

Artificial Intelligence and Its Impact on Banking Systems

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Abstract:

My research focuses on the impact on banking systems caused by artificial intelligence. This research emphasizes many things such as governance, customer service, employment, operational efficacy, risk management and fraud detection. Using a qualitative secondary-research methodology, this research uses evidence extracted from regulatory and institutional publications. The results show that AI can analyze data related to this field, help in finding out suspicious financial activities, accomplish repetitive processes and provide fast digital assistance. On the other hand, AI causes many issues such as cybersecurity, privacy, biases, reliability, workforce transformation and clear explanations. As a conclusion of this study, AI and human resources should go hand in hand in this field with human effort in employee training, governance, oversight and supervision and compliance. Further researches should use banking level data to measure the financial and operation level of effective and efficiency of AI integration.

Keywords:

Artificial Intelligence (AI), Banking Systems, Risk Management, Fraud Detection, Customer Service, Employment

Introduction:

As seen in all sectors, AI is always becoming a major role player in banking systems as well. Banks depend largely on compliance procedures, human processing, data and human judgement. The added AI systems have the ability of pattern recognition, automation of basic tasks, detection of suspicious transactions, assisting clients through chatbots and analyzing data. With the sharp increase in technology and digital competition in the banking field, financial institutions are testing if the addition of AI helps improve effectiveness and efficiency while keeping up with compliance regulations, fairness and security.

Banks and financial institutions are an essential part of the global and national financial system, as they directly attribute to growth and firm performance as argue Mawad and Freiha (2024) while studying the specific case of Lebanon.

The research problem is that AI is a double-edged sword since it has lots of benefits, but also lots of downsides. The banking systems face many risks that are a result of AI integration such as: lending biases, cybersecurity gaps, invasion of privacy, automated output fallacies, technology dependence and employment changes. Therefore; speed and cost management aren't enough to evaluate the performance of AI in this field, factors such as risk management, customer protection, governance and human oversight should be highlighted and taken into consideration.

The main research question is: How does artificial intelligence affect the banking system in terms of operational efficiency, risk management, customer experience, and employment?

This research holds the following objectives: analyzing AI contributions to risk management and fighting fraud, examining AI's added value on the banking efficiency, highlight challenges related to biases and privacy, evaluating the effect of AI on customer service and financial inclusion and understanding how AI will transform employment and the workforce and the skills that are required to be developed in order to fulfill the market's needs.

Literature Review:

The literature view in banking considers AI as a technology that improves decision-making and helps in automating data-intensive transactions but also creates systematic and governance risks. The Bank for International Settlements (2024) shows that artificial intelligence can have an influence in intermediating, assessing risks, customer relationships and financial markets structuring. Nevertheless, including AI highlights the need for string governance because AI systems aren't perfect and can make mistakes that spread across the institutions.

When it comes to credit risk management, using machines will help us identify and process more variables than traditional methods and this can lead to identifying patterns directly related to default risks. Nevertheless, the European Banking Authority (2023) believes that financial institutions must consider the quality of data, protection of customers, transparency in explanation and compliance with the usage of advanced technologies. An accurate model in predicting seems like a perfect solution, but it can still be problematic if the decisions taken cannot be proved or explained and if it favors some groups over others.

Technology has positively attributed to banks performance especially in difficult situations (El-Chaarani et al., 2023), by enabling smarter decisions (Subrahmanyam & Beainy, 2027), however this positive impact is heavily dependent on technology adaptation (Bejjani et al., 2024).

Furthermore, it was technology that enabled the creation of cryptocurrencies, which constitute today an important asset in most financial institution's balance sheet (Beainy & Kamel, 2026). However, for banks to thrive proper governance needs to match the technological advancements in the industry (Athari et al., 2023). AI in banks and audit companies can increase financial transparency (Saber & Sassine, 2022) by increasing fraud detection (Sawaya et al., 2026).

In the war against fraud and in the AML (anti-money laundering) concept, AI can also play a major role. Artificial intelligence can identify unusual behavior and suspicious activities by analyzing patterns in real time. The Financial Action Task Force (2021) believes that the new technologies being used and integrated will play a major role in financial crime prevention, but we to keep in mind that for that to work institutions must manage data protection, model reliability, and the risk of criminals adapting their behavior.

Customer support and service are an essential application and practice in this industry. Virtual assistants and bots can reduce waiting time, can offer 24-hour response and assistance with routine questions and help in transactions. When an issue is hard to fix, customers may need human intervention and help. This shows that AI is an add on tool and a complementary one since I cannot do all the work on its own.

Employment effects are mixed. The key to reducing repetitive and casual administrative work is automation. This will also lead to an increase in demand in governance and compliance, data analysis, cybersecurity and model validation. As argued by the International Monetary Fund (2024), AI will create a major in the market demand for employment and jobs created and it will all depend on whether workers are replaced, fired or reorganized and supported with and through this technology.

As mentioned before, examining the effect of AI on banking is the research gap addressed here. Usually, discussions focus on one aspect such as: fraud or compliance. But in this research everything is being addressed and taken into account and put into one framework (efficiency, employment, risk, customer experience...)

Methodology:

This research uses a qualitative secondary-research design supported by comparative analysis. This study relies on institutional publications and regulatory sources, rather than collecting data and information from invented survey responses.

In this research, the unit being analyzed is the banking system. The banking system's four main dimensions are being highlighted with great attention as well (operational efficiency, risk management, customer experience, and employment). The new and detached factor -also known as the independent factor- is artificial intelligence technologies. The dependent dimensions are processing efficiency, fraud and risk-management capacity, service accessibility, and changes in job tasks and skills.

The analysis has a three-step process. Starting with, important publications coming from major institutions are reviews to find applications and risks. Adding to that, thematic groups and categories help in sorting out the evidence found. Ending with, the findings are compared using a table split into two categories: risks and potential benefits. No causal conclusion can be reached from the statistical study made because the study is based on an original bank dataset or organized experiment. The main obstacle or limitation in this methodology is that different definitions, measurements and samples are being used in institutional reports. As a result, the findings aren't seen as universal numerical estimates, but they are seen as structured synthesis of the existing evidence.

Results:

The review shows that AI affects the banking system through multiple interconnected channels. The table below shows the areas of impact and the steps for responsible implementations.

Banking dimension	Observed or documented contribution	Main risk or condition
Operational efficiency	Automation can accelerate repetitive processing, document analysis, customer requests, and internal workflows.	Poor implementation, inaccurate outputs, and integration costs can reduce expected benefits.
Risk management	AI can analyze large datasets, support credit-risk assessment, and detect unusual transactions.	Bias, weak data quality, limited explainability, and model drift require controls.
Fraud and AML	Pattern recognition and real-time monitoring can help prioritize suspicious activity.	Criminals may adapt; false positives and privacy issues must be managed.
Customer service	Chatbots and digital assistants can provide continuous support and faster responses.	Customers need human escalation, transparency, and protection of personal data.
Employment	Routine tasks may be automated while demand increases for technology, compliance, and analytical skills.	Reskilling is needed, and some roles may be reduced or redesigned.
Governance	AI can support monitoring and decision processes when integrated with controls.	Accountability must remain clear, with human oversight and regulatory compliance.

Table 1: Areas of AI impact on banking systems

Table 1 shows that AI's benefits are not independent from its risks. For example, a faster automated credit decision may improve efficiency, but the bank must also ensure that the model is fair, explainable, and subject to review. Similarly, AI-based fraud monitoring may increase the volume

of transactions screened, but investigators still need to evaluate alerts and avoid unnecessary restrictions on legitimate customers.

A conceptual impact assessment is presented below. The categories represent the direction of the relationship identified in the reviewed literature, not a statistical score or a measured ranking.

Area	Potential effect of AI	Required safeguard
Processing time	Reduction in repetitive manual work	Testing, monitoring, and fallback procedures
Decision support	More extensive analysis of financial data	Explainability, validation, and human review
Fraud detection	Earlier identification of suspicious patterns	False-positive controls and investigator oversight
Customer access	More continuous digital assistance	Accessibility, human escalation, and disclosure
Workforce	Task transformation and transition	Training, role redesign, and reskilling
System stability	Greater dependence on digital models and providers	Cybersecurity, resilience, and third-party risk management

Table 2: Conceptual impact assessment

Overall, the evidence supports the conclusion that AI can improve several banking functions, but the magnitude of the benefit depends on data quality, organizational readiness, governance, and the way human employees remain involved in important decisions.

Discussion and Conclusion:

In this research, we saw how AI affects the banking sector through customer service, risk management, governance, employment and efficiency. The literature shows that artificial intelligence can automatically complete standard practices and activities, analyze complex financial information, assist in fraud detection and provide digital customer service. These applications will improve the way banks operate and work.

Nevertheless, this modern technology also proves to be problematic. Biases and inaccuracies can affect some customer services. Invasion of privately held information and cybersecurity risks can show an increase since banks process more data and rely on interconnected systems. Additionally, automation can transform jobs and create the need for constant employee training.

To integrate this new technology optimally, banks should add it gradually with strong governance and precise procedures. These procedures should include model validation, data-quality controls, cybersecurity measures, transparency, human oversight, and clear accountability. This intelligence should assist humans in completing complex tasks rather than cancelling out human responsibility. The study's main obstacle is that it relies on quantitative synthesis and secondary sources. It does not approximately calculate the financial consequences of AI on specific banks and countries. Further researches are advised to use bank level data to measure changes in operating costs, fraud losses, service waiting times, loan-default rates, and employee productivity before and after AI adoption. Future studies could also analyze and study AI integration in Lebanese banks, where many things can influence the results.

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