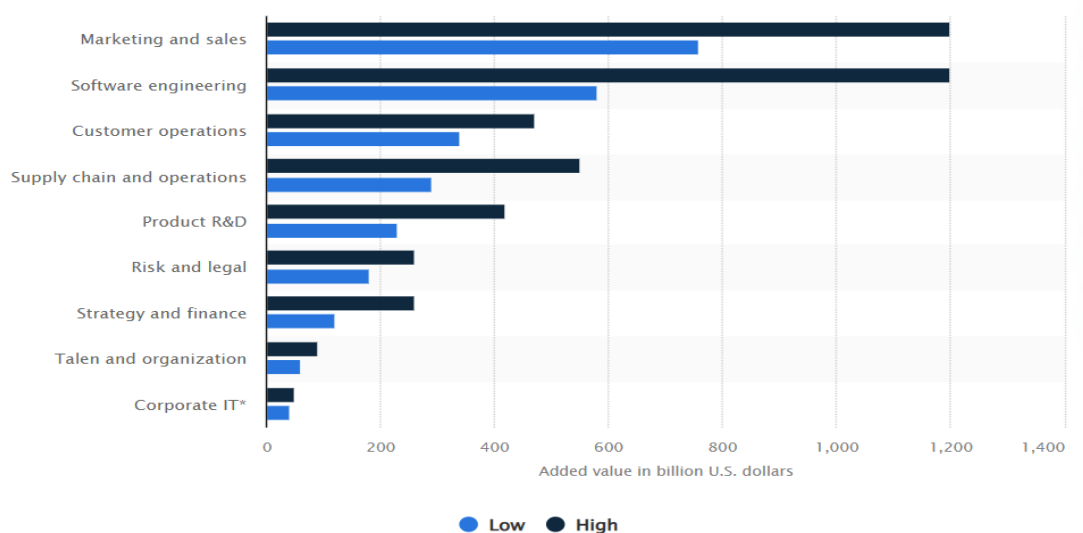
Emerging new technologies, developments such as the Internet of Things and artificial intelligence will change the way people live, work, have fun and travel, as well as how countries and businesses interact with the world. In the future, customer demands will change and more personalized products will be demanded, as well as wider and more diverse ones. Companies that want to be successful in global competition

will need to use intelligent robots that will work in production and distribution processes, artificial intelligence systems to be used in R&D, sales, marketing and management processes, and systems with the skills to enable them to exchange information with the outside world. [3] The production of companies needs to adapt quickly to meet the needs of the market. This will be possible with Industry 4.0. With Industry 4.0, a perfection is aimed where all processes from demand to product/service development, from raw material supply to production, from production to the customer are integrated with human, machine and information technology dimensions, decision-making mechanisms are autonomous and each product or service creates instant customer-specific value. With Industry 4.0, the Internet of Things comes to life in production. With Industry 4.0, production

processes in the factory will be interconnected. When devices are connected to each other, the data generated is rapidly transferred to each other with high-speed internet support through software that produces its own data for each device, and faster and more effective decisions can be made by looking at the results obtained from the resulting data.

Artificial intelligence systems reduce the importance of cheap human-based labor while increasing the need for qualified human resources that can work with artificial intelligence systems. The development and spread of artificial intelligence systems affect every segment of society, from the education system to the business world, from managers to employees. The quality of the workforce required today may soon become unnecessary. The following figure shows the main areas in which AI is used:

Figure 1. Potential impact of generative artificial intelligence (AI) on productivity worldwide in 2023, by business functions (in billion U.S. dollars)



Source: <https://www.statista.com/statistics/1446250/worldwide-artificial-intelligence-impact-by-business-function/#>

The given figure shows the potential impact of AI on productivity across various business functions in 2023. Based on the figure, we can see that AI was used most in marketing and sales. The total volume of business operations in marketing, information technology and sales was recorded at a maximum value of \$1.2 trillion. It was also widely used in supply chain, customer operations, strategy and finance. However, among these, supply chain ranked high

at approximately \$580 billion. The lowest figure was in talent and organization, as well as corporate IT.

Artificial intelligence allows you to analyze the preferences, interests, and behavior of merchants in order to offer them the most suitable products or services. This helps to strengthen customer loyalty and increase sales. In conclusion, the use of artificial intelligence in business analysis provides many advantages and

opens up new opportunities for companies. Despite its name, AI rather acts as an accelerator that improves the work of people, rather than replacing them. In this relationship, the key issue is the effective cooperation between humans and artificial intelligence. It is the combination of these two resources that will allow achieving the highest efficiency of business analysis.

Therefore, states need to take artificial intelligence systems into account when organizing their development plans and education systems. Even if states do not use artificial intelligence systems within their own institutions, they are affected by the increasingly widespread artificial intelligence systems. The USA, Russia, China and European countries, pioneers in developing artificial intelligence systems, are making major investments in this field. The Organization for Economic Co-operation and Development (OECD) has added the measurement of digital literacy, digital citizenship, information fluency, technological literacy, creativity, innovative thinking, critical thinking, solution generation, and decision-making to the Programme for International Student Assessment (PISA). The success obtained from paper-and-pencil tests in the classical education system is being replaced by success obtained in the virtual environment.

The development of systems based on artificial intelligence has changed both the expected human profile and the structure and functioning of education. Today, thanks to artificial intelligence applications, personalized education programs, individual performance monitoring, course content preparation, and determining teaching models have improved education quality through large data sources. With the development of artificial intelligence, it has become possible to continue education independently of time and space. The integration of artificial intelligence into education systems has supported flexible service models, personalized learning, and project-based learning. Artificial intelligence systems are widely used in distance education, online learning (e-learning), virtual reality, and augmented reality. With artificial intelligence systems, changes have occurred in both the type

of individuals the education system aims to train and the way education operates. Educators form the most important group that must adapt to new goals and operating methods. School administrators, subject teachers, and classroom teachers need to have the skills to use and work in harmony with artificial intelligence systems.

Pandemic conditions experienced globally in the last two years showed that educational technologies and artificial intelligence should be used effectively. Compulsory distance education demonstrated that artificial intelligence can be functional in solving educational problems. After this period, studies and publications on the use of artificial intelligence systems in education have increased. In *Artificial Intelligence in Education: Promises and Implication for Teaching and Learning*, Holmes, Bialik, and Fadel (2019) stated that many governments and major companies have made enormous investments in artificial intelligence and examined its effects on education within the framework of “what to teach” and “how to teach.” Under “what to teach students,” they emphasized that teaching only knowledge is no longer sufficient and that a more integrative perspective is needed. Under “how to teach students,” the indirect and direct effects of artificial intelligence systems as a teaching aid and as an instructor were addressed. Although artificial intelligence minimizes learning deficiencies through personalized content, systems can sometimes give wrong results in specific situations because they rely on big data analysis. [4 p.5174]

The role of artificial intelligence in businesses today

In the modern business environment, more and more new technologies are emerging that transform traditional methods of work and management. Artificial intelligence (AI) is one of these technologies, which is already actively used in business analysis and plays an important role in shaping the development strategy of organizations, especially in the context of digital transformation. What does AI give to business analysis:



- 1) Big Data analysis. AI enables rapid and efficient processing of large data volumes,

revealing hidden patterns that improve decision-making, reduce costs, and enhance product and service quality. With the rise of IoT and real-time data flows, AI helps companies analyze information instantly and react promptly. Literature shows wide application prospects across industries. For instance, Harvard Business Review reports that AI greatly accelerates large-scale data processing and reduces related costs, while also uncovering patterns invisible to manual analysis. Another critical aspect of the data used to train the AI is the quality of the data. [5 p.1716] Despite these benefits, challenges remain. Communications of the ACM notes that AI systems may produce errors because algorithms cannot always capture contextual nuances. Overall, research indicates strong potential but stresses the need for improved algorithms, ethical standards, and legal frameworks.

Studies also confirm that AI increases the accuracy and speed of data analysis. [6 p.612] For example, a PLOS ONE study showed that machine learning identifies more precise medical patterns, supporting more effective treatments. Meanwhile, deep learning in the banking sector reduced processing costs and improved forecasting accuracy, helping banks make more informed decisions. [7]

- 2) Automation of processes. The use of AI allows you to automate many processes that previously required significant time and resources. For example, AI can automatically collect information from various sources, analyze it and issue ready-made reports. This happens much faster than if a person were to manually process all this information. Business process automation with AI is the use of machine learning algorithms and other AI techniques to perform tasks that were previously performed by humans. AI can process large amounts of data, make decisions based on the analysis of information, and perform tasks more efficiently and accurately than is possible for a human. So, automation of business processes with AI can offer the following benefits: Increased efficiency, reduced costs,

improved quality and accuracy, accelerated decision making by using different AI techniques such as machine learning, Natural Language Processing (NLP), computer vision, robotics, etc. Automatic decision making is an artificial intelligence method that enables computer systems to make decisions based on data analysis and pre-set rules. In business process automation, automatic decision making can be used to optimize processes, automatically manage resources, and make operational decisions in real time. [8 p.827]

- 3) Forecast accuracy. Machine learning algorithms can analyze thousands of metrics to make an accurate forecast. It takes a lot of time for a person to evaluate such an array of information, and the conclusions are not always correct. AI forecasting differs from traditional methods because machine learning evaluates all business indicators and finds patterns that are invisible to humans. The decision made by artificial intelligence is completely autonomous. It can be used to create new forecasts.

Demand forecasting helps companies balance inventory, prevent shortages or surpluses, and meet customer needs. Forecasting the growth of a company's model (sales to income ratio) helps develop a business strategy. AI improves decisions on spending and resource allocation. With the help of artificial intelligence, financial companies predict fraudulent transactions and take measures to prevent them. AI also forecasts real estate values using location and historical data. Manufacturers use AI to reduce downtime and improve production efficiency. Smart forecasting enhances maintenance planning, optimizes deliveries, and strengthens risk prediction, fraud detection, pricing, marketing strategy, and customer targeting. Programs predict leads with the highest probability of conversion. They also help set prices for products and predict the likelihood of adverse situations during delivery, which allows you to conclude an insurance contract on time. [9 p.70-75]

- 4) Strategy development. Developing a business strategy using artificial intelligence includes the following stages:

A) Primary analytics. At this stage, companies compare data on dashboards and try to find patterns. It is important to collect and systematize data from all departments, as they will be useful at the second stage. They can be placed in one program, and the next new ones can be entered into the same space, so that the AI solution implemented later analyzes the entire array of information and takes into account the information of different departments.

B) Diagnostics and detection of approximate problems and drivers. This step is necessary to select tools. You can assemble a team of developers and analysts to check how real and serious the identified problems are, and also take a "test" project and check on it how much AI solutions will help it. [10] Colleagues from both blocks are needed here to look at the situation comprehensively and assess the need and

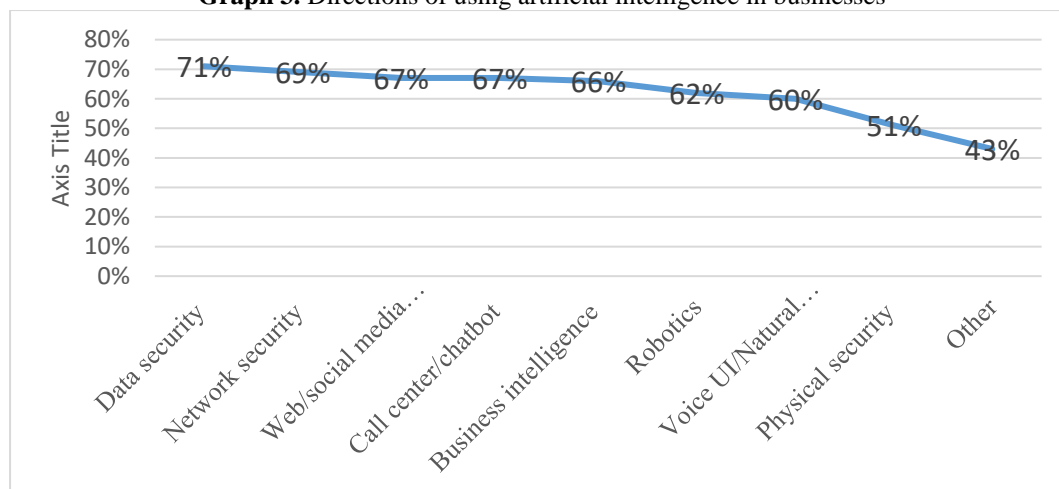
technical feasibility of implementing the system, its potential effectiveness.

C) Predictive analytics. At this stage, it is important to understand how to develop existing processes with the help of an AI solution and build a system. It is important to understand how we will develop existing processes with the help of an AI solution and build a system. Therefore, all leaders of the directions will be useful to control the options for strategic decisions that the neural network will offer.

5) Personalization. One of the areas of application of AI in business analysis is the personalization of services and products for end customers. [11]

As it is mentioned above, there are different kinds of AI technologies and tools that are used for various purposes in business operations. The following graph clearly shows the main directions:

Graph 3. Directions of using artificial intelligence in businesses



Source: https://whatsthebigdata.com/ai-in-the-workplace-statistics/?utm_source=chatgpt.com

The graph shows the integration directions of artificial intelligence and their percentages. Thus, data security is in first place with 71%, while cybersecurity is in second place with 69%. This figure is 69% in social media analysis, chatbots and business strategies. Robotization was 62%, Natural language processing was 60% and other services were 43%.

Since artificial intelligence systems are developing and spreading very rapidly today, it is clear that standing against artificial intelligence

will be an unnecessary endeavor at this point. Instead of competing with artificial intelligence systems, people should focus on developing their skills in using and managing them. From the smallest units of the states to the highest units, from the oldest individuals of the society to the youngest individuals, they need to be trained so that they can understand and adapt to artificial intelligence systems. In addition, establishing control and audit mechanisms to prevent the misuse of artificial intelligence systems will be beneficial in terms of carrying out the studies

more healthily. In addition to all these, the use of artificial intelligence, especially in the field of education, will provide practicality in many areas and will make important contributions. Adaptation to the effects of artificial intelligence systems on all scientific fields and society can only be achieved through the education system. On the other hand, the education system also benefits from artificial intelligence systems while preparing individuals for the change caused by artificial intelligence.

Conclusion

In general, using artificial intelligence technologies, marketers do not spend as much time on analysis and preparation of reports as before. They use new technologies to more optimally determine the content and strategies of the campaign they will present. Thus, through artificial intelligence, marketers can see the current situation from a wider perspective and determine their strategies accordingly. Businesses use augmented reality technology to sell their products in a more interactive way. Augmented reality is the creation of a physical appearance of the real-world environment and its contents by enriching it with sound, image, graphics, etc. information by a computer. This technology can also be defined as the placement of virtual objects on real objects using the object recognition feature of devices. The use of augmented reality allows companies to move to a higher level in their communication with customers. As an example, we can mention product testing. One of the behaviors that is often seen in consumer purchasing habits is testing the product before buying it. Augmented reality brings products closer to the buying audience by providing the closest possible view to reality. For example, a consumer can see how a dress will fit them or how a favorite sofa will look in the living room without going to the store through this technology. A study conducted in the United States (US Virtual and Augmented Reality Users 2020) found that 72.8 million people in this country used augmented reality at least once a month in 2019. [12] Considering the benefits of augmented reality technology, investments in this field are also increasing year by year. Thus, while global spending on augmented reality technology

was \$11 billion in 2017, it is expected to reach \$22.8 billion in 2025, and by 2030 this figure will increase 15 times to \$342 billion. Thus, it is important for businesses to determine consumer preferences in order to increase sales volume. Today, smartphones, social media, and connected devices generate more information than ever before. Businesses are using artificial intelligence tools to transform this information into valuable products that can be sold. There are many platforms used in this field. Examples of these include: Invoca, Appier, Lexalytics, Netbase, Airpr, Persado, etc. platforms.

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BİZNES ƏMƏLİYYATLARINDA SÜNİ İNTELLEKTİN ARTAN ROLU

Xülasə.

Tədqiqatın məqsədi süni intellektin (Sİ) biznes əməliyyatlarında artan rolunu təhlil etmək və Sİ texnologiyalarının qərarvermə, avtomatlaşdırma, proqnozlaşdırma və strateji idarəetməni necə dəyişdirdiyini müəyyənləşdirməkdir. Araşdırmada Sİ bazarının genişlənməsi, müəssisələrdə tətbiq səviyyəsi və sahələr üzrə təsirlərini qiymətləndirmək üçün rəsmi məlumatların statistik analizi aparılmışdır.

Metodologiya global Sİ investisiyalarının, biznes məhsuldarlığı göstəricilərinin və gəlir dinamikasının öyrənilməsini, həmçinin mövcud elmi ədəbiyyatın təhlilini əhatə edir.

Nəticələr göstərir ki, Sİ məlumatların emalını sürətləndirir, əməliyyat səmərəliliyini artırır, fərdiləşdirməni və proqnozların dəqiqliyini yaxşılaşdırır, eyni zamanda biznes modellərinin və təşkilati strategiyaların yenilənməsinə səbəb olur. Statistika Sİ-nin sürətli bazar artımını və marketinq, İT və təchizat zənciri kimi sahələrdə geniş tətbiq olunduğunu təsdiqləyir. Tədqiqat həmçinin insan–Sİ əməkdaşlığının əsas dəyər mənbəyi olduğunu vurğulayır.

Açar sözlər: Süni intellekt; biznes əməliyyatları; avtomatlaşdırma; proqnozlaşdırma; rəqəmsal transformasiya.

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ВОЗРАСТАЮЩАЯ РОЛЬ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА В БИЗНЕС-ОПЕРАЦИЯХ

Резюме.

Цель данного исследования состоит в анализе возрастающей роли искусственного интеллекта (ИИ) в бизнес-процессах и выявлении того, каким образом ИИ-технологии трансформируют принятие решений, автоматизацию, прогнозирование и стратегическое

управление. В работе применён статистический анализ официальных данных для оценки расширения рынка ИИ, уровня внедрения ИИ на предприятиях и отраслевых эффектов.

Методология включает изучение глобальных инвестиций в ИИ, показателей производительности бизнеса и динамики доходов, опираясь на современную научную литературу.

Результаты показывают, что ИИ существенно повышает эффективность обработки данных, оптимизирует операции, улучшает персонализацию и точность прогнозов, а также способствует изменению бизнес-моделей и организационных стратегий. Статистические данные подтверждают быстрый рост рынка и широкое применение ИИ в маркетинге, ИТ и логистике. Исследование также подчёркивает, что наибольшая ценность достигается через сотрудничество человека и ИИ.

Ключевые слова: искусственный интеллект; бизнес-операции; автоматизация; прогнозирование; цифровая трансформация.

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