



AN INVESTIGATES THE USE OF ARTIFICIAL INTELLIGENCE IN FINANCIAL SERVICES WITH REFERENCE TO PUBLIC AND PRIVATE SECTOR BANKS IN INDIA

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<https://doi.org/10.55041/ijssmt.v2i8.074>

Cite this Article: REDDY, PATLOLLA, and DR LAVANYA. "AN INVESTIGATES THE USE OF ARTIFICIAL INTELLIGENCE IN FINANCIAL SERVICES WITH REFERENCE TO PUBLIC AND PRIVATE SECTOR BANKS IN INDIA." International Journal of Science, Strategic Management and Technology 02, no. 8 (2026): 1-5. <https://doi.org/10.55041/ijssmt.v2i8.074>.

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ABSTRACT

Artificial Intelligence (AI) is increasingly transforming banking operations in India. Public and private sector banks are adopting AI to improve customer service, fraud detection, credit evaluation, risk management, digital banking, and operational efficiency. This study investigates AI use in Indian public and private sector banks, comparing adoption, benefits, challenges, and future significance. Primary and secondary data were used, with responses from 100 participants. Percentage analysis was applied to interpret the findings. Results indicate that mobile banking is the most popular AI-enabled service, faster service is the leading benefit, private banks show stronger adoption, and data privacy remains the major challenge.

Keywords: Artificial Intelligence, Banking, Financial Services, Public Sector Banks, Private Sector Banks

1. INTRODUCTION

The banking and financial services industry has undergone substantial transformation because of technological advancement, globalization, digital innovation, and changing customer expectations. Artificial Intelligence (AI) has emerged as an important technology in this transformation because it enables computer systems to perform activities that normally require human intelligence. Financial institutions process large volumes of customer information, transactions, regulatory records, and risk-related data. AI can analyse these data rapidly, identify patterns, detect unusual transactions, support credit assessment, predict customer behaviour, automate repetitive activities, and improve decision-making. AI-enabled chatbots and virtual assistants provide immediate responses to customer queries, while mobile banking applications and personalized digital services improve accessibility. AI also supports fraud detection by continuously monitoring transactions and identifying suspicious behaviour. AI also improves digital banking security and convenience. Risk management is another important application. Banks face credit, market, operational, liquidity, cybersecurity, and compliance risks. AI-based systems can identify emerging risks and provide timely information for managerial decisions. Automation can reduce manual errors in data entry, reconciliation, customer verification, document processing, and regulatory reporting. AI-supported cybersecurity can monitor network activity, recognize abnormal behaviour, and support rapid responses

to security threats. The Indian banking system includes public and private sector institutions with different organizational structures and technological capabilities. Private sector banks have generally adopted digital technologies rapidly because of their investment capacity and operational flexibility. Public sector banks are also expanding AI applications through technological modernization and digital transformation initiatives. The uploaded study specifically examines this comparison and evaluates AI adoption, customer service, operational efficiency, fraud detection, risk management, and implementation challenges. Despite its benefits, AI adoption creates concerns involving data privacy, cybersecurity, implementation costs, shortage of skilled personnel, ethical issues, algorithmic bias, system integration, and regulatory compliance. Therefore, banks must balance innovation with security, transparency, responsible governance, and customer protection. The present study examines the role of AI in financial services with reference to Indian public and private sector banks. It focuses on adoption patterns, benefits, customer-oriented applications, comparative sector performance, major challenges, and future importance of AI. The findings are intended to support better technology planning and sustainable digital transformation in Indian banking.

2. REVIEW OF LITERATURE

Artificial Intelligence has become an important driver of transformation in banking and financial services. Sharma and Verma (2019) reported that AI automation can improve operational efficiency, reduce processing time, and limit operational errors. Patel and Reddy (2020) emphasized machine-learning applications for identifying abnormal transaction patterns and strengthening fraud prevention. Singh (2021) observed that AI-based credit evaluation can improve lending decisions by examining financial behaviour and repayment information. Nair and Joseph (2022) highlighted the contribution of intelligent monitoring and predictive analytics to risk management and regulatory compliance. Agarwal and Mehta (2022) reported that robotic process automation can improve processing speed and reduce documentation errors. Rao and Desai (2023) found that customers value faster service and personalized guidance but remain concerned about privacy and cybersecurity. Joshi and Kapoor (2023) reported faster AI adoption in private sector banks, while public sector banks are gradually expanding their capabilities. Prakash and Iyer (2024) associated AI with customer retention, fraud detection, cost control, and operational efficiency. Mishra and Gupta (2025) highlighted generative AI, predictive analytics, blockchain, cloud computing, intelligent automation, and cybersecurity as emerging areas. The present study addresses the identified gap by comparing public and private sector adoption in India. These findings directly guide this study.

3. OBJECTIVES OF THE STUDY

1. **To study** the application of Artificial Intelligence in financial services with reference to public and private sector banks in India.
2. **To compare** the adoption and application of Artificial Intelligence in public and private sector banks.
3. **To examine** the impact of Artificial Intelligence on banking performance, operational efficiency, and customer service.
4. **To identify** the opportunities and challenges associated with the implementation of Artificial Intelligence in the banking sector.
5. **To suggest** suitable measures for strengthening Artificial Intelligence usage and improving financial services in Indian banks.

4. RESEARCH METHODOLOGY

A comparative and descriptive research design was adopted. Primary data were collected through a structured questionnaire from 100 respondents selected using convenience sampling. Secondary information was obtained from banking reports, RBI publications, journals, books, government sources, and official websites. Percentage analysis supported systematic comparison of AI applications and respondent perceptions.

4.1. STATISTICAL TOOL

Percentage Analysis

Percentage Analysis is selected as the appropriate statistical tool because the study primarily examines categorical responses concerning AI awareness, AI-enabled services, benefits, challenges, sector-wise adoption, and future importance.

Formula:

$$\text{Percentage} = (\text{Number of Respondents} / \text{Total Number of Respondents}) \times 100$$

The original project also used **percentage analysis, tabular display, bar diagrams, and pie charts** for systematic presentation and interpretation.

5. DATA ANALYSIS AND INTERPRETATION

Table 5.1: Most Popular AI-Powered Banking Service

Category	Respondents	Percentage
Mobile Banking	35	35%
Chatbots	24	24%
Robo-advisors	18	18%
Voice Banking	13	13%
Others	10	10%
Total	100	100%

Analysis: Mobile banking recorded the highest response, with 35 respondents representing 35%.

Interpretation: Mobile banking is the most frequently used AI-enabled banking service, indicating the importance of convenient and accessible digital banking services to customers.

Table 5.2: Primary Benefit of Artificial Intelligence in Banking

Category	Respondents	Percentage
Faster Service	33	33%
Fraud Detection	24	24%
Cost Reduction	20	20%
Personalization	13	13%
Others	10	10%
Total	100	100%

Analysis: Faster service received the highest response, with 33 respondents or 33%.

Interpretation: Faster customer service is perceived as the primary benefit of AI, followed by fraud detection and cost reduction.

Table 5.3: Sector with Better AI Adoption

Category	Respondents	Percentage
Private Sector	59	59%
Public Sector	41	41%
Total	100	100%

Analysis: Private sector banks received the higher response, with 59 respondents representing 59%.

Interpretation: 59% of respondents believe private sector banks have adopted AI more successfully than public sector banks, reflecting the stronger perception of technological investment and faster digital transformation in private banking.

6. RESULTS

1. Artificial Intelligence has become an important technological innovation in the Indian banking sector.
2. The majority of respondents are familiar with AI-enabled banking services.
3. **Mobile banking is the most popular AI-powered banking service**, receiving 35% of responses.
4. **Faster service is the leading perceived benefit of AI**, with 33% of respondents.
5. AI contributes to fraud detection, operational efficiency, cybersecurity, customer satisfaction, and financial decision-making.
6. **Private sector banks are perceived to have better AI adoption**, with 59% of respondents selecting them.
7. Public sector banks are also progressively increasing their use of AI through digital transformation initiatives.
8. Data privacy is identified as the major challenge in AI implementation, followed by high implementation cost and skill gaps.
9. Respondents recognize the growing importance of AI for future banking.
10. Overall, AI is supporting customer service improvement, faster operations, fraud reduction, and digital transformation in Indian public and private sector banks.

7. SUGGESTIONS

1. Banks should continue investing in advanced AI technologies, machine learning, predictive analytics, robotic process automation, and intelligent customer-service platforms.
2. Banks should organize regular training programmes covering AI, digital banking, cybersecurity, and data analytics.
3. Public sector banks should accelerate digital transformation and modernize their technological infrastructure.
4. Banks should strengthen cybersecurity and data-privacy mechanisms to protect customer information.
5. Regular system audits should be conducted to identify security weaknesses and improve AI governance.
6. Banks should ensure compliance with applicable regulatory requirements while implementing AI-based systems.
7. Customer awareness programmes should explain the benefits and safe use of AI-enabled banking services.
8. Banks should develop skilled human resources capable of managing and supervising AI applications.
9. Investment in AI infrastructure should be increased to improve operational efficiency and customer service.
10. Banks should balance technological innovation with transparency, security, responsible governance, and customer confidence.

8. CONCLUSION

Artificial Intelligence has become a significant technology in the Indian banking and financial services sector. The study demonstrates that both public and private sector banks are increasingly applying AI to customer service, digital banking, fraud detection, credit evaluation, risk management, and operational activities. The analysis shows that mobile banking is the most popular AI-enabled service and faster service is considered its major benefit. The findings also indicate that private sector banks are perceived to have stronger AI adoption than public sector banks, although public sector institutions are progressively improving their digital capabilities. At the same time, data privacy, cybersecurity, implementation costs, and shortage of skilled personnel remain important barriers. Therefore, successful AI adoption requires continuous investment in technology, employee training, cybersecurity, data protection, and regulatory compliance. AI can strengthen banking efficiency, customer satisfaction, fraud prevention, and digital transformation when implemented responsibly. The future development



of Indian banking will depend on the ability of financial institutions to combine technological innovation with human expertise, customer protection, and effective governance.

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