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**The use of Big Data and Artificial Intelligence for
International Business Development**

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Abstract. *The article explores the ways artificial intelligence and big data technologies are applied in the development and management of international business. The aim of the study is to identify how AI tools and big data analytics influence the organization, strategic planning, and operational efficiency of transnational companies in the context of the digital transformation of the global economy. The study employed general scientific methods of cognition: analysis, synthesis, induction, deduction, comparison, generalization, and a systematic approach. The results show that the active integration of AI and big data technologies is significantly reshaping the approaches to conducting international business. In particular, it is concluded that these tools help optimize operational processes, boost productivity, improve strategic planning accuracy, and support the creation of innovative solutions in global management. It has been found that through the use of modern digital technologies, transnational corporations are able to respond quickly to*



shifts in the global market environment, predict consumer behavior, improve logistics processes, and enhance their overall competitiveness. The integration of AI and big data encompasses all key aspects of international business: from selecting markets and entry strategies to managing human resources, intercultural communication, sustainable development, and international marketing. A comprehensive digital ecosystem is being formed, bringing together various functional business subsystems and enabling sustainable growth, efficient resource management, and the expansion of international presence. The practical value of this research lies in its potential to inform the development of digital transformation strategies within the international business landscape.

Keywords: *artificial intelligence; big data; international business; digital transformation; competitiveness*

Використання big data та штучного інтелекту для розвитку міжнародного бізнесу

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Анотація. *Стаття присвячена дослідженню напрямів використання технологій штучного інтелекту та Big Data у сфері розвитку й управління міжнародним бізнесом. Мета дослідження – з'ясувати, яким чином інструменти штучного інтелекту та аналітики великих даних впливають на організацію, стратегічне планування й ефективність функціонування транснаціональних компаній в умовах цифрової трансформації глобальної економіки. У ході наукового дослідження використовувалися загальнонаукові*



методи пізнання: аналіз, синтез, індукція, дедукція, порівняння, узагальнення та системний підхід. Результати дослідження показують, що активне впровадження технологій штучного інтелекту та Big Data суттєво змінює підходи до ведення міжнародного бізнесу. Зокрема, зроблено висновок, що ці інструменти сприяють оптимізації операційної діяльності компаній, підвищенню продуктивності, точнішому стратегічному плануванню та створенню інноваційних рішень у сфері глобального менеджменту. Досліджено, що завдяки застосуванню сучасних цифрових технологій транснаціональні корпорації отримують можливість оперативного реагувати на зміни у глобальному ринковому середовищі, прогнозувати поведінку споживачів, удосконалювати логістичні процеси та підвищувати загальний рівень конкурентоспроможності. Показано, що інтеграція ІІІ та Big Data охоплює всі ключові напрями міжнародного бізнесу: від стратегічного вибору ринку та моделі виходу на нього до управління людськими ресурсами, міжкультурної комунікації, сталого розвитку й міжнародного маркетингу. Створюється цілісна цифрова екосистема, що об'єднує різні функціональні підсистеми бізнесу, забезпечуючи сталий розвиток, ефективне управління ресурсами та розширення міжнародної присутності компаній. Практичне значення дослідження полягає в тому, що його результати можуть бути використані для розробки стратегій цифрової трансформації в міжнародному бізнес-середовищі.

Ключові слова: *штучний інтелект, Big Data, міжнародний бізнес, цифрова трансформація, конкурентоспроможність*

Problem Statement. In the context of globalization and the growing digitalization of the world economy, digital technologies, particularly artificial intelligence (AI) and big data analytics, serve as key drivers for the development and scaling of international business. These technologies are shaping a new paradigm for the management of transnational companies, enabling effective adaptation to dynamic



external conditions and ensuring stable growth in global markets. Digital solutions enhance the analytical capabilities of enterprises, allowing for strategic decision-making based on large volumes of data, optimization of logistics and operational processes, as well as the provision of a personalized approach to clients across different cultural and regional contexts. This is especially important for companies aiming to scale their operations, enter new markets, and create global value chains.

The application of AI and Big Data enables the identification of new market niches, forecasting changes in consumer behavior, as well as the development of innovative business models that take into account both local and global trends. At the same time, these technologies contribute to the integration of e-learning processes and staff upskilling, which is critically important for maintaining the innovative potential and competitiveness of a company on the international stage. In this context, the study of the impact of AI, big data, and business analytics on the processes of scaling enterprises in the international environment is extremely relevant. It is necessary to identify the factors that promote or hinder the effective implementation of digital tools in transnational activities, with the aim of forming strategies for sustainable development, internationalization, and digital transformation of business under conditions of global competition.

Analysis of recent scientific research and publications. The issue of using big data and artificial intelligence for the development of international business is sufficiently studied in foreign scientific literature. The listed sources are dominated by publications from authors of various countries, which indicates a high level of global interest in the topic and the relevance of its research in the context of the transformation of the international business environment. Significant contributions to the development of this topic have been made by such authors as M. Beltrami, G. Orzes, J. Sarkis, and M. Sartor [1], who proposed a conceptual model for integrating the principles of Industry 4.0 with the goals of sustainable development. Their work is fundamental for understanding the potential of AI and big data in the context of environmental and social corporate responsibility. Equally important is the study by P. Budhwar,



A. Malik, M.T.T. De Silva, and P. Thevisuthan [3], which examines the challenges and opportunities of applying AI in international human resource management, forming the foundation for new HR strategy models. F. Ciulli and A. Kolk [4] made an attempt to systematize the impact of digital technologies on sustainable development in international business, showing how AI and big data influence decision-making and the transformation of business models. M.H. Jarrahi [8], in his study, proposes the concept of a “human-AI symbiosis,” which becomes a central idea for building the organizations of the future. K. Güler and A. Tepecik [5] draw attention to the use of AI algorithms for forecasting economic crises, which has direct practical significance for international financial strategy.

Publications in modern online media, particularly Forbes [6][7], OECD [14], and others, complement academic research with practical cases of AI application in business. They highlight how leading companies integrate new technologies to optimize processes, personalize marketing, and reduce risks in international markets.

Identification of previously unresolved aspects of the general problem.

Despite the sufficient amount of literature on this topic, there is a noticeable lack of systematized material on the subject of research. Therefore, using various methods of scientific inquiry, information has been analyzed, grouped, and systematized, and presented in terms of directions for the use of artificial intelligence and big data in various fields of international activity.

Formulation of the article’s objectives (statement of the task). The purpose of the article is to demonstrate the directions of using artificial intelligence and big data technologies in the process of managing and organizing international business activities. To achieve this goal, the following tasks were carried out during the research: the essence of artificial intelligence and big data technologies was defined; the main areas of application of these technologies were identified, in particular in innovation management, international market selection, market entry modeling, currency operations, trade negotiations, and global supply chains.



Presentation of the Main Material. Artificial intelligence (AI), in combination with big data technologies, plays a key role in the transformation of international business. In the context of the digital revolution, these technologies have become essential tools for increasing operational efficiency, making strategic decisions, and driving innovation on a global scale. AI encompasses a wide range of technologies, including machine learning, robotics, natural language processing, and artificial neural networks [4]. The use of AI makes it possible to solve complex tasks related to the management of global operations, for example, understanding cultural heterogeneity within a single country through machine learning algorithms.

The term “big data” encompasses a collection of information characterized by large volumes and processing complexity. Sources of such data include, in particular, social networks, learning management systems (LMS), artificial intelligence, and data mining technologies. The use of big data enables enterprises to reduce operational costs, better understand consumer preferences, and optimize production processes. For example, by analyzing user posts on social networks, companies can form accurate insights into customer needs and adapt their products to meet market demand [16].

Artificial intelligence (AI) is a branch of applied computer science that models human intellectual functions using computational methods to improve the efficiency of business processes. It plays a key role in the interaction between enterprises and their target audience, particularly in the development of new consumer-oriented products. In this context, digital technologies serve as a platform for engaging customers in the innovative activities of companies. The integration of technological resources into various areas of activity contributes to the formation of long-term development strategies. AI enables the rapid analysis of large volumes of information from online sources, which, in turn, supports the implementation of new management models, the development of innovative products, the strengthening of customer loyalty, and the enhancement of competitiveness [11].

The integration of AI into the activities of international companies ensures increased productivity, competitiveness, and the effectiveness of managerial decision-



making. In combination with Big Data technologies, AI enables predictive analytics, business process automation, supply chain management optimization, and improvements in cross-border transactions. It is expected that the widespread adoption of AI will bring an additional \$13 trillion to the global economy by 2030 [3].

Due to their capacity to process large volumes of information, AI technologies are becoming particularly relevant in multinational enterprises (MNEs), where the complexity and scale of operations require prompt data processing and well-founded decision-making in a dynamic environment.

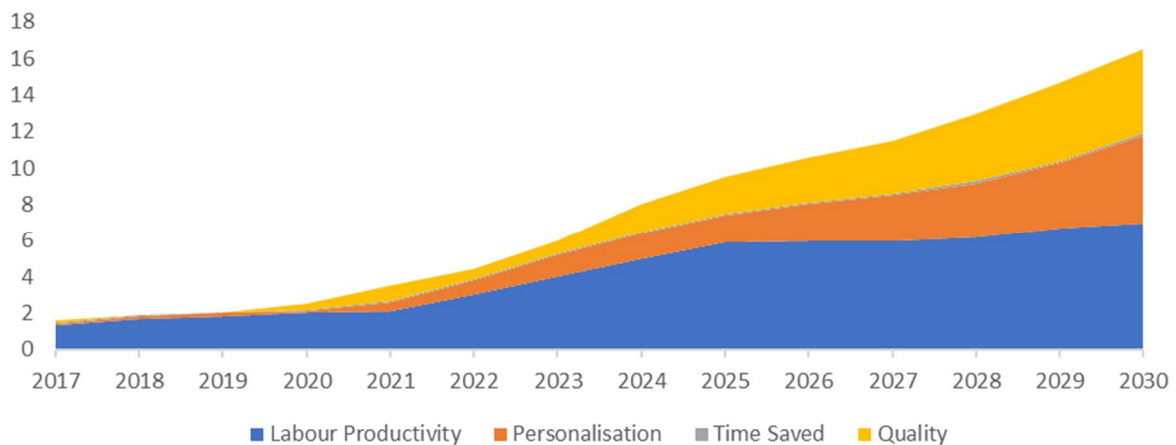


Fig. 1. The Impact of Artificial Intelligence on Global Gross Domestic Product, Trillion USD

Source: compiled by the author based on analysis [3]

In 2023, there was a sharp increase in public interest in AI due to the open access to systems such as ChatGPT by OpenAI, Bing by Microsoft, and Bard by Google. This process stimulated scientific discussions regarding the role of AI in the field of international business; however, it also revealed significant gaps in understanding how exactly these technologies are integrated into company practices and strategies [7].



Table 1

The main areas of application of AI and Big Data in various fields
of International Business (IB) Activities

IB Practice	Application of AI and big data in various areas of IB
Innovative Approaches	Creating value through data analysis and forecasting; enhancing the processes of developing new products, services, and business operations; identifying errors, improving functionality and reliability.
International Market Selection	Use of technologies to increase business engagement; analysis of a country's/network's external effects; improved recognition of international opportunities; forecasting of market trends; generation of business plans using generative AI; identification of suppliers, customers, and partners in foreign markets.
Market Entry Mode Selection	Making optimal decisions regarding market entry modes; forming an IB ecosystem through digital platforms, freelancing, and crowdsourcing; analyzing product descriptions and tariff codes in accordance with customs regulations.
Currency Operations	Forecasting currency trends; more accurate analysis and prediction of exchange rate fluctuations.
International Trade Negotiations	Analysis and forecasting of trade partners' actions; assessment of possible negotiation outcomes for multiple participants; enhancing the efficiency of the international negotiation process.
Global Supply Chains and International Operations	Demand forecasting, route optimization, logistics, inventory management; risk management in global supply chains; agent-based autonomous systems; smart warehouses and factories; use of AI for backshoring (relocating production to the home country).
Sustainability Issues in IB	AI and Big Data as catalysts for sustainability; reduction of carbon footprint and responsible production; increased inclusivity for vulnerable stakeholder groups; waste reduction and improved efficiency.
International Human Resource Management	Data-driven decision-making; development of tools for personnel selection; automation of HRM functions; improvement of employee interaction; reduction of bias in hiring processes.
Cross-Cultural Management	Automatic translation and communication within teams from different countries; enhancement of cross-cultural interaction through language support.
International Marketing	Virtual assistants and chatbots for customer service; personalization of products and services; forecasting consumer behavior; automatic translation of content for online commerce.

Source: author's own development

As noted by the OECD [14], artificial intelligence has the potential to stimulate innovation by enabling organizations to create value based on data and reduce trade costs through improved operational and supply chain efficiency. AI can also complement human creativity, opening up new opportunities for the development of



innovative products, services, processes, and business models. From an innovation perspective, AI provides significant opportunities for transnational companies to enhance quality and productivity, including error detection and correction, functional improvements, and increased reliability [6]. It can also boost innovation, operational flexibility, and strategic decision-making, giving companies competitive advantages in the global market [14].

International Market Selection. Strategic decisions and the complexity of technologies significantly influence the way companies enter foreign markets [2]. Through global information exchange, technologies stimulate the expansion of international business ties even under lower cost conditions [2]. AI can play a key role in international market selection. It enables transnational companies to more rapidly recognize international opportunities and analyze market trends without the need for substantial resource investments in local branches [13].

With the help of data analytics and visualization tools, companies can gain insights into the current and projected state of foreign markets, develop business plans, and assess the cultural and psychic distance between countries [7].

Additionally, AI enables the creation of profiles for countries, industries, and competitors, and assists in identifying suppliers and other participants in the international business ecosystem. The application of such solutions should take into account the digital capabilities of the recipient countries [7].

Market Entry Mode Selection. Entry modes are described as structural arrangements that allow for the implementation of a product strategy in the host country, either independently or through partnerships. AI can facilitate the formation of an international business ecosystem through digital platforms, freelancing, crowdsourcing, and partner networks [15]. It can also support network interaction, analyze customs codes, and detect counterfeit goods, particularly through machine learning algorithms similar to those used for license plate recognition [12]. Furthermore, research results indicate that the use of AI can lead to the reshoring of production (back-shoring), associated with automation capabilities [9].



Currency exchange in international business. Understanding currency trends is crucial for successful decision-making in the field of international business. AI can forecast and analyze currency trends based on large volumes of market data [5]. One example is a system trained on Nikkei data that predicted the USD/JPY exchange rate dynamics based on market indicators and commodity prices. As a result, currency-related decisions in international business become more data-driven and well-founded.

International trade negotiations. AI can be applied to analyze and forecast the economic trajectories of trade partners within the negotiation process. It allows for modeling outcomes for multiple participants, taking into account changes in trade barriers, and predicting the reactions of third countries [14]. An example is the Brazil Intelligent Tech & Trade Initiative, which uses AI to improve the quality of negotiation processes.

Global supply chains and international operations. Supply chain management is increasingly based on the use of neural networks, agent-based systems, and genetic algorithms. Neural networks, by imitating the structure of the brain, enable demand forecasting, route optimization, production scheduling, and supplier evaluation [15]. Agent-based systems model the interactions of individual elements within the supply chain, ensuring autonomous decision-making and the identification of bottlenecks [11].

Additionally, the concept of “smart factories” is based on the integration of IoT, sensors, and AI for autonomous production management, flexible response to demand changes, and increased productivity [9]. AI is also used to improve logistics, inventory management, demand forecasting, and the automation of warehouse processes. This enhances the efficiency of global value chains and enables rapid adaptation to changes in consumer demand.

Sustainable Development in International Business. AI is a catalyst for sustainable development, capable of reducing carbon emissions, improving the efficiency of logistics operations, and contributing to the achievement of the UN Sustainable Development Goals [4]. In addition, it promotes transparency in interactions with various stakeholder groups and supports responsible consumption.



AI-based data and analytics also aid in planning energy-efficient delivery routes and reducing waste [11].

International human resource management. AI supports informed decision-making in the area of personnel management, aids recruitment processes, task automation, and enhances overall HR efficiency [8]. It is used for skill demand planning, job posting creation, candidate evaluation, coordination of the selection process, and reducing subjective biases in hiring decisions. The application of AI in HRM enables the development of a more objective human resource management system, improves candidate experience, and strengthens the employer brand [8].

Cross-Cultural Management. AI helps overcome language barriers in global teams through automatic translation and speech recognition. Tools such as Zoom enable real-time interpretation during online meetings, reducing the cost of interpreters and improving communication [14]. Enhanced cross-cultural interaction fosters the expansion of international business [10].

International Marketing. AI is actively used in international marketing through chatbots, virtual assistants, as well as for product personalization and forecasting consumer behavior [10]. Machine translation makes it possible to serve foreign markets, adapt content, and facilitate product searches for consumers speaking different languages. This enhances the effectiveness of marketing campaigns and expands access to new markets, contributing to brand globalization and increased sales [10].

Conclusions. The use of artificial intelligence and Big Data technologies is significantly transforming international business by enhancing operational efficiency, strategic planning, and innovation implementation. These technologies open new opportunities for flexible responses to changes in the global market, support trend forecasting, automate processes, and contribute to increasing the competitiveness of transnational companies in the digital age.

The integration of AI and big data encompasses all key areas of international business: innovation, market and entry mode selection, currency operations, trade



negotiations, global supply chain management, sustainable development, HRM, cross-cultural management, and international marketing. As a result, a cohesive ecosystem of digital interaction is formed, which promotes sustainable growth, efficient resource management, and the expansion of companies' presence in international markets.

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