

Application of Artificial Intelligence in Indian Banking-Opportunities and Challenges

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ABSTRACT

Banking is the most important sector of any economy because it connects the most with government and public at large and also it protects the economy from any crises. Technology has brought tremendous change, it has made both positive and negative impact on every sector and banking sector is the most dynamic in technological transformation. Among the various technological transformations of recent, the birth of Artificial intelligence is particularly remarkable. AI is fast evolving as the go-to technology for banking sectors across the world to personalise experience for individuals. With data analytics, block chain and machine learning, banks are advancing their services and offerings. The technology itself is getting better and smarter day by day, allowing more and newer banks to adopt the AI for various applications. Banking sector is becoming one of the first adopters of AI. And just like other segments, banks are exploring and implementing the technology in various ways. AI refers to computers having cognitive skills similar to humans, which could result in immense efficiency gains for banks and their clients alike. It is important to understand how AI can influence the Banking sector hence this paper is an attempt to understand the opportunities and challenges of Artificial intelligence for Indian banking sector.

Keywords: Technology, Indian banking, cognitive skills, machine learning, data analytics

INTRODUCTION

The world has witnessed tremendous technological changes in the recent times and digital disruption is redefining the industries and changing the ways of business functions. Every industry is assessing options and adopting ways to create value in technology driven world. And Artificial intelligence is one such which has brought dynamic changes in every sector. AI is the branch of computer science and it can improve creating the computers and machines as intelligent as human beings. AI is a new technical discipline that researches and develops theories, methods, technologies, and application systems for simulating the extension and expansion of human intelligence. The objective of artificial intelligence is that machines can perform some complex tasks that require intelligent humans to complete. The machine can replace human to solve some complicated tasks.

Artificial Intelligence is an approach to make a computer, a robot, or a product to think how smart human think. AI is a study of how human brain think, learn, decide and work, when it tries to solve problems. The aim of AI is to improve computer functions which are related to human knowledge.

Artificial intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think like humans and mimic their actions. The term may also be applied to any machine that exhibits traits associated with a human mind such as learning and problem-solving.

How to cite this paper: Prof. Mohammed Nawaz | Prof. Triveni. K | Prof. Bharathi. G. R "Application of Artificial Intelligence in Indian Banking-Opportunities and Challenges"

Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-5 | Issue-1, December 2020, pp.429-432, URL: www.ijtsrd.com/papers/ijtsrd37964.pdf



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John McCarthy regarded as father of Artificial Intelligence defines AI as "The science and engineering of making intelligent machines, especially intelligent computer programs".

Andreas Kaplan and Michael Haenlein defines AI as a system's ability to correctly interpret external data, to learn from such data, and to use those learning to achieve specific goals and tasks through flexible adaptation.

Artificial Intelligence is becoming more wide spread in the current market. It is used in every sector and banking sector is one of the early applied sectors as it has began to understand the need of automated decision making processes in order to reduce the margin of error. Banking sector is using AI in a very innovative way to save time and cost. The banks are using algorithms to generate an accurate result which enhances better customer services and improves sales and profit. Along with this AI ensures functional efficiencies and creates process driven operation.

For many years banks have been the forefront of using technology and there is no surprise that banks are using artificial intelligence in various ways. Large banks who are industry and market leaders are adopting AI to stay ahead of competition, to provide better customer service and to transform many back end processes. With the application of AI Indian banking can grow from strength to strength.

Need for application of AI in Banking Sector

- **Enhanced customer experience:** Based on past interactions, AI develops a better understanding of customers and their behaviour. This enables banks to customize financial products and services by adding personalized features and intuitive interactions to deliver meaningful customer engagement and build strong relationships with its customers.
- **Prediction of future outcomes and trends:** With its power to predict future scenarios by analyzing past behaviours, AI helps banks predict future outcomes and trends. This helps banks to identify fraud, detect anti-money laundering pattern and make customer recommendations. Money launderers, through a series of actions, portray that the source of their illegal money is legal. With its power of Machine Learning and Cognition, AI identifies these hidden actions and helps save millions for banks. Similarly, AI is able to detect suspicious data patterns among humungous volumes of data to carry out fraud management. Further, with its key recommendation engines, AI studies past to predict future behaviour of data points, which helps banks to successfully up-sell and cross-sell.
- **Cognitive process automation:** This feature enables automation of a variety of information-intensive, costly and error-prone banking services like claims management. This secures ROI, reduces costs and ensures accurate and quick processing of services at each step. Cognitive process automation fundamentally automates a set of tasks that improvises upon their previous iterations through constant machine learning.
- **Realistic interactive interfaces:** Chat bot identify the context and emotions in the text chat and respond to it in the most appropriate way. These cognitive machines enable banks to save not only time and improve efficiency, but also help banks to save millions of dollars as a result of cumulative cost savings.
- **Effective decision-making:** Cognitive systems that think and respond like human experts, provide optimal solutions based on available data in real-time. These systems keep a repository of expert information in its database called knowledge database. Bankers use these cognitive systems to make strategic decisions.
- **Robotic automation of processes:** AI reviews and transforms processes by applying Robotic Process Automation (RPA). This enables automation of about 80% of repetitive work processes, allowing knowledge workers to dedicate their time in value-add operations that require high level of human intervention.

Areas of application of AI in Banking

- Accounting
- Financing and Loans
- Customer services
- Fraud and cyber security
- Risk management
- Compliance
- Wealth management
- Business processing
- Merchant services

- Assets management
- Internal Auditing
- Sales
- Marketing
- Decision making
- Customers relationship management

Banks which are using Artificial Intelligence

State Bank of India (SBI): SBI is currently using an AI-based solution developed by Chapdex, the winning team from its first national hackathon, "Code for bank". On the front desk, it uses SIA chat bots, an AI-powered chat assistant developed by Payjo, a startup based in Silicon Valley and Bangalore. It addresses customer enquiries instantly and helps them with everyday banking tasks just like a bank representative.

Bank of Baroda: Bank of Baroda has set up of hi-tech digital branch equipped with advanced gadgets like artificial intelligence robot named Baroda Brainy and Digital Lab with free Wi-Fi services.

Allahabad Bank: In a media statement Allahabad bank said that its app 'EmPower' is scheduled to get major enhancements like Chat bots and artificial intelligence-based ecommerce payments.

Andhra Bank: Bangalore based AI start up, Floatbot has launched AI Chat bot integrated with Core Banking Servers of Andhra Bank, to digitally engage and automate customer support for its 5 Cr customers. Floatbot will also develop a chat bot for 20K+ internal employees of Andhra Bank to automate on boarding and training.

YES Bank: It has partnered with Gupshup, a bot platform, to launch 'YES Power' – a banking chat bot for its loan product. Another AI product **Yes Robot** is equipped to answer consumer's banking related queries anytime, anywhere, without the hassle of waiting for on-call or searching online. Also, YES BANK was the 1st Bank in India to introduce chat bot based banking with the launch of YES TAG in April 2016 which allows customers to perform banking transactions on various social messengers.

HDFC Bank: It has developed an AI-based chat bot, "Eva", built by Bangalore-based Sense forth AI Research. Eva can assimilate knowledge from thousands of sources and provide simple answers in less than 0.4 seconds. Going forward, Eva would be able to handle real banking transactions as well. HDFC is also experimenting with in-store robotic applications and launched a prototype robot IRA ("Intelligent Robotic Assistant").

ICICI Bank: It has deployed software robotics in 200+ business processes across various functions of the company, created mostly in-house using AI features such as facial and voice recognition, natural language processing, machine learning and bots among others. The software robots at ICICI Bank are configured to capture and interpret information from systems, recognize patterns and run business processes across multiple applications to execute activities. One such product is its AI-based chatbot, named iPal, which helps in answering queries, helping in financial transactions and discovering new features.

Axis Bank: It launched an AI-enabled app that uses natural language processing to enable conversational banking that helps consumers with financial and non-financial transactions, queries and product information.

Canara Bank: It launched Mitra, a humanoid robot developed by Bengaluru-based Invento Robotics which helps customers navigate the bank. Another one Candi, which is slightly smaller than Mitra is supplementing the human resource.

Punjab National Bank: In 2018, the bank announced its plan to implement AI in account reconciliation as well as using analytics to improve its audit systems. The move came in after the infamous debilitating fraud of approximately INR 20K Cr, carried out by the pair of Nirav Modi and Mehul Choksi in February 2018, which almost paralysed the bank's operation for a short time.

IndusInd Bank: It has launched Alexa Skill, 'IndusAssist', using which bank account holders can conduct financial and non-financial banking transactions with Alexa, Amazon's virtual assistant.

City Union Bank: It launched the banking robot, Lakshmi. The robot can interact with customers on more than 125 subjects. Apart from answering generic questions, the robot is also programmed to connect with the core banking solution.

Literature Review

- 1. Ritu Tulisameer Salunkhe(2019)-** In paper title "Role of Artificial Intelligence in providing customer service with special reference to SBI and HDFC" tried to study the application of AI in banks and how it influence customer service and also tried to understand how government is influencing application of AI by investing in it. Study also covered the challenges faced by two banks in adopting the new technology. It was found that banks are facing challenges in terms of awareness, acceptance of new technology and strong policies governing AI. The study was concluded that major challenges are yet to be explored as we are in early stage of its application but banks are putting great efforts in successful application.
- 2. Dr. Simran Jewandah(2019)-** In the study title "How Artificial Intelligence is changing the banking sector- A case study of top four Indian commercial banks" tried to study importance of technological adoption in banking industry. It covers the usage of AI and its implications in banking sector. Study found that AI is used to provide personalised financial services, smart wallets, voice assisted banking, application to assist in lending decisions, customers support and digitalization. And AI has assisted in detection of frauds, reduction of cost, increase in revenue and made better customer experience. The study concluded that banks have made efforts in entering digital era through chat bot and usage of robotics software.
- 3. Dr. K. Suresh Kumar, Aishwarya Lakshmi and Akalya A-** In their study title " Impact and challenges of Artificial Intelligence in Banking" tried to understand the impact and challenges in implementation of Artificial

Intelligence and also benefits in Banking. They also explored the possible areas where AI can be implemented. Study also covered the initiatives taken by banks to overcome challenges and study was concluded that future of banking sector is very bright as it enable easy transaction processing and also ensures personalised and high quality customers service for better customer satisfaction.

- 4. Dr. Navleen Kaur and Dr. Monika Sharma (2020)-** In their study title " Banking 4.0-The influence of Artificial Intelligence on the banking industry and how AI is changing the face of modern day banks" tried to understand the possibilities of witnessing revolutionary changes in banking industry and also its impact on human power. They tried to evaluate the challenges faced by banks and also the benefits which customers can obtain with the application of AI in banking sector. The study concluded that effective use of AI has positive effect on customer attraction which ensures growth and development of banks.
- 5. Dr. Munish Sabharwal-** In their study title "The use of Artificial Intelligence based Technological application by Indian Banks" tried to study reasons for application of AI in select Indian Banks. Study was descriptive in nature where structured interview of branch heads of 16 selected banks was done. Hypothesis was set with an assumption to prove that Indian banks do not use AI based technological application. The study was concluded that Yes Bank uses AI for employee performance evaluation, credit evaluation and portfolio analysis.

Statement of problem

Technological adoption and transformation is the need of every sector for growth and long term survival and banking sector is the most active sector in adopting the new technological innovations. Artificial intelligence is the most amazing thing which has evolved in technical world of recent and banking industry is one of the early applied sectors. Ever technology bring greater benefits and also posses the threats and same can be said about artificial intelligence, hence this study is undertaken to understand the opportunities and challenges of AI for banking sector.

Objectives

- To understand the Artificial intelligence and its application in Indian Banking.
- To analyse the opportunities and challenges of Artificial intelligence in Indian Banking.

Scope

The study covers only the aspects of understanding Artificial intelligence and its application in Indian banking sector and also analyses the opportunities and challenges of its application.

Methodology

The study is descriptive in nature and based on secondary data. The data is obtained from journals, articles, reports of banks and news papers and internet sources.

Opportunities

- Enable self service at banks, smarter chat bot for customer service and personalised service for individuals.
- Critical and automated decision making with greater speed and accuracy and ensures error free decision making unlike human minds.
- Increases the accuracy of credit card frauds detection and anti money laundering.
- Humanoid chat bot interface can be used to increase efficiency and reduce the cost for customer satisfaction.
- Image and face recognition using real time camera images and deep learning can be used at ATM's to prevent and detect frauds and crimes.
- Capturing documents data using OCR and using machine learning to generate insight from text data greatly can bring down back office processing time.
- Suspicious behaviour, unknown calls, log analysis and spurious emails can be traced to prevent and predict security branches.
- Personalised portfolios can be managed by advisors for clients by taking in to account life style, expected return and ability to take risk on investment.
- Customized products can be offered to clients by looking at historical data, doing risk analysis and eliminating human efforts from human made models.
- Solving complex problems requires time and difficult calculation but AI performs this function without any error.
- Foundation for need of innovations in products and services which banks offer.
- Transforming customer experience and building new banking models.
- Repetitive jobs can be performed without any delay and intermission.
- Highly risky and sensitive task which human minds may not perform can be done.
- Thinks and works faster than human minds and can perform multiple task continuously without much error.
- Can be a greater tool in managing data and deriving proper output as AI does not possess any emotions like human does.
- AI machines can be deployed in hazardous environment which reduced risk for human. And AI machines are more reliable and consistent.
- AI can save time in interacting with clients digitally.

Challenges

- Availability of data is the life blood of any technology and wrong data can be a serious concern in AI.
- Unavailability of people with right data skills is a biggest challenge as we are short on having large number of data scientist.
- Training to the existing employees can be very time consuming as they are new to AI technology and even employing the skilled human resource can be a great challenge.
- Data privacy regulations are not of greater significance in regulating Artificial intelligence.
- Data access and data privacy is a central aspect of any AI work and responsibility is on management to ensure privacy.

- Application of 'speech to text and text to speech' depends on natural language processing.
- Ensuring right process in collecting, validating, standardising, correcting and distributing relevant data.
- High cost of installation, repairs, up gradation, and requires huge time for recovery from any error and breakdown.
- Massive data management and ability to handle it is very crucial.
- Need of modelling techniques to estimate model parameter with high prevision using limited data sample is eminent.
- Widespread use of AI can cause ethical, moral and legal issues which can be a serious concern.
- Can create a high negative impact on traditional skills as AI brings dynamic changes in processes.

Conclusion

Technology tends to bring greater opportunities and creates challenges as well and Artificial Intelligence has brought new life in banking sector as it is creating automated processes and enhancing customer satisfaction to a greater extent. The authorities must ensure data privacy norms to protect client's credentials and also must collaborate with universities to develop data scientist. And wide network banks need to have artificial intelligence officers. AI has the potential to ensure speedy growth of banking sector.

References:

- [1] 'Banking 4.0-The influence of Artificial Intelligence on the banking industry and how AI is changing the face of modern day banks' by Dr.Navleen Kaur and Dr.Monika Sharma-International Journal of Management (IJM), Volume 6, Issue 6, June 2020.
- [2] 'The use of Artificial Intelligence based technological application by Indian banks' by Dr.Munisha Sabharwal, International Journal of Artificial Intelligence and agent technology, Volume 2, issue 1, February 2014.
- [3] 'Pros and Cons of Artificial Intelligence in banking sector of India' by Dr.Shivraj Singh and Dr.Lokesh Agarwal, 14th biyani international conference (BICON-19), ISBN: 978-93-83462-96-4.
- [4] 'Application of Artificial Intelligence for successful strategy implementation in Indian banking sector' by Ms Bhavana Agarwal, Dr. Himansh Agarwal, Dr.Parviz Talib, International journal of Advance research, ISSN: 2320-5407, Nov 2019.
- [5] 'Impact of Artificial Intelligence in chosen Indian commercial Bank-A Cost benefit analysis' by Sindhu J and Renee Namratha, Asiam journal of Management, ISSN 2321-5763, Volume 10, issue 4, 2019.
- [6] 'Role of Artificial Intelligence in providing customer services with special reference SBI and HDFC Bank' by Ritu Tulisameer Salunkhe, International journal of recent technology and Engineering (IJRTE), ISSN-2277-3878-Issue 4, November 2019.
- [7] 'Artificial Intelligence in Banking-Mini Review' by Aoron Smith and Haitham Nobanee, SSRN electronic journal, Feb 2020.