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ARTIFICIAL INTELLIGENCE ADOPTION IN RETAIL BANKING: EFFECTS ON CUSTOMER SATISFACTION, CREDIT SCORING ACCURACY, AND OPERATIONAL EFFICIENCY"

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Abstract: The rapid advancement of artificial intelligence (AI) has significantly transformed the retail banking sector by enhancing service delivery, risk assessment, and internal processes. This study examines the impact of AI adoption in retail banking on three key dimensions: customer satisfaction, credit scoring accuracy, and operational efficiency. Using a mixed-methods approach that combines quantitative analysis of banking performance indicators with qualitative insights from customer surveys and expert interviews, the research evaluates how AI-driven tools such as chatbots, machine learning–based credit scoring models, and robotic process automation contribute to improved banking outcomes. The findings indicate that AI adoption positively influences customer satisfaction through personalized and faster services, increases credit scoring accuracy by reducing human bias and error, and enhances operational efficiency by lowering costs and processing time. The study provides practical implications for bank managers and policymakers seeking to promote digital transformation in the financial sector.

Keywords: Artificial Intelligence, Retail Banking, Customer Satisfaction, Credit Scoring, Operational Efficiency

Introduction

The retail banking industry is undergoing a profound digital transformation driven by advances in artificial intelligence (AI). Banks increasingly adopt AI technologies to remain competitive, improve decision-making, and respond to changing customer expectations. AI applications in retail banking include customer service chatbots, fraud detection systems, personalized marketing tools, and automated credit scoring models. These technologies promise not only cost reduction but also enhanced service quality and risk management.

Customer satisfaction has become a critical success factor in retail banking, as customers demand faster, more personalized, and more convenient services. At the same time, accurate credit scoring is essential for minimizing credit risk and ensuring financial stability. Operational efficiency is another key concern, as banks face pressure to reduce costs while complying with regulatory requirements.

Despite the growing adoption of AI in banking, empirical evidence on its comprehensive impact remains limited, particularly in emerging and transition economies. This study aims to fill this gap by analyzing the effects of AI adoption in retail banking on customer satisfaction, credit scoring accuracy, and operational efficiency. The research seeks to answer the following questions: (1) How does AI adoption affect customer satisfaction in retail banking? (2) What is the impact of AI-based credit scoring on accuracy and risk assessment? (3) How does AI influence operational efficiency in retail banks?

Methodology

This study employs a mixed-methods research design combining quantitative and qualitative approaches. Quantitative data were collected from annual reports and internal performance indicators of selected retail banks that have implemented AI solutions. Key

variables include customer complaint rates, loan default rates, credit approval time, and operational cost ratios before and after AI adoption.

In addition, a structured customer survey was conducted to assess perceptions of service quality, speed, and personalization. The survey used a five-point Likert scale and included respondents who actively use digital banking services. Qualitative data were gathered through semi-structured interviews with banking professionals and IT specialists to gain deeper insights into AI implementation challenges and benefits.

The quantitative data were analyzed using descriptive statistics and comparative analysis, while qualitative data were examined through thematic analysis. This methodological approach allows for a comprehensive assessment of AI's impact on retail banking performance.

Results

The results demonstrate a significant positive relationship between AI adoption and customer satisfaction. Banks that implemented AI-powered chatbots and personalized recommendation systems reported shorter response times and higher customer satisfaction scores. Survey results indicate that customers value 24/7 availability and quick problem resolution enabled by AI tools.

Regarding credit scoring accuracy, the findings show that AI-based models outperform traditional scoring methods. Machine learning algorithms improved prediction accuracy by incorporating a wider range of variables and identifying complex patterns in customer data. As a result, banks experienced lower default rates and more consistent credit decisions.

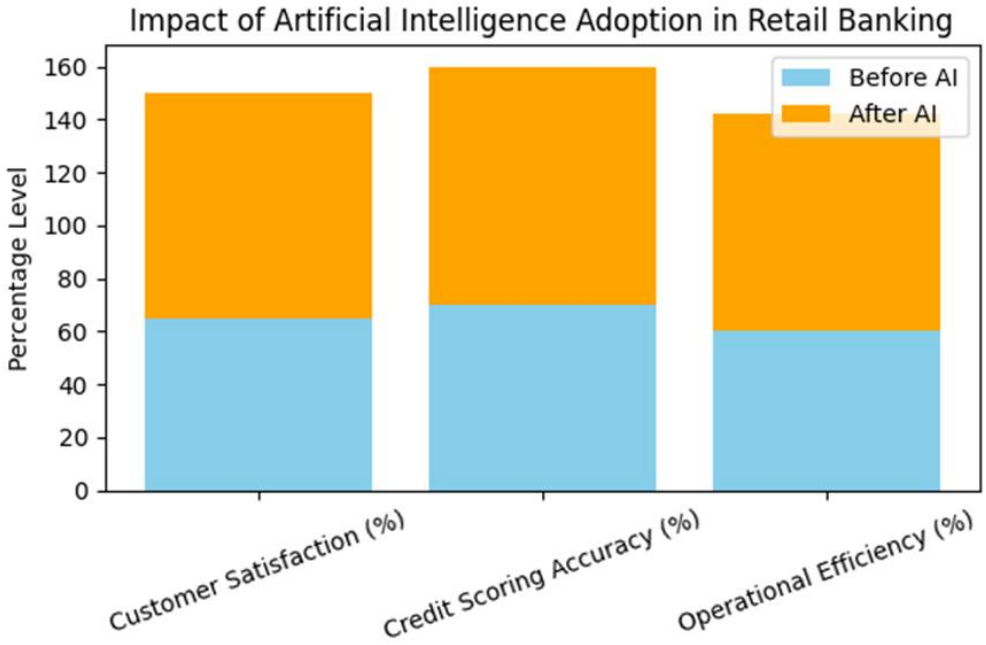
In terms of operational efficiency, AI adoption led to reduced processing times and operational costs. Robotic process automation streamlined routine tasks such as data entry and compliance checks, allowing employees to focus on higher value-added activities. Overall, banks achieved improved productivity and cost efficiency after integrating AI solutions.

Table-1

Advantages and Disadvantages of Artificial Intelligence Adoption in the Banking Sector of Uzbekistan

Advantages	Disadvantages
Improved efficiency in customer service	Limited access to advanced technologies
Enhanced fraud detection and security	High software and implementation costs
Personalized banking services	Risks related to data privacy and personal information protection
Faster decision-making processes	Reduced human involvement in decision-making
Higher accuracy in credit and risk assessment	Continuous need for system updates and maintenance

Impact of artificial intelligence adoption in retail banking. The following diagram illustrates the impact of artificial intelligence adoption on customer satisfaction, credit scoring accuracy, and operational efficiency in retail banking. The data shows improvements in all three key metrics after AI implementation.



Discussion

The findings confirm that AI adoption plays a crucial role in enhancing key performance dimensions of retail banking. Improved customer satisfaction can be attributed to faster service delivery and personalized interactions, which strengthen customer trust and loyalty. Enhanced credit scoring accuracy reduces financial risk and supports more inclusive lending practices by minimizing human bias.

Operational efficiency gains highlight the strategic importance of AI for cost management and scalability. However, the study also identifies challenges, including data privacy concerns, high implementation costs, and the need for skilled personnel. Addressing these issues is essential for maximizing the benefits of AI in banking.

The results are consistent with existing literature on digital transformation in financial services and provide new empirical evidence on the multifaceted impact of AI adoption.

The development of the digital economy and its practical implementation are reflected in Presidential Decree No. 358, *"On Approval of the Strategy for the Development of Artificial Intelligence Technologies until 2030,"* which clearly defines the goals and objectives facing the country. In particular, the strategy envisages allocating USD 1.5 billion by the specified deadline to the development of software and services based on intelligent algorithms, as well as establishing dozens of artificial intelligence laboratories. Among the priority targets, special emphasis is placed on creating a legal and regulatory framework aimed at the advancement of artificial intelligence technologies (Presidential Decree No. PQ-358, October 14, 2024).

Today, in several developed European countries such as Germany, Austria, and Switzerland, the majority of banks and insurance companies are actively exploring the possibilities of using artificial intelligence. To enhance digital efficiency and reduce overall costs, these institutions increasingly rely on AI-based solutions such as chatbots, automation, and predictive marketing within banking operations. Many financial institutions that pursue these objectives are implementing large-scale projects based on intelligent algorithms.

Focusing specifically on retail banking, customers perform a wide range of daily operations, including money transfers, cash withdrawals, currency exchange, and various digital transactions related to plastic cards. In managing such operations, artificial intelligence plays a crucial role in detecting fraudulent activities, minimizing risks, and enhancing the overall

security of online financial services. One notable example of effective AI-based fraud detection is Danske Bank. Its intelligent fraud detection system has reduced cyberattack exposure by 60% and increased fraud detection accuracy by 50%, enabling the bank to cancel or delay suspicious transactions and make timely and informed decisions.

Unlike human employees with limited working hours, AI-powered chatbots operate 24/7 and represent another important application of artificial intelligence in retail banking services. By integrating chatbots into banking applications, banks are able to respond to customer inquiries continuously, including on weekends and holidays, thereby improving service efficiency. Moreover, chatbots can offer personalized support based on customer needs and recommend relevant banking products and services. One of the most advanced AI chatbots is *"Erica,"* developed by Bank of America. As early as 2019, this virtual assistant had already responded to more than 50 million customer inquiries (Bharadwaj, 2025).

The application of artificial intelligence in banking has also enabled more secure, efficient, and reliable credit decision-making through comprehensive data analysis and a deeper understanding of customer needs. Currently, many banks assess the creditworthiness of individuals and legal entities primarily based on customer data, credit history, and credit scores. However, as these information sources increasingly contain errors, inconsistencies, and outdated data, the demand for AI-based creditworthiness assessment systems is growing. Artificial intelligence automatically evaluates credit applications by integrating multiple factors, producing more accurate and reliable lending decisions. This system allows banks to process credit applications more quickly and automate decision-making, ultimately enabling more efficient management and faster customer service.

At present, artificial intelligence is increasingly being applied across various aspects of banking management in Uzbekistan. Banks utilize intelligent algorithms in cybersecurity and risk management, chatbots, customer experience analysis, and credit and credit risk control, thereby improving the efficiency and quality of their products and services.

Conclusion

This study demonstrates that the adoption of artificial intelligence in retail banking has a positive and significant impact on customer satisfaction, credit scoring accuracy, and operational efficiency. AI-driven solutions enable banks to deliver better services, make more accurate credit decisions, and optimize internal processes. The findings suggest that strategic investment in AI technologies can enhance competitiveness and sustainability in the retail banking sector.

Future research may focus on longitudinal studies and cross-country comparisons to further explore the long-term effects of AI adoption in banking. Policymakers and bank managers should support responsible AI implementation through appropriate regulation, data governance, and workforce training.

The practical application of artificial intelligence in retail banking services serves as a fundamental basis for the effective management of banking operations in the future. As noted above, artificial intelligence possesses inherent advantages as well as certain limitations, which vary across countries depending on their social, economic, cultural, and political contexts. In the near future, the growing availability of specialists skilled in digital economy technologies within the banking sector is expected to significantly simplify management processes and reduce operational costs.

The main significance of this article lies in the fact that it provides a scientifically grounded justification for the current necessity of using intelligent algorithms in banking activities.

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