International Journal of Science, Strategic Management and Technology
Volume **02** Issue **04** April-**2026** | ISSN: **3108-1762 (Online)** | Impact Factor: 3.8
An International, Peer-Reviewed, Open Access Scholarly Journal Indexed in recognized academic databases

Role of AI in Uplifting the Banking Industry

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https://doi.org/10.55041/ijsmt.v2i4.147
Cite this Article: vashishta, L. (2026). Role of AI in Uplifting the Banking Industry. International Journal of Science, Strategic Management and Technology, *02*(04). https://doi.org/10.55041/ijsmt.v2i4.147
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CHAPTER 1 – INTRODUCTION

The banking sector has undergone a remarkable transformation with the emergence of Artificial Intelligence (AI). AI refers to intelligent digital systems designed to simulate human thinking abilities such as learning, reasoning, and problem-solving. Over the past decade, financial institutions have increasingly adopted AI technologies to modernize their services, streamline operations, and remain competitive in a rapidly evolving digital environment.

This study examines the role of AI in reshaping banking practices by enabling faster and more accurate data processing. Unlike conventional banking systems, AI-based solutions can handle massive volumes of data instantly, uncover hidden patterns, and generate predictive insights that support better decision-making. This shift has not only improved operational efficiency but has also significantly reduced the chances of human error.

One of the most impactful contributions of AI in banking is the delivery of personalized financial services. By analyzing customer behavior, transaction history, and financial goals, AI systems provide customized recommendations that help individuals manage their finances more effectively. This personalized approach enhances customer satisfaction and strengthens long-term relationships between banks and their clients.

In addition to customer service, AI has strengthened compliance and security mechanisms. Processes such as Anti-Money Laundering (AML) checks, which were previously time-consuming, are now completed quickly with the help of intelligent algorithms. AI also plays a crucial role in identifying potential cybersecurity threats, ensuring the protection of sensitive financial data.
Moreover, AI-powered chatbots and virtual assistants have transformed customer interactions by offering instant support at any time of the day. Internally, banks use AI to improve recruitment, communication, and investment decisions through data-driven analysis. Overall, AI is not only enhancing efficiency but also opening new opportunities for growth and innovation within the banking industry.

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CHAPTER 2 – LITERATURE REVIEW

2.1 AI Applications in Banking

Artificial Intelligence has become a major force driving innovation across industries such as healthcare, retail, logistics, and finance. In the banking sector, AI is particularly valuable due to its ability to manage complex operations and process large datasets with speed and accuracy.

Existing studies highlight that AI improves transaction monitoring, enhances fraud detection, and simplifies routine banking activities. By replacing manual processes with automated systems, banks are able to deliver faster and more reliable services to customers.

2.2 Key Areas of AI Implementation in Banking

Cost Reduction

AI helps banks lower operational costs by automating repetitive tasks such as data entry, document verification, and regulatory compliance. This reduces dependency on manual labor and allows organizations to utilize their resources more efficiently, leading to long-term financial benefits.

Chatbots and Virtual Assistants

AI-driven chatbots have significantly improved customer service in banking. Using natural language processing, these systems understand customer queries and provide immediate and accurate responses. Their 24/7 availability reduces waiting time and enhances user experience.

Enhancing Customer Experience

AI enables banks to offer highly personalized services by analyzing customer data and predicting future needs. It can recommend suitable financial products, provide spending insights, and offer financial advice, thereby improving customer engagement and satisfaction.

CHAPTER 3 – RESEARCH OBJECTIVES

1. To study how AI enhances personalized financial services

AI allows banks to deliver customized solutions based on real-time customer data. Features such as expense tracking, financial planning tools, and automated alerts help users manage their finances efficiently. These services empower customers to make informed financial decisions.

2. To analyze the role of AI in fraud detection, risk management, and cybersecurity

AI plays an essential role in maintaining security within the banking system. It continuously monitors transactions to identify unusual patterns and detect fraudulent activities instantly. In risk management, AI evaluates creditworthiness by considering multiple factors such as income, repayment behavior, and market conditions. Additionally, AI strengthens cybersecurity by preventing threats such as hacking and phishing attacks.

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CHAPTER 4 – SCOPE OF THE STUDY

1. Functional Scope

The study focuses on key banking functions where AI is widely applied, including:

- Customer support through chatbots and virtual assistants
- Fraud detection and cybersecurity systems
- Loan approval and risk assessment processes
- Automation of KYC and documentation procedures

2. Geographical Scope

- *This research includes both domestic and international perspectives:*
- Indian banks such as SBI and HDFC Bank
- Global banking institutions for comparison
- Regulatory frameworks primarily related to India

3. Technological Scope

The study covers the practical application of:

- Machine Learning (ML)
- Natural Language Processing (NLP)
- Predictive Analytics
- Robotic Process Automation (RPA)

CHAPTER 5 – RESEARCH METHODOLOGY

Research Approach

- The study is based on a structured review of existing literature related to AI in banking. Relevant information was collected using keywords such as “AI in banking” and “digital transformation in finance.”

Research Design

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- A descriptive research design has been used to understand how AI impacts banking operations and services.

Data Collection

The research relies on secondary data collected from:

- Academic journals and research articles
- Industry and consultancy reports
- Publications from financial institutions
- Reliable online sources

Sample Size (Secondary Data Study)

Total Sample Size: 30–40 sources

Composition:

- Research papers: 12–15
- Industry reports: 8–10
- Case studies: 5–7
- Government publications: 3–5
- Online articles: 5–8

Sampling Method

- Purposive sampling has been used to select relevant and credible sources.

CHAPTER 6 – DATA ANALYSIS AND INTERPRETATION

The findings are based on insights gathered from multiple secondary sources:

1. AI Adoption (Approx. 80%)

A majority of banks have integrated AI into their operations.
Interpretation: AI adoption is becoming essential for survival in the digital banking landscape.

2. Operational Efficiency (Approx. 50%)

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Automation has improved efficiency significantly.
Interpretation: While progress is evident, full optimization is still in progress.

3. Cost Reduction (Approx. 25%)

Banks have achieved moderate cost savings.
Interpretation: High initial investment limits immediate financial benefits.

4. Chatbot Performance (Approx. 70%)

Most customer queries are handled by AI chatbots.
Interpretation: Customer service has become faster and more efficient.

5. Fraud Detection (Approx. 88%)

AI is highly effective in identifying fraud.
Interpretation: Security is the strongest area of AI implementation in banking.

CHAPTER 7 – FINDINGS, CONCLUSION & RECOMMENDATIONS

Findings

- AI improves speed, accuracy, and service quality
- It reduces human errors and operational costs
- Personalized services increase customer satisfaction
- AI provides a competitive edge to banks
- Fraud detection systems are highly effective

Conclusion

- The study concludes that AI plays a vital role in transforming the banking sector. It enhances efficiency, strengthens security, and enables personalized services. However, challenges such as high implementation costs, lack of skilled professionals, and integration issues still exist.

- ***Recommendations***
- Increase investment in AI infrastructure
- Provide training and skill development for employees

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- Strengthen cybersecurity systems
- Combine human expertise with AI technology
- Establish ethical guidelines for AI usage
- Adopt AI gradually for smooth implementation
- Educate customers about AI-based services
- Collaborate with fintech companies for innovation

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