

AI in Decision Making: The Role of AI in Managerial Decision Making

Hamad Almusallam, Affiliation establishment, Bahrain,

hamad.a.almusallam@gmail.com

Send Article Date 12/ 2/ 2025 / Date of acceptance of the article: 27 / 3/ 2025

Abstract:

AI is transforming managerial decision-making by enhancing data analysis, problem-solving, and strategic planning. The literature review highlights AI's increasing adoption in HR, marketing, finance, and supply chain management. AI improves efficiency by automating tasks, enabling predictive analytics, and supporting data-driven decisions. Balancing AI insights with human judgment is crucial for effective organizational leadership. Ethical concerns include data quality, bias, and transparency in AI-driven decisions. Future trends involve augmented intelligence systems and advancements in explainable AI. Organizations leveraging AI effectively can gain competitive advantages like efficiency, cost reduction, and better customer satisfaction.

Key words: Artificial intelligence, decision making, AI, automation, data analysis

Introduction:

Artificial Intelligence (AI) has significantly transformed the landscape of managerial decision-making, offering unprecedented capabilities in data analysis, prediction, and automation. The integration of AI into business processes has led to more informed, efficient, and data-driven decision-making across various organizational levels.

Nowadays, AI has become popular in companies, enabling increased productivity and competitiveness, particularly in areas related to decision-making and data-processing, which is significant for the businesses, since it allows them to automate tasks developed by machines, the purpose of which is to increase the efficiency of business management. (Brynjolfsson, E., & McAfee, A. 2020), (Balbaa et al., 2024), (Gonesh, 2023) & (Lichtenthaler, 2020). According to Haenlein, & Kaplan, (2019), AI is the ability of machines to emulate and exceed certain human cognitive capacities, such as learning, reasoning, and decision-making, through the processing of large quantity of information. This allows them to function autonomously and adapt to different environments and situations. From the standpoint of Martínez-Mena et al, (2024), AI drastically transforms the business landscape and improves the efficiency, productivity, and competitiveness of organizations. Those companies that are reluctant to adopt these technologies risk being left behind in an increasingly competitive and innovation-driven environment. Automating repetitive and routine tasks is one of the main benefits that AI offers in the business environment. AI liberating employees from manual tasks, so they can focus on more strategic, creative, and value-added activities. In addition, it facilitates informed and optimized decision-making, by enabling the analysis of large volumes of data for decision-makers as they face rapid and constant changes, which they must embrace to improve their competitiveness and efficiency, as well as to remain relevant in an increasingly complex market (Wright, & Schultz, 2020). One of the current trends in the managerial functions of companies is the integration of artificial intelligence (Lichtenthaler, 2020). Artificial Intelligence (AI) is redefining the limits of business innovation, being crucial in a world where speed and precision are essential. AI is presented as a catalyst that will radically transform how organizations carry out their business operations and strategies (Gonesh et al, 2023). Hence, companies are adopting AI to optimize processes, improve decision-making, and offer personalized customer experiences. However, despite the potential it offers, AI effective implementation poses significant challenges that require deep understanding and a strategic approach. According to Jarrahi, (2021), the exponential growth in the amount of data in recent years has created an urgent need for tools and technologies that can extract meaningful information from this enormous amount of data. This is where artificial intelligence plays a crucial role, offering advanced analysis capabilities that can identify patterns, predict trends, and generate valuable insights from complex and diverse data. However, as Makridakis, (2019) point out, access to high-quality data and the ability to process it efficiently remain significant challenges to the effective implementation of AI in companies.

Artificial Intelligence (AI) is constantly revolutionizing business operations. It is a set of systems or algorithms designed to imitate human intelligence and perform tasks that can be improved with the information collected. This technology offers companies opportunities to improve their efficiency, productivity, and competitiveness (Rai et al., 2019). Additionally, human resource management is being radically transformed by artificial intelligence (AI), which provides advanced tools and techniques to improve efficiency and decision making. In recent years, AI has come out as a vital tool for optimizing internal processes in companies and organizations, becoming increasingly integrated into business and organizational management (Ransbotham et al., 2019). Technological advances, growing investments, and competition for talent point to an inevitable transformation: Artificial Intelligence shall commence to deeply modify business operations. This change will affect how companies increase their revenues, carry out their daily operations, interact with customers and employees, develop new business models, etc. According to a survey on emerging technologies in 2023, 73% of US companies have already adopted AI in at least some areas of their operation, with generative AI (GenAI) standing out as the leader (PwC, 2023).

One year after ChatGPT was launched in the market, more than half of the companies surveyed (54%) have implemented GenAI in various areas of their operations (PwC, 2024). According to According to Tambe, (2019) in recent years, numerous companies have chosen to incorporate Artificial Intelligence (AI) into their core operations. According to a survey conducted by strategic consulting firm New Vantage Partners, 97% of the organizations surveyed are investing in data initiatives, while 91% are devoting resources to AI-related activities. In addition, 92% of large companies are seeing positive returns on their investments in data and AI. On the other hand, the survey indicates that the number of AI-related initiatives continues to grow. The adoption of Artificial Intelligence (AI) in organizations is crucial to improve efficient decision making in this area. A beneficial aspect of integrating artificial intelligence into business is its ability to assist managers in detecting anomalies by providing instant information on early signs of problems, facilitating the implementation of timely corrective measures (Jarrahi, 2021). The successful implementation of artificial intelligence in human resource management faces significant challenges, including overcoming technological and access limitations, ensuring data quality and privacy protection, mitigating ethical biases in algorithms, managing the potential impact on employment and labor equity, and promoting an organizational culture that fosters the acceptance and adaptation of these innovative technologies (Abaas, & Robbins, 2024). These elements are essential to optimize the benefits of artificial intelligence in talent management, considering the particularities of the business environment. Consequently, the purpose of this research is to determine the utilization of artificial intelligence in managerial decision making.

This study employs a qualitative approach through a systematic review of researches published from 2019 to 2024, focusing on AI implementation in business management. It examines how

AI systems can be integrated into organizations, highlighting their advantages, challenges, and opportunities. The research process involved consulting digital databases such as Science Direct, central pro-project databases, Google Scholar, and Dialnet. These sources provided a broad selection of studies in business, economics, and finance. The search was exhaustive, with no geographical restrictions, to capture a comprehensive range of research. To refine the selection, specific filters and search equations incorporating keywords like "artificial intelligence," "Business Administration," and "Business Management" were applied, using Boolean operators for optimization. This process ensured the retrieval of relevant studies, which were then rigorously analyzed for significant findings. Inclusion criteria required studies to analyze AI in business administration, be published in peer-reviewed journals, be in English, and be from 2019 onwards. Excluded studies included non-relevant analyses, conference presentations, theses, and pre-2019 publications. A PRISMA diagram visually represented the review process, culminating in 35 selected articles. The focus on recent studies ensures that findings remain relevant, considering AI's rapid evolution and its growing impact on business applications.

THE FIRST TOPIC

Enhanced Data Analysis and Insights

One of the primary ways AI impacts managerial decision-making is via its capability to process and analyze enormous amounts of data at high speeds. This capability allows managers to gain more comprehensive insights into various aspects of their business. According to recent research, AI improves the quality of decisions by providing accurate and in-depth data analysis, enabling managers to make decisions that are more based on data rather than intuition or experience alone Wury (2024), Ashritha & Reddy, (2023).

The power of AI in data analysis is particularly evident in its ability to handle big data. With the exponential growth of data in the digital age, AI algorithms can filter through enormous datasets to identify patterns, trends, and correlations that might be invisible to human analysts. Today this ability is critical in data-driven business environment, in which the capacity to extract useful insights from large volumes of data can give a momentous competitive advantage, hence, leads to quality decision making (Duan, Edwards, & Dwivedi, 2019).

FIRST REQUIREMENT

The review effectively highlights how AI is transforming traditional decision-making processes by enhancing data analysis capabilities, enabling predictive analytics, and automating routine

tasks. This focus on the fundamental changes brought about by AI in managerial practices is a key strength of the review.

THE SECOND TOPIC

Human Resources Management

AI is revolutionizing human resources management, offering new ways to streamline recruitment, employee engagement, and talent management. In terms of recruitment and candidate Screening, AI can assist in accelerate and improve recruiting by automating resume screening, candidate assessment, and identifying key skills and traits for jobs. AI algorithms can analyze resumes and job applications to identify the most suitable candidates, reducing time-to-hire and improving the quality of hires (Tambe, et al, 2019). Besides, AI can provide Employee Performance Analysis, that is, AI tools can analyze employee performance data to provide insights into productivity trends and identify areas for improvement. Predictive Analytics for Retention is another AI capability. By analyzing employee data, AI can predict which employees are at risk of leaving, allowing managers to take proactive retention measures. Additionally, AI is a tool to provide a Personalized Training and Development of HR in the sense that AI can recommend personalized training programs based on an employee's skills, performance, and career goals. In terms of talent retention, AI can recognize early warning signs of attrition, such as declining engagement or job satisfaction, by analyzing data. An AI system can help a company design personalized interventions for talent retention, such as development programs or changes in assignments. The use of AI in HR management has led to more data-driven decision-making in areas traditionally reliant on subjective judgments. This shift has the potential to improve the overall effectiveness of HR practices and contribute to better organizational outcomes (Qamar, 2022).

FIRST REQUIREMENT

The implementation of AI in decision-making processes often requires specialized skills that may not be readily available within an organization which is another challenge. This skills gap can be a significant barrier to effective AI adoption. To address this challenge, organizations can invest in training and development programs for existing employees and partner with educational institutions to develop AI-focused curricula.

Conclusion

The integration of Artificial Intelligence into managerial decision-making processes represents a significant shift in how businesses operate and compete in the modern economy. This literature review has explored the multifaceted impact of AI on various aspects of business management, from enhancing data analysis and predictive capabilities to transforming specific business functions such as marketing, finance, and human resources.

The benefits of AI in decision-making are improved efficiency, more accurate predictions, enhanced risk management, and the ability to process and derive insights from vast amounts of data. These capabilities enable managers to make more informed, data-driven decisions, potentially leading to better business outcomes and competitive advantages.

However, the implementation of AI in decision-making processes is not without challenges. Organizations might struggle with issues related to data quality, ethical considerations, integration with existing systems, and the need for specialized skills. Addressing these challenges requires a strategic approach, involving investments in technology, processes, and people.

Organizations that leverage AI can make decisions faster than competitors, gaining a competitive edge. AI enables managers to analyze data and make decisions in real-time, enhancing agility and responsiveness. For example, AI-powered supply chain management systems can monitor inventory levels and predict disruptions, enabling managers to make timely adjustments. By leveraging AI, organizations can achieve a competitive advantage in today's fast-paced business environment. While AI offers tremendous potential to enhance managerial decision-making, its effective implementation requires careful consideration of both its capabilities and limitations. Managers must strive to balance the power of AI-driven insights with human judgment, ethical considerations, and the specific needs of their organizations. As AI continues to evolve, those who can effectively harness its potential while navigating its challenges will be well-positioned to lead their organizations to success in an increasingly complex and data-driven business landscape.

References

- Abaas, G. & Robbins, S. (2024). Artificial Intelligence Implementation in Human Resources: Ethical Challenges and Performance Benefits.[Online]: https://www.researchgate.net/publication/382073626_Artificial_Intelligence_Implementation_in_Human_Resources_Ethical_Challenges_and_Performance_Benefits. [Accessed 2/2/2025].
- Ashritha P. & Reddy P. (2023) Impact Of Artificial Intelligence On Management Decision-Making. Artificial Intelligence & Management Decision-making, VOL. 1 (2)
- Brynjolfsson, E., & McAfee, A. (2020). The business of artificial intelligence. Harvard Business Review, 98(4), 96-104.
- Balbua, Muhammad & Abdurashidova, Marina. (2024). The Impact of Artificial Intelligence in Decision Making: A Comprehensive Review. EPRA International Journal of Economics, Business and Management Studies. 11. 27 - 38. 10.36713/epra15747.

- Duan, Y., Edwards, S., & Dwivedi, K. (2019). Artificial intelligence for decision making in the era of Big Data – evolution, challenges and research agenda. *International Journal of Information Management*, 48, 63-71.
- Gonesh, C., Paulin, S., Yerasuri, S., Saha, H. & Dongol, P. (2023). The Impact of Artificial Intelligence on Business Strategy and Decision-Making Processes. 10.52783/eel.v13i3.386.
- Haenlein, M., & Kaplan, A. (2019). A brief history of artificial intelligence: On the past, present, and future of artificial intelligence. *California Management Review*, 61(4), 5-14.
- Jarrahi, M. H. (2021). Artificial intelligence and the future of work: Human-AI symbiosis in organizational decision making. *Business Horizons*, 64(2), 159-167.
- Lichtenthaler, U. (2020). Beyond artificial intelligence: Why companies need to go the extra step. *Journal of Business Strategy*, 41(1), 19-26.
- Martínez-Mena, E. , Bolaños-López, V., & Medina-Ocampo, F. (2024). Impact of artificial intelligence on business transformation and efficiency: a contemporary analysis. *Journal General Economics*. 8. 10.35429/JGE.2024.8.14.1.7.
- Makridakis, S. (2019). The forthcoming Artificial Intelligence (AI) revolution: Its impact on society and firms. *Futures*, 90, 46-60.
- Qamar N (2022). The Impact of Artificial Intelligence in Human Resource Decision Making Processes. *Journal of Pharmaceutical Negative Results*. Volume 13.
- NewVantage (2022). NewVantage Partners Releases 2022 Data And AI Executive Survey. [Online]: NewVantage Partners Releases 2022 Data And AI Executive Survey | Business Wire. [Accessed 1/2/2025]
- PwC (2023), 2023 Emerging Technology Survey. [Online] <https://www.pwc.com/us/en/tech-effect/emerging-tech/emtech-survey.html>, [Accessed on 28/1/2025]
- PwC (2024), 2024 AI Business Predictions. [Online] 2024 AI Business Predictions: PwC [Accessed on 28/1/2025]
- Rai, A., Constantinides, P., & Sarker, S. (2019). Next-generation digital platforms: Toward human–AI hybrids. *MIS Quarterly*, 43(1), iii-x.
- Ransbotham, S., Khodabandeh, S., Fehling, R., LaFountain, B., & Kiron, D. (2019). Winning with AI. MIT Sloan Management Review and Boston Consulting Group.
- Tambe, P., Cappelli, P., & Yakubovich, V. (2019). Artificial intelligence in human resources management: Challenges and a path forward. *California Management Review*, 61(4), 15-42.

Wury, A. (2024). Artificial Intelligence in Managerial Decision-Making: An Empirical Examination. *Nanotechnology Perceptions* 20 No.5 (2024) 304–311.

Wright, S. A., & Schultz, A. E. (2020). The rising tide of artificial intelligence and business automation: Developing an ethical framework. *Business Horizons*, 63(6), 741-750.