



Investigating the role of artificial intelligence in strategic management accounting in financial organizations using the hybrid Delphi fuzzy method

Mohammad Barzegar¹, Mahdi Jahani ^{*2}

1. Department of Industrial Engineering and Management, Faculty of Industrial Engineering and Management, Shahrood University of Technology, Shahrood, Iran. mohammadbarzzegar@gmail.com
2. Department of Industrial Engineering and Management, Faculty of Industrial Engineering and Management, Shahrood University of Technology, Shahrood, Iran. jhanymhdy70@gmail.com

OPEN ACCESS

Article type: Research Article

*Correspondence:

Mahdi Jahani

jhanymhdy70@gmail.com

Received: August 17, 2025

Accepted: January 29, 2026

Published: winter 2026

Citation: Barzegar, M. and Jahani, M. (2025). Investigating the role of artificial intelligence in strategic management accounting in financial organizations using the hybrid Delphi fuzzy method. *Strategic Management Accounting*, 2(4),22-45.

Publisher's Note: MSDS stays neutral with regard to jurisdictional claims in published material and institutional affiliations.



Copyright: © 2026 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Abstract

Today, financial organizations are looking for new ways to strengthen their competitive position and optimize decision-making processes. Artificial intelligence (AI), as one of the most advanced technologies, plays an unparalleled role in this field. This article analyzes the role of artificial intelligence in strategic management accounting of financial organizations and examines how this technology affects the improvement of data analysis, financial forecasting, and facilitation of strategic decision-making processes. By using complex algorithms and machine learning, artificial intelligence can identify hidden patterns and predict financial scenarios that can be effective in assessing risk and investment opportunities. It also addresses the cultural and technical implications of implementing artificial intelligence technology in management accounting structures and discusses challenges such as the need for changes in employee skills and the integration of artificial intelligence systems into existing processes. The purpose of this study is to examine the criteria for the role of artificial intelligence in strategic management accounting in financial organizations. The criteria were identified and ranked through research history and then identified and approved by experts using the fuzzy Delphi method. To rank the approved criteria, the best-worst multi-criteria decision-making method was used. Finally, the results indicated that the criteria for training and skill development costs, lack of specialized human resources for implementation, maintenance and support costs are, respectively, the most important criteria for the role of artificial intelligence in strategic management accounting in financial organizations.

Keywords: Artificial Intelligence, Obstacles, Strategic Management Accounting, Fuzzy Delphi, Best and Worst.

JEL Classification: M41, M42, O30.

DOI: <https://doi.org/10.22034/smajournal.2026.541507.1118>

INTRODUCTION

In today's digital age, fundamental changes have taken place in the management and performance of organizations. One of the most important of these developments is the emergence of artificial intelligence (AI) as an efficient and effective tool in financial and accounting processes. Artificial intelligence has not only been able to transform traditional methods but also greatly help organizations in improving financial and strategic decision-making (Shrestha., et al. 2019). Especially in the field of strategic management accounting, artificial intelligence brings the ability to improve accuracy and efficiency, which doubles its importance in financial organizations. Strategic management accounting, as a key tool in navigating economic challenges and strategic decision-making, requires accurate analysis of data and information (Korobeynikova., et al. 2021). In this regard, artificial intelligence as a new solution can play an effective role in analyzing information and identifying patterns. Machine learning algorithms and sophisticated analytics developed in the context of artificial intelligence enable organizations to achieve more accurate financial forecasts (Yaşar. 2024). Research shows that artificial intelligence can help increase the accuracy of financial forecasts, identify risks and opportunities, and provide optimal solutions in financial management. These capabilities help organizations respond to rapid market changes and increase their competitiveness. One of these developments is the emergence and spread of artificial intelligence (AI), which is considered a key tool for optimizing business processes. In the field of strategic management accounting, artificial intelligence is increasingly recognized as an effective factor in facilitating financial and strategic decision-making. Strategic management accounting, as one of the most critical aspects of financial management in financial organizations, requires accurate and timely analysis of financial and non-financial data. Given the increasing competition in this field, financial management is looking for new and efficient ways to strengthen its position in the market. Artificial intelligence can help improve the quality of strategic decisions by providing advanced analytics and accurate forecasts (Chen. 2021). When we look at the applications of artificial intelligence in management accounting, we can point to the efficiency in data processing, analyzing financial patterns, and predicting future situations. Technologies such as machine learning and big data analysis can be used as new solutions in identifying financial trends and potential. However, the use of artificial intelligence in management accounting also leads to challenges. Among these challenges are the need for continuous training of employees, changing organizational culture, and creating appropriate infrastructure for the advancement of employees and future university students. In recent years, attention to artificial intelligence (AI) has increased dramatically in various fields, especially accounting. Researchers and experts are looking for ways to optimize processes and increase the efficiency of organizations by utilizing the capabilities of artificial intelligence. In this regard, numerous studies have been conducted on the role of artificial intelligence in management accounting, especially in strategic management (santos., et al. 2025). Artificial intelligence, as a root cause of digital transformation, has created fundamental changes in financial processes and in macro-decision making in financial organizations. According to studies, artificial intelligence has significant capabilities in analyzing financial data that can help managers make better decisions. For example, research has shown that AI-powered information management and data analytics can improve the accuracy of financial forecasts and provide optimal solutions to financial challenges (Marrone & Hazelton, 2019). These advances are driven by machine learning algorithms and advanced analytics that can recognize complex patterns and analyzing information from human data (Mancini., et al. 2021). Some research has examined the direct impact of AI on the design and implementation of financial strategies. These studies have shown that organizations that use AI are able to better identify business risks and opportunities, achieving competitive advantage through more accurate and timely decision-making. (Mahalakshmi et al. 2022) In this way, artificial intelligence can be considered as an important tool in facilitating strategic decision-making processes. On the other hand, automating accounting processes using artificial intelligence can reduce errors and increase the speed of performing accounting and financial tasks. This is especially important in situations where organizations are faced with increasing data volumes (Hassan. 2022). Research shows that artificial intelligence can automate time-consuming processes and lead to greater transparency and efficiency. However, the adoption of artificial intelligence in management accounting is also accompanied by challenges.

Many organizations are still in the stage of instability and need to develop organizational culture and prepare employees to work with new technologies. (Yazdan Parast et al. 2022) proposed a fuzzy hybrid multi-criteria decision-making method to identify and prioritize the applications of artificial intelligence in online marketing. Applications of artificial intelligence have attracted a lot of attention from investors and marketing managers. In their research, the best and worst applications of artificial intelligence were identified. For this purpose, the opinions of industry experts and students from reputable Iranian universities who are familiar with artificial intelligence and online marketing were reviewed. Finally, four general areas were identified: product design and value creation, pricing and cost design, advertising and customer information, and product distribution. In total, 40 different applications were classified and prioritized in these four areas. Among these applications, "personalization of advertising based on previous user behavior" had the highest priority. In contrast, "distribution of distribution forces in branches based on workload prediction" had the lowest priority. These results can help managers choose the best applications of artificial intelligence to improve their performance.

(Setayesh and Rezaianzadeh. 2023) identified and ranked the factors affecting innovation in accounting and concluded that, based on the results of this study, the three main factors that affect innovation in accounting are, in order of importance: advances in information technology, changes in the business environment, and the level of financial knowledge and analytical skills of accountants. To increase the areas of innovation in accounting, this study shows that accountants should be familiar with general information about business and new technologies. Also, as key human resources in the innovation process, they should continuously improve their financial knowledge and analytical skills through various methods, including university education, training courses, and self-directed learning, because information technology and Internet-related innovations will bring significant changes to accountants' business environments.

(Saadati et al. 2025) studied the use of artificial intelligence technology in accounting from a strategy-oriented approach, and the results showed that artificial intelligence can significantly increase the efficiency and responsiveness of people working in the accounting profession, including its trends such as auditing and management accounting. This technology helps accountants to pay more attention to the needs of information technology in their field and use it more effectively. In addition, the use of artificial intelligence can update and improve the content of university courses in accounting and related trends. This process not only helps to improve the software knowledge of people working in this field, but also increases their analytical and technical abilities. Thus, it can be expected that the implementation of artificial intelligence in accounting will lead to positive developments and effective innovations.

METHODOLOGY

This research is descriptive in terms of purpose and has practical aspects in terms of results. Because it examines the role of artificial intelligence in strategic management accounting of financial organizations. To achieve this goal, first, experts were identified and selected by audit and financial companies, and after selecting the experts, a field study method was used, and questionnaires were distributed among specialists and experts of financial companies to confirm and rank the impact of information technology on management accounting. The fuzzy Delphi method was used to validate the identified criteria, and the multi-criteria decision-making method known as "best and worst" was used to prioritize the indicators. In this research, a comprehensive review of the research literature on the obstacles and challenges of artificial intelligence in strategic management accounting of financial organizations was first conducted. Then, relevant and appropriate criteria were extracted according to the existing literature and the interview analysis steps were used. This comprehensive and precise approach provides a strong foundation for analyzing the impact of information technology in the field and helps to better understand the existing challenges. The statistical population of this study includes experts and experts from financial companies who have had years of experience and activity in this field. From this group, 42 people were selected as a sample and finally, 12 of them answered the

questionnaire questions. This process was designed to continue until theoretical saturation was reached so that the information collected fully reflects the views and experiences in this field. Considering the main objective of this study, two methods, Fuzzy Delphi and Best-Worst (BWM), were used to identify and rank the challenges related to the role of artificial intelligence in financial organizations. In the first stage, a Fuzzy Delphi questionnaire was designed and distributed based on the barriers identified in the research literature with 32 indicators. This questionnaire was filled out with the cooperation of 12 experts and experts, who also added their opinions and criteria to it. After this stage, a new questionnaire with the added criteria was distributed and collected among the experts. It is worth noting that the questionnaires were carefully reviewed before distribution to ensure validity and reliability and then made available to the experts. Also, after distributing the fuzzy Delphi questionnaires, the criteria whose mean difference was greater than (0.1) were ignored and 24 important indicators were identified and selected from 32 indicators. The validity and reliability of the questionnaires were performed using SPSS26 software.

RESULTS

To confirm the artificial intelligence index in strategic management accounting in financial organizations, they were identified through a review of previous research. A fuzzy Delphi questionnaire was prepared and 12 experts and specialists were asked to answer the questions based on the rules of the fuzzy Delphi method. After analyzing the data from the questionnaire, 24 indicators were identified, of which 8 indicators were approved by experts and specialists.

According to the results of solving the linear programming model of the best-worst method by Linko software, it was shown that the criteria of training and skill development costs, lack of specialized human resources for implementation, maintenance and support costs are respectively the most important criteria for the role of artificial intelligence in strategic management accounting in financial organizations, and the obtained compatibility rate indicates an acceptable compatibility rate.

CONCLUSION

In this study, first, the criteria and obstacles to the role of artificial intelligence in strategic management accounting in financial organizations were identified through a literature review, and then a fuzzy Delphi questionnaire was designed and prepared and distributed among experts and experts in the financial field. Finally, after completion, it was collected and 24 criteria were identified in this field and 8 main indicators were finally approved by experts and experts in this field. In the next stage, the criteria approved from the best-worst method questionnaire were ranked and weighted among 12 experts in this field to determine the best and worst criteria. Finally, in the next stage, a linear programming model of the best-worst method was created in Lingo software. The results showed that the criteria of training and skill development costs, lack of specialized human resources for implementation, maintenance and support costs, security concerns, and privacy are, respectively, the most important criteria for the role of artificial intelligence in strategic management accounting in financial organizations. In fact, this modern system or technology is used as an effective human resource for usability in the organization and can respond to organizational needs. Therefore, the implementation and use of this technology has a series of advantages and disadvantages. These obstacles can lead to expenses for advertising, necessary training, and awareness of employees to use and welcome this technology. It is suggested that future research should identify and analyze these limitations and challenges and develop solutions for optimizing artificial intelligence programs in management accounting. Several suggestions for future research include: 1- Studying the impact of artificial intelligence on the stress and job concerns of accounting employees. 2- Conduct research that examines how AI is used in management accounting in various industries, such as banking, insurance, and technology companies. 3- Research on the impact of legal frameworks and financial regulations on the adoption and implementation of AI technologies in accounting. 4- Research on best practices to ensure data security and compliance with privacy laws. Future research in the field of AI and strategic management accounting can help improve our understanding of the impacts of this technology on the financial industry and develop acceptable best

practices and strategies. These suggestions can lead to the expansion of existing knowledge and facilitate the effective application of AI in management processes.

Contribution of Authors

All authors participated equally in all stages of the research.

Ethical Approval

This research was conducted in compliance with the principles of research ethics and informed consent of the respondents.

Sponsor

This research did not receive financial support from any specific institution or organization.

Conflict of Interest

No conflicts of interest have been declared by the authors.

Acknowledgements

The cooperation and responsiveness of all accountants, auditors, and financial managers who participated in completing the questionnaire and collecting data are appreciated.

References

- Bandyopadhyay, D., & Sen, J. (2011). Internet of things: Applications and challenges in technology and standardization. *Wireless personal communications*, 58(1), 49-69. https://www.researchgate.net/publication/51890865_Internet_of_Things_Applications_and_Challenges_in_Technology_and_Standardization
<https://link.springer.com/article/10.1007/s11277-011-0288-5>
- Burange, A. W., & Misalkar, H. D. (2015, March). Review of Internet of Things in development of smart cities with data management & privacy. In *2015 International Conference on Advances in Computer Engineering and Applications* (pp. 189-195). IEEE. <https://ieeexplore.ieee.org/abstract/document/7164693>
- Chen, Y. (2021). Framework of the smart finance and accounting management model under the artificial intelligence perspective. *Mobile Information Systems*, 2021(1), 4295191. <https://doi.org/10.1155/2021/4295191>
- Dirican, C. (2015). The impacts of robotics, artificial intelligence on business and economics. *Procedia-social and behavioral sciences*, 195, 564-573. <https://doi.org/10.1016/j.sbspro.2015.06.134>
- Dineshreddy, V., & Gangadharan, G. R. (2016, March). Towards an “Internet of Things” framework for financial services sector. In *2016 3rd International Conference on Recent Advances in Information Technology (RAIT)* (pp. 177-181). IEEE. https://www.researchgate.net/profile/Dr-Dinesh-Reddy-Vemula/publication/289451535_Towards_an_Internet_of_Things_Framework_for_Financial_Services_Sector/links/60bcb9d8a6fdcc22eadfc007/Towards-an-Internet-of-Things-Framework-for-Financial-Services-Sector.pdf
- Hasan, A. R. (2021). Artificial Intelligence (AI) in accounting & auditing: A Literature review. *Open Journal of Business and Management*, 10(1), 440-465. <https://doi.org/10.4236/ojbm.2022.101026>
- Han, H., Shiwakoti, R. K., Jarvis, R., Mordi, C., & Botchie, D. (2023). Accounting and auditing with blockchain technology and artificial Intelligence: A literature review. *International Journal of Accounting Information Systems*, 48, 100598. <https://www.sciencedirect.com/science/article/pii/S1467089522000501>
- Holmes, A. F., & Douglass, A. (2022). Artificial intelligence: Reshaping the accounting profession and the disruption to accounting education. *Journal of Emerging Technologies in Accounting*, 19(1), 53-68. https://digitalcommons.trinity.edu/cgi/viewcontent.cgi?article=1193&context=busadmin_faculty
- Karmańska, A. (2021). Internet of Things in the accounting field—benefits and challenges. *Operations Research and Decisions*, 31. https://www.researchgate.net/publication/356654114_Internet_of_Things_in_the_Accounting_Field_Benefits_and_Challenges
- Korobeynikova, O. M., Korobeynikov, D. A., Popova, L. V., Chekrygina, T. A., & Shemet, E. S. (2021, March). Artificial intelligence for digitalization of management accounting of agricultural organizations. In *IOP conference series: earth and environmental science* (Vol. 699, No. 1, p. 012049). IOP Publishing. <https://iopscience.iop.org/article/10.1088/1755-1315/699/1/012049/meta>
- Mancini, D., Lombardi, R., & Tavana, M. (2021). Four research pathways for understanding the role of smart technologies in accounting. *Meditari Accountancy Research*, 29(5), 1041-1062. <http://tavana.us/publications/SMART-ACC.pdf>

- Marrone, M., & Hazelton, J. (2019). The disruptive and transformative potential of new technologies for accounting, accountants and accountability: A review of current literature and call for further research. *Meditari Accountancy Research*, 27(5), 677-694. https://www.researchgate.net/profile/Mauricio-Marrone/publication/335440311_The_disruptive_and_transformative_potential_of_new_technologies_for_accounting_accountants_and_accountability_A_review_of_current_literature_and_call_for_further_research/links/5f093b5645851550509c702b/The-disruptive-and-transformative-potential-of-new-technologies-for-accounting-accountants-and-accountability-A-review-of-current-literature-and-call-for-further-research.pdf
<https://www.emerald.com/insight/content/doi/10.1108/MEDAR-06-2019-0508/full/html>
- Mahalakshmi, V., Kulkarni, N., Kumar, K. P., Kumar, K. S., Sree, D. N., & Durga, S. (2022). The role of implementing artificial intelligence and machine learning technologies in the financial services industry for creating competitive intelligence. *Materials Today: Proceedings*, 56, 2252-2255. <https://doi.org/10.1016/j.matpr.2021.11.577>
- Mikhaylov, S. J., Esteve, M., & Campion, A. (2018). Artificial intelligence for the public sector: opportunities and challenges of cross-sector collaboration. *Philosophical transactions of the royal society a: mathematical, physical and engineering sciences*, 376(2128), 20170357. <https://royalsocietypublishing.org/rsta/article-abstract/376/2128/20170357/115646/Artificial-intelligence-for-the-public-sector?redirectedFrom=PDF>
- Namifard Tehran, F. , Sotudeh, R. , Haghparast, A. and hirad, A. (2025). Presenting the structural model of the efficiency indicators and components of blockchain technology in the accounting and auditing unit. *Journal of Management Accounting and Auditing Knowledge*, 14(56), 395-410. [in persian] https://www.jmaak.ir/article_23869.html?lang=en
- Nguyen, T. T. H., & Tran, N. H. (2024). Strategic management accounting implementation: how the role of big data. *Electronic Journal of Applied Statistical Analysis*, 17(1), 51-68. https://www.researchgate.net/profile/Hung-Tran-Ngoc/publication/379189863_Strategic_management_accounting_implementation_how_the_role_of_big_data/links/65fea4fca4857c7962701f89/Strategic-management-accounting-implementation-how-the-role-of-big-data-Strategic-management-accounting-implementation-how-the-role-of-big-data.pdf
- Omotoso, K. (2012). The application of artificial intelligence in auditing: Looking back to the future. *Expert Systems with Applications*, 39(9), 8490-8495. <https://www.sciencedirect.com/science/article/abs/pii/S095741741200111X>
- Perols, J. (2011). Financial statement fraud detection: An analysis of statistical and machine learning algorithms. *Auditing: A Journal of Practice & Theory*, 30(2), 19-50. <https://doi.org/10.2308/ajpt-50009>
- Santos, C., Rocha, Á., & Silva, A. (2025). Management accounting as a business intelligence system. Examination in Portuguese small and medium enterprises. *Neural Computing and Applications*, 1-15. <https://doi.org/10.1007/s00521-025-11118-4> .
- Saadati, E., Ansari, Z., Farahmandnia, A., & Asadimehr, K. (2025) The Strategy based approach to applying artificial intelligence technology in accounting: with reference to auditing and management accounting trends, [in persian] : DOI [10.22034/smajournal.2025.526677.1036](https://doi.org/10.22034/smajournal.2025.526677.1036)
- Setayesh, M. H., Rezaianzad. Z., (2023) Identifying and ranking factors affecting innovation in accounting., [in persian] : <https://doi.org/10.22054/qjma.2023.73784.2461>

- Shrestha, Y. R., Ben-Menahem, S. M., & Von Krogh, G. (2019). Organizational decision-making structures in the age of artificial intelligence. *California management review*, 61(4), 66-83. <https://doi.org/10.1177/0008125619862257>
- Sotudeh, R. , Haghparast, A. and Hiran, A. (2025). Management Accounting and Resilience Economics Model for Sustainable Development of Manufacturing Companies. *Strategic Management Accounting*, 1(1), 41-66. [in persian] <https://doi.org/10.22034/smajournal.2025.511901.1003>
- Sotudeh, R. and Abasyan, R. (2024). Explaining the accounting model of strategic management to reduce the costs of manufacturing companies in the country. *Modern Research in Performance Evaluation*, 2(4), 253-262. [in persian] <https://doi.org/10.22105/mrpe.2024.450062.1093>
- Sotudeh, R. , Hiran, A. and Sarhadi, E. (2024). Explaining the pattern of monitoring and evaluating the organizational performance of commercial companies in the country. *Modern Research in Performance Evaluation*, 3(1), 11-22. [in persian] <https://doi.org/10.22105/mrpe.2024.447861.1092>
- Yaşar, Ş. (2024). Integration of artificial intelligence in management accounting: a SWOT analysis. *Journal of Business in The Digital Age*, 7(1), 9-19. <https://dergipark.org.tr/en/download/article-file/3888560> <https://doi.org/10.46238/jobda.1474352>.
- Yazdanparast, S. M., Jamipour, M., Jafari, S, MB. (2022) Identifying and prioritizing applications of artificial intelligence in online marketing, [in persian] :(DOI): [10.22034/jbar.2022.15783.3850](https://doi.org/10.22034/jbar.2022.15783.3850).
- Zhang, C., Zhu, W., Dai, J., Wu, Y., & Chen, X. (2023). Ethical impact of artificial intelligence in managerial accounting. *International Journal of Accounting Information Systems*, 49, 100619. <file:///C:/Users/SabaNet/Downloads/ssrn-4394217.pdf>
- Yaşar, Ş. (2024). Integration of artificial intelligence in management accounting: a SWOT analysis. *Journal of Business in The Digital Age*, 7(1), 9-19. <https://dergipark.org.tr/en/download/article-file/3888560> <https://doi.org/10.46238/jobda.1474352>.