

Research Title

The Impact of Applying Artificial Intelligence Techniques to Saudi Banks

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Introduction:

Banking institutions face many changes and challenges, and these challenges have led to the emergence of new concepts in institutional management aimed at achieving the goal of survival and continuity in the world of competition and keeping pace with technological progress. This involves changing their traditional ways that do not suit the challenges they face. In this study, we will study the impact of applying artificial intelligence technologies and how banks that apply these modern technologies and methods can deal with and overcome these challenges. The efficient and effective use of artificial intelligence applications in banks can contribute significantly to facilitating banking operations, data analysis, and international communications. In addition, mitigate risks such as money laundering, fraud, and cheating. In this study, we will examine whether there is a statistically significant relationship between the application of artificial intelligence techniques and the mitigation of banking risks. We will use the questionnaire in this study, and it will be distributed to employees and managers of Saudi banks.

The Study Problem:

The problem of the study revolves around contributing to the impact of applying artificial intelligence techniques to financial institutions. Based on this, the problem of the study can be formulated as follows:

“What is the effect of applying artificial intelligence techniques in Saudi banks?” From this main question, emerge the following sub-questions:

1. What is the current state of applying artificial intelligence techniques to banks?
2. What is the effect of using artificial intelligence techniques in different areas?
3. What are the obstacles to using artificial intelligence techniques in banks?

The Study Importance:

The scientific importance of the study stems from its theoretical background related to applying artificial intelligence techniques in commercial banks and its results, which may help improve the use of artificial intelligence in financial institutions from all scientific aspects.

In terms of practical importance, applying artificial intelligence technologies helps enhance reliable information in local financial and banking operations and link them globally.

The Study Objectives:

The study mainly aims to clarify the following:

1. Recognize the current state of applying artificial intelligence techniques to Saudi banks.
2. Clarify the impact of using artificial intelligence techniques on reducing banking risks.
3. Highlight the main obstacles hindering the application of artificial intelligence techniques in Saudi commercial banks.

The Study Questions:

Based on what is mentioned in the objectives and the importance of the study, and in view of the importance of the topic, the following question arises before us:

What artificial intelligence techniques exist in financial institutions in Saudi Arabia? What is the impact of applying it?

From this question, the following sub-questions emerge:

1. What is the current state of applying artificial intelligence techniques to Saudi banks in light of Vision 2030?
2. What is the impact of using artificial intelligence techniques to mitigate banking risks?
3. What are the obstacles to using artificial intelligence techniques in commercial banks?

The Study Hypothesis:

The main hypothesis is that artificial intelligence can perform most banking operations in a way that mimics human work.

In light of the problem of the study and in line with its objectives and importance, and through this hypothesis, we aim to test the following hypotheses:

1. The first hypothesis is that there is no statistically significant relationship between the use of artificial intelligence techniques in commercial banks and mitigating banking risks.
2. The second hypothesis is that there is no statistically significant relationship between the application of artificial intelligence techniques in commercial banks and keeping pace with global financial and banking developments.

Previous Studies:

1. (Biswas & others, 2020) Study:

This study suggests that AI technologies can lead to cost reductions through efficiencies resulting from increased automation, improve human decision-making in terms of speed and accuracy when deployed after controlling risks, enhance revenue through increased personalization of services to customers and employees, reduce error rates, improve resource utilization, and uncover new and previously unrealized opportunities based on an improved ability to process and generate insights from massive sets of data. Additionally, these technologies can significantly improve banks' ability to achieve four key outcomes: higher profits, personalization at scale, differentiated comprehensive channel experiences, and rapid innovation cycles.

The researchers stated in their study that banks that have not implemented artificial intelligence technologies or fail to make it a key element in their strategy and core operations will face several risks through current trends, namely: rising customer expectations with increased adoption of digital banking services; for example, the use of online and mobile banking channels has increased by an estimated 20 to 50% due to the COVID-19 pandemic, and this may reduce their visits to branches from 15 to 45%. In their study, Biswas, Carson, Chung, Singh, and Thomas classified the most widely used artificial intelligence technologies in banks around the world as: robotic process automation (36%) for structured operational tasks; virtual assistants or chat interfaces (32%) for customer service departments; and machine learning techniques (25%) to detect fraud, support underwriting, and manage risks. Big Tech companies have already gained a foothold in financial services in selected areas (particularly in payments and, in some cases, lending and insurance) and may soon look to exploit their advantages to deepen their presence and build a broader scale.

2. (Sabharwal, 2014) Study:

This research that the researcher studied refers to Indian banks, and only new private sector banks are using AI technological applications. The researcher mentioned that these banks are using AI applications for trivial matters like facilitating automatic checkbook reordering, employee performance appraisal, credit assessment, and portfolio analysis.

3. (Yalamati, 2023) Study:

The researcher asserted that AI is a transformative force in banking. AI technologies, including machine learning, natural language processing, and predictive analytics, are becoming instrumental in increasing operational capabilities and redefining customer experiences. The researcher explained the relationship between operational efficiency and AI, citing improved operational efficiency as a key driver for integrating AI into banking systems. The researcher highlighted that AI-driven automation streamlines routine processes, reduces manual efforts, and improves resource allocation. This reduces costs and enables banks to provide services with unprecedented speed and accuracy. In addition, the researcher confirmed in his study that customer interactions have witnessed a paradigm shift in the era of digital banking. The researcher also demonstrated the versatility of AI in risk management and fraud detection, which are important components of secure banking systems.

4. (Reham M. Diab, 2022) Study:

The researcher explained the contribution of artificial intelligence technologies in the field of banking, including: managing credit card accounts, combating money laundering, and chat robots that serve the customer; fraud detection; review and evaluation of loan applications submitted to banks; financial

planning; faster customer service; stronger data protection; and other contributions made by artificial intelligence.

5. (Boraghdad & Mawsawi, 2024):

The researchers mentioned in this study that global banks are considered among the most important leading banks in the technological field due to their use of artificial intelligence in many fields. One of the global banks mentioned by the researchers is Citibank. This global bank used innovations and technologies that contributed to assisting in trade exchange, reducing time, and lowering costs. One of the technologies developed by CitiBank is Optical Character Recognition (OCR) technology, which played a major role in advancing CitiBank globally.

Theoretical Principles of the Study:

- The concept of artificial intelligence (AI):

In recent years, the concept of artificial intelligence has received great attention in all areas of life, especially in the financial and banking fields. Financial institutions and banks today have relied heavily on artificial intelligence and made it an essential strategy to enhance their performance and continuity and keep pace with technology to enhance opportunities for growth and competition. The concept of artificial intelligence has varied among researchers due to the diversity of their research fields, which has led to a wide range of definitions.

According to Azibe (2024), artificial intelligence is “the development of a technology that can think and act similarly to humans and not merely simulate human behavior in a specific field and relies on a knowledge base consisting of symbols that computers use to perform tasks.”

Artificial intelligence is one of the branches of computer science and one of its main pillars in this era. It is represented by its ability to simulate the human mind through specific algorithms, through which it can make appropriate decisions based on the entered data. It can also develop itself and learn from previous experiences. (Muqatil & Hosni, 2021)

Another researcher defined artificial intelligence as the process of imitating human intelligence through systems that imitate human thinking patterns, human behavior, and the method of complex computer algorithms. (Ibtisam Al-Rasheed, 2023)

Therefore, we define artificial intelligence (AI) as a field in computer science that aims to develop systems and programs capable of simulating human intelligence, relying on algorithms and technologies that enable devices to learn, think, and make decisions. It is used in many fields, such as

machine learning, robotics, data analysis, machine translation, etc. It is an exciting and exhilarating field that continues to develop and advance.

Artificial intelligence (AI) plays an important role in the field of banking. It was used to analyze financial data to identify patterns and trends and detect fraud. It is also used to improve the customer experience by developing self-support systems and talking to customers. Artificial intelligence (AI) also helps in improving credit processes and providing personalized banking services to customers. It is an innovative technology that helps improve the efficiency and security of banking operations.

- Saudi Data and AI Authority (SDAIA):

Saudi Data and AI Authority was established in the year 1440 AH (2019). It is the authority responsible for data and artificial intelligence in the Kingdom of Saudi Arabia, including big data. It is considered the national reference in everything related to data and artificial intelligence, including regulation, development, and dealing. It has the original competence in everything related to operation, research, and innovation in the data and artificial intelligence sectors. SDAIA aims to govern data and artificial intelligence, provide capabilities related to data and forward-looking capabilities, and enhance them with continuous innovation in the field of artificial intelligence, ensuring the Kingdom's advancement to leadership within data and artificial intelligence-based economies. SDAIA seeks to achieve the ambitions of Vision 2030 by defining the strategic direction of data and artificial intelligence and overseeing its achievement through data governance, providing data-related and forward-looking capabilities, and enhancing them with continuous innovation in the field of artificial intelligence.

- Artificial intelligence techniques used in banks include:

1. Machine learning: intelligent models trained on financial data and the banking behavior of customers to make informed decisions and analyze financial models and trends.
2. Natural Language Processing: Natural language processing applications are used to understand and analyze financial texts and communicate with customers intelligently and effectively.
3. Voice Recognition: Voice recognition techniques are used to convert spoken speech from customers into written texts for analysis and interaction.
4. Talking robots: Talking robots are used to interact with customers, provide banking services, and answer inquiries intelligently and efficiently.

These are some of the techniques used in artificial intelligence in banks. Artificial intelligence helps improve efficiency and the customer experience in banking.

Methodology and Research Methods:

Depending on the problem, importance, and objectives of the study, it will follow a descriptive and analytical approach in preparing the study, as it is the best and most appropriate method for the nature of the current research.

The Study Tools:

The study population consists of bank managers and employees in Saudi Arabia. To complete this study, questionnaires will be distributed to study the impact of applying artificial intelligence techniques to Saudi banks. The questionnaire will consist of three main axes:

1. The first axis is identifying the current state of applying artificial intelligence techniques in Saudi banks.
2. The second axis is evaluating the impact of using artificial intelligence techniques in mitigating banking risks.
3. The third axis is identifying the main obstacles to the use of artificial intelligence technologies in commercial banks.

The Study Boundaries:

- Objective boundaries: The study is limited to the reality of applying artificial intelligence techniques in commercial banks and their impact on mitigating banking risks.
- Geographical boundaries: financial and banking departments in Saudi banks and their branches in the Kingdom, where the questionnaire is likely to be distributed during the period from August to December 2024.

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