

Effectiveness of Artificial Intelligence Applications as a Mechanism for Banking Risk Management and Prediction: A Quantitative Assessment

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Abstract:

This article examines to what extent artificial intelligence (AI) can act as an effective mechanism for predicting banking crises and managing banking risks. It argues that traditional risk forecasting tools have proven insufficient in a highly complex financial environment. Using an analytical descriptive and inductive approach, the study highlights how AI techniques particularly neural networks and intelligent algorithms enable banks to analyse vast amounts of structured and unstructured data and to detect hidden patterns linked to credit, market, liquidity, and operational risks. The findings show that AI can significantly enhance early warning capabilities, improve the quality of lending and fraud detection decisions, and support proactive, data-driven risk management. The article concludes that realizing this potential requires appropriate digital infrastructure, skilled human resources, and robust ethical and regulatory frameworks.

Keywords: artificial intelligence, banking risk management, crisis prediction, neural networks, expert systems.

1. INTRODUCTION :

With the global financial system undergoing radical transformations, banks and financial institutions are more vulnerable than ever to the effects of complex and overlapping risks, whether credit, market, operational, or systemic. In recent decades, we have witnessed major financial crises, such

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as the 2008 global financial crisis, which demonstrated a severe deficiency in traditional forecasting and control mechanisms and prompted the financial sector to radically rethink its risk management methods. In this context, AI has emerged as a pivotal force capable of transforming the way financial risks are detected, analysed and predicted, by analysing a huge amount of unstructured and diverse data in real time, and extracting hidden patterns that neither humans nor traditional statistical models can detect. Predicting a crisis is no longer a prediction based on lagging indicators, but rather a dynamic, intelligent, interactive predictive process that enables banks to make proactive and informed decisions. This feature is critical in building more resilient, sustainable, data-age-friendly financial systems and accelerated financial complexity.

Based on the above, the following problem can be raised:

To what extent can artificial intelligence contribute as an effective mechanism in predicting crises and banking risks?

Study hypotheses:

This research is based on a set of hypotheses that will be tested and analysed:

- ❖ Artificial intelligence is the behaviour and certain characteristics of computer programs that make them mimic the mental abilities of humans and their working patterns. One of the most important of these characteristics is the ability to learn, deduce and react to situations that are not programmed in the machine
- ❖ Artificial intelligence cannot fundamentally improve banking risk prediction compared to conventional models.

Importance of study:

This study is important of the importance of the subject, as it addresses the applications of artificial intelligence and its role in the management of banking risks in banks, which is one of the most important topics in the banking sector due to the wide spread of applications of artificial

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intelligence and its use in various sectors such as the banking sector and the effects of this use on this sector.

Research objectives:

- Clarify the concept of banking crises and their causes and methods and indicators of measurement.
- Highlight the role of artificial intelligence in the development of risk prediction models.
- Study the most important techniques and smart algorithms used in predicting banking crises.
- Evaluate the effectiveness of artificial intelligence compared to traditional risk management methods.

Approach of the study:

In order to achieve the objectives of the study and access to the best methods and methods to reveal the effectiveness of the application of artificial intelligence in the management of banking risks, and then the use of the following scientific methods.

Analytical descriptive approach: By describing some theoretical aspects of the subject by identifying the basic terms related to artificial intelligence and banking risk management and analysing the relationship between them by studying the importance and effectiveness of artificial intelligence in banking risk management through the use of its applications and methods.

Inductive approach: Through the study and extrapolation of previous studies related to the topic of research and how to use them in addressing the problem of research, has been relied in the preparation of the study on several sources, both library or from the Internet and memos and periodicals.

Theme 1: Artificial Intelligence: Frameworks and Concepts

First, the concept of artificial intelligence.

The behaviour and certain characteristics of computer programs make them mimic the mental abilities of humans and their working patterns, one of the most important of these characteristics is the ability to learn, deduce and react to situations not programmed in the machine¹.

A computer program is able to make balanced decisions based on the current context and the overall result of using such a system is to enhance the decision goals to achieve this achievement Artificial intelligence system must be able to simulate human actions such as image identification and that the correct operation of artificial intelligence requires the system high operating capacity and large amounts of data².

Providing the calculator with the information and characteristics of human intelligence through the creation of software and applications with high technologies and better exploitation within the sports organization³.

Second: The importance of artificial intelligence.

The importance of artificial intelligence can be summarized as follows⁴:

- ✓ artificial intelligence is very important due to the comprehensiveness of its applications, its use and systems in all fields where it can be used in the tourist, medical, industrial, and scientific aspects, as it facilitates the completion of tasks and operations
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¹ Souad Boubha, Artificial Intelligence: Applications and Implications, Journal of Financial and Business Economics, vol. 06, No. 04, 2022, p. 93.

² Rashid Nazim Hassan, Avram Mi Ablahad, Auditing Bias in Artificial Intelligence in Light of the Institute of Internal Auditors "Artificial Intelligence Audit Framework (ia) - An Analytical Theory Study, Journal of Contemporary Business and Economic Studies, Vol. 06, No. 01, 2023, p. 433.

³ Omar Abdel Rahim Naser Ahmed, The Reality of the Use of Artificial Intelligence Applications in Human Resources Management in the Fund for the Welfare of Youth, Youth and Sports in the Right-wing Republic, Professional Magazine, Vol. 12, No. 01, 2025, p. 05.

⁴ Aya Ben-Gru Al-Thib, Dad Ben Karat, The Reality of Artificial Intelligence in Industrial Enterprise Case Study "Siemens Foundation's Use of Artificial Intelligence at the Sollas Foundation Level, Journal of Economic and Financial Research, Vol. 12, No. 01, 2025, pp. 32-33.

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- ✓ AI systems are independent and neutral in the processing of information, allowing for accurate, objective and more reliable decisions.
- ✓ AI technologies automate routine processes, allow humans to focus on creative aspects, and reduce risk through the use of robotics in operations.
- ✓ AI plays an important role in the life of an individual and society as it represents an interconnected set of many technologies working together to improve analytics, use resources, automate processes and spend routine activities and leave the opportunity for individuals to achieve creative tasks.

Third: Types, fields, applications of artificial intelligence

1: Types of artificial intelligence: Artificial intelligence can be divided into different types, which are as follows:

A: Narrow or weak artificial intelligence: Narrow artificial intelligence is a type capable of performing a task dedicated to intelligence, which is the most common type currently available in the world of artificial intelligence cannot be narrow artificial intelligence to exceed its field or limits where it is trained on only one task and also called weak artificial intelligence and can perform routine, repetitive and mundane tasks that humans prefer to avoid while excelling in the fields Specialized it is not able to generalize any reuse of knowledge gained across different fields¹.

B: Strong artificial intelligence: Also called general artificial intelligence, where it represents the ability to think, analyse and understand the general context and perform complex tasks that weak artificial intelligence cannot do or even understand, it is characterized by strength and adaptability and

¹ Ahmed Amira, Abdul Qader Rotal, The Importance of the Application of Artificial Intelligence Techniques in Improving the Quality of External Auditing Company Case Study (Deloitte), Journal of New Economy, Vol. 16, No. 01, 2025, p. 16.

perform various functions in different situations in addition to the ability to sense and learn from previous experiences and understand the environment in which it exists and behave in a similar way to the behaviour of the human mind¹.

C: Super AI: These are models that are still only a theoretical idea or a project under experiment that can be distinguished into two patterns. The first pattern, called self-consciousness, attempts to understand human thoughts and emotions that influence human behaviour. The second type, called theory of mind, is the next stage of artificial intelligence systems that are currently being worked on by scientists in order to innovate and develop, and in this pattern the machine will be able to predict the feelings of others and their situations and interact with them².

2: Areas of artificial intelligence.

Artificial intelligence was able to impose its important role in all fields and in the performance of many difficult tasks that provided a simple and easy life for man through the use of artificial intelligence techniques that saved him effort and time in the performance of many functions and embodied the most important areas of artificial intelligence most used in³:

Artificial intelligence with other scientific fields includes: Communication, time management, health and safety, education, goals and information needs, games and entertainment and activities.

Artificial intelligence and infrastructure: Include transportation, business and agricultural decision-making, engineering, architecture, energy and conservation.

¹ Khaled Shwini, Ali Sardouk, Abdul Razzaq Hamdouche, Foresight of Educational Artificial Intelligence, 8 May 1954 Guelma University, Journal of Humanistic Research and Studies, vol. 18, No. 01, 2024, p. 160.

² Rashida Hashemi, Abdelwahab Mliani, Conceptual Framework for Artificial Intelligence, Heritage Magazine, vol. 14, No. 02, 2024, p. 51

³ Linda Saimoud, Suhaila Dahmani, Artificial Intelligence Digital Technology Leading to the Creation of an Emerging Educational Experience in Algeria - Enkidia A Model Company, Journal of Media and Communication Studies, Vol. 02, No. 02, 2022, pp. 91-92.

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AI and the consumer domain encompass both the evolving relationship with computation and sensing, logic and learning, custom smart applications, products and services, challenges and opportunities with data and privacy. Artificial intelligence in science includes: Machine discovery, designing experiments, cutting out resources, interpreting data, chemistry, medicine and climate.

Artificial Intelligence and Applied Fields: Natural Language Processing, Computer Vision Technology, Speech and Voice Recognition Technology, Expert Systems Technology, Computer Intelligent Teaching and Learning, or Intelligent Education Systems.

3: Artificial intelligence applications: The applications of artificial intelligence are embodied in the following:

A: Artificial neural network.

It is a data processing system in the same way that the natural neural network of a human or an organism contains a large number of small systems for processing information called a neuron and its main advantages are compared to the techniques applied by¹:

- Their ability to integrate highly heterogeneous information sources by handling incomplete data and data that is confused or contains many extreme values.
- A powerful statistical analysis tool because of its ability to learn from past experience and modify itself according to new data.
- Ultimate accuracy and realism in finding future forecast values to end the standard error in the results obtained.
- Using the designed program does not take time and therefore leads to quick access to the desired results.

¹ Umm Kalthoum Collectors, The Reality of the Use of Artificial Intelligence Applications and Its Relationship to Administrative Empowerment from the Point of View of Employees of Communication Company Oredo Algeria, Journal of New Economy, Vol. 14, No. 01, 2023, p. 45.

B: Expert systems.

The system defines the expert as: That intelligent program that uses the rules taken from human experience in the form of conditions and results in a particular field and uses methods of derivation and inference to extract the reasoned results of the reasons resulting from the conformity of these conditions or results with a condition or result of a particular problem to be solved, and expert systems are used in many areas, including¹:

- Medical diagnosis - Aviation - Geological prospecting - Electronic industries - Chemical industries - Engineering design – Law - Agriculture - Computer technologies - Nuclear technologies and production planning and scheduling.

Theme 2: Theoretical foundations of the banking risk management function

Banking institutions of all kinds are exposed to many risks that affect their performance and activity, we will try to expose them in this axis by defining these banking risks and types, and manage and measure these risks.

First: Definition of banking risks

The risk or risk with which the bank deals is futuristic, representing the change that occurs on the value of each share, the value of private funds or a particular asset, And it's pertinent to every financial decision, when the financial flows that are expected later are not predictable Whoever makes the financial decision must choose between several specific possibilities², It is also defined as all decisions that can affect the change in the market value of a bank³.

¹ Saadia bin Thamer, Jamal bin Farhat, Perspectives on the Adoption of Artificial Intelligence and the Challenges of its Application, Heritage Magazine, vol. 14, No. 01, 2024, p. 106.

² Edroug Djamel, Assessment and Management of Loan Risk in a Commercial Bank Case Study of the National Bank of Algeria, Thesis for a Master's Degree in Economic Sciences, University of Algiers, 2001, p.

³ Babacar Yes Babacar: Banking Risks: Types, Money Magazine, No. 6, September 2006, p.5

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It can also be defined as the likelihood of the bank experiencing unexpected and unplanned losses and/or fluctuating expected return on a particular investment. That is, this definition refers to the view of internal auditors and managers to express their concern about the negative effects of potential future events that have the potential to affect the achievement of the bank's approved objectives and the successful implementation of a strategy.

The American Institute of Auditors, in determining the objectives of internal audit, stressed the need to include these objectives to evaluate the adequacy of the system of internal control, administrative management and general controls of the works and their effectiveness. General business controls are intended to control the fundamental risks facing the bank associated with its operations such as credit risk, currency exchange risk, profit and transaction risk, negative publicity, etc.

Second: Management and measurement of banking risks

In general, the Bank's credit risk management and measurement requires, in addition to the competencies assigned to each of the credit sector departments (Central Credit Management, Credit Follow-up Management, Troubled Debt Liquidity Management...), the existence of a system for measuring and managing risks.

1: Credit risk management and measurement:

Strong credit risk management is crucial to a bank's stability. The Board is responsible for approving and reviewing the Bank's credit risk strategies and lending policies. On the other hand, the Bank's senior management has the responsibility to implement the policies approved by the Board of

Directors and the need to develop policies and procedures as a way to achieve effective management of lending risks. The Department shall¹:

2. Liquidity risk management and measurement:

A. Key principles and tools for liquidity risk management:

Ensuring adequate liquidity in the Bank is the responsibility of the Board of Directors and senior management and therefore the Bank to prepare comprehensive liquidity policies that take into account activities within the budget as well as extrabudgetary activities². Liquidity management in the Bank involves the establishment of several limits:

- Limits on cumulative increases of accrued liabilities on assets in the short term.
- Limits to reliance on short-term funding.
- Legal requirements such as maintaining the minimum ratio of public debt instruments to local currency deposits and compliance due to gaps established according to the system of the scale of benefits.
- The general liquidity position is periodically reported as a requirement of the Central Bank.
- The entitlements of all asset classes and liabilities should be monitored.
- According to recent banking developments, the monetary supervisory authorities in developed countries have asked their banks to follow a modern method of measuring their liquidity ratios in order to measure and manage liquidity risks, and the modern method is the liquidity system according to the accrual scale.

B. Liquidity system according to the accrual scale:

Liquidity is based mainly on the rule of compatibility between the maturities of liabilities and the maturities of assets to ensure that there are no funding pressures Determining the optimal compatibility between the

¹ Erahim Al-Karasneh, Basic and Contemporary Frameworks in Banking Supervision and Risk Management, Arab Monetary Fund, Economic Policy Institute, Abu Dhabi, March 2006, p. 163-164.

² Ibrahim al-Karasneh, op. cit., p. 38.

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assets and liabilities of each bank is extremely difficult. The responsibility lies with the management of each bank because of its capabilities. The supervisory authorities summarize their task in this regard by requiring banks under their supervision to maintain a minimum amount of liquid funds. The accrual scale according to the asset and liability timelines allows for a reduction in future cash flows to offset external cash flows during periods of time not specified, usually commencing with immediate receivables from both the liability and asset sides. Cash inflows arise from accrued assets, non-liquidable assets and credit lines granted to the bank that can be exploited and utilized.

C: Liquidity Risk Measurement Indicators¹:

- Basic deposits/total assets.
- Cash and bank balances and treasury bills/total assets.
- Cash and balances at banks and treasury bills/deposits and balances due to banks.
- Total loans/customer deposits.
- Foreign currency loans/gross loans.
- Sector deposits in foreign currencies/total loans in foreign currencies.
- Foreign currency deposits/total deposits.
- Sector deposits in foreign currencies/total deposits in foreign currencies.

3. Market risk management and measurement:

A. Key principles and tools for measuring market risk:

- The Bank shall use an internal market risk model to calculate the value under daily risk on trading positions for the past day, investment assets and records of the Bank.
 - ELINK analyses the value at risk to measure the market risk statistically on its commercial loans, investments and liquidity centers according to the importance and nature of those positions. This method predicts future losses
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¹ Samir al-Khatib, op. cit., p. 232

according to a predetermined level of confidence and provides risk measurement results and basic information that enables the General Administration to make judgments on the bank's exposure to market risks.

- Interest rate exposure to bank records is calculated accurately as well as reviewed on the basis of market rates for portfolios subject to risk analysis.
- The Bank evaluates its position and obtains accurate information from the market using accurate models and in a regular manner through public market sources and statistics in order to ensure the Bank's ability to achieve the best results through risk measurement tools.
- To ensure that market risk limits are measured, the Bank analyzes a scenario to calculate the value at risk on the limits of trading positions that have been internally adopted for various trading instruments, and the results of this scenario are taken into account when determining the required limits and trading strategies.

Here is a brief overview of the most important market risk management:

- Measuring interest rate risk.
- Assets sensitive to interest rate trend/total assets.
- Assets sensitive to interest rate trend/total liabilities.
- Sensitive assets/liabilities.

4. Manage and measure of operating risk:

The development and complexity of financial services, the increased use of technology and the conduct of banking activities at an international level, as well as the reliance on others to provide some services, have increased the importance of operating risks.

A. Collect data on operating losses¹:

There are several factors that lead to the non-disclosure of operational risks, including saving time and effort, fear of the spread of these events or taking responsibility as a result, in addition to the desire to forget these events.

- Insurance against any action taken in case of disclosure of such losses.
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¹ Samir al-Khatib, op. cit., pp. 241-242.

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- Confidentiality: Not knowing who did it.
- Separation between the entity that collects and analyses such data and the entity on the basis of which procedures or penalties are imposed.
- Easy operation loss reports.

B. Proper procedures for management and control of operational risks:

- The Bank's Board of Directors and senior management must ensure that there is an effective framework for managing this type of risk, including a clear organizational structure that outlines the powers, roles and responsibilities of all operational risk management components, as well as the provision of support tools to define and evaluate key risk management. The bank must also have policies and procedures in place to control or mitigate operational risks. There must also be constant monitoring to control these risks¹.
- The senior management of the Bank shall be responsible for the implementation of the policy approved by the Board of Directors in this regard and shall establish the procedures and instructions related thereto.
- The flow of information is a key element for the success of this policy, so there must become a culture of reporting operating losses so that senior management in the bank as well as the Board of Directors become as it happens, and tell employees what is expected of them.

Theme 3: AI Applications as Effective Banking Risk Management Mechanisms

First: Uses of artificial intelligence applications in banking risk management

¹ Ibrahim al-Karasneh, op. cit., p. 41.

Artificial intelligence technologies and applications have brought about pivotal changes in various aspects of banking activity and patterns of customer interaction in the banking sector, among these techniques used in banks are the following:

1. Artificial neural networks:

Neural networks have evolved from their inception in the 1940s to where they are today. A system designed to simulate the way human depth performs a particular task. It is a huge processor distributed in parallel, and a component of simple processing units. These units are only computational elements called neurons or nodes that have a neural property where they store scientific knowledge and experimental information to make them available to the user by adjusting weights.

It is also known as computational models that tend to simulate the way the human brain and nervous system process various tasks, and this technology has witnessed a remarkable development supported by the progress of neuroscience, which contributed to a deeper understanding of the mechanisms of thinking and reasoning in humans, and these networks rely on distributed processing processes carried out in parallel through simple processing units known as "Nodes" or "neurons" that collaborate to simulate human thinking and decision-making.

2. AI algorithms: AI algorithms can be used to analyse case history and identify any potential problem with it. This involves using machine learning to create accurate models that enable financial experts to follow specific trends and observe potential risks. They can also ensure more reliable information in future training models. Using machine learning to manage risk means large amounts of data can be processed quickly in a short period of time. Structured and unstructured data can also be managed using cognitive computing. It involves creating systems that are able to self-learn,

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recognize patterns, understand language and ultimately act without human intervention¹.

One of the most prominent examples of the use of artificial intelligence in banking operations is the use of Banco Santander has been dealing with customers in a customer center in Spain since 2010, in addition to using a bank UBS, Amazon's Alexa customer service assistant, creates Morgan Stanley AI unit to monitor fraud and bank usage ABN AMRO is a large-scale artificial intelligence network that includes a digital assistant for customers, fraud detection tools, risk analysis management, and a bank announcement HSBC says it will join the wave of artificial intelligence being used to monitor money laundering, fraud and terrorist financing.

3. Cyber Security:

Artificial intelligence has prevented bank fraud for years now. It can help detect credit card fraud, which has risen in recent years with the growth of e-commerce and online transactions, as artificial intelligence works to combat money laundering that comes from illicit sources and detect fraud using data analysis techniques in the banking sector known as -fico falcon, which relies on a neural network to deploy advanced AI systems based on deep learning When something seems broken, fraud detection systems assess customer behavior, location, purchase patterns and activate the security mechanism².

Artificial intelligence can significantly improve the effectiveness of cybersecurity systems by leveraging data from past threats and learning patterns and indicators that may seem unrelated to predicting and preventing attacks. In addition to preventing external threats, AI can also

¹ Sadawi Noura, Applications of Artificial Intelligence in Arab Banks - UAE Experience, Journal of Economic Additions, Vol 08 No. 01, 2024, p. 215.

² Azmi, The Impact of Administrative Applications of Artificial Intelligence on the Competitive Advantage of Business Organizations Applied to Branches of Commercial Banks, Mansoura City, Scientific Journal of Financial and Commercial Studies and Research, vol. 1, No. 01, p. 201.

monitor internal threats or breaches and suggest corrective actions, preventing data theft or misuse.

4. Credit/direct lending

In traditional banking transactions, credit applications such as home loans, car finance and personal loans usually take a few days before being processed by the bank and the customer is given approval for the required loan, but using artificial intelligence the situation has changed, as the customer can submit his applications while the computer program (Smart mobile devices review his credit rating, history of past payments and other factors that help assess whether the customer is eligible or not for the loan. Customers and banking transactions are reviewed to determine whether an individual or company is creditworthy. All banking transactions from money transfer from one account to another. Opening a new account. Smart interaction with the client and anticipate his requirements with the study of the local interest market and adapt to the requirements of the depositor, estimate, classify and anticipate the credit capacity of the client.

AI is also useful in helping alternative lenders determine customers "creditworthiness by analysing data from a wide range of traditional and non-traditional data sources. This helps lenders develop innovative lending systems backed by a robust credit scoring model. In addition to creating reports, reports can be written by collecting large amounts of data and putting them in the form of paragraphs that highlight the review and evaluation of loan applications submitted to banks, financial planning to create an investment portfolio for investors. Financial planning and planning to secure the necessary financial resources for the marketing of products. Review the budgets of branches, advice and advice system for long-term investments.

Conclusion:

With the rapid transformation of the banking sector and the increasing complexity of financial and operational risks, reliance on traditional risk

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management methods is insufficient to ensure stability and efficiency. AI stands out as a proactive and intelligent solution that enables banks to predict risks before they occur, analyse them with high accuracy, and respond quickly and effectively. By integrating machine learning technologies, big data analysis, and intelligent detection systems, banks can not only reduce potential losses, but also improve the quality of services, and boost trust among customers and regulators. To make the most of these technologies, it requires a clear regulatory framework, sustainable investment in cadres and infrastructure, while maintaining ethics and transparency.

Findings:

AI plays a pivotal role in managing and predicting banking risks before they occur, thanks to its ability to analyse vast amounts of data quickly and accurately, and to extract complex patterns and relationships that may not be perceived by humans. The following are the main aspects of the importance of artificial intelligence in this area:

- Artificial intelligence uses predictive models (such as neural networks, machine learning algorithms) to analyse borrowers "behaviour, credit history, income, expenses, and even digital behaviours.
- It can identify the likelihood of default with higher accuracy than traditional methods, helping banks make safer lending decisions.
- Analyse transactions in real time to detect abnormal or unusual patterns.
- Smart systems are constantly learning from customer behaviour and updating detection rules, making them more effective in the face of sophisticated fraud methods.
- Artificial intelligence can monitor internal processes, identify weaknesses, human errors, or technical failures before they turn into crises.
- Using big data analytics and forecasting models, banks can anticipate market volatility, interest rate changes, and exchange rates.

- News, social media, and economic reports can be integrated into models to improve forecasting accuracy.

Recommendations for future studies

Based on the above It can be suggested that:

1. Spreading cultural awareness about artificial intelligence to integrate it into banking risk management by holding seminars, international conferences and study days to exchange ideas, experiences and knowledge in all its aspects.
2. Adopt transparent and explainable AI models to ensure system decisions are understood and bias avoided.
3. Banks invest in developing digital infrastructure and upgrading data collection and storage systems to support AI analytics.
4. Training human cadres to deal with artificial intelligence tools and integrate them into the daily workflow.
5. Cooperate with regulators to develop ethical and legal standards for the use of artificial intelligence in the financial sector.
6. Conduct periodic tests and continuous updates of smart models to ensure their effectiveness in light of changing economic and security conditions.

References:

- 1-Ahmed, O. A. R. N. (2025). The reality of the use of artificial intelligence applications in human resources management in the Youth, Youth and Sports Fund in the Right-wing Republic. *Professional Magazine*, 12(1), 45-67.
- 2-Al-Ayadi, F., & Ghanem, G. (2024). Artificial intelligence from the perspective of John Searle. *Al-Hikma Journal of Philosophical Studies*, 12(3), 123-145.
- 3-Amira, A., & Rotal, A. Q. (2025). The importance of applying the principles of artificial intelligence in improving the quality of external auditing: Company case study (Deloitte). **Journal of New Economy*, 16(1), 112-135.
- 4-Ben Gru Al-Thib, A., & Ben Karat, W. (2025). The reality of artificial intelligence in industrial enterprise: Case study "Siemens Foundation's use of artificial intelligence at the Sollas Foundation level". *Journal of Economic and Financial Research*, 12(1), 78-102.
- 5-Bin Khadim, O., & Laayadi, E. (2024). The role of artificial intelligence applications in the development of human resources within sports institutions (field study of the

Effectiveness of Artificial Intelligence Applications as a Mechanism for Banking Risk Management and Prediction A Quantitative Assessment

Directorate of Youth and Sports in Souk Haras State). Journal of Sports Performance Sciences, 6(1), 23-45.

6-Bin Thamer, S., & Bin Farhat, J. (2024). Perspectives on the adoption of artificial intelligence and the challenges of its application. Magazine, 14(1), 89-110.

7-Boubha, S. (2022). Artificial intelligence: Applications and implications. Journal of Financial and Business Economics, 6(4), 34-56.

8-Chouini, K., Sardouk, A., & Hamdouche, A. R. (2024). Foresight of educational artificial intelligence, 8 May 1954 University Guelma. Journal of Human Research and Studies, 18(1), 140-160.

9-Collectors, U. K. (2023). The reality of the use of artificial intelligence applications and its relationship to administrative empowerment from the point of view of employees of Communication Company Oredo Algeria. Journal of New Economy, 14(1), 56-78.

10-Hashemi, R., & Meliani, A. (2024). Conceptual framework of artificial intelligence. Heritage Magazine, 14(2), 67-89.

11-Hassan, R. N., & Ablahad, A. M. (2023). Auditing bias in artificial intelligence in light of the Institute of Internal Auditors "Artificial Intelligence Audit Framework (IIA)": An analytical theory study. Journal of Contemporary Business and Economic Studies, 6(1), 12-34.

12-Mokdad, I., & Hamouda, N. (2024). The impact of artificial intelligence applications on the effectiveness of human resources management in the Hotel Marriott series. *Journal of Economics and Business Administration, 8(1), 56-78.

13-Saimoud, L., & Dahmani, S. (2022). Artificial intelligence digital technology leading to the creation of an emerging educational experience in Algeria - Enkidia a model. Journal of Media and Communication Studies, 2(2), 45-67.

14-Edrog, J. (2001). Evaluation and management of loan risk in commercial banks: A case study of the National Bank of Algeria [Master's thesis, University of Algiers]. University Repository.

15-Babker, Y. B. (2006). Banking risks: Their types. Al-Amwal Magazine (6), 23-45.

16-Al-Zubairi, H. M. (2000). Bank management: Strategy for mobilizing deposits and granting credit (1st ed.). Al-Warraq Publishing House.

17-Al-Khatib, S. (2005). Measuring and managing risks in banks. Al-Ma'arif, Alexandria.

-
- 18-Abdul Aal, T. (1999). Evaluating the performance of commercial banks: Analysis of return and risk. University House, Alexandria.
- 19-Abdul Aal Hammad, T. (2001). Evaluating the performance of commercial banks. University House, Alexandria.
- 20-Al-Karasneh, I. (2006, March). Basic and contemporary frameworks in bank supervision and risk management. Arab Monetary Fund, Institute of Economic Policies, Abu Dhabi.
- 21-Sudawi, N. (2024). Applications of artificial intelligence in Arab banks - Experience of the United Arab Emirates. *Journal of Economic Additions*, 8(1), 34-56.