



Significance Of Artificial Intelligence In Indian Banking Industry

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Abstract: The preliminary objective of this research article is to observe the significance of Artificial Intelligence (AI) in the Indian banking industry. Efficient and effective AI technological applications are essential for the big industrial houses and even for the common masses. This research is in general of nature and not specifically evaluated in any specific public or private bank. The present use of AI vis-à-vis future enlargement has also been explored. Artificial Intelligence and multiple Analytics models have dominated the new technologies in past few years. These new technological applications together are solving many of the banking issues in the digital world but data hacking simultaneously emerging as one of the biggest and critical challenge. AI demonstrated as one of the most reliable tool which can fetch information rapidly from the banking database and convert it into the convenient way to the customer and even for the banks.

The research study suggests that AI is one of the futuristic indispensable tools in the hands of the banking industry. The core objective of the AI is to support the banking industry for analysis, data management and customer services whereby the futuristic approach is to detect and defuse the cyber security issues. Fraudulent activities and online manipulative transfer of money must be the challenges ahead the AI technological banking.

Keywords: Artificial Intelligence (AI), Machine Learning (ML), chatbots, fintech, e-banking, 'Trace and Tackle', tech-savvy, Generative AI, fraudulent transactions, financial crime and cyber threats.

1. INTRODUCTION

Recent developments have challenged the dominance of traditional forecasting methods. Artificial Intelligence (AI) and Machine Learning (ML) techniques have emerged as powerful forecasting tools, offering improved predictive accuracy in several economic applications. AI models have demonstrated superior performance in various domains due to their ability to process large datasets, uncover non-linear patterns, and adapt to new information. However, their adoption in the banking sector remains cautious, primarily, due to the concerns about interpretability, transparency, explainability and impact on the institutional credibility.

Artificial Intelligence (AI) is one among the most emerging *de-novo* perspectives and have just begins with exploring its horizons in various facets of the professional working. It has been found to be associated with the well-being of the common human. Emerging role of the AI specifically in the banking industry entails a resourceful approach with the focus to enhance the reliability, speed, accuracy, fast calculation and AI-driven prophecy's.

The coming era will be technology oriented and therefore the efforts are required to be spared where the implementation of AI across all functions of the banking verticals are on full swing. According to COMESA special report, “Central Banks need to strengthen their capacity, intensify their monitoring and surveillance of the evolution of AI technology and its application to the financial system. To ensure that AI does the right thing, Central Banks must be prepared to deal with its implications. Central Banks need to learn and adapt to the AI technologies, by among others, understanding how these technologies work, to maximize and leverage on the benefits. The failure of some Central Banks to do this may result in being left behind while others leverage and take advantage of AI.”¹

2. REVIEW OF LITERATURE

2.1 Sabharwal, Munish (2014)², in his study examines the use of artificial intelligence technological applications by Indian banks. The assumption of hypothesis was set as to prove that the Indian Banks do not use Artificial Intelligence based technological applications. The research was conducted in the Meerut city of UP with the focus on scheduled bank branches in the region and used stratified sampling to draw the results. Hypothesis testing proves that public, old private, regional rural and cooperative banks are not using any AI based technological application.

Interestingly, it emerges that new private sector banks are using any AI based technological applications, thus, it proves that assumed hypothesis is false. Research concluded that none of the banks selected by the researcher for study except new private sector banks are using the AI based technological applications. Further, it found that these new private sector banks use the AI mostly for petty purposes such as auto cheque book re-order facility. However, it discovered that the artificial intelligence being used by ‘Yes Bank’ for evaluation of employee performance, portfolio analysis and credit evaluation.

2.2 V Ganesh Kumar, Kommana (2021)³, in his research observed that AI and Analytics are able to solve many of the bank problems and help the banks to understand - segmenting & customer profiling, customers spending pattern, selling & cross selling of products, risk management, regulatory compliances, security and financial crime safety management. It also observed that AI helping the industry in various financial related issues; such as, fraud detection, investment & trading, advisory role, decision-making processes. The role of analytics in banking has found significant in some of the areas viz.; credit score, fraud detection, pre-approved personal loans, early warning system and pre-approved business loans. It has been concluded that AI and Analytics together will be able to help the banking industry to boost organizational success by achieving main goals viz.; risk reduction, performance, profitability and competitiveness.

2.3 Doumpos, Michalis; Zopoundis, Constantin; Gounopoulos, Dimitrios; Platanakis, Emmanouil; and Zhang, Wenke (2022)⁴, in their research work observed that the rising trend to use the Operational Research (OR) and Artificial Intelligence (AI) techniques so that the challenges ahead banking industry can be addressed. Comprehensive analysis of the existing banking studies with due coverage of various research topics and applications of OR&AI methods with proper identification of emerging future research areas has been duly examined in this research. The role of OR&AI techniques in banking has also examined. Various OR&AI methods have examined in the research such as; performance of bank, fintech in banking industry, customer-related studies, banking regulations, merger & acquisition, risk management and bank efficiency. As future study, the article indicated the issues of environmental, social and governance, which associated with opportunities and risks that may increase in banking sector. The future studies might have explored the effect of government regulations and managerial behaviors on the risk taking by the banks. Further, it also suggested that unsupervised machine learning should apply as future study.

This research paper has analyzed 338 published studies during the period from 2010 to 2020. It concluded with the description of six general topics that employ OR&AI methods with the focus to address crucial banking issues.

3. ARTIFICIAL INTELLIGENCE

Various stakeholders have defined the AI as per their use and policy framework. In general, “Artificial Intelligence (AI) is technology that enables computers and machines to simulate human learning, comprehension, problem solving, decision making, creativity and autonomy.”⁵ Accurate prediction of data and its conversion into result is the need of the hour. Therefore, the consistent increase of AI technology has noticed across all facet of working irrespective of industry.

Further, it has been observed - “Tech-savvy customers, exposed to advanced technologies in their day-to-day lives, expect banks to deliver seamless experiences. To meet these expectations, banks have expanded their industry landscape to retail, IT and telecom to enable services like mobile banking, e-banking and real-time money transfers. While these advancements have enabled customers to avail most of the banking services at their fingertips anytime, anywhere, it has also come with a cost for the banking sector.”⁶

4. ROLE OF AI IN BANKING SECTOR

Futuristic scenario can be considered much advanced than today wherein banking industry can be seen to play pivotal role having emphasis on data analysis enhancement, accurate trend of predictions, improvement in the services for the customer and must able to ‘Trace and Tackle’ (T&T) the swindle risks. It may be more appropriate to state that AI will able to empower different facets of the banking industry such as; commercial, investment, retail, and loan banking. It will strengthen the common masses to understand the market dynamic, behaviour of the customer, emphasis on digital interaction and due engagement of human intelligence and interface on a larger way.

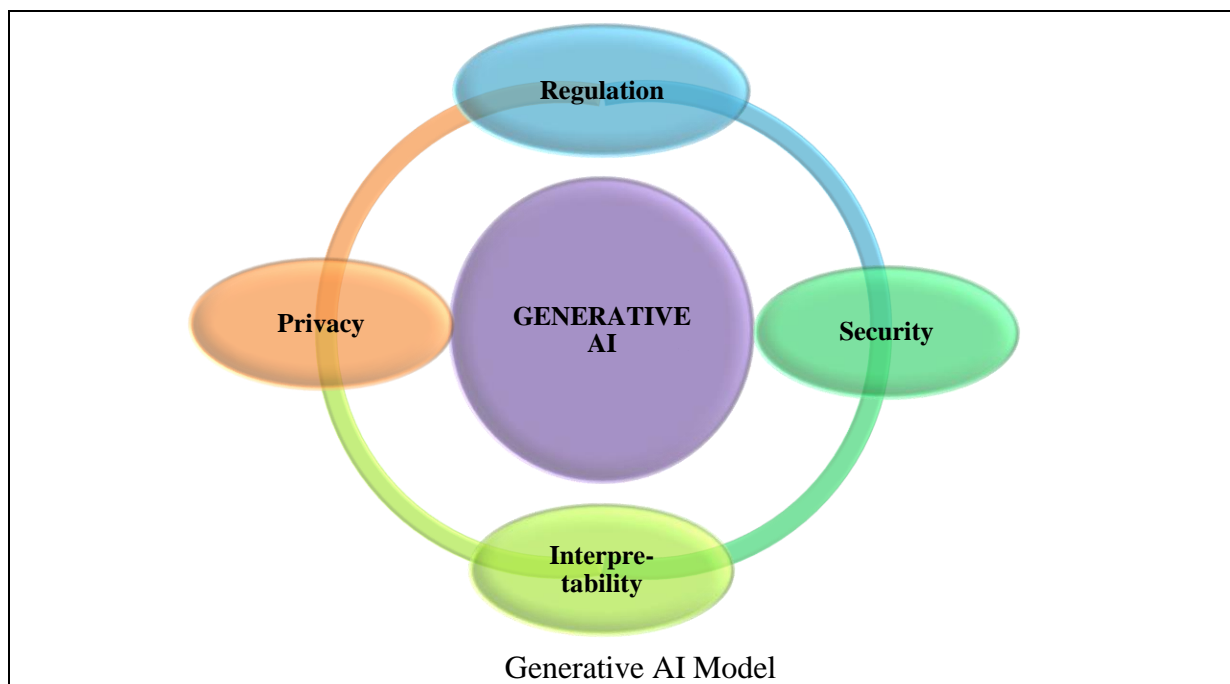
It also recognized as to enhance various functions of the banking industry which *inter-alia* subsumed as efficient customer service, better decision-making, cost reduction, improving security, peril & swindle management, precise prediction, and operational efficiency. On the one hand, AI-powered solutions viz. chatbots and virtual assistants dedicated for the personalized help whereas on the other hand, the algorithms oriented solution-based data for peril & swindle identification. Since, AI is one of the *de-nova* perspectives of the technology based techniques, therefore it is dedicated for the automation of processes which further leads to cost effective and efficiency driven for the banks. These are some areas where AI can be used effectively:

- (i) Customer & personalized Services and products for the individual needs;
- (ii) Identifying and creating new business opportunities;
- (iii) To enable transparency and compliances;
- (iv) Effective management of risk and frauds;
- (v) Streamlining the banking operations; and
- (vi) Automated operations leading to cost reduction

The “Generative AI” (G-AI) is one of the important aspects and eventually deals with creating new texts, audio-video, complex images and special codes. It empowered with the foundation models, which also recognized as larger models and multi-task nature having ability to perform out of the box tasks. G-AI performs by utilizing the ML model with the aim to understand the associations and prototypes in a dataset of the human-fashioned content. Thus, these explored patterns use to create and identify new contents.

AI is one of the most important tools, which entail the deep potential to improve the financial institutions such as bank of all segments. Its effective use is equally critical for the development of banking industry vis-à-vis for the customers. Being delicate in nature, difficult to tackle all potential threats and accuracy challenge give more thrust on the AI with the absolute responsiveness to develop and apply the AI in a responsible manner. Some of critical blocks of Generative AI in banking are summarized, as under:

- (a) Regulation;
- (b) Security;
- (c) Interpretability; and
- (d) Privacy



5. IMPORTANCE OF ARTIFICIAL INTELLIGENCE

AI is sensitive in nature but extremely important in various organizations including banking industry. Some of the imperative functions leading to AI importance are:

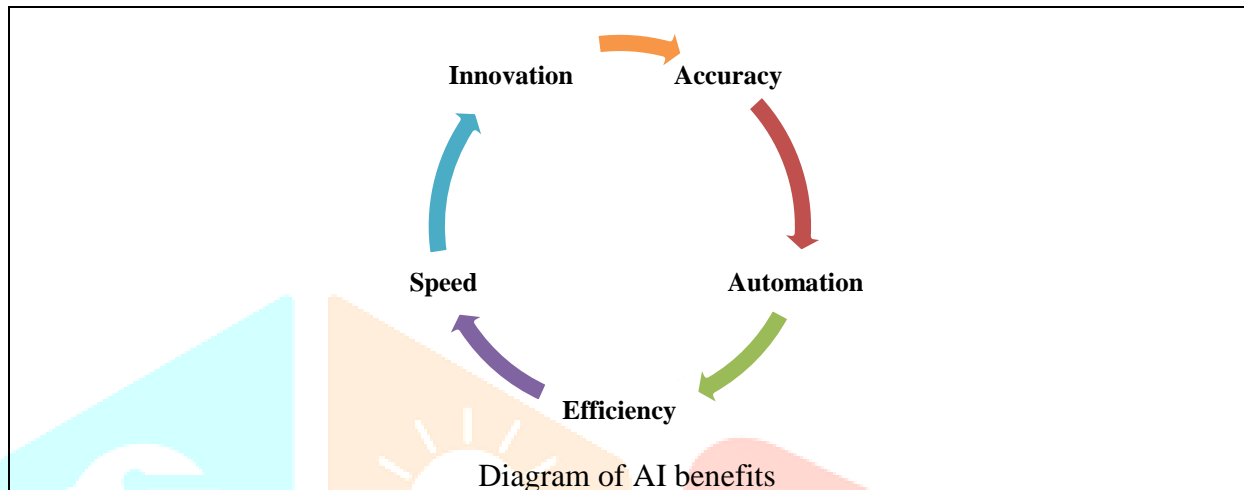
- (a) **Speech Recognition:** It can work effectively and accurately to improve the services with the meaningful insights from the customer interactions, which inter-alia includes; customer call centre, online solutions and information.
- (b) **Sentimental Analysis:** Exploring the emotional opinion from any given text is important arena and such opinions can be drawn based on the natural language AI. Digital text can also be determined and subject to the tone of message i.e. negative, positive or nonaligned. To deal with exceptional high volume of text data, customer care support may be meaningful to identify the customer need and taste.
- (c) **Anomaly Detection Process:** Effective use of AI can identify, trace and prevent the fraudulent transactions, financial crime and cyber threats. However, regular up-gradation of technology required to be adhered scrupulously.
- (d) **Anti-Money Laundering Threat:** In commercial and retail banking, cyber fraud and hackers suspicion was and will be the big challenge. Thus, data safety and security having multiple layers of technology based solution required to put on place.

6. BENEFITS OF AI

Accurate and fast working, personalized services and management of big data with utmost safety are essential in all most every commercial functioning. AI technology provides for the solution to the banking and it has some meaningful benefits.

- (a) **Accuracy:** The calculation work, documentation, processing of online request of the customers, auto emails reply, etc. are some of the areas where the use of AI is important. Sms, email and whatsapp connect etc. are some of the examples which can be based on AI technological applications.
- (b) **Automation:** Through AI, the banking sector can be able to empower decision-making process, strengthening of internal banking processes and automate the workflow. AI can be critical as watchdog for cyber security, fast client services and faster personalized digital banking with the focus on customer centric-approach.

- (c) **Efficiency:** Repetitive nature of work, auto processing of customer request and solution, etc. are some of the important area where AI can play pivotal role. These can be managed through AI applications and further improves the efficiency.
- (d) **Speed:** AI technology provides for the faster decision-making, effective trading communication, risks modeling and compliance management
- (e) **Innovation:** Innovative approach ensures to strengthen the customer services, sale of products and retention of huge data in systematic way. Above all to maintain human touch is one of its important aspects.



7. CONCLUSION

Financial institutions and Indian banking industry has been serving for the customers through various platforms that *inter alia* consists of internet banking, mobile banking, app-based banking etc. Due to technological platforms the footfall in the bank branches are experiencing marginal downfalls. Customer satisfaction by offering attractive personalized services through secure environment will be the future challenges.

Role of Artificial Intelligence has been rapidly increasing in every function. Today, the AI has already explored its wings in all most every field from nursery class to highly sophisticated equipment. It is playing crucial part in medical, engineering, architecture, and other allied fields of social sciences and further this role will become more meaningful. It is therefore utmost important that development of more vibrant and user-friendly AI technology is required to create so that the society as a whole can be benefitted. With the help of bulletproof AI technological applications, it is mandatory to control the cyber and money frauds.

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