

In addition, the shortage of qualified personnel remains one of the key problems. For successful digitalization, businesses need specialists in the field of IT, analytics and data management, and this disadvantage slows down the processes of introducing new technologies.

Another problem is the increased threat to data security associated with an increase in the number of digital transactions. Companies are forced to spend significant amounts of money on protecting information by developing cybersecurity strategies, which can also constrain the process of digitalization.

The situation is further complicated by the existence of administrative and bureaucratic barriers, which sometimes impede access to the latest technologies and complicate the digitalization process for businesses in the CIS countries and Belarus.

For the successful development of digital transformation in the CIS countries and Belarus, it is necessary to focus on several strategic directions. First, it is important for states to develop IT infrastructure and implement business support programs, providing tax incentives for IT companies and startups, which will accelerate the pace of digitalization.

To sum up, digital transformation is an opportunity for CIS companies and Belarus to adopt modern challenges and raise their competitiveness in the international arena. Introduction of new technologies improves not only management processes but also opens new perspectives.

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THE INTEGRATION OF INFORMATION TECHNOLOGIES AND MATHEMATICAL MODELING IN ENHANCING BUSINESS EFFICIENCY

Интеграция информационных технологий и математического моделирования в повышение эффективности бизнеса

As globalization and digital transformation reshape the business landscape, organizations face unprecedented challenges and opportunities. In this context, information technologies (IT) and mathematical modeling have emerged as indispensable tools that enhance operational capabilities and notify strategic decisions. IT encompasses a wide range of technologies, including data management systems, artificial intelligence, and machine learning, which alleviate the collection and analysis of large datasets

The integration of IT with mathematical modeling operates on daily basis resulting in the analytical reports of organizations. Thus, businesses can enter real-time data into

mathematical models insuring more accurate forecasts and better-informed decisions [1]. Several industries demonstrate a successful integration of personalized experiences.

In healthcare, predictive methods analyze patients` data to optimize treatment protocols with shorter treatment periods therefore leading to more efficient resource allocation. Another usage is when simulation models are used to relate symptoms and body testing results to a complex health diagnoses description, thus avoiding misinterpretation of the diagnoses. What is more is that mathematical models help to predict patients` admission rate allowing better staff and resource management. CRM systems, for example, integrate data across various touchpoints, allowing businesses to analyze consumer behavior and tailor their marketing strategies accordingly.

In industries such as finance, this capability is particularly important. Instantaneous access to information can significantly influence trading decisions and risk assessments. A mathematical model can be a powerful tool for organizations seeking to optimize their operations and mitigate risks. Simulating real-world processes and assessing potential outcomes can be accomplished by creating abstract representations. The integration of IT with mathematical modeling enhances the analytical capabilities of organizations, fostering a data-driven culture that underpins strategic decision-making. By utilizing IT systems for data collection and processing, businesses can feed real-time data into mathematical models, leading to more accurate forecasts and better-informed decisions [2].

For instance, predictive analytics in marketing employs historical data to construct models that forecast customer behavior. Companies like Netflix utilize advanced algorithms to analyze viewer preferences, guiding content recommendations and improving user engagement. This integration exemplifies how organizations can leverage data to personalized experiences and drive business growth. Hospitals employ simulation models to forecast patient admissions, allowing for better staff and resource management. In the aviation sector, airlines utilize mathematical modeling to optimize flight schedules and pricing strategies. By integrating real-time data on weather conditions, fuel prices, and demand forecasts, airlines can create informed decisions that maximize profitability while ensuring customer satisfaction [3].

The manufacturing industry also benefits this integration. Companies use IT to monitor production processes while employing mathematical models to predict equipment failures and optimize maintenance schedules. This proactive approach not only minimizes downtime but also enhances overall productivity. The integration of information technologies and mathematical modeling is fundamental for businesses aiming to navigate the complexities of the modern marketplace [3].

As a conclusion, IT tools play the multifaceted roles in contemporary business practices, highlighting their contributions to data-driven decision-making, predictive analytics, and resource optimization. Through the use of case studies across various sectors it is illustrated how mathematical models enable organizations to simulate complex scenarios, analyze risk, and enhance operational workflows.

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METHOD OF MINIMISING ERRORS OF GENERATIVE LANGUAGE MODELS OF NEURAL NETWORKS IN SOLVING LOGISTIC PROBLEMS

Способ минимизации ошибок языковых генеративных моделей нейронных сетей при решении логистических задач

Digitalisation has spread widely to all the sectors of the economy and, in particular, to all functional areas of logistics as a science. The models of neural networks became important elements of overall process of implementation of innovations.

There are many different models of neural networks, but the most popular at the moment are generative language models (GLM). Specialists teach such models on the text data massive. While the model learns, parameters form and the probabilities (weights) of that parameters assign. After that users can interact with the GLM usually via the chat bots. ChatGPT 3.5 was the first opened generative language model, which was released to the public in 2022 (the latest version as on November 2024 is ChatGPT-4o. mini).

The business subjects, in particular logistic companies, declared their willingness to implement those models in business processes and functional areas. Generative language models in logistics can be used in all the areas: transportation, warehousing, distribution processes, inventory management etc. The main purposes of it lies in the usage as the assistant instrument in the demand forecasting, routing, document search, choosing the concept of the production at the theory of decision-making process and many other tasks.

Since 2018 the developer, OpenAI, conducted a lot of experiments with the first versions of neural networks built on that architecture, such as GPT 1.0, GPT 2.0 etc. But