Impact on Adoption of Artificial Intelligence(AI) in the Banking Industry.

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How to Cite this Article:

S.Aishwarya, (2026). Impact on Adoption of Artificial Intelligence(AI) in the Banking Industry.. International Journal of Creative and Open Research in Engineering and Management, 02(04). https://doi.org/10.55041/ijcope.v2i4.053

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ABSTRACT

Artificial Intelligence (AI) has revolutionized the banking industry, enabling automation, predictive analytics, and improved customer interactions. This research explores how the adoption of AI affects customer satisfaction, and the elements of the adoption include fraud detection and perceived challenges. A structured questionnaire was used to collect data on 200 banking customers. The findings indicate that the use of AI can dramatically enhance the customer experience, and fraud detection can bolster the trust and security impressions. On the other hand, perceived challenges have a negative impact on satisfaction. The research advances the fintech literature by incorporating the behavioral and technological lens and providing practical implications to banks that would like to use AI as a sustainable development factor.

Keywords: Artificial Intelligence, SEM, intention to adopt, India FinTech, Bank customers.

INTRODUCTION

Artificial Intelligence (AI) In Banking.

The banking sector is undergoing a paradigm shift driven by technological advances, especially the use of Artificial Intelligence (AI). The use of AI-powered applications like chatbots, predictive analytics, and automated decision-making tools is transforming conventional banking processes. In developing markets such as India, the use of AI is growing faster as more people gain access to the internet and government policies encourage economic inclusion.

This paper will examine the effects of adopting AI in the banking sector on performance and customer experience, focusing only on quantifiable results.

AI enables the diverse banking industries, such as retail, commercial, and investment banking, to get insights into the market dynamics and behavior of customers, examine digital interactions, and provide an experience that is similar to human intelligence and interaction, but at a far greater scale.

The banking industry is one of the most common places where this technology is applied to improve the user experience and customer satisfaction. AI is effective in automating repetitive and routine activities like fraud detection and data entry. This results in better operational efficiency and less cost on labor.

AI in the banking industry encompasses a range of sophisticated technologies.

- Machine Learning (ML): Predictive analysis and decision-making.
- Natural Language Processing (NLP): Chatbots and virtual assistants.
- Robotic Process Automation (RPA): Automates monotonous work.
- Deep Learning: Strengthens pattern recognition of masses of data.

REVIEW OF LITERATURE

The study will examine the significance and issues of adopting artificial intelligence (AI) in the banking system, as well as analyze the variables that are significant in understanding consumers' intention to adopt AI in the banking system (Dr. V. Rajalakshmi et al., 2025). This literature review provides a definition of artificial intelligence, its application in banks, and its effects on bank performance.

Garcia et al. (2023) state that AI can address the problem of information asymmetries and ethical issues in the banking sector. This can be achieved through the use of features like transparency, dissemination of information accurately, immutability, and computational reasoning, which are supported by technologies like smart contracts and automation.

The present research found out that the use of AI has a positive impact on developing countries in terms of financial inclusion (Kumar et al., 2023).

In this work, Dawei et al. (2022) also mentioned that small transactions can be conducted using digital currency and mobile technology at affordable costs, and this aspect is beneficial to the whole banking industry and vulnerable populations. Digital currency and mobile transactions can also assist in the reduction of time and allow bulk and correct transactions.

Saloni Tripathi, (2022) identifies the dynamics of AI platforms in the banking sector and how they are starting to become a major disruptor. The current technologies are posing challenges to banks by employing smart algorithms to substitute human efforts. Firms need to embrace AI in their business strategies and practices in order to remain competitive.

Sapovadia (2021) also mentioned that data technology and AI are applied in the digital banking industry to determine creditworthiness of customers and reduce information asymmetry. It is assumed that the presence of AI and Big Data allows using alternative data, i.e., deposit records, online behavioral pattern, transaction records, and other data not traditionally used in the banking industry to score credit.

Hickam Sadok (2020). This paper discusses the implications of artificial intelligence (AI) application on the credit score evaluation of banks and other financial institutions. These prohibitions are the basis of the new era of economic legislation that brings in the certification of AI algorithms and data used by the bank.

Chandrima Bhattacharya (2019). The paper has helped us realize that literature reviews and theoretical research were carried out on various global and Indian banks, with the perspective to integrate AI in order to improve interactions with clients and internal banking operations. The examples of chatbot use in banking systems are ranked mostly by the experience of clients.

Research Gap:

Although the available literature concentrates on the advantages of technology, there are few empirical studies on customer level and behavioral outcomes in the Indian banking situation.

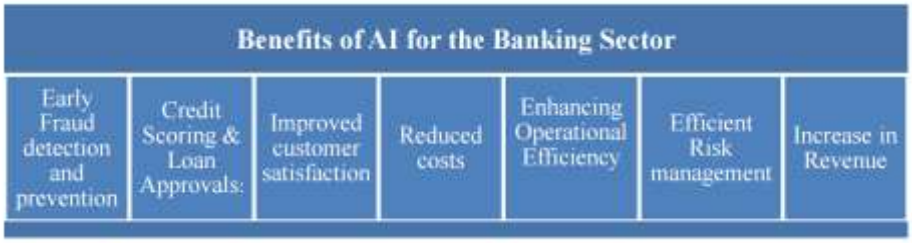
Study Objectives.

- To investigate how the adoption of AI will affect the efficiency of the banking operations.

To examine the satisfaction of customers with AI-based banking services.

- To detect the problems related to the implementation of AI.

BENEFITS OF ARTIFICIAL INTELLIGENCE IN THE BANKING INDUSTRY.



AI APPLICATIONS IN THE INDIAN BANKING SECTOR

Technologies such as biometric fraud-detection systems, AI bots, and digital payments help deliver outstanding services to a wider range of clients. A wide range of technologies falls under the field of artificial intelligence, including, but not limited to, machine learning, natural language processing, expert systems, vision, speech, planning, and robotics. AI applications in the Indian banking sector are as follows:

- **Chatbots**

  Chatbots are one of the most widely used AI applications across sectors. They provide a high return on investment in cost reductions. Most frequently requested tasks, such as fund transfers, mini statement access, and balance inquiries, can be efficiently handled by chatbots. Thus, the workload from other channels, like call centers and online banking, is lessened

- **Smart Wallets**

  Mobile wallets with Artificial intelligence incorporated to make payments for bus tickets, taxis, events, movies, and utility bills.

- **Robo advice**

  One issue in the financial services industry is the use of automated guidance. The information provided by the user, a robo-advisor, tries to determine the financial well-being of its clients. The robo-advisor will be able to provide suitable investment recommendations within a product class, down to the individual product or stock, based on this research and the client's goals.

- **Cyber security**

  By analyzing data from prior threats and identifying trends and signs that appear unrelated, artificial intelligence (AI) can dramatically increase the efficacy of cybersecurity systems. AI is not only capable of stopping external threats but also monitors internal threats and breaches and recommends remedial actions to prevent data theft or misuse.

THEORETICAL FRAMEWORK AND MODEL SPECIFICATION

The conceptual framework of this study is grounded in the Technology Acceptance Model (TAM) and Innovation Diffusion Theory (IDT). These theories explain user acceptance and adoption behavior of new technologies.

The proposed structural model includes:

- Independent Variable: AI Adoption (AIA)
- Mediating Variable: Fraud Detection (FD)
- Dependent Variable: Customer Satisfaction (CS)
- Control/Barrier Variable: Challenges (CH)

The hypothesized relationships are tested using Structural Equation Modeling (SEM).

Hypotheses Development

H1	AI adoption has a significant positive impact on operational efficiency
H2	AI-based services significantly improve customer satisfaction.
H3	AI adoption enhances fraud detection capabilities.
H4	There are significant challenges affecting AI implementation in banking.

RESEARCH METHODOLOGY:

Target Population

The target population consists of **bank customers who actively use digital banking services**, including mobile and internet banking, as well as AI-based services such as chatbots.

SAMPLING TECHNIQUE

A convenience sampling technique will be followed to select the respondents for the present study. The study involves a kind of respondent. i.e., bank customers. A sample of 150-250 respondents will be conveniently drawn from the population of bank customers.

RESEARCH DESIGN

Research Design: Descriptive in nature and a qualitative approach

Data Collection: Primary data collected through questionnaires, and Secondary Data from journals, reports, and banking publications

Sample size: 150-250 respondents (bank customers)

Sampling Technique: Convenience sampling

Tools used: Descriptive analysis, Correlation and regression analysis, ANOVA

Measurement scale: 5-point Likert scale

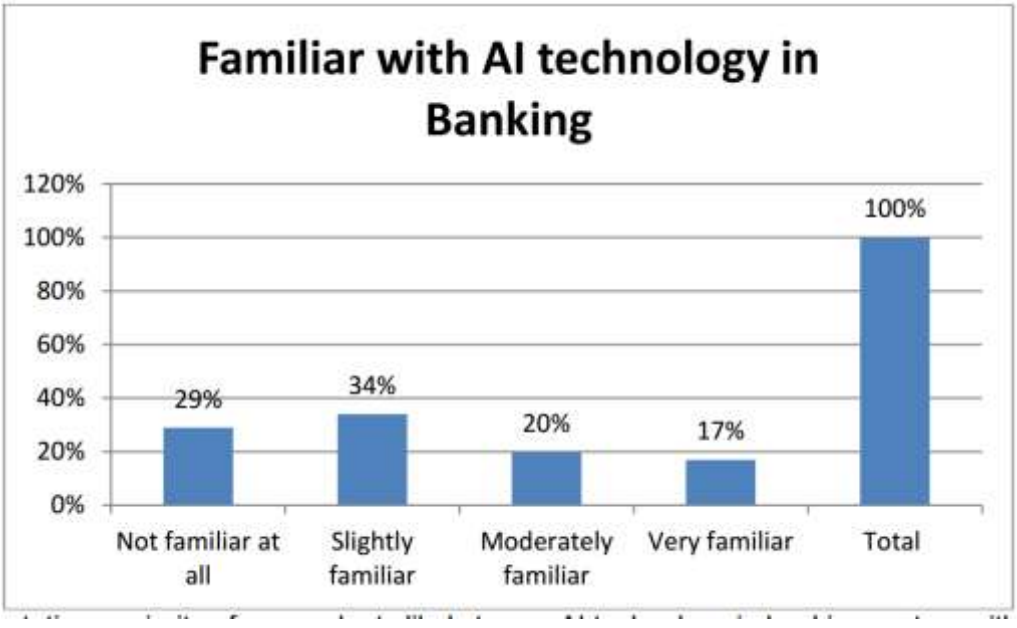
- **Measurement Instrument:** questionnaire consists of **21 items** divided into four constructs:

Construct	Items	Source/Adaptation
AI Adoption (AIA)	6	Adapted from TAM studies
Customer Satisfaction (CS)	5	Service quality literature
Fraud Detection (FD)	5	Fintech security studies
Challenges (CH)	5	Technology adoption barriers

DATA ANALYSIS AND INTERPRETATION

Table-1: Shows the familiar with AI technology in banking.

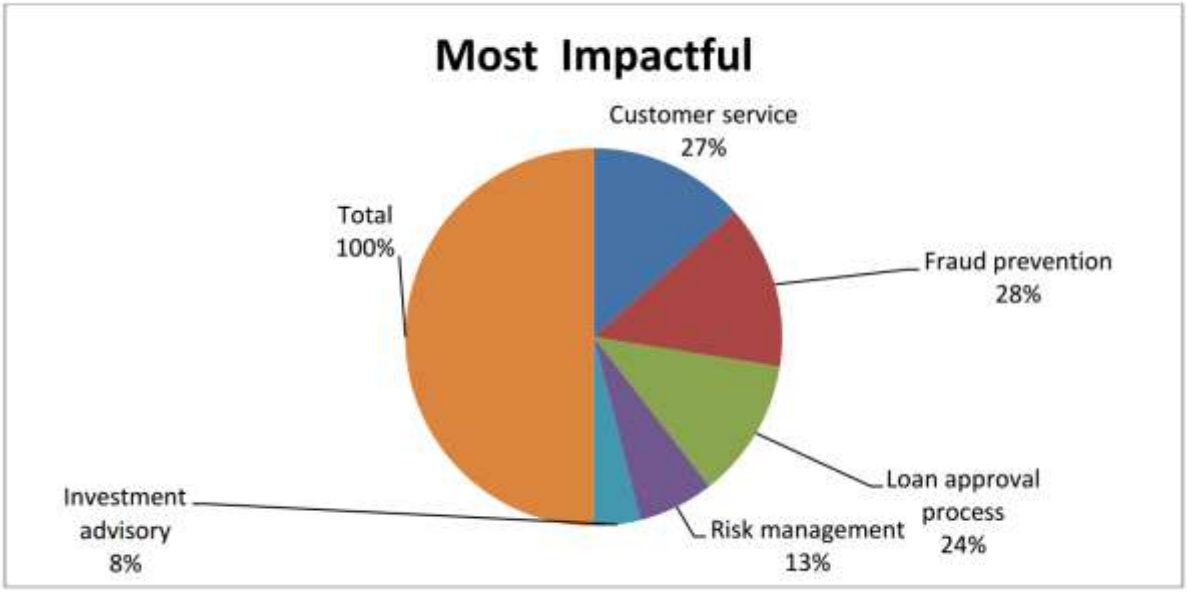
How familiar with AI technology in banking system?	Not familiar at all	Slightly familiar	Moderately familiar	Very familiar	Total
Respondents	22	25	15	13	75
Percentage	29%	34%	20%	17%	100%



Interpretation: major respondents are likely to use AI technology in the banking system, with 34%

Table-2: Shows the areas of banking operations which AI is most impactful.

Which areas of banking operations do you think AI is most impactful?	Customer service	Fraud prevention	Loan approval process	Risk management	Investment advisory	Total
Respondents	20	21	18	10	06	75
Percentage	27%	28%	24%	13%	8%	100%



Interpretation: most respondents are likely to use the areas of banking operations where AI is most impactful, with 28%

Table-3: Shows the replace of human involvement in Banking servic

Is AI able to successfully replace human involvement in Banking services, in your opinion?	**Yes**	**No**	**Total**
Respondents	45	30	75
Percentage	60%	40%	100%

Interpretation: Most of the respondents believe AI enables the successful replacement of human involvement in banking services, with 60%

Chart-4 : GRAPHS SHOWING THE FUNCTIONAL AREAS OF DEPLOYING ARTIFICIAL INTELLIGENCE (AI) IN BANKING SYSTEM

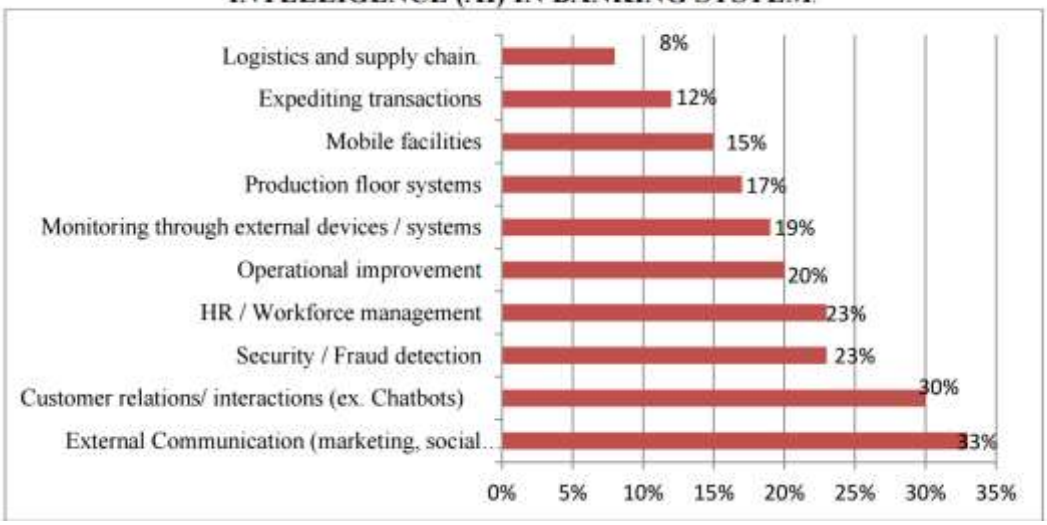


Table-5: Shows the factors that customers influences in banking services **In Ranking Method**

Banking services	Mean	Rank
Credit card services	2.62	7
Online banking	3.26	4
Loans	3.16	5
Money transfers	4.56	2
ATM withdrawals	5.06	1
Mobile banking	4.25	3
Investment services	2.80	6
Others	1.29	8

Interpretation: The banking services that influence customers utilized the most are ATM withdrawals, which have ranked 1

FINDINGS:

- Most of the respondents will tend to adopt AI technology in the banking system, with 34 percent.
- Most respondents will probably apply the spheres of banking activity where AI can have the most significant effect, with 28%
- Most of the respondents can substitute human touch in banking services with 60% external communication being possible.
- The most used banking services that impact on customers are ATM withdrawals that have been ranked number 1.

SUGGESTIONS:

In banking, AI can be applied to automate customer service chatbots, improve fraud detection models using machine learning, personalize financial offerings using customer data, streamline loan approvals with predictive algorithms, facilitate compliance processes using regulatory technology powered by AI, improve risk management, using real-time financial data analysis, improve cybersecurity with advanced threat detection systems, enable smarter investment strategies with AI-driven market analysis, provide custom financial advice to customers using AI-powered assistants.

CONCLUSION:

The scientific examination of AI adoption in the banking sector is an area of growing interest. Use of AI has also been extended to credit decisions and risk management, investment advising, fraud detection, sales and marketing, payments, operations automation, accounting, and data management, and the list is growing.

Banks have evolved over time to accommodate technological changes, such as online banking and ATMs. We are now in the age of digital, which is supercharged by AI. With AI technologies, it is possible to enhance automation, improve decision-making, and create value.

The four key areas where disruptive AI can enhance banks are increased revenue, personalized services and experiences, and accelerated innovation cycles. These technologies will be deployed by AI-first banks to create new customer experiences and value propositions. They will provide custom services, smooth interactions and creative solutions.

AI will enhance risk assessment, fraud detection and customer support. The absence of an explicit AI strategy, outdated technology infrastructure, disparate data assets, and operational model problems are impediments to the adoption of AI. Major obstacles are the lack of expertise, data privacy and security, and regulatory limitations. To sum up, artificial intelligence has entirely changed the daily work of banks by enhancing detection of fraud, risk management, and customer service. With the development of technologies, Artificial Intelligence (AI) is expected to gain more and more power to change the banking sphere.

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