

INFLUENCE OF ARTIFICIAL INTELLIGENCE ON BUSINESS DECISION-MAKING*

Oleksandr V. Kubatko¹, Stanley Ch. Ozims², Viacheslav I. Voronenko³

The paper delves into the influence of artificial intelligence (AI) on business decision-making. By examining this phenomenon's technical, strategic, and ethical dimensions, the study seeks to unravel the implications that artificial intelligence integration brings to decision-making. The study conducted a comprehensive analysis to investigate the perceptions and experiences of individuals regarding integrating artificial intelligence in business decision-making. The study involved a detailed examination of demographic characteristics, artificial intelligence awareness, implementation status, perceived impact on decision-making speed and accuracy and ethical considerations related to bias in artificial intelligence-driven decision-making. The findings show that the gender and age distribution of respondents influence the perception and use of artificial intelligence in business decision-making. And artificial intelligence-driven decisions are dominant in the healthcare sector. Furthermore, artificial intelligence awareness and implementation indicated a generally positive outlook, with significant acknowledgement and familiarity among respondents. There is a positive perception of artificial intelligence making decisions faster with a positive contribution to the accuracy of business decisions. However, there is a record of some biases in artificial intelligence-driven decision-making. This highlights a significant concern in the fair and equitable application of artificial intelligence algorithms. This shows the importance of addressing biases to ensure ethical decision-making. The hypothesis testing sought to ascertain whether the incorporation of artificial intelligence is contingent on the accuracy of business decisions. The chi-square test results indicated insufficient evidence to propose a noteworthy relationship between the integration of artificial intelligence and decision accuracy. This implies that organizations should explore additional factors influencing decision accuracy, recognizing that artificial intelligence integration alone may not be the sole determinant.

Key words: decision-making, business, demographic characteristics, decision accuracy, contribution, artificial intelligence (AI).

JEL Classification: D81, M21, J11

General problem statement and its connection with scientific and practical objectives. Effective decision-making is a crucial pillar for success in the dynamic landscape of modern business enterprises. In the face of the ongoing digital transformation of industries, integrating Artificial Intelligence (AI) into business processes has emerged as a powerful force driving change. The spectrum of AI technologies, including machine learning, natural language processing, and predictive analytics, is actively reshaping conventional decision-making paradigms within organizational frameworks. This transformative shift necessitates thoroughly examining the intricate interplay between AI systems and the decision-making frameworks businesses employ.

The advent of AI technologies has entirely revolutionized businesses' perspectives on decision-making processes. Traditionally, decisions relied heavily on human intuition, past experiences, and a limited pool of available data. However, with the increasing prevalence of AI, businesses are now more inclined to leverage advanced analytics and algorithms to guide and enhance their decision-making processes. This paradigm shift extends beyond mere technological adoption; it signifies a fundamental reconsideration of the decision-making environment, disrupting long-standing conventions and introducing opportunities and challenges.

Analysis of recent research and approaches to the solution of the mentioned issues. Business decision-

* The paper is prepared within the projects "Economic and energy security of Ukraine in the conditions of war and post-war reconstruction: disruptive technologies for sustainable development" (№ 0123U103593) and "Digital transformations to ensure civil protection and post-war economic recovery in the face of environmental and social challenges" (№ 0124U000549).

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making is a complex and critical aspect of organizational management, influencing enterprises' trajectory and ability to navigate an ever-evolving marketplace. Decision-making in business enterprise comprises psychological, organizational, and strategic perspectives. The psychological aspects of decision-making have been extensively explored in the literature [4; 11]. Wakker [14] explained that Kahneman and Tversky's prospect theory [8] laid the foundation for understanding how individuals make decisions under uncertainty. Behavioural economics and psychology research have identified cognitive biases, such as anchoring, confirmation bias and loss aversion, that can significantly impact decision outcomes [1; 7]. Understanding these biases is crucial for businesses seeking to enhance the quality of decision-making at both individual and group levels.

Organizations are complex entities where decisions are often made through processes involving multiple stakeholders [15]. Research by Shannon et al. [13] introduced the concept of "bounded rationality", highlighting that decision-makers within organizations often operate with limited information and cognitive resources. The organizational decision-making literature emphasizes the role of structures, routines, and communication channels in shaping how decisions are formulated and executed [6; 15]. The concept of decision-making within the organizational culture and climate has also gained prominence [11].

According to Sugiarto [14], strategic decision-making is central to the long-term success of businesses. Scholars such as Dagnino et al. [2] argue that strategic decisions play a pivotal role in shaping the competitive advantage of firms. They explore decision-making processes related to resource allocation, diversification and competitive positioning. The study by Zhou et al. [17] also explores how strategic choices affect a company's success and how dynamic capabilities help a company adjust to shifting conditions.

The emergence of the digital era has expanded the scope of corporate decision-making. Organizations can make decisions based on real-time data and predicted insights thanks to information technology and data analytics [3]. The research on digital decision-making conducted by Green et al. [5] and Kumar et al. [9] examines big data, artificial intelligence, and machine learning, emphasizing how these technologies might support decision-making procedures.

To evaluate the bibliometric connections between the concepts of artificial intelligence and decision-making, we used the reference database Scopus, which contains scientific articles and materials of conferences on the subject of the study. The time period of 2014–2024 was chosen for the study, since artificial intelligence has already begun to be widely used in economic and socio-political issues, without any doubt, in the last decade. Filters were set for the research on the keywords artificial intelligence and decision-making. As a result, more than 10,000 publications were selected.

Limiting the research to the areas of Social Sciences, Business, Management and Reporting, Earth Sciences,

and Multidisciplinary Sciences, 1,317 publications were obtained. Using the bibliometric tool VOSviewer, eight blocks of scientific research related to the categories of artificial intelligence and decision-making were identified (Figure 1).

However, after conducting a deeper formal and logical analysis, separate blocks can be identified as separate clusters. In particular, the red cluster is the most powerful, covering the topics of artificial intelligence, algorithms, analytics, big data, chatbots, decision-making, digitalization, informatization, knowledge management, machine learning. The green sector is responsible for forecasting, climate change, water resources and water management. The blue sector is responsible for diagnosis and the person. The main sector for data management, public administration and electronic self-government. The purple sector is responsible for protecting the interests, ethics, transparency, and leadership.

Nazarov [12] explained that cultural factors influence decision-making, and research in cross-cultural management has shed light on how decision-making processes vary across different cultures. Cultural dimensions, such as individualism-collectivism and power distance, impact decision-making styles and preferences [10]. Scholars like Stone et al. [18] highlighted the revolutionary potential of data-driven decision-making, claiming that artificial intelligence (AI) technologies allow businesses to leverage large data for more strategic and informed decision-making. Benbya et al. [19] emphasized the importance of addressing bias in AI algorithms, particularly when trained on datasets reflecting historical inequalities. The perpetuation of biases in decision outcomes, such as those related to gender, race, or socioeconomic status, raises concerns about fairness and equity [20]. Researchers call for developing ethically grounded AI systems that prioritize transparency, accountability, and fairness in decision-making [21]. Olan et al. [22] argue that effective collaboration involves complementing the strengths of AI with human expertise, emphasizing the importance of maintaining a balance between technical precision and human intuition. Organizational barriers often revolve around resistance to change, as employees and stakeholders accustomed to traditional decision-making processes may be sceptical or apprehensive about AI-driven approaches [23]. Understanding the relationship between artificial intelligence and decision-making is crucial for businesses operating in globalized environments. And there is a lack of studies on how artificial intelligence influences business decision-making.

Formulation of the article's aims. This article aims to contribute to understanding how businesses can harness the power of artificial intelligence to enhance decision-making while navigating the ethical considerations inherent in using artificial intelligence.

The main research material. Artificial Intelligence (AI) plays a pivotal role in business decision-making by analysing vast datasets swiftly and efficiently, providing valuable insights into market trends and consumer behaviour. AI enables businesses to make data-driven decisions

Table 1 – Key tools for utilising digital technologies and data analysis to enhance business decision-making processes

Digital technology tool	Description of the tool for making business decisions
Artificial intelligence	Artificial intelligence helps improve business decisions by automating data analysis, identifying trends and developing forecasts, which allows you to make informed and strategically important decisions.
Big data analysis	Big data analysis allows businesses to make more objective and accurate decisions based on a deeper understanding of changes in consumer demand, market trends and operational efficiency.
Simulation models	Building simulation models allows businesses to test and experiment with different strategies, predicting possible scenarios and their consequences, which contributes to more deliberate and optimal decision-making.
Data visualisation	Data visualization facilitates the understanding of complex relationships and patterns, facilitating prompt and intuitive business decisions based on clearly presented information.
Protection of personal data	Effective protection of personal data promotes customer trust by enabling businesses to collect, process and use data in accordance with high privacy standards, which has the effect of creating a stable and ethical basis for decision-making.

ment”, which were relevant in 2014–2017. Subsequently, in 2016–2019, the interest of scientists changed to “decision-making”; “man”; “morality”; “sustainable development”. The most recent research topics for 2021–2024 are “artificial intelligence”; “blockchain”; “industry 4.0”; “automated decision-making”, that is, the cluster depicted in light green and yellow colors in Figure 2.

This research employed a mixed-methods approach, integrating both quantitative and qualitative methods to offer a thorough insight into the impact of AI on business decision-making. The study involves survey-based data collection and in-depth interviews with professionals in diverse industries. A stratified random sampling technique ensured representation from various industries and organ-

isational sizes. The target sample size is 20 professionals in their organisations’ decision-making roles. Purposive sampling was used to select participants for in-depth interviews. Approximately 5-10 professionals with diverse experiences in AI-driven decision-making were invited for interviews.

The method of data collection used in this research project is primary data. A structured questionnaire was developed based on the research objectives. The survey was administered electronically through professional networks, industry forums, and email invitations. Data were collected using Google Forms, ensuring anonymity and confidentiality.

Frequency, Percentage, Bar chart and Pie chart were used to analyze survey responses. Inferential statistics such

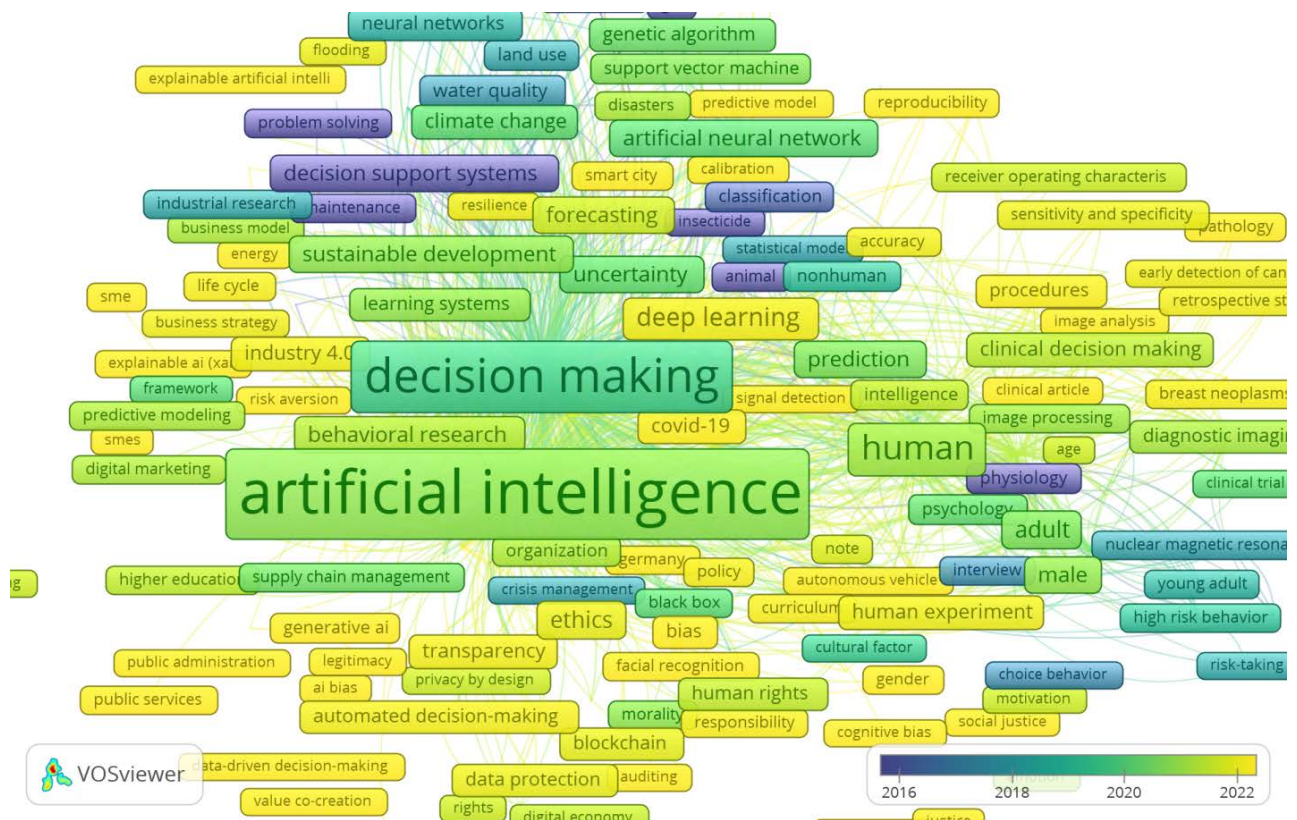


Figure 2 – Time distribution of popularization of research topics in 2014–2024

as Chi Squared were employed to identify significant relationships between variables:

$$X^2 = \sum_{i,j=1}^n \frac{(f_{ij} - f_e)^2}{f_e}$$

$$df = (r - 1)(c - 1),$$

where X^2 – chi-square; f_{ij} – frequency observed; f_e – frequency expected; df – degree of freedom; r – number of rows; c – number of columns.

Note: tolerance level is 5% or 0,005. Table 2 shows that gender distribution has influenced the perception and use of AI in business decision-making. About 55% are Male, while about 45% are Female. The result indicates that most respondents are in the 18-34 age range; this suggests that younger individuals, who may be more tech-savvy, are a key demographic for AI-related decisions. Limited representation from individuals aged 65 and above might imply a potential gap in understanding the needs or concerns of older decision-makers regarding AI. The IT/Technology sector has a significant representation, suggesting a high level of involvement or interest in AI applications. Executives/Managers and those in Marketing/Sales may have different perspectives on how AI influences decision-making, emphasizing the importance of considering diverse roles. The dominance of the healthcare industry in the sample indicates that findings might be particularly relevant to this sector. Industries without representation might not benefit fully from the insights gathered, and the study’s generalizability may be limited.

Figure 3 indicates that most respondents are somewhat familiar, while some are very familiar with integrating AI in business decision-making. This result indicated a higher level of acknowledgement and familiarity with using AI Integration in Business decision-making.

Figure 4 shows that 60% of the respondents affirm that AI technologies are implemented in business decision-making in their organization. 17% of the respondents affirm that AI isn’t involved in their business decision-making. In comparison, 17% of the respondents are unsure of implementing AI technologies in their business deci-

Table 2 – Demographic analysis of the respondents

		Frequency	Percentage
Gender	Male	16	55.17
	Female	13	44.83
Age	Under 18 years	1	3.45
	18-24 years	7	24.14
	25-34 years	10	34.48
	35 – 44 years	5	17.24
	45-54 years	4	13.79
	55-64 years	2	6.90
	65 years and above	0	0.00
Occupation	Executive/Managerial	4	13.79
	IT/Technology	8	27.59
	Marketing/Sales	5	17.24
	Finance/Accounting	4	13.79
	Operations	2	6.90
	Others	6	20.69
Industry	Manufacturing	3	10.34
	Technology	5	17.24
	Healthcare	14	48.28
	Finance	4	13.79
	Retail	3	10.34
	Others	0	0.00

sion-making. This result shows that there is a significant level of adoption of AI in business decision-making among the respondents, indicating a recognition of the value that AI can bring to the decision-making landscape.

Table 3 indicates that few respondents perceived AI as slowing down business decision-making. However, about 10.34% believe that AI has no significant impact on the speed of decision-making in their organizations.

Most respondents (75.86%) believe that AI positively impacts decision-making speed. The fact that 75.86% of respondents perceive AI as making decision-making either slightly or significantly faster suggests a positive outlook on the role of AI in expediting business decisions. AI tech-

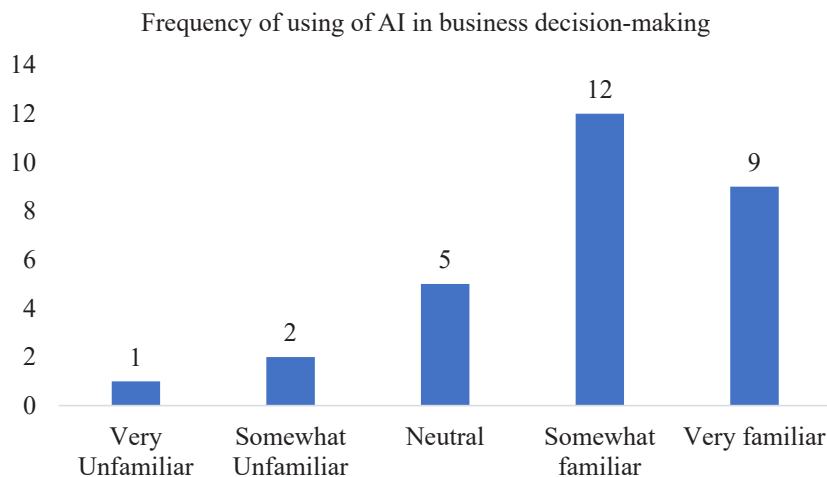


Figure 3 – Familiarity with AI in business decision-making

Implementing AI technologies for business decision-making

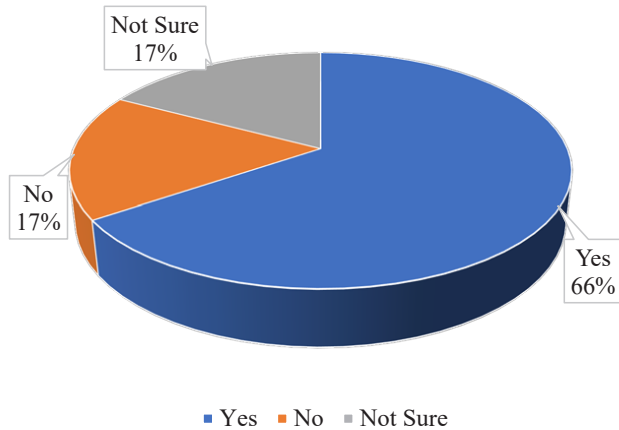


Figure 4 – Showing the implementation of AI technologies for business decision-making

Table 3 – Perceptions of AI impact on business decision-making

	Frequency	Percentage
Significantly slower	2	6.90
Slightly slower	2	6.90
No impact	3	10.34
Slightly faster	9	31.03
Significantly faster	13	44.83

nologies are perceived as valuable tools for streamlining decision-making processes and gaining a competitive edge in the business environment. Table 4 shows that 72.42% of respondents perceive AI as positively contributing to the accuracy of business decisions.

Table 4 – Contribution of AI to accuracy of business decisions

	Frequency	Percentage
Do not contribute	0	0.00
Slightly contribute	1	3.45
Neutral	7	24.14
Moderately contributes	13	44.83
Strongly contributes	8	27.59

Most respondents believe that AI has a role in enhancing the accuracy of decision-making processes within their organizations. However, 24.14% of respondents neither agree nor disagree with the statement that AI contributes to the accuracy of business decisions. The neutrality suggests a segment of respondents who may be undecided or require more concrete evidence or experience to form a strong opinion about the impact of AI on decision accuracy.

Conclusions of the research and prospects for further development. Based on the findings in this study, it can be concluded that the gender and age distribution of respondents influence the perception and use of AI in business decision-making. The study also concluded that AI-driven decisions are dominant in the Healthcare sector. Furthermore, based on the findings in the study, it is concluded that AI awareness and implementation indicated a generally positive outlook, with a significant level of acknowledgment and familiarity among respondents. Also, there positive perception of AI making decisions faster with a positive contribution to the accuracy of business decisions. However, there is a record of some biases in AI-driven decision-making. This highlights a significant concern in the fair and equitable application of AI algorithms. This shows the importance of addressing biases to ensure ethical decision-making.

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ВПЛИВ ШТУЧНОГО ІНТЕЛЕКТУ НА ПРИЙНЯТТЯ БІЗНЕС-РІШЕНЬ

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Анотація. У статті досліджується вплив штучного інтелекту на прийняття бізнес-рішень. Аналізуючи технічні, стратегічні та етичні аспекти цього явища, дослідження ставить за мету розкрити наслідки, які приносить інтеграція штучного інтелекту у процес прийняття рішень. У роботі проведено комплексний аналіз для вивчення знань та досвіду осіб щодо впровадження штучного інтелекту в бізнес-процеси щодо прийняття рішень. Досліджено деталі демографічних характеристик, рівня обізнаності про штучний інтелект, статусу впровадження, впливу на швидкість та точність прийняття рішень і етичні аспекти, пов'язані з упередженням у рішеннях, що базуються на штучному інтелекті. Результати свідчать, що стать та віковий розподіл впливають на знання та використання штучного інтелекту у прийнятті бізнес-рішень. Рішення, прийняті на основі штучного інтелекту, є домінуючими в секторі охорони здоров'я. Крім того, рівень обізнаності та впровадження штучного інтелекту свідчать про загально позитивний рівень обізнаності серед респондентів. Існує позитивне сприйняття того, що штучний інтелект дозволяє приймати рішення швидше з якісним внеском у точність бізнес-рішень. Однак є відомості про деякі упередження у рішеннях, що базуються на штучному інтелекті. Це підкреслює значущість проблеми справедливого та рівноправного застосування алгоритмів штучного інтелекту, що свідчить про важливість вирішення упереджень для забезпечення етичного прийняття рішень. В статті представлені результати гіпотезного тестування, що спрямоване на визначення того, чи залежить використання штучного інтелекту від точності бізнес-рішень. Результати вказали на недостатні докази для висування значущого зв'язку між інтеграцією штучного інтелекту та точністю прийняття рішень. Це свідчить про те, що організації повинні вивчати додаткові фактори, які впливають на точність прийняття рішень, визнавши, що сама інтеграція штучного інтелекту може бути не єдиним визначальним фактором.

Ключові слова: прийняття рішень, бізнес, демографічні характеристики, точність рішень, внесок, штучний інтелект (ШІ).

Стаття надійшла до редакції 23.01.2024
The article was received January 23, 2024

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