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ARTIFICIAL INTELLIGENCE IN BUSINESS: MARKET DYNAMICS, IMPLEMENTATION PRACTICES, CHALLENGES AND DEVELOPMENT PROSPECTS

Abstract

The paper provides a comprehensive analysis of the artificial intelligence (AI) market within a business context, based on the 2025 Statista report "Artificial Intelligence (AI) in Business," synthesized with data from McKinsey & Company, BCG, Stanford University, NVIDIA, Qualtrics, and the World Economic Forum. According to the study, the global AI market reached 184 billion USD in 2024 and is projected to exceed 826 billion USD by 2030, representing a Compound Annual Growth Rate (CAGR) of 28.5%. The number of AI tool users is expected to grow from 154 million to 1,172 million over the 2021–2031 period (CAGR of 22.5%). Organizational AI adoption surged from 55% in 2023 to 78% in 2024, an increase of 23 percentage points across all geographies.

The study identifies a systematic gap between the perceived relevance of AI risks and the extent of their active mitigation, particularly pronounced in Cybersecurity (13 p.p. gap) and intellectual property infringement (19 p.p. gap). The author concludes that the industry is transitioning from an experimental phase to a stage of large-scale industrial implementation, accompanied by escalating systemic risks and workforce challenges.

Keywords: Artificial Intelligence (AI), AI in business, Generative AI (GenAI), Digital transformation, Corporate AI adoption, AI risks, Analytical AI, Responsible AI, AI skills, Creator economy.

JEL Classification: M15, M21, O33

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ШТУЧНИЙ ІНТЕЛЕКТ У БІЗНЕСІ: ДИНАМІКА РИНКУ, ПРАКТИКИ ВПРОВАДЖЕННЯ, ВИКЛИКИ ТА ПЕРСПЕКТИВИ РОЗВИТКУ

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Анотація

У статті здійснено комплексний аналіз ринку штучного інтелекту (artificial intelligence, AI) у бізнес-контексті на основі даних звіту Statista «Artificial Intelligence (AI) in Business» (2025), синтезованого з матеріалами McKinsey & Company, BCG, Stanford University, NVIDIA, Qualtrics та World Economic Forum. За даними дослідження, глобальний ринок AI у 2024 році сягнув 184 млрд доларів США та, за прогнозами, перевищить 826 млрд доларів США до 2030 року, що відповідає середньорічному темпу зростання (CAGR) на рівні 28,5%. Кількість користувачів AI-інструментів за період 2021–2031 років зросте з 154 до 1 172 млн осіб (CAGR 22,5%). Прийняття AI організаціями зросло з 55% у 2023 році до 78% у 2024 році (приріст 23 процентних пункти на рівні всіх географій). Виявлено систематичний розрив між сприйняттям актуальності AI-ризиків та ступенем їх активної мітигації (gap), особливо помітний у сфері кібербезпеки (13 п. п.) та порушень інтелектуальної власності (19 п. п.). Сформульовано висновок про перехід галузі від експериментальної фази до стадії широкомасштабного промислового впровадження з одночасним наростанням системних ризиків та кадрових викликів.

Ключові слова: штучний інтелект, AI у бізнесі, генеративний AI, цифрова трансформація, корпоративне впровадження AI, AI-ризики, аналітичний AI, відповідальний AI, AI-навички, креатор-економіка.

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Introduction

The period of 2022-2025 can be regarded as a stage of accelerated penetration of artificial intelligence technologies into the core areas of business activity. Prior to the public launch of ChatGPT in November 2022, AI remained a predominantly niche tool available to large technology companies and specialised research centers; yet within just two years, more than three quarters of organisations worldwide reported the active use of AI in at least one business function. In terms of the pace of adoption, this transformation is comparable to the key waves of digitalisation in previous decades - the development of the internet, mobile technologies, and cloud computing.

The relevance of the chosen topic is determined by several interrelated circumstances. First, the rapid growth of the global AI market - from 93 billion US dollars in 2020 to a projected 826 billion by 2030 (Statista, 2025) - signifies the formation of a new mega-industry that is already approaching in scale the

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traditional technology segments (cloud services, enterprise software). Second, AI is transforming from an optional auxiliary tool into a critical factor of competitiveness: companies that delay implementation may lose their competitive positions within one or two innovation cycles. Third, the scale and speed of AI adoption have confronted business, regulators, and society with fundamentally new challenges in the areas of Cybersecurity, data privacy, intellectual property, ethics, and labour market transformation.

Literature review

The issue of AI implementation in the business environment is multidimensional in nature and encompasses technological, economic, sociol-managerial, and regulatory-legal aspects. The contemporary scholarly discourse on this topic draws upon both fundamental research in computer science and applied studies in management, economics, and law.

The conceptualisation of artificial intelligence as a scientific field originates from the seminal work of J. McCarthy and co-authors, where the conceptual foundations of this phenomenon were first formulated (McCarthy et al., 1955/2006). A foundational understanding of the algorithms and operating principles of modern intelligent systems is elaborated in detail in the fundamental textbook by S. Russell and P. Norvig (Russell & Norvig, 2021). From a technological standpoint, a pivotal moment for the current stage of AI development (particularly generative AI) was the paper by Google researchers Vaswani, A., Shazeer, N., Parmar, N. and others, which introduced the Transformer architecture (Vaswani et al., 2017). It was this architecture that underpinned modern large language models (LLMs) and revolutionised their application in business. For understanding the processes of perception and adoption of these complex technologies by the corporate sector, the classical diffusion of innovations theory by E. Rogers serves as a reliable methodological foundation (Rogers, 2003).

The impact of AI on the economy and business models is the subject of active research by leading economists and analytical centers. E. Brynjolfsson and A. McAfee consider artificial intelligence as a general-purpose technology that fundamentally alters the corporate landscape and requires new approaches to management (Brynjolfsson & McAfee, 2017). Practical assessments of the economic effect of implementing the latest solutions, particularly generative AI, are presented in the comprehensive McKinsey & Company report. The authors identify this technology as a new frontier of productivity, capable of generating trillions of dollars of added value for the global economy through the automation of routine tasks and the acceleration of innovation (Chui et al., 2023).

Of particular note are the contemporary studies by Ukrainian scholars who analyse practical cases and the local specifics of AI integration in the context of the digital transformation of the economy. Thus, Ya. V. Hrynko investigates the toolkit for optimising commercial activities, demonstrating the effectiveness of implementing AI technologies directly in the work of sales departments. Changes in human capital management and the inevitable transformation of workplaces under the influence of intelligent algorithms are thoroughly analysed in the work of L. Lihonenko and I. Naumov (Lihonenko & Naumov, 2024).

Conceptual questions of the synergy of cutting-edge technologies are examined by Ya. Yu. Yakovenko, who substantiates that the combination of AI, Big Data, and the paradigm of responsible consumption is becoming a new imperative for the innovative development of domestic business structures (Yakovenko, 2024). At the same time, the financial and strategic dimensions of such innovations - particularly the value, feasibility, and challenges of scaling AI investments at the stage of enterprise digitalisation - are the subject of analysis by S. A. Pimenov (Pimenov, 2024).

Aims and Objectives

The aim of the paper is to conduct a systematic analysis of the state of the global artificial intelligence market in business as of 2024-2025, to identify key development trends, to quantitatively assess the benefits and risks of AI implementation, and to formulate a substantiated forecast for the further prospects of the industry.

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The object of the study is the global artificial intelligence market in the business sector as a distinct segment of the digital economy. The subject of the study encompasses the quantitative and qualitative parameters of the market, the patterns of its development, and the structure of business interaction with AI technologies.

To achieve the stated purpose, the following tasks are addressed in the study:

- to systematise the theoretical and methodological approaches to defining artificial intelligence in the business context;
- to analyse the dynamics of the global AI market in 2020-2030, distinguishing between historical and forecast periods;
- to assess the level of AI adoption by organisations worldwide by regional and sectoral structure;
- to identify the key business benefits (revenue growth, cost reduction) from the use of AI across various functional areas;
- to analyse the structure of AI risks in terms of their perception and active mitigation by organisations;
- to examine workforce challenges and the transformation of skills under the conditions of the AI revolution;
- to characterise the investment strategies of organisations and to formulate a forecast for the development of the industry.

Methods

The article employs the following methods:

- descriptive statistics for characterising key indicators;
- time series analysis - for identifying trends;
- CAGR computation using the compound interest formula;
- gap analysis - for comparing perceptions and actual actions regarding AI risks;
- graphical modelling - for data visualisation;
- content analysis of industry literature - for interpreting the identified patterns.

Results

The concept of "artificial intelligence" is one of the most debated in modern science and technology. The classical formulation proposed by J. McCarthy and co-authors within the framework of the Dartmouth project laid the groundwork for understanding AI as a field of research into intelligent machines (McCarthy et al., 1955/2006). A more contemporary definition by the OECD considers an AI system as a machine-based system that, for a given set of human-defined objectives, is capable of making predictions, recommendations, or decisions that influence the real or virtual environment (OECD, 2024). In the business context, these academic definitions are typically refined into operational formulations that allow AI to be distinguished from other classes of software solutions.

The Statista report "AI in Business" (2025) deliberately employs a broad functional definition encompassing at least three major classes of technologies. The first is traditional (narrow) AI: machine learning systems that perform a specific task (recommendation algorithms, fraud detection, demand forecasting, logistics optimisation). The second is analytical AI: tools oriented towards extracting insights from structured and unstructured data, building predictive models, and automated reporting. The third is generative (GenAI) AI: large language models (LLMs), image, video, and code generators; it is this category that has undergone revolutionary development since 2022 and is responsible for the main wave of mass AI perception in business.

Of fundamental methodological importance is the distinction between AI as a technology and AI as a business function. The former is an object of engineering and scientific activity; the latter is an object of strategic management, investment, and risk management. In the business context, AI is evaluated not by the technical characteristics of algorithms, but by the economic value created: revenue growth, cost reduction, acceleration of time-to-market, and improvement in the quality of decisions. This fundamentally

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alters the criteria for "success" of AI implementation compared to academic research.

A separate category is the concept of responsible AI, which in 2023-2025 acquired practical significance for corporate governance. In this study, responsible AI is understood as a set of principles, procedures, and control mechanisms aimed at ensuring the ethics, transparency, safety, accountability, and legality of AI system use (OECD, 2024; European Parliament and Council of the European Union, 2024). In business practice, this approach is implemented through data management policies, model audits, risk assessment procedures, and personnel training.

The contemporary classification of AI technologies in the business environment depends on the chosen criterion. By the criterion of intelligence depth, narrow AI (narrow / weak AI), which performs specific tasks, is distinguished; artificial general intelligence (AGI), which theoretically is capable of performing any intellectual task at the human level; and artificial superintelligence (ASI), which surpasses the cognitive capabilities of humans. As of 2025, all industrially deployed AI systems belong to the narrow AI category, although leading research laboratories (OpenAI, Anthropic, Google DeepMind, xAI) are actively working towards AGI.

By the criterion of methodology, symbolic AI (symbolic AI/GOFAI), based on rules and logical inference, is distinguished; connectionist AI based on neural networks and deep learning; and hybrid systems combining both approaches. The current wave of AI in business is almost entirely based on the connectionist approach, particularly on the Transformer architecture (Vaswani et al., 2017), which underpins virtually all large language models.

By the criterion of business function, AI solutions can be classified as: tools for automating routine processes (Robotic Process Automation (RPA) with AI enhancement, intelligent document processing); decision support systems (BI with AI analytics, predictive analytics); generative content creation tools (text, images, video, code, design); personalisation and targeting systems in marketing and sales; AI agents (autonomous agents) capable of performing complex multi-step tasks without human intervention.

The information base of the study is characterised by several methodological features that are important to emphasise. First, data come from several primary sources that employ different collection methodologies (surveys of C-level executives at BCG; industry reviews by McKinsey; market modelling by Statista; venture analytics by Quid). This creates certain difficulties in direct comparison of indicators, but simultaneously ensures triangulation through independent sources.

Second, the forecast values (especially market volume and user numbers through 2030-2031) are the result of model computations and carry significant uncertainty. They reflect the baseline development scenario and may be substantially revised in the event of shock events (geopolitical crises, regulatory disruptions, technological breakthroughs or, conversely, an "AI winter").

Third, some indicators (particularly the percentage of organisations using AI) depend on the specific wording of the question and the definition of "use." In different surveys, these criteria vary, which explains certain discrepancies in the data from different sources.

The first and fundamental indicator characterising the scale of the AI industry in business terms is the volume of the global AI market. Figure 1 presents the dynamics of this indicator for the period 2020-2030, where the values for 2025-2030 are projections.

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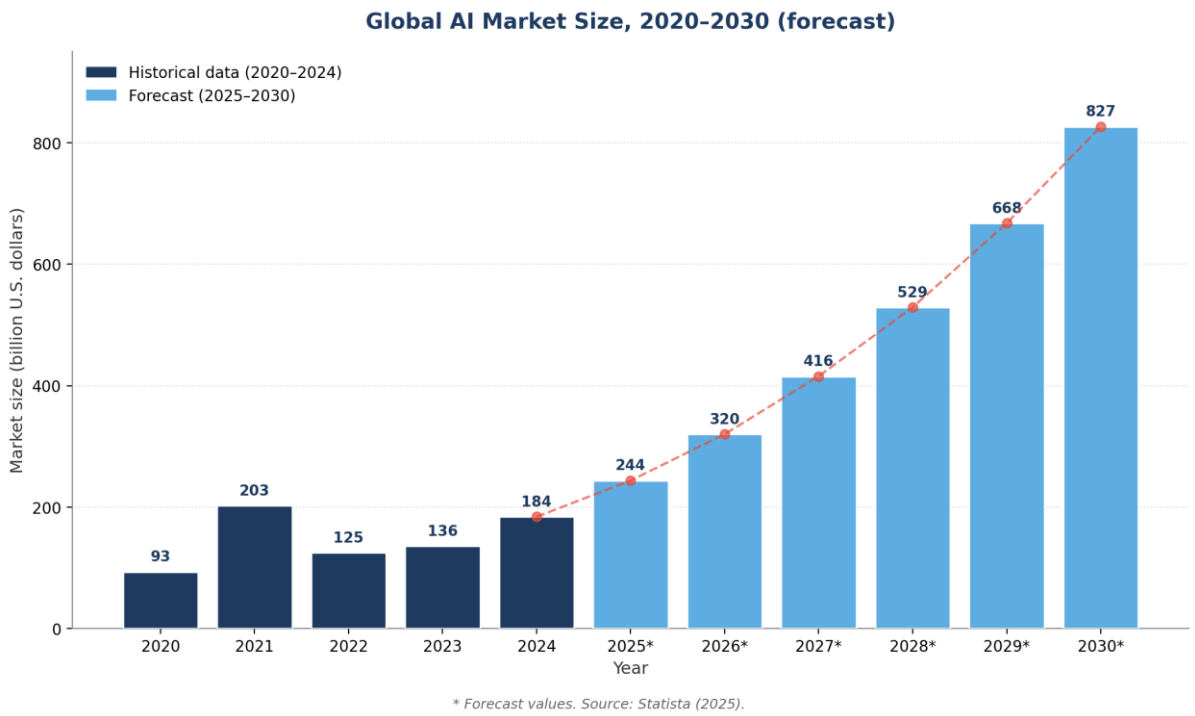

Figure 1. Global AI market size, 2020-2030, billion USD.
Source: compiled by the author based on Statista data (Statista, 2025).

The analysis of the presented data allows several key observations. First, the market dynamics in 2020-2024 were uneven: significant growth in 2021 (to 202.59 billion USD) was followed by a substantial contraction in 2022 (to 124.79 billion USD). This phenomenon is primarily explained by the investment bubble of the COVID-19 pandemic period, when venture capital was massively channelled into technology start-ups (including AI start-ups), and the subsequent year was marked by a correction. Second, from 2023 the market returned to sustained growth, and 2024 (184.04 billion USD) marks the beginning of a new phase driven by the mass adoption of generative AI following the launch of ChatGPT.

Third, the projected trajectory is exceptionally optimistic: the CAGR for the period 2024-2030 reaches approximately 28.5%. Having analysed the dynamics of the AI market (Table 1), it was determined that the cumulative growth over the six-year forecast period should amount to nearly 4.5 times - from 184 to 827 billion USD. For context: a comparable CAGR is twice the average growth rate of the global IT services market over the past 15 years.

When evaluating the cited forecasts, it is advisable to consider both growth drivers and sources of uncertainty. Growth drivers include the scaling of AI in production and operational processes, the proliferation of AI agents, and increased investment in computing infrastructure. At the same time, forecast estimates remain sensitive to the cost of capital, the availability of specialised chips, regulatory constraints, and the actual ability of businesses to convert AI solutions into measurable economic value (Statista, 2025; Stanford Institute for Human-Centered Artificial Intelligence, 2025).

Thus, the projected development trajectory of the AI market should be interpreted as a baseline rather than a guaranteed scenario. Historical AI development cycles have demonstrated periods of declining investment activity following inflated expectations; therefore, for a proper analysis, it is necessary to consider not only the optimistic but also the conservative scenario for the industry's development (Stanford Institute for Human-Centered Artificial Intelligence, 2025).

Table 1 – Quantitative characteristics of AI market dynamics, 2020-2030

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Period	Start (billion USD)	End (billion USD)	Growth, times	CAGR, %
2020-2024 (historical)	93,27	184,04	1,97	18,5
2024-2030 (forecast)	184,04	826,73	4,49	28,5
2020-2030 (entire period)	93,27	826,73	8,86	24,4

Source: calculated by the author based on Statista data (Statista, 2025).

The second important indicator characterising the scale of the AI revolution is the number of direct users of AI tools - individuals who interact with AI services at least once a month (ChatGPT, Claude, Gemini, Midjourney, GitHub Copilot, and other solutions). The dynamics of this indicator are presented in Figure 2.

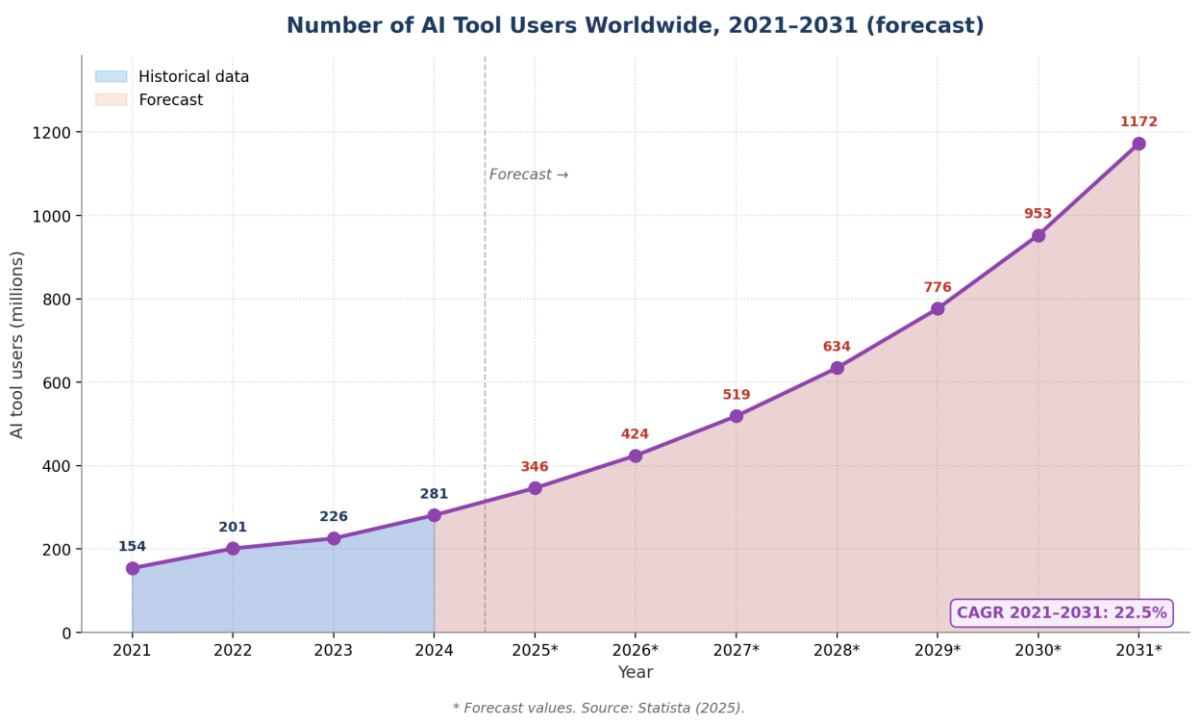

Figure 2. Number of AI tool users worldwide, 2021-2031, million persons
Source: compiled by the author based on Statista data (Statista, 2025).

The data demonstrate rapid growth of the user base: from 154 million in 2021 to 281 million in 2024 (historical period) and to a projected 1,172 million persons in 2031. The total growth over 11 years amounts to more than 7.6 times, with a CAGR of 22.5%. It is fundamentally important that this indicator pertains only to the "AI Tool Users" segment - users of specialised AI services, and not the total number of people who interact with AI in one way or another (for example, through social media recommendation algorithms, smartphone AI features, or AI assistants in email). Under the broadest definition, the actual audience interacting with AI in 2025 already exceeds 5 billion persons.
It is also noteworthy that the growth rate in the forecast period (2024-2031, CAGR approximately 22.7%) is actually higher than in the historical period (2021-2024, CAGR approximately 22.2%). This is an atypical trajectory for any technology - as a rule, growth rates decline as the market approaches saturation. Statista

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analysts explain the sustained high growth rates by two factors: the entry of new markets (Africa, South Asia), which are currently underrepresented; and the emergence of fundamentally new categories of AI products (AI agents, AI assistants in work applications, AI features in social networks) that will attract new users (Statista, 2025).

The third key indicator of the scale of the AI revolution is the dynamics of new AI company creation and the volume of venture capital investment in the industry. According to Quid data, summarised in the Stanford AI Index, the number of newly funded AI companies worldwide reached a peak of 2,049 in 2024, which is 275 more compared to 2021. The dynamics of this indicator for 2013-2024 reflect several clearly defined phases: 2013-2016 - gradual market formation (495-712 new companies per year); 2017-2020 - rapid acceleration of investor interest (983-1,299); 2021 - the pandemic peak against the backdrop of cheap capital (1,676); 2022 - correction in connection with interest rate increases (1,289); 2023-2024 - a new wave of growth driven by the generative AI hype (1,812 and 2,049 respectively).

While in absolute terms the number of new AI companies has grown more than fourfold over the decade, the volumes of their funding have grown considerably more. According to the Stanford AI Index Report 2025, in 2024 alone venture capital investment in AI companies exceeded 100 billion US dollars (compared to less than 5 billion USD in 2013), with more than 60 billion of this sum going to the ten largest recipients - OpenAI, Anthropic, xAI, Mistral AI, Cohere, and others (Stanford Institute for Human-Centered Artificial Intelligence, 2025).

The concentration of funding in a limited number of companies has a dual effect. On the one hand, it provides resources for building large-scale models; on the other, it increases the risk of forming an oligopolistic structure in the foundational models market and of business dependence on a small group of infrastructure and model providers (Stanford Institute for Human-Centered Artificial Intelligence, 2025).

The most comprehensive indicator of the level of AI adoption in business is the share of organisations reporting the use of AI in at least one business function. Figure 3 presents the dynamics of this indicator by region for the period 2023-2024 - a period coinciding with the active proliferation of generative AI.

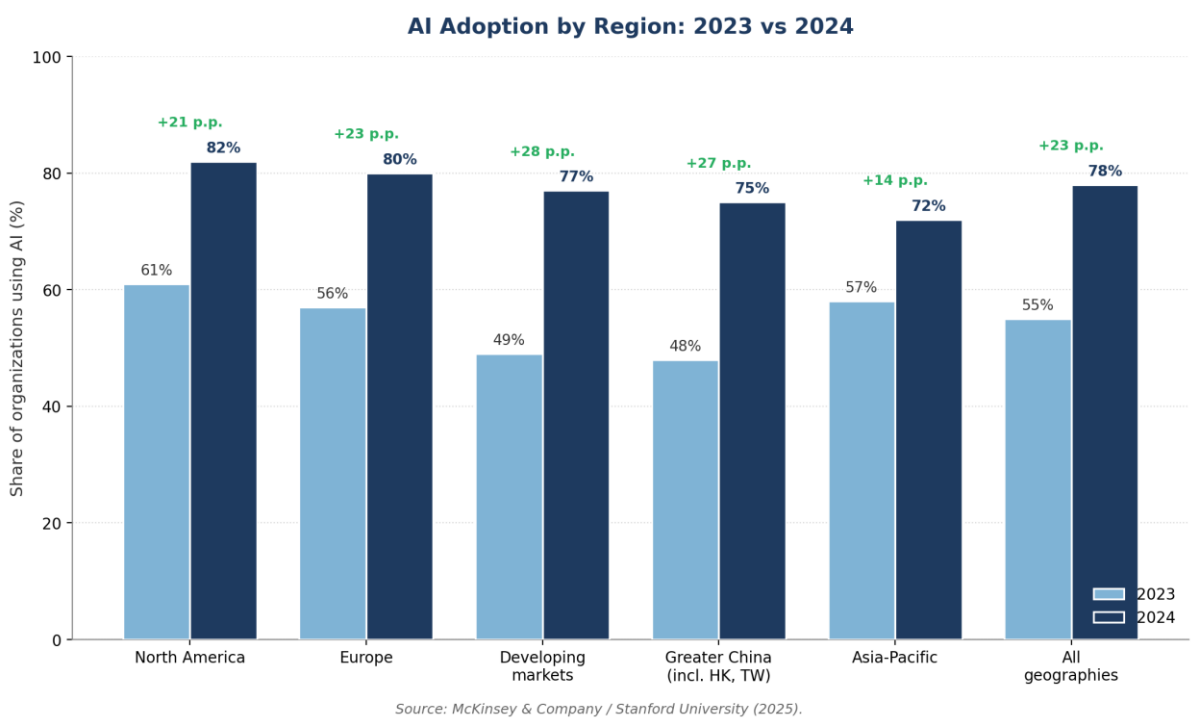

Figure 3. AI adoption by organisations by region, 2023 vs 2024, % of respondents

Source: compiled by the author based on McKinsey & Company and Stanford HAI data (McKinsey & Company, 2024; Stanford HAI, 2025).

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The presented data allow the identification of several key patterns. First, the level of AI adoption has increased significantly across all regions without exception: at the level of all geographies - by 23 percentage points (from 55% to 78%). This means that in less than a year, approximately a quarter of all organisations worldwide that had not previously used AI began to adopt it. In the context of E. Rogers' diffusion of innovations theory, this represents an unprecedentedly rapid transition from early adopters to the early majority (Rogers, 2003).

Second, the leaders in AI adoption remain North America (82% in 2024) and Europe (80%). However, the highest rate of increase (28 percentage points) was demonstrated by developing markets (India, Latin America, MENA): this phenomenon is largely explained by a more relaxed regulatory environment, lower sensitivity to data privacy issues, and a strategy of technological "leapfrogging," whereby developing markets can skip intermediate stages of technological development.

Third, even in regions with a relatively slow rate of increase (Asia-Pacific, +14 pp), the absolute value of the indicator in 2024 remains very high - 72%. This indicates that AI as a technology has transitioned from the category of "new and experimental" to the category of "mainstream and essential." Aggregated data by region are summarized in Table 2.

Table 2 – Level of AI adoption by organisations by region, 2023 vs 2024

Region	2023, %	2024, %	Δ, п. п.	Δ, %
North America	61	82	+21	+34,4
Europe	57	80	+23	+40,4
Developing markets	49	77	+28	+57,1
Greater China (incl. HK, TW, Macau)	48	75	+27	+56,3
Asia-Pacific	58	72	+14	+24,1
All geographies	55	78	+23	+41,8

Source: calculated by the author based on McKinsey & Company and Stanford HAI data (McKinsey & Company, 2024; Stanford HAI, 2025).

Beyond the geographical dimension, the sectoral dimension of AI adoption is equally important. According to McKinsey & Company and Stanford HAI data (McKinsey & Company, 2024; Stanford HAI, 2025), the most "AI-intensive" industries as of 2024 are: technology (notably IT services - 48% of companies use AI in IT functions and 47% in marketing and sales), media and telecommunications (40% in IT and marketing), financial services (40% in IT), and healthcare and pharmaceuticals (39% in IT).

The distribution by functional purpose is also illustrative. Across all industries, the highest level of AI penetration is recorded in marketing and sales (43% on average across all industries), IT (40%), and product and service development (approximately 30-47% depending on the industry). Less AI-intensive remain manufacturing (15% on average) and human resource management (approximately 20% on average), although the rate of growth in these areas has also been rising rapidly in recent times. Aggregated data on sectoral usage are summarised in Table 3.

The analysis of the matrix indicates that no industry remains entirely outside AI adoption, yet the intensity and focus differ substantially. The technology sector is the clear leader with the highest indicators across virtually all functions. In contrast, in financial services, AI is used predominantly in IT and analytics rather

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than in manufacturing functions (for which the indicator is merely 1%). An interesting observation is that in all industries except energy, marketing and sales consistently rank among the top two functions by level of AI adoption - this is a consequence of the early availability of AI tools for customer data analysis, personalisation, and content marketing.

The quantitative assessment of economic benefits from AI is the most complex and debated question in contemporary business-AI research. According to the NVIDIA industry survey, approximately 13% of professionals reported annual revenue growth of more than 20% attributable to AI use; a further 23% recorded growth in the range of 10-20%; 18% - in the range of 5-9%; 21% - less than 5%; and 25% noticed no impact whatsoever (NVIDIA, 2024).

Table 3 – Industry matrix of AI usage in companies worldwide, 2024, %

Industry	HR	IT	Manuf.	Marketing	Product Dev.
Advanced industries	14	36	32	39	25
Business/legal services	20	28	4	43	37
Consumer goods/retail	13	26	15	43	26
Energy and materials	18	40	22	23	27
Financial services	21	40	1	36	31
Healthcare/pharma	22	39	7	28	28
Media and telecom	27	40	12	40	31
Technology	24	48	12	47	47

Source: McKinsey & Company and Stanford HAI (McKinsey & Company, 2024; Stanford HAI, 2025).

Thus, the cited assessments attest to the presence of an economic effect from AI, although this effect is not automatic. It depends on data quality, the managerial maturity of the organisation, the selection of use cases, the integration of AI into business processes, and the ability to measure the value created (McKinsey & Company, 2024; Chui et al., 2023).

According to McKinsey & Company data, the greatest revenue increase from the use of analytical AI is observed in the marketing and sales function - 71% of respondents report some level of revenue increase (44% - an increase of 5%; 23% - of 6-10%; 4% - over 10%) (McKinsey & Company, 2024). This is logical, as marketing is the first to reap the rewards of better targeting, personalisation, and customer behaviour forecasting. In second place is the supply chain and inventory management function (63% with some revenue increase), and in third - service operations (57%).

The reverse side of AI value is its ability to reduce costs. According to McKinsey & Company data, the greatest scale of cost reduction from analytical AI is observed in the service operations function (49% of respondents report some level of cost reduction, of which 16% - by 10-19%, 5% - by more than 20%). The highest share of "significant" (more than 20%) cost reductions is demonstrated by the risk management, legal, and compliance function (9% of organisations), which is explained by the high cost of human expertise in these functions - every automated hour of a lawyer's or auditor's work generates noticeable savings (McKinsey & Company, 2024).

The aggregate economic effect of AI for organisations manifests not as a single indicator but as a combination of revenue growth and cost reduction across various functional areas. According to McKinsey estimates, a typical organisation that systematically implements AI can expect EBITDA growth of 5-15% over 3-5 years (McKinsey & Company, 2024). At the scale of the global economy, this implies a potential for additional economic value in the trillions of dollars - by various estimates, from 2.6 to 4.4 trillion US

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dollars annually upon the full-scale deployment of generative AI.

Despite the anticipated economic advantages, systems for measuring the AI value created remain insufficiently mature. As of 2025, only a portion of organisations simultaneously track both the financial and operational results of AI initiatives, while a significant share of companies lack a formalised mechanism for evaluating effectiveness (Boston Consulting Group, 2025). This creates risks of irrational resource allocation and complicates the comparison of AI project effectiveness across functional units.

The absence of systematic AI value tracking is one of the key workforce and managerial challenges of the industry. It is conditioned by several circumstances: 1) AI often influences a multitude of interrelated indicators, complicating the attribution of a specific effect; 2) there is a lack of universally accepted AI-ROI metrics; 3) AI benefits often materialise with a lag, whereas costs are incurred immediately; 4) some benefits (such as improved decision quality, accelerated innovation) are non-financial in nature and are difficult to quantify.

Contemporary management accounting practice offers several approaches to measuring AI-ROI. The first is the traditional financial ROI: the ratio of additional profit (net of AI costs) to total investment in the AI initiative. This approach is the simplest but does not account for non-financial effects. The second is operational metrics: measuring specific operational indicators (cycle time, number of processed requests, forecast accuracy) before and after AI implementation. The third is a balanced AI scorecard: covering financial, operational, customer, and internal process aspects. The fourth is value tree analysis: decomposition of the AI initiative's impact across the entire value creation chain with quantitative assessment of each link.

In practice, leading organisations apply a combined approach: for tactical AI projects (automation of a specific process) - financial ROI and operational metrics; for strategic transformational initiatives - balanced scorecard and value tree analysis. A distinct methodological innovation of recent years has been the introduction of so-called AI value dashboards - instrumental panels that track key AI performance indicators across various business functions in real time.

Beyond quantitative indicators, it is important to highlight the qualitative aspects of AI's impact on the organisation. First, AI increases the speed of decision-making - what previously required weeks of analytical work, AI can perform in hours or even minutes. Second, AI expands the organisation's analytical capabilities, enabling the processing of data volumes that are fundamentally inaccessible to manual analysis. Third, AI reduces dependence on a limited number of key experts by codifying their knowledge in digital format. Fourth, AI creates new opportunities for personalising offerings to customers - from one-to-one marketing to customised products and services.

All these qualitative advantages do not always translate directly into financial indicators but create the foundation for long-term competitiveness. It is precisely for this reason that strategically minded organisations do not limit themselves to quantitative KPIs but form a comprehensive vision of AI value that includes both measurable and non-financial dimensions.

The rapid scaling of AI in business is inevitably accompanied by a rise in incidents - cases of unexpected or harmful behaviour by AI systems. According to McKinsey & Company and Stanford HAI data, more than 70% of organisations reported fewer than 10 AI incidents during 2024: 42% - 1-2 incidents; 30% - 3-5; 13% - 6-9; 11% - 10 or more; 5% were unable to specify an exact number (McKinsey & Company, 2024; Stanford HAI, 2025). At first glance, these indicators do not appear critically high. However, it must be taken into account that these are only "identified" incidents; the actual number may be several times higher due to the absence of comprehensive AI behaviour monitoring systems in many organisations.

A fundamentally important aspect of risk management in AI is the gap between risk perception and actual actions to mitigate it. This gap is clearly presented in Figure 4.

The analysis of the presented data allows the identification of several groups of risks by the criterion of gap depth. The first group - "moderately mature": risks where the gap is relatively small (less than 10 pp). These are inaccuracy (5 pp), explainability (9 pp), equity and fairness (8 pp), workforce displacement (8 pp), and environmental impact (7 pp). Here, companies either respond sufficiently actively to perceived risks or simply do not recognise them as critical.

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The second group - "moderately mature": cybersecurity (gap of 13 pp), regulatory compliance (13 pp), and personal privacy (14 pp). These are the most pertinent risks in the business environment - they are considered highly relevant (53-66% of organisations), but actual mitigation actions lag behind. Particularly critical is the example of cybersecurity: 66% of companies consider it the most pertinent AI risk, but only 53% actively mitigate it. This gap is primarily explained by objective constraints: cyber threats evolve rapidly, and protective measures require significant investment in specialised solutions and personnel.
The third group - "immature": here the gap is the largest. The leader is intellectual property infringement (19 pp) - the issue of copyright violations, particularly in connection with generative AI, which can reproduce fragments of protected works. In second place - organisational reputation (16 pp). The situation here is particularly acute: the risk is recognised by 45% of companies, but only 29% actively mitigate it. This creates the potential for serious reputational crises in the event of public AI incidents.

Figure 4. AI risks: considered relevant vs actively mitigated by global business, 2024, % of respondents
Source: compiled by the author based on McKinsey & Company and Stanford HAI data (McKinsey & Company, 2024; Stanford HAI, 2025).

According to the BCG AI Radar 2025 Survey (1,803 C-level respondents), in 2025, 66% of executives identified data privacy and security as a key AI risk; 48% - the lack of control or understanding of AI decisions (the so-called "black box" problem); 44% - regulatory challenges and compliance (Boston Consulting Group, 2025). These results correlate with the McKinsey data but simultaneously reveal the specifically perceived concerns of senior executives: the lack of transparency in AI decisions as a managerial challenge, not merely a technical problem.
While risks concern what can go wrong after AI implementation, barriers concern the difficulties of implementation itself. According to the World Economic Forum (survey of 1,000 employers), in 2025 the primary barrier to AI adoption is the shortage of qualified specialists - 50% of organisations cite precisely this factor. In second place is the lack of vision among managers and executives (43%); third - the high cost of AI products and services (29%); fourth - the lack of customisation to local business needs (24%); fifth - complex and costly regulation of AI and data use (21%); sixth - insufficient consumer demand (16%) (World Economic Forum, 2025).

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The structure of these barriers is particularly telling. The greatest obstacles are workforce-related and managerial, not technological or financial. This means that even with the desire and budgets in place, organisations cannot rapidly scale AI due to a shortage of human resources. Hence the strategic importance of upskilling and reskilling programmes, which are addressed in a dedicated section.

According to the BCG AI Radar 2025 Survey, in 2025, 29% of companies worldwide stated that more than a quarter of their workforce had been trained to use AI and generative AI. The leaders in upskilling are Singapore (44%) and Japan (38%); followed by Germany (30%); lagging behind are Italy and Brazil (20% each) (Boston Consulting Group, 2025). Ukraine was not included in the survey, although based on available industry information, the level of AI upskilling in domestic companies is estimated at approximately 15-20% - below the global average.

According to the World Economic Forum data, the most rapidly growing in importance are AI and big data skills: 87% of employers acknowledged that these skills will increase in significance over the next five years. In second place are networks and cybersecurity (70%), in third - technology literacy (68%), followed by creative thinking (66%), and resilience, flexibility and agility (66%) (World Economic Forum, 2025).

An interesting observation is that among the skills growing in importance, technological skills predominate; whereas among the core skills (skills that will remain most critical in 2025), the leader is analytical thinking (69%), followed by resilience, flexibility and agility (67%), leadership and social influence (61%), and creative thinking (57%). That is, analytical and soft skills remain foundational, while technological skills are rapidly growing in relative significance. The future professional must combine "soft" and "hard" skills.

According to the World Economic Forum data, in 2025 employer strategies for AI integration were distributed as follows: 77% plan reskilling and upskilling of the existing workforce; 69% - hiring workers with skills in developing AI tools; 62% - hiring workers capable of working with AI; 49% - reorienting the organisation towards new business opportunities created by AI; 47% - transferring workers from positions being transformed to other roles; 41% - reducing staff in functions where AI can replace part of human labour (World Economic Forum, 2025).

The distribution of strategies is telling: the inclusive approach (upskilling/reskilling) predominates rather than complete replacement of personnel. This partly refutes the catastrophic predictions about "mass unemployment from AI." At the same time, 41% of companies do plan reductions - this is a quite significant figure, which potentially means millions of eliminated jobs in the medium term.

The regional structure of AI upskilling, derived from BCG data, exhibits a clearly pronounced geographical pattern. The leaders - Singapore (44% of companies have more than a quarter of their workforce trained in AI/GenAI) and Japan (38%) - are countries with traditionally strong government policy in the field of ICT education. Germany occupies an intermediate position (30%) - this is the consequence of the German dual vocational education model, which adapts relatively quickly to new technological challenges. Spain, France, the United Kingdom, and the United States demonstrate indicators around 29%; the UAE - 27%, India - 26% (Boston Consulting Group, 2025).

The most problematic regional cases prove to be Italy and Brazil (20% each - substantially below the global average) (World Economic Forum, 2025). This creates the risk of further economic polarisation: countries leading in AI upskilling will accelerate productivity, while those lagging behind risk falling further behind. For Ukraine, which was not included in the survey but by indirect estimates falls in the 15-20% range (below the global median value), this places the priority of AI education on a par with the most important strategic directions of national development.

Educational programmes in the field of AI can be systematised by depth of competency. The basic level - AI literacy: a general understanding of AI operating principles, the ability to use ready-made AI tools (ChatGPT, Claude, Gemini, Copilot). This level is appropriate for 70-80% of the workforce. The intermediate level - AI fluency: a deep understanding of AI capabilities and limitations, the ability to formulate effective prompts, integrate AI into the work process, and evaluate the quality of AI outputs. Recommended for 15-20% of specialists. The advanced level - AI mastery: the ability to develop, configure, and validate AI models, work with data, and address AI ethics. Applicable to 5-10% of technical specialists.

For business, the strategic priority is establishing a baseline level of AI literacy across a broad range of

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employees while simultaneously creating a core of specialists with AI fluency in key functional units. The advanced level of AI mastery is advisable to develop selectively - in technical teams, analytical units, risk management functions, and areas where AI directly determines competitive advantages (Lihonenko & Naumov, 2024)

According to BCG data, the focus of AI investment in 2025 is distributed as follows: 42% of organisations direct their primary AI investments towards "transformation" - productivity at the process level that changes critical functions; 40% - towards "creating new solutions" - innovation at the company level that is core to the business; 18% - towards "deployment" - productivity at the level of individual employees (Boston Consulting Group, 2025). This structure reflects the maturity of the strategic approach: only a small share limits itself to everyday productivity tools; the majority builds an AI strategy around the transformation of business processes and the creation of new products.

According to the same study, in 2025 Japan is the country with the most intensive AI investment plans: 47% of companies plan to invest more than 26 million US dollars in AI during the year, 11% - more than 100 million dollars. Globally, approximately one in three companies (31%) plans to invest more than 26 million dollars. The most conservative are companies in Brazil (86% plan to invest up to 25 million USD), Italy (83%), and Spain (81%). Overall, the picture indicates that large AI investments are the exception rather than the rule - the majority of companies opt for a gradual approach with limited budgets (Boston Consulting Group, 2025).

Particular attention is warranted by investments in responsible AI. According to McKinsey & Company data, the smallest companies (with revenue up to 100 million dollars) spend predominantly up to 5 million USD on responsible AI (68% of such companies). Large companies (revenue exceeding 30 billion USD) distribute budgets more broadly: 25% spend 1-5 million, 29% - 5-10 million, 21% - 10-25 million, 25% - 25-50 million dollars (McKinsey & Company, 2024). Interestingly, the absolute expenditures on responsible AI in small and the largest companies may be comparable - this suggests that the issue of responsible AI use is currently being addressed on the principle of the "minimally necessary" level of expenditure, rather than on the principle of proportionality to the size of the organisation.

The prospects for AI development in business through 2030 are best described through a scenario-based approach. The baseline scenario envisages the realisation of Statista forecasts: a market size of approximately 826 billion USD by 2030, further growth in the share of AI-using organisations, and over 1 billion AI tool users (Statista, 2025). The optimistic scenario is associated with the rapid integration of AI agents, a reduction in computing costs, and the emergence of new business models; the pessimistic scenario - with regulatory restrictions, a shortage of specialists, high infrastructure costs, or a decline in trust towards AI due to incidents.

For Ukraine, the AI revolution creates both opportunities and constraints. The opportunities include the integration of Ukrainian developers into global AI projects, the use of AI in infrastructure recovery, logistics, medicine, education, and public services, as well as the development of AI start-ups. The constraints include a shortage of capital, wartime risks, uneven digital competencies in business, and the necessity of harmonising future AI policy with EU law (Cabinet of Ministers of Ukraine, 2020; Pimenov, 2024).

A separate important variable that will determine the trajectory of AI development across all scenarios is the regulatory environment. The most comprehensive regulatory act to date is EU Regulation 2024/1689 (AI Act), which entered into force in 2024 and is being phased in during 2025-2027. It introduces a risk-based approach to AI regulation, distinguishing four categories: unacceptable risk (complete prohibition - for example, social scoring); high risk (strict regulation - medicine, education, employment, justice); limited risk (transparency requirements - for example, labelling of AI content); and minimal risk (free use) (Stanford Institute for Human-Centered Art(European Parliament and Council of the European Union, 2024). For business, this means the necessity of systematic categorisation of its own AI applications and significant compliance costs - by some estimates, up to 17% of the total AI initiative budget in regulated sectors.

Beyond the EU, regulatory approaches remain heterogeneous: the United States applies a predominantly sectoral and framework-based model, China combines government stimulation of AI with strict control over generative services, and Ukraine is at the stage of forming its own AI policy. For Ukrainian business, the

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key reference point should be compatibility with the European risk-based approach, as it will determine the requirements for digital services export and cross-border data processing (Stanford Institute for Human-Centered Art(European Parliament and Council of the European Union, 2024; Cabinet of Ministers of Ukraine, 2020). Factors that could substantially alter any of the scenarios include technological breakthroughs in the field of AI agents, multimodal models, robotics, and specialised computing. Their impact on business will depend not only on the technical capabilities of models but also on the cost of implementation, the level of user trust, data protection, regulatory requirements, and the readiness of organisations to restructure their processes (Stanford Institute for Human-Centered Artificial Intelligence, 2025; European Parliament and Council of the European Union, 2024).

Discussion

The findings reveal a paradox inherent in contemporary AI adoption: while organisational uptake has reached mainstream levels (78% globally), the mechanisms for measuring AI-generated value remain underdeveloped. This asymmetry between deployment velocity and evaluative maturity suggests that a significant proportion of AI investments may yield suboptimal returns. The identified risk perception-mitigation gap, particularly pronounced for intellectual property (19 pp) and reputational risks (16 pp), indicates that corporate governance frameworks have not kept pace with technological diffusion. Furthermore, the predominantly workforce-related nature of adoption barriers challenges the prevailing techno-deterministic narrative, redirecting scholarly attention towards human capital development as the critical enabler of AI-driven transformation in business organisations.

Conclusions

The conducted analysis allows the formulation of the following main conclusions:

1) The global artificial intelligence market in business is experiencing a period of unprecedented growth. The market volume in 2024 reached 184.04 billion US dollars and, according to Statista projections, will exceed 826.73 billion US dollars by 2030 with a CAGR of 28.5% in the forecast period. The number of AI tool users will grow from 281 million in 2024 to 1,172 million in 2031 (CAGR 22.5%).

2) AI adoption by organisations worldwide demonstrates rapid dynamics: in 2023-2024 alone, the share of AI-using organisations grew from 55% to 78% at the level of all geographies (an increase of 23 pp). The leaders in adoption are North America (82%) and Europe (80%); the highest rate of increase is in developing markets (+28 pp).

3) The economic benefits from AI are real and significant. More than 50% of companies record a positive impact on revenues (5% and above); the greatest revenue increase from analytical AI is observed in the marketing and sales function (71%); the greatest cost reduction - in service operations (49%). At the same time, only 24% of organisations track AI-created value in both operational and financial dimensions, which indicates the immaturity of AI management systems.

4) The structure of AI risks as perceived by business is characterised by a systematic gap between the recognition of relevance and active mitigation. The largest gaps are demonstrated by: intellectual property infringement (19 pp), reputation (16 pp), personal privacy (14 pp), cybersecurity (13 pp), and regulatory compliance (13 pp). The most acute issues, according to C-level executives (BCG), are data privacy and security (66%), lack of control over AI decisions (48%), and regulatory challenges (44%).

5) The primary barriers to AI adoption are workforce-related and managerial, not technological. 50% of organisations cite the shortage of qualified specialists; 43% - the lack of management vision; only 29% – the high cost of AI products. This underscores the strategic importance of upskilling and reskilling programmes.

6) The transformation of workforce skills is proceeding rapidly: 87% of employers recognise AI and big data skills as growing in importance; simultaneously, analytical thinking (69%) and resilience (67%) remain foundational. Employer strategies for AI integration are oriented predominantly towards reskilling/upskilling (77% of companies) rather than complete replacement of personnel – although 41% plan reductions in certain functions.

7) Investment strategies indicate maturity of approaches: 42% of companies focus on

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"transformation" (process transformation), 40% – on "creating new solutions" (new products), and only 18% - on simple individual productivity. The leader in AI investment intensity is Japan: 47% of companies plan to invest more than 26 million dollars in AI in 2025.

8) In the medium-term perspective (2026-2030), the development of AI in business will be determined by the balance between technological breakthroughs (AI agents, potential AGI), regulatory evolution (EU AI Act, US and Chinese initiatives), workforce strategies of organisations, and ethical challenges of responsible AI. The baseline scenario envisages the realisation of Statista forecasts; alternative scenarios (optimistic – a market exceeding 1 trillion USD, pessimistic – in the event of an AI winter) remain possible.

9) For Ukraine, the AI revolution opens strategic opportunities: integration into global AI projects, AI-oriented post-war recovery, and development of the national AI ecosystem. The potential of Ukrainian AI start-ups remains undervalued – this is an area for systematic government policy and commercial diplomacy.

Prospects for further research. Promising directions for further research include: 1) quantitative analysis of AI-ROI across different industries and functions with the construction of standardised metrics; 2) investigation of the workforce effects of AI on the labour markets of developing countries; 3) comparative analysis of the effectiveness of responsible AI policies under different regulatory regimes; 4) assessment of the prospects of AI agents and their impact on the structure of corporate labour; 5) investigation of the state of the Ukrainian AI market in business with the identification of competitiveness niches.

References

1. Statista. (2025). Artificial Intelligence (AI) in Business. Study ID 133541. Hamburg: Statista. URL: https://www.statista.com/study/133541/ [in English]

2. McKinsey & Company. (2024). The state of AI in early 2024: Gen AI adoption spikes and starts to generate value. URL: https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai [in English].

3. Boston Consulting Group. (2025). AI Radar 2025: From potential to profit: Closing the AI impact gap. Boston: BCG. URL: https://web-assets.bcg.com/0b/f6/c2880f9f4472955538567a5bcb6a/ai-radar-2025-slideshow-jan-2025-r.pdf [in English].

4. World Economic Forum. (2025). The Future of Jobs Report 2025. Geneva: World Economic Forum. URL: https://www.weforum.org/publications/the-future-of-jobs-report-2025/ [in English].

5. NVIDIA. (2024). State of AI in Retail and CPG: Annual Report. Santa Clara, CA: NVIDIA Corporation. URL: https://images.nvidia.com/aem-dam/Solutions/documents/retail-state-of-ai-report.pdf [in English].

6. Stanford Institute for Human-Centered Artificial Intelligence. (2025). Artificial Intelligence Index Report 2025. Stanford, CA: Stanford University. URL: https://hai.stanford.edu/ai-index/2025-ai-index-report [in English].

7. OECD. (2024). Recommendation of the Council on Artificial Intelligence. OECD/LEGAL/0449. URL: https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0449 [in English].

8. Vaswani, A., Shazeer, N., Parmar, N., Uszkoreit, J., Jones, L., Gomez, A. N., Kaiser, Ł., & Polosukhin, I. (2017). Attention is all you need. Advances in Neural Information Processing Systems, 30, 5998-6008. URL: https://proceedings.neurips.cc/paper_files/paper/2017/file/3f5ee243547dee91fbd053c1c4a845aa-Paper.pdf [in English].

9. McCarthy, J., Minsky, M., Rochester, N., & Shannon, C. E. (1955/2006). A proposal for the Dartmouth Summer Research Project on Artificial Intelligence. AI Magazine, 27(4), 12-14. DOI: https://dl.acm.org/doi/10.1609/aimag.v27i4.1904 [in English].

10. European Parliament and Council of the European Union. (2024). Regulation (EU) 2024/1689 laying down harmonised rules on artificial intelligence (Artificial Intelligence Act). Official Journal of the European Union, L Series. URL: https://artificialintelligenceact.eu/the-act [in English].

11. Russell, S., & Norvig, P. (2021). Artificial Intel-

ligence: A Modern Approach (4th ed.). Pearson. [in English].
12.Brynjolfsson, E., & McAfee, A. (2017). The business of artificial intelligence. Harvard Business Review. URL: https://hbr.org/2017/07/the-business-of-artificial-intelligence [in English].
13.Rogers, E. M. (2003). Diffusion of Innovations (5th ed.). New York: Free Press. [in English].
14.Chui, M., Hazan, E., Roberts, R., Singla, A., Smaje, K., Sukharevsky, A., Yee, L., & Zemmel, R. (2023). The economic potential of generative AI: The next productivity frontier. McKinsey & Company. URL: https://www.mckinsey.com/capabilities/tech-and-ai/our-insights/the-economic-potential-of-generative-ai-the-next-productivity-frontier [in English].
15.Zakon Ukrainy «Pro zakhyst personalnykh danykh» vid 01.06.2010 № 2297-VI. URL: https://zakon.rada.gov.ua/laws/show/2297-17 [in Ukrainian].
16.Kabinet Ministriv Ukrainy. (2020). Kontseptsiia rozvytku shtuchnoho intelektu v Ukraini: rozporiadzhennia № 1556-r vid 02.12.2020. URL: https://zakon.rada.gov.ua/go/1556-2020-p [in Ukrainian].
17.Hrynko, Ya. V. (2024). Vprovadzhennia tekhnolohii shtuchnoho intelektu v robotu viddilu prodazhiv. Ekonomichnyi visnyk Donbasu, 3(77), 93-101. DOI: https://doi.org/10.12958/1817-3772-2024-3(77)-93-101 [in Ukrainian].
18.Lihonenko, L., & Naumov, I. (2024). Vplyv shtuchnoho intelektu na personal biznes-orhanizatsii. Ekonomika ta suspilstvo, 65. DOI: https://doi.org/10.32782/2524-0072/2024-65-37 [in Ukrainian].
19.Yakovenko, Ya. Yu. (2024). Shtuchnyi intelekt, Big Data i vidpovidalne spozhyvannia yak imperatyv innovatsiinoho rozvytku biznes-struktur v umovakh formuvannia tsyfrovoi ekonomiky. Ekonomika ta suspilstvo. DOI: https://doi.org/10.32782/2524-0072/2024-60-151 [in Ukrainian].
20.Pimenov, S. A. (2024). Investytsii v shtuchnyi intelekt: tsinnist, dotsilnist i masshtabuvannia v umovakh tsyfrovizatsii pidpryiemstv. Investytsii: praktyka ta dosvid, 22, 112-120.DOI: https://doi.org/10.32702/2306-6814.2024.22.112 [in Ukrainian].

ADDITIONAL INFORMATION

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