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THEORETICAL CONCEPT OF ARTIFICIAL INTELLIGENCE, ITS IMPACT ON THE MODERNISATION OF BUSINESS PROCESSES AND STRATEGIC DEVELOPMENT OF ENTERPRISES

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THE PURPOSE OF THE ARTICLE is to study the theoretical concept of artificial intelligence and its impact on the modernisation of business processes and strategic development of enterprises.

RESEARCH METHODS. The article uses the following methods: expert assessments; algorithmic analysis; experimental research; statistical analysis; monitoring and evaluation of results; analysis and synthesis; graphical method, etc.

PRESENTING MAIN MATERIAL. Artificial intelligence (AI) is a multidisciplinary scientific concept that has a huge potential for transformation in the field of business process modernisation and strategic development of enterprises. AI is capable of radically modernising business processes and their strategic development by automating decision-making systems and predicting innovations in production based on data analytics. As AI touches upon issues such as ethics, privacy, and cybersecurity, the misuse of AI can have serious negative consequences for users. The main types of AI fall into two broad areas: Weak AI – systems that are capable of performing specific tasks, but without understanding the broader context or the ability to adapt in general, which can outperform humans in certain tasks but do not have true 'consciousness'; Strong AI – systems that can think, understand and learn at the level of human intelligence (Strong AI is still a hypothetical area of research, as there is no fully implemented Strong AI in modern science). Currently, there are several main approaches to AI development, each of which has its own peculiarities. The main methods are machine learning, expert systems, neural networks, and evolutionary algorithms. AI is becoming a relevant tool for modernising business processes, optimising resources, and developing enterprises strategically. Thus, AI opens up new horizons for business, allowing companies to optimise their business processes, minimise costs and increase efficiency. Integrating AI into the development strategy of enterprises requires a deeper understanding of its potential and limitations, where the introduction of AI changes not only individual business processes but also affects the overall approach to the management and development of enterprises. One of the key areas of AI use in the strategic development of enterprises is forecasting and strategic planning, where AI can help enterprises predict economic trends, analyse the competitive environment, and develop strategies that meet future customer demands.

CONCLUSIONS. It has been established that AI has a mega-potential for business transformation, contributing to the modernisation of business processes and strategic development of enterprises. However, to achieve effective results, it is important to be aware of both the advantages and disadvantages associated with its integration. Successful AI integration requires not only technical training, but also the adaptation of business models, a strategic approach, attention to all ethical aspects, investment in innovation, and continuous training of employees. The introduction of AI will allow businesses to optimise their operations, make more informed decisions and adapt to the changing environment. Understanding the importance of AI for businesses allows them not only to adapt to new conditions but also to gain a competitive advantage, as AI is becoming one of the key factors in business development, and its role will only grow in the future.

KEYWORDS: artificial intelligence; modernisation of business processes; strategic development of enterprises; business transformation; integration; innovation; enterprises; adaptation; implementation.

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
25	4	0

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ТЕОРЕТИЧНИЙ КОНЦЕПТ ШТУЧНОГО ІНТЕЛЕКТУ, ЙОГО ВПЛИВ НА МОДЕРНІЗАЦІЮ БІЗНЕС-ПРОЦЕСІВ ТА СТРАТЕГІЧНИЙ РОЗВИТОК ПІДПРИЄМСТВ

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МЕТОЮ СТАТТІ є дослідження теоретичного концепту штучного інтелекту, а також його впливу на модернізацію бізнес-процесів та стратегічний розвиток підприємств.

МЕТОДИ ДОСЛІДЖЕННЯ. В статті було використано методи: експертних оцінок; алгоритмічного аналізу; експериментальних досліджень; статистичного аналізу; моніторингу і оцінки результатів; аналізу та синтезу; графічний метод та ін.

ВИКЛАД ОСНОВНОГО МАТЕРІАЛУ. Штучний інтелект (ШІ) є багатовекторним науковим поняттям, яке має величезний потенціал для трансформації у сфері модернізації бізнес-процесів та стратегічного розвитку підприємств. ШІ здатний радикально модернізувати бізнес-процеси та їх стратегічний розвиток, автоматизуючи системи прийняття рішень та прогнозуючи на основі аналітики даних інновації у виробництво. Оскільки, ШІ дотичний до таких питань, як етика, конфіденційність та кібербезпека, то неправильне застосування ШІ може мати серйозні негативні наслідки для користувачів. Основні види ШІ поділяються на два великі напрямки: Weak AI – системи, що здатні виконувати конкретні завдання, але без розуміння широкого контексту чи здатності до загальної адаптації, які можуть перевершувати людей у певних завданнях, але не мають справжньої «свідомості»; Strong AI – системи, які можуть мислити, розуміти та навчатися на рівні людського інтелекту (Strong AI ще залишається гіпотетичним напрямком досліджень, оскільки в сучасній науці не існує повноцінно реалізованого Strong AI). В сучасних умовах існує декілька основних підходів до розробки ШІ, кожен з яких має свої особливості. Так, основними методами є машинне навчання, експертні системи, нейронні мережі та еволюційні алгоритми. ШІ стає актуальним інструментом для модернізації бізнес-процесів, оптимізації ресурсів та стратегічного розвитку підприємств. Отже, ШІ відкриває нові горизонти для бізнесу, дозволяючи підприємствам оптимізувати свої бізнес-процеси, мінімізувати витрати та підвищувати ефективність діяльності. Інтеграція ШІ у стратегію розвитку підприємств вимагає більш глибокого розуміння його потенціалу та обмежень, де впровадження ШІ змінює не тільки окремі бізнес-процеси, але й впливає на загальний підхід до управління та розвитку підприємств. Одним із ключових напрямків використання ШІ у стратегічному розвитку підприємств є прогнозування та стратегічне планування, де завдяки ШІ підприємства можуть прогнозувати економічні тенденції, аналізувати конкурентне середовище та розробляти стратегії, що відповідають майбутнім запитам споживачів.

ВИСНОВКИ. Встановлено, що ШІ має мега-потенціал для трансформації бізнесу, сприяючи модернізації бізнес-процесів та стратегічному розвитку підприємств. Однак для досягнення ефективних результатів важливо усвідомлювати як переваги, так і недоліки, пов’язані з його інтеграцією. Успішна інтеграція ШІ потребує не лише технічної підготовки, але й адаптації бізнес-моделей, стратегічного підходу, уваги до всіх етичних аспектів, інвестування в інновації та безперервного навчання своїх працівників. Впровадження ШІ дозволить підприємствам оптимізувати свої операції, приймати більш обґрунтовані рішення та адаптуватися до мінливих умов сьогодення. Розуміння значимості ШІ для підприємств дозволяє останнім не лише адаптуватися до нових умов, але й отримати конкурентну перевагу, оскільки ШІ стає одним із ключових факторів розвитку бізнесу, і його роль у майбутньому лише зростатиме.

КЛЮЧОВІ СЛОВА: штучний інтелект; модернізація бізнес-процесів; стратегічний розвиток підприємств; трансформація бізнесу; інтеграція; інновації; підприємства; адаптація; імплементація.

Statement of the problem. Artificial intelligence (AI) is a multidisciplinary scientific concept that has a huge potential for transformation in the field of business process modernisation and strategic development of enterprises. AI is the foundation of the fourth industrial revolution (Industry 4.0), which leads to automation, digitalisation and intellectualisation of processes that change approaches to business management, strategic development, production optimisation, market analysis and consumer behaviour. AI helps to increase the efficiency and productivity of enterprises by automating routine tasks, analysing large amounts of data and making decisions based on machine learning, which significantly increases the competitiveness of enterprises in the global and world markets. AI is able to radically modernise business processes and their strategic development by automating decision-making systems and predicting production innovations based on data analytics. In addition, AI can perform some of the tasks previously performed by company employees, which leads to the training and retraining of new personnel, the need for new professions, and has a general impact on employment in general. As AI touches on issues such as ethics, privacy and cybersecurity, the misuse of AI can have serious negative consequences for users. AI has the potential to fundamentally change the way we think about intelligence and automation, but its potential should be used with caution and responsibility.

Analysis of publications on the problem. AI issues have always been in the focus of attention of economists, especially in the times of Industry 4.0, and with the onset of technological transformations, responding to consumer demands and modern market requirements. AI has been studied by many researchers: V. Andriievskyi, V. Kyrychenko, O. Kostenko, M. Kurkov, M. Kushnir, A. Tokarieva, B. Lohvinenko, O. Parubets, D. Suhoniako, I. Serediuk, N. Pavlikha, O. Pizhuk, S. Ramazanov, A. Shevchenko, Ye. Kuptsova, Z. Shatska, H. Olshanskyi, A. Shevchenko, K. Yefremova and others. However, scholars have not been able to come to a consensus on the basic concept, which is the subject of our study.

Statement of the main results. The beginning of AI as a scientific discipline is associated with the development of computers in the mid-20th century. The first concepts of AI started to develop in the mid-1950s, when scientists A. Turing and J. McCarthy proposed theories and methods for creating intelligent machines. A. Turing, one of the founders of computer science, proposed the famous Turing Test as a method of assessing the ability of a machine to demonstrate intelligent behaviour equivalent to that of a human. J. McCarthy, for his part, coined the term ‘artificial intelligence’ and proposed a number of fundamental concepts for the further development of the industry. Over the next decades, AI development went in waves, with periods of high enthusiasm known as the "AI summer" and lulls in interest called "AI winters". However, since the late 1990s, thanks to advances in

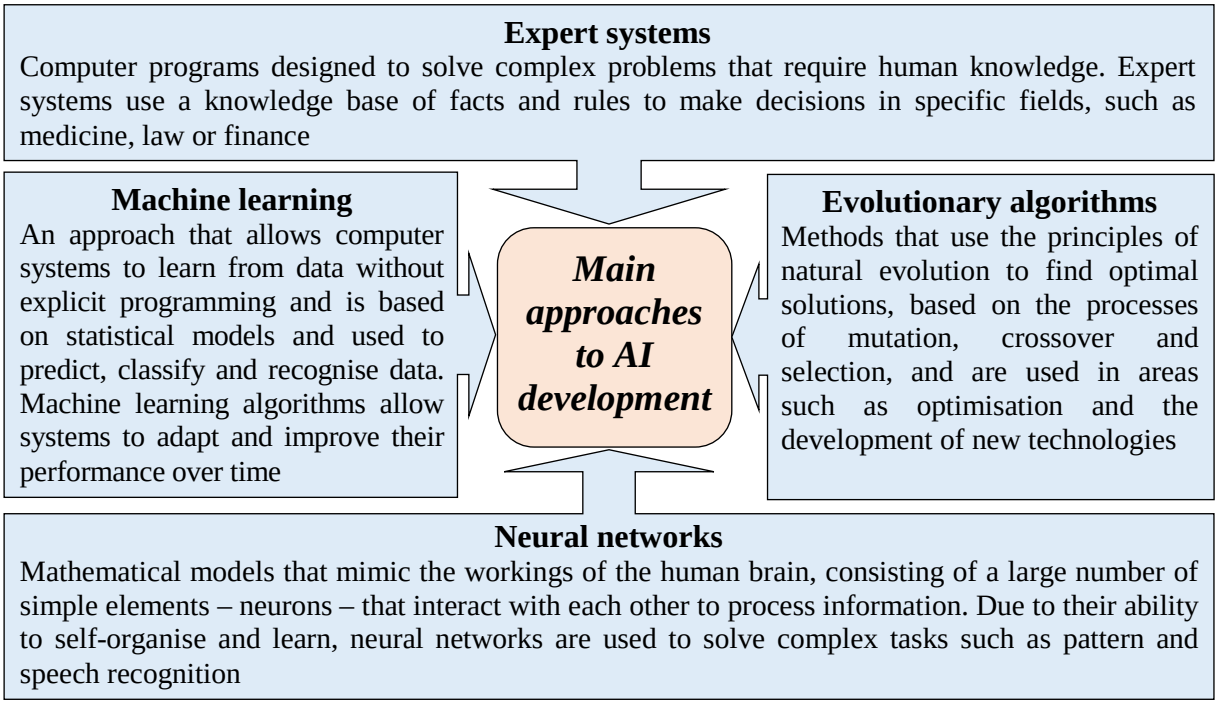
computing technology and access to large amounts of data, AI has experienced a significant rise (Yefremova, 2020; Pizhuk, 2019; Irnazarov and Puzyrova, 2023; Ramazanov, 2022; Komaretska, 2006).

In today's reality, AI is one of the most significant scientific and technological achievements of our time, gaining increasing popularity due to its application in various fields, including medicine, manufacturing, finance, entertainment, computer science, mathematical logic, neuroscience, automata theory and cognitive psychology. The key goal of AI is to develop systems capable of imitating human thinking and behaviour. AI also allows machines to learn, make decisions, and adapt to new conditions, which has significant potential for transforming economic and social systems (Puzyrova and Synytsia, 2024; Kostenko, 2022; Kurkov, 2020). The main types of AI are divided into two broad blocks:

1. Weak AI is a system capable of performing specific tasks but without understanding the broader context or the ability to adapt in general, which can outperform humans in certain tasks, such as chess or face recognition, but does not have true ‘consciousness’.

2. Strong AI are systems that can think, understand, and learn at the level of human intelligence. Strong AI is still a hypothetical area of research, as there is no fully implemented Strong AI in modern science.

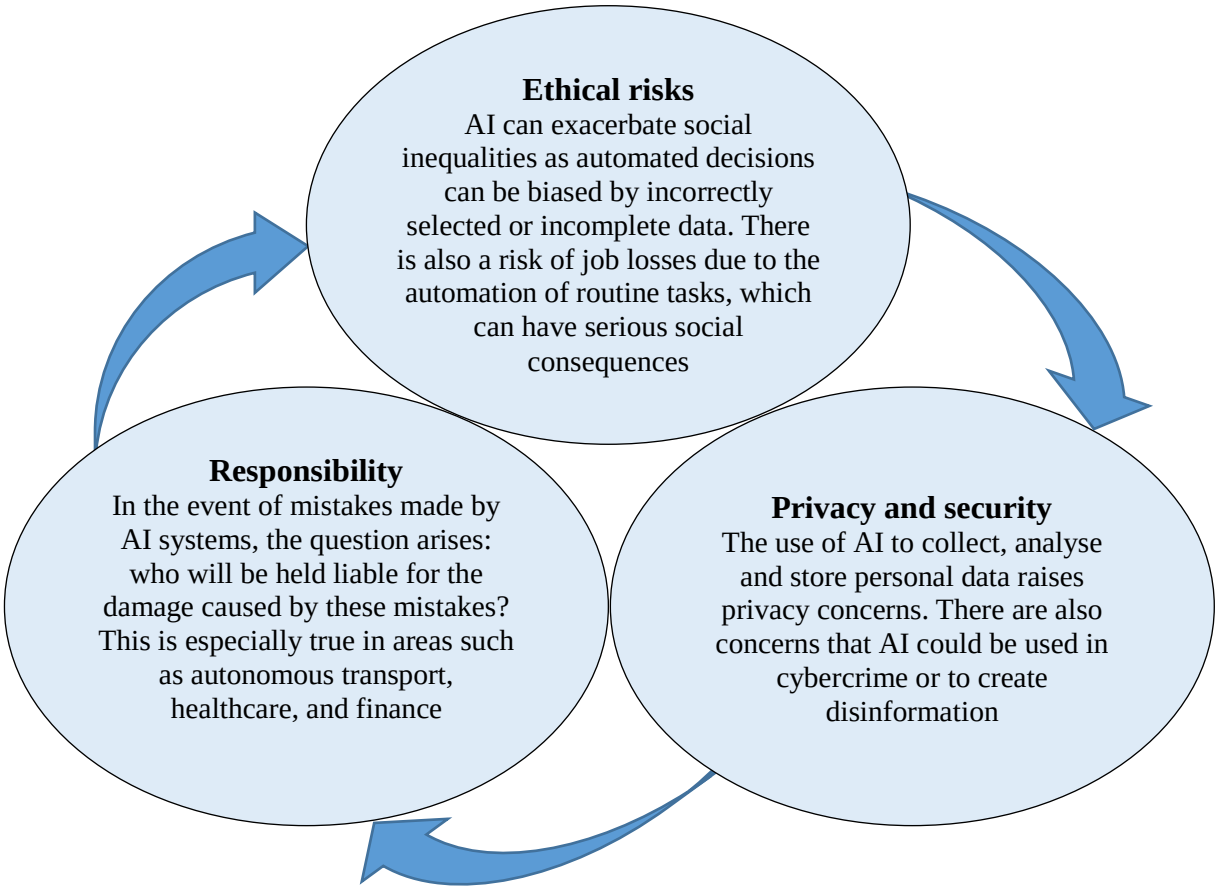
Currently, there are several main approaches to AI development, each of which has its own peculiarities. The main methods are machine learning, expert systems, neural networks, and evolutionary algorithms (Fig. 1).



Source: (Puzyrova and Synytsia, 2024; Kostenko, 2022; Kurkov, 2020).

Fig. 1. **Main approaches to AI development**

Artificial intelligence, despite its potential, raises many pressing issues that need to be addressed. One of the main issues is the ethical aspects of using AI through privacy, security, discrimination, and liability in case of AI errors (Fig. 2).



Source: (Parubets, Suhoniako and Serediuk, 2019; Shatska and Olshanskyi and Irnazarov, 2023).

Fig. 2. **Topical issues to be considered when using AI**

Thus, AI is rapidly becoming one of the most influential technologies of the 21st century, which has a profound impact on all sectors of the economy and business, stimulating the transformation of organisations, rethinking management models, and introducing new strategic approaches to development (Kushnir and Tokarieva, 2020; Lohvinenko, 2022; Irnazarov and Puzyrova, 2024).

In today's globalised and digitalised world, businesses face challenges that require innovative approaches to management and development. AI is becoming the main tool for modernising business processes, optimising resources and strategic development of enterprises. AI opens up new horizons for business, allowing companies to optimise their business processes, minimise costs and increase efficiency. The use of AI in business processes goes beyond simple

automation of routine tasks. Today, AI is capable of generating new solutions that can fundamentally affect the strategic development of enterprises (Parubets, Suhoniako and Serediuk, 2019; Shatska, Olshanskyi and Irnazarov, 2023).

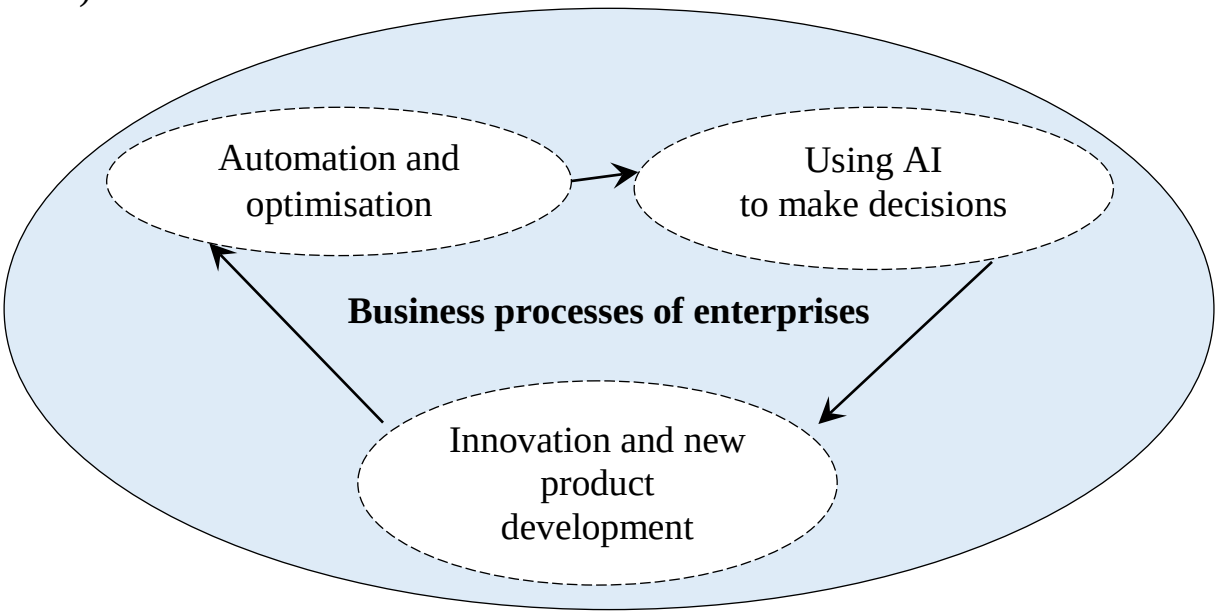
One of the key areas of AI implementation is the automation of routine and repetitive tasks, including the automation of document processing, inventory management, customer service via chatbots, and other similar processes. Such automation can optimise operational costs and free up human resources for more strategic tasks. AI also provides businesses with the ability to analyse large amounts of data in real time, which allows them to identify hidden trends, predict future customer needs, and make informed management decisions. Using machine learning methods, businesses can analyse consumer behaviour, optimise marketing campaigns, and develop personalised offers for customers (Pavlikha, 2023; Puzyrova, Irnazarov and Khaliliaieva, 2023; Kurkov, 2019).

The implementation of AI in businesses is enabling the creation of new business models that were previously impossible or uneconomic, including concepts such as smart products that can adapt to user needs or predictive services that offer products and services to consumers before there is demand for them. It is these kinds of innovations that allow businesses to create unique innovative competitive advantages and enter new markets.

One of the main advantages of using AI in business processes is the ability to automate them, which leads to lower operating costs, increased efficiency, and minimisation of the human factor. Process automation using AI can cover various business areas, from supply chain management to customer service and financial transactions. AI can automate routine tasks, freeing up human resources for more creative and strategic work. AI also has the potential to significantly impact the decision-making process in organisations by analysing large amounts of data in real time, identifying patterns and suggesting the best development strategies. AI-based systems are used to predict market trends, analyse the competitive environment, and assess risks. For many businesses, AI-based solutions provide a competitive advantage through deeper data analysis and more effective strategies. AI also opens up new opportunities for innovation, especially in research and development, where businesses can use AI to accelerate business processes to create new products and services, reduce R&D time, and minimise testing and optimisation costs (Fig. 3).

Integration of AI into the enterprise development strategy requires a deep understanding of its potential and limitations, where the introduction of AI changes not only individual business processes but also affects the overall approach to enterprise management and development. One of the key areas of AI application in the strategic development of enterprises is forecasting and strategic planning. AI can help forecast market trends, product demand, assess the competitive environment, and manage risks. Using machine learning,

businesses can model different scenarios of business processes and choose the best strategies based on complex analytical models. AI also helps businesses identify priority areas of development, identify new market opportunities, and adapt to changes in the external environment. Thanks to AI, businesses can predict economic trends, analyse the competitive environment, and develop strategies that meet future consumer demands (Irnazarov, Kyrychenko and Andriievskyi, 2024; Ramazanov, Shevchenko and Kuptsova, 2020; Shevchenko, 2023).



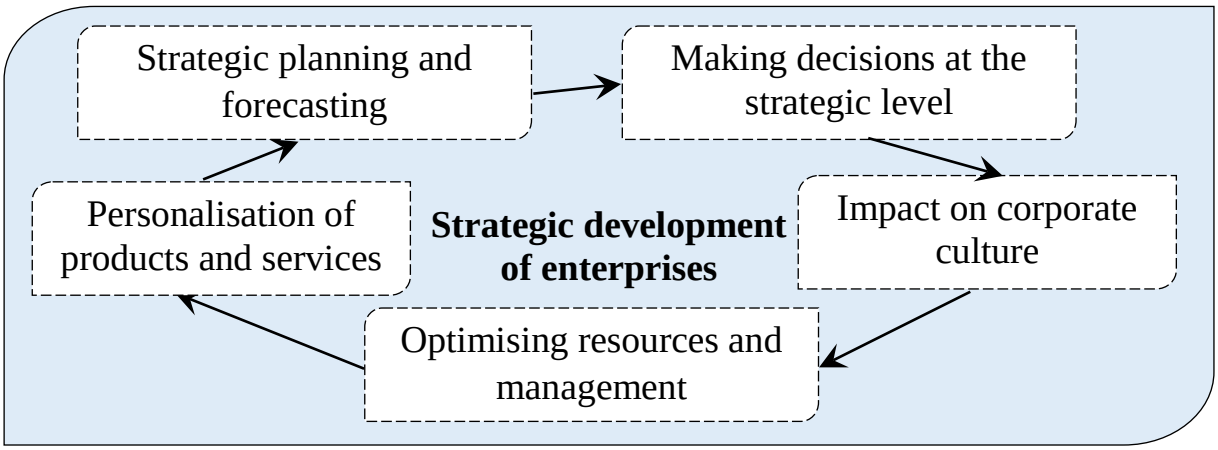
Source: (Irnazarov, Kyrychenko and Andriievskyi, 2024; Ramazanov, Shevchenko and Kuptsova, 2020; Shevchenko, 2023).

Fig. 3. **Artificial intelligence in the modernisation of business processes**

Another important role of AI in strategic management is the analysis and optimisation of supply chains, which allows businesses to reduce costs, optimise logistics processes, and improve customer service.

Integration of AI into strategic management affects the corporate culture of the enterprise, requiring employees to adapt to changes, openness to new technologies and continuous learning, where competitive enterprises stimulate the development of digital literacy among employees and encourage innovation in business processes. Intelligent management systems allow optimising the use of resources, reducing costs and increasing efficiency, which is especially important in a global competitive environment where the ability to respond quickly to changes in demand and ensure continuity of supply is a key competitive advantage. That's why AI allows automating inventory management, production planning, and logistics processes, which ensures more efficient use of resources. AI also allows businesses to offer consumers more personalised products and services tailored to their individual needs and

preferences, which not only increases customer satisfaction but also fosters loyalty, which in the long run has a positive impact on business profitability (Fig. 4).



Source: (Pavlikha, 2023; Puzyrova, Irnazarov and Khaliliaieva, 2023; Kurkov, 2019).

Fig. 4. **The impact of artificial intelligence on the strategic development of enterprises**

Thus, despite its many advantages, the integration of AI into business processes is not without its drawbacks:

– ethical and legal aspects – aspects related to the use of data privacy, the possibility of discrimination, and responsibility for decisions that require careful regulation and control;

– risks of job losses – automation of many processes with the help of AI can become a serious social problem if companies do not invest in retraining their employees and creating new jobs in developing areas;

– direct dependence on technology – increased dependence on AI can be a risk for businesses in the event of technical failures or cyberattacks, which prompts them to ensure the reliability and security of AI systems, as well as to develop a contingency plan in case of unforeseen situations.

Conclusions. Artificial intelligence has a mega-potential for business transformation, contributing to the modernisation of business processes and the strategic development of enterprises. However, to achieve effective results, it is important to understand both the advantages and disadvantages associated with its integration. Successful AI integration requires not only technical training, but also the adaptation of business models, a strategic approach, attention to all ethical aspects, investment in innovation, and continuous training of employees. The introduction of AI allows businesses to optimise operations, make more informed decisions, and adapt to the changing environment. AI is already transforming traditional business models by increasing process efficiency, reducing costs, and opening up new opportunities for innovation. Understanding the importance of AI

for businesses allows them not only to adapt to new conditions but also to gain a competitive advantage, as AI is becoming one of the key factors in business development, and its role will only grow in the future.

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