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The enabling capabilities of artificial intelligence in improving the supervisory performance of Iran's banking system

Mohammad Nasr Esfahani[1]*, Mahdi Ghaemi Asl[1], Rahele Montazer[2], Melika Esmaili[1]

1. Department of Islamic Economics and Banking, Faculty of Economics, Kharazmi University, Tehran, Iran.
2. Banking, Insurance and Customs Department, Faculty of Management, Kharazmi University, Tehran, Iran.

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Abstract

Artificial intelligence, as one of the advanced technologies, plays an important role in the banking sector of Iran. This research evaluates the position of AI-enabled capabilities in improving the supervisory performance of Iran's banking system. These capabilities include fraud detection, information security and protection, risk management, and payment system improvement. Then, the importance of using artificial intelligence in Iranian banking is examined. This study also investigates the advantages and disadvantages of using artificial intelligence in banking, improving bank performance, reducing errors, increasing security, enhancing customer experience, and the challenges and obstacles in implementing artificial intelligence in banking. The statistical population in this research includes various individuals and units active in the banking sector, as well as professors from Kharazmi University who have studied the banking industry. The research results, based on the prioritization of sub-criteria and the pairwise comparison of information security and protection capabilities, fraud detection, risk management, and payment system improvement with different types of banking using the Analytic Hierarchy Process (AHP) aided by Expert Choice software, show that token-based banking is evaluated as more important than other types of banking. The output details indicate that in token-based banking, the capability of information security and protection with a relative weight of 0.492, risk management with a relative weight of 0.489, fraud detection with a relative weight of 0.481, and payment system improvement with a relative weight of 0.444 are prioritized, highlighting the significant importance of information security and protection capabilities and risk management in improving the supervisory performance of the banking system.

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* Corresponding author: mnasr@khu.ac.ir, https://orcid.org/0000-0002-0161-9222

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Extended Abstract

Introduction

Artificial intelligence, as one of the advanced technologies, plays an important role in the field of banking in Iran. This research evaluates the role of AI-enabling capabilities in improving the supervisory performance of Iran's banking system. Examining this topic can help banks leverage the potential and benefits of using artificial intelligence in their strategic decision-making processes, as explored in this research.

Aims

The main objective of the research, which has played a fundamental role in its formation, is to examine and analyze the role and importance of artificial intelligence in improving the supervisory performance of the banking system. Additionally, the research questions addressed during this study include: What types of artificial intelligence capabilities have the most significant impact on improving the supervisory performance of Iran's banking system, and why should banks transform into AI-based institutions? What future does an AI-based bank hold? Next, the enabling capabilities of artificial intelligence used in Iranian banking are defined. These capabilities include fraud detection, information security and protection, risk management, and improvement of payment systems. Then, the importance of using artificial intelligence in Iranian banking has been examined. In this research, the advantages and disadvantages of using artificial intelligence in banking, improving bank performance, reducing errors, increasing security, and enhancing customer experience have been examined. Additionally, the challenges and obstacles in implementing artificial intelligence in banking have also been examined.

Methods

The statistical population in this research includes various individuals and units active in the banking sector, such as the board of directors of Bank Mellat, IT experts from Bank Melli, experts from the Monetary and Banking Research Institute, and professors from Kharazmi University who have studied the banking industry. Additionally, this research includes the formulation of questions and the examination of the importance and necessity of improving artificial intelligence systems in the Iranian banking industry, and it has been conducted as a scientific study focusing on banking, artificial intelligence, and the evaluation of enabling capabilities of artificial intelligence. Data analysis is of particular importance for examining the accuracy and validity of research questions or hypotheses. Nowadays, in most research studies that rely on data collected from the subject of investigation. Data analysis is one of the most fundamental and important parts of research, and therefore, after introducing the research

method, it is necessary to test the hypothesis or research questions using data and statistical methods. Subsequently, by utilizing statistical techniques and operational research methods, including the hierarchical data analysis technique that aligns with the research method and the type of variables, the collected data have been analyzed, and the research questions have been tested. To conduct this research quickly and accurately, the Expert Choice software was used, which ultimately revealed the research results.

Findings

Among the importance and necessity of this research in Iranian banking, one can mention the improvement of banking processes, as artificial intelligence, being a new and powerful technology, offers many capabilities for enhancing banking processes. This research can help identify the enabling capabilities of artificial intelligence in improving banking services, increasing speed and accuracy in operations, reducing errors, and enhancing customer experience. Also, the evaluation of AI enabler capabilities can help banks optimize their resources and increase efficiency and productivity. By better understanding the capabilities and limitations of artificial intelligence in banking, banks can make better decisions regarding the use of this technology in their processes and services, leading to a transformation in customer experience, as artificial intelligence can enhance customers' experiences in banking. By utilizing the capabilities of artificial intelligence, such as natural language processing and machine learning, banks can offer personalized services and intelligent recommendations to customers. Increasing security, where artificial intelligence can play an important role in enhancing security in banking. By using algorithms and artificial intelligence technologies, banks can identify and implement fraud detection algorithms, detect unusual patterns, and facilitate the improvement of security against cyber-attacks. The development of innovation, which research on evaluating the enabling capabilities of artificial intelligence in Iranian banking can contribute to, can help advance innovation and the progress of banking technologies. By better understanding the capabilities and limitations of artificial intelligence, banks can offer innovative solutions to improve banking systems and provide more advanced services to customers. International competitiveness, considering the rapid growth of artificial intelligence in the global banking industry, research in this area can help Iranian banks take effective steps in competing with international banks and companies. By utilizing the capabilities of artificial intelligence and incorporating it into banking processes and services, Iranian banks can enhance their competitiveness and achieve a stronger position in the banking market.

Conclusion

Considering the prioritization of sub-criteria and the pairwise comparison of security and information protection capabilities, fraud detection, risk management, and payment system improvement with various types of banking using the Analytic Hierarchy Process (AHP), the output obtained with the Expert Choice software indicates that token-based banking is evaluated as more important than other types of banking. The output details show that in token-based banking, the capability of security and information protection has the highest importance with a relative weight of 0.492. Risk management with a relative weight of 0.489 is in second place, and fraud detection with a relative weight of 0.481 is in third place.

Conflict of interest

The authors declared no conflicts of interest.

Authors' contributions

All authors contributed to the original idea, study design.

Ethical considerations

The authors have completely considered ethical issues, including informed consent, plagiarism, data fabrication, misconduct, and/or falsification, double publication and/or redundancy, submission, etc. This article was not authored by artificial intelligence.

Data availability

The dataset generated and analyzed during the current study is available from the corresponding author on reasonable request.

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