

# Role of Artificial Intelligence in Indian Banking Sector

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**Abstract-** In recent years, technology plays a major role in helping businesses or organizations achieve their goal of providing good services to their customers. Artificial intelligence is transforming the global markets rapidly. AI technology has been explored across numerous industries and the banking sector. Recent years in India, AI has used in banking has increased. Artificial Intelligence is described as the ability of a device to perform cognitive functions we companion with human minds, such as perceiving, reasoning, getting to know, interacting with the surroundings, hassle solving, or even exercise creativity. Artificial intelligence is carried out in banking systems via algorithms with wonderful success in Custom Management Services, Credit Information Services, Frequently Asked Questions services, Financial Assistance Services. Presently, the enhancement in overall performance of a banking machine is achieved via applying the A.I. The banking industry is undergoing various reforms, with a focus on the client as the primary driver. Customers that are tech aware and often interact with cutting-edge technologies want banks to provide smooth experiences. In order to meet these expectations, banks have expanded their industrial landscape to encompass retail, IT, and telecom through the use of services like mobile banking, e-banking, and real-time money transfers. Thus, the paper aims to analyse the concept of Artificial Intelligence and to discuss the opportunities of Artificial Intelligence in Indian banking sector and also to understand the growth of Artificial Intelligence in Indian banking sector.

**Keywords:** Artificial Intelligence, Banking Industry, Technology, Custom management services, Credit Information Services.

## I. INTRODUCTION

Artificial Intelligence in Banking refers to the application of advanced technologies, particularly machine learning and data analytics, to automate and enhance various banking processes. Artificial intelligence (AI) is revolutionizing the banking industry by enhancing various banking processes. AI

is used in banking for intelligent automation, data-driven insights, enhanced customer experiences, risk management, and efficiency and cost reduction. AI-powered systems can perform tasks traditionally carried out by humans, such as data analysis, decision-making, and customer service. AI can also process massive amounts of banking data to extract valuable insights, enabling institutions to make informed decisions and enhance their services. AI-driven chat bots and virtual assistants can provide customers with instant, personalized assistance. Additionally, AI helps banks assess and manage risks by analysing customer creditworthiness, detecting fraudulent transactions, and predicting market fluctuations. Moreover, AI can streamline operations by automating routine tasks, minimizing errors, and reducing operational costs, ultimately leading to improved profitability.

## II. OBJECTIVES OF THE STUDY

1. To Discuss the Advantages of Artificial Intelligence in Banking Sector
2. To Study the AI Applications in Indian Banking Sector
3. To Study the Adoption of AI in Indian Banking Sector
4. To examine the Issues with the widespread use of AI in Indian Banking Service

## III. RESEARCH METHODOLOGY

The study is limited to secondary sources of knowledge and data. The available standard literature, which includes cited journals, articles, books, periodicals, newspapers, financial regulatory bodies, government policies and case studies from organizations implementing financial innovations.

#### IV. ADVANTAGES OF ARTIFICIAL INTELLEGEENCE IN BANKING

AI brings numerous advantages to the banking sector, including:

- **Enhanced customer experience:** AI-powered solutions such as chat bots and virtual assistants provide customers with swift and personalized support, significantly improving their overall experience. These systems can offer tailored product recommendations and personalized offers based on the customer's transaction history and behaviour patterns.
- **Improved Operational Efficiency:** AI systems possess the capability to automate various banking tasks, including data entry, document processing, and customer onboarding. By reducing the need for manual intervention, these systems streamline processes, enhance operational efficiency, and contribute to cost reduction.
- **Enhanced Risk Management:** AI systems excel at analysing vast amounts of data and identifying potential risks, empowering banks to make well-informed decisions and effectively mitigate risks. These systems can monitor credit portfolios, evaluate creditworthiness, and predict the likelihood of credit defaults, thus enhancing risk management practices.
- **Increased Profitability:** AI systems assist banks in identifying unexplored revenue streams and profitable investment opportunities by analysing market trends and customer behaviour. Moreover, by optimizing operational efficiency and reducing costs, AI contributes to increased profitability for banks.

In India, the impact of AI can already be seen in a wide range of organisations and industries. Businesses are using AI to improve operations across all industries, including the financial industry, retail, and manufacturing. Further, Indian retailers are using AI to improve supply chains, personalise recommendations and ensure maximum efficiency. AI is being used by (2013) Microsoft introduces Cortana (2014) Amazon introduces Alexa& the Amazon Echo2014 Amazon introduces Alexa& the Amazon Echo (2016) Google Launches Google Home Present (2019) majority of technologies under AI are in a rapid innovation stage across most sectors. Indian

manufacturers to raise quality control standards and promote cost effectiveness, demonstrating the many benefits that AI can provide. Indian banks are using AI to strengthen fraud detection systems and improve customer service, delivering a more secure and seamless experience.

#### V. AI APPLICATIONS IN INDIAN BANKING SECTOR

The technology like biometric fraud detection systems, AI bots, and digital payments contributes to providing outstanding services for a wider range of clients. A wide range of technologies fall 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 Indian banking sectors are as follows:

- **Chat bots:** Chatbots are one of the most widely used AI applications across sectors. They provide high return on investment in cost reductions. Most frequently requested tasks, like fund transfers, mini statement access, balance inquiries may be efficiently handled by chatbots. Thus, the workload from other channels like call centres and online banking is lessened.
- **Smart Wallets** Mobile wallets with Artificial intelligence incorporated to make payments for bus ticket, taxi, event, movie, utility bill payments
- **Robot advice** one of the issues in the financial services industry is automated guidance. The information provided by the user, a Robot-advisor makes an effort to determine the financial well-being of its clients. The Robot-advisor will be able to provide suitable investment recommendations in a certain product class, right down to the individual product or stock, based on this research and the client's goals.
- **Cyber Security** Assessing the data from prior threats and identifying trends and signs that appear unrelated to detect and prevent assaults, artificial intelligence (AI) can dramatically increase the efficacy of cyber security systems. AI is not only capable of stopping external threats, but it keeps an eye out for internal dangers or breaches and recommends remedial activities to stop data theft or misuse.

- Credit scoring AI analyses data from a variety of standard and non-traditional data sources, which is crucial in assisting alternative lenders in determining the creditworthiness of clients. This facilitates the development of creative lending systems by lenders, for people or organizations with little credit history, and is supported by a strong credit rating model.

## VI. ADOPTION OF AI IN THE BANKING SECTOR

Artificial intelligence plays a very important role in the Indian economy. During 2016, global investment in AI applications touched USD 5.1 billion (Euro 4.3 billion) PwC FinTech Report India (2017). Not only PNB but banks like SBI, HDFC, ICICI, HSBC, Axis banks and many other banks in India have turned towards AI. The some of the banks adopted AI are:

### 1. State Bank of India

SBI bank introduced SIA. SIA provides a chatbot solution that enables customers to interact with the bank through natural language conversation, reducing wait times and the need for human customer service representatives. It assists customers with routine financial procedures and answers their questions ineptly, exactly like a bank staff. SIA is continuously evolving to provide more AI-powered solutions to enhance the customer experience.

### 2. Bank of Baroda (BoB)

It has created a digital branch with gadgets like an artificial intelligence-based robot called Baroda Brainy and a Digital Lab with free Wi-Fi services.

### 3. Allahabad Bank

Allahabad Bank uses artificial intelligence (AI) in various aspects of its operations like Fraud detection, automated customer service, loan processing, including risk management are some frequent applications for AI in the banking industry. Banks can process a lot of data accurately and rapidly, improve operational efficiency, and provide better and more personalized services to their customers by using AI.

### 4. YES Bank

YES Bank has implemented two major AI initiatives that is Yes Power where this is an AI-powered

platform that provides a range of services to the bank's customers, such as chatbots for customer service, fraud detection, and risk management and YES ROBOT is to improve its operations and customer experience.

### 5. HDFC Bank

It has created the chatbot EVA, which stands for Electronic Virtual Assistant and is an AI powered chatbot solution which enables customers to interact with the bank through natural language conversation. EVA responds to consumer questions quickly and accurately, cutting down on waiting periods and the demand for human customer service employees.

### 6. Axis Bank

It stands for Axis AI and Automation and is an AI-powered platform that provides a range of services to the bank's customers, such as chatbots for customer service, fraud detection, and risk management. The AI initiative is aimed at improving the bank's operational efficiency, reducing costs, enhancing the customer experience, and staying ahead in the rapidly evolving banking industry. By implementing AXAA, the bank can provide more targeted products and services, prevent fraudulent activities, and improve its reputation and competitiveness in the market.

### 7. ICICI Bank

ICICI bank was the first in the nation to integrate AI technology on a broad scale into visually appealing operations. This has implemented multiple AI initiatives, but it does not have a specific named AI initiative. However, the bank has implemented AI-powered chatbots, AI-powered fraud detection solutions, and AI-powered personalized services. These programs have helped ICICI Bank increase operational effectiveness, lower expenses, and improve customer satisfaction.

### 8. Canara Bank

Canara Bank introduced Mitra, it is an AI-powered virtual assistant that provides instant and accurate responses to customer inquiries through natural language conversation a creative robot that assists visitors in navigating the bank. The second AI is, Candi, it is an AI-powered chatbot solution that enables customers to access banking services through a conversational interface.

## VII. ISSUES WITH THE WIDESPREAD USE OF AI IN BANKING

The widespread implementation of advanced technologies such as Artificial Intelligence (AI) in the banking sector is not without its challenges. These challenges encompass various aspects, including data security, the availability of quality data, and the need for explainability in AI systems. Let's delve into each of these challenges:

- **Data security:** The utilization of AI in banking involves the collection and handling of large volumes of data, much of which contains sensitive information. Consequently, additional security measures must be put in place to safeguard this data. To ensure proper handling of customer data, it is crucial for banks to seek out technology partners who can offer a range of security options.
- **Lack of quality data:** Before deploying a comprehensive AI-based banking solution, financial institutions require structured and high-quality data for training and validation purposes. The use of good quality data is essential to ensure that the AI algorithms function effectively in real-life scenarios. Furthermore, if the data is not in a machine-readable format, it may lead to unexpected behaviours in the AI models. Therefore, banks aiming to adopt AI technology need to adjust their data policies to mitigate privacy and compliance risks.
- **Lack of explainability:** AI systems are increasingly employed in decision-making processes due to their ability to minimize errors and save time. However, these systems may inherit biases from past instances of flawed human judgment. Even minor inconsistencies in AI systems can quickly escalate and create significant problems, thereby jeopardizing the reputation and operations of a bank. To mitigate such risks, it is crucial for banks to provide an appropriate level of explainability for all decisions and recommendations generated by AI models. Banks must strive to understand, validate, and explain how these models arrive at their decisions.

By addressing these challenges, banks can navigate the implementation of AI technology more effectively and ensure its successful integration into their operations.

## VIII. CONCLUSION

In recent years, India is focusing on technology; it is a key component of economic development. AI enhances business results exponentially as it is evolving as the go-to technology across the world. Banking sector is becoming one of the first adopters of AI and implementing the technology in different ways. The applications of AI include smarter chatbots for customer service, personalizing services for individuals and even placing an AI robot for self-service at banks. Beyond these basic applications, banks can implement the technology to enhance the efficacy of back-office and also reduce the fraud and security risks. Thus, Artificial intelligence is set to become the sole determinant of the competitive position of Indian banks.

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