

Embracing Artificial Intelligence-An Inevitable Challenge for Banking Industry in India

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ABSTRACT

Security Pacific National Bank was the first bank in US to use Artificial Intelligence (AI) to prevent frauds and unauthorized use of debit cards. Since then its usage in the banking activities has assumed greater significance. Banks use AI system to organize operations, maintain book keeping, invest in stocks and manage properties. AI is considered as a future technology to deal with complicated financial trading and also to optimize banking activities. Fintech or financial technology therefore has become a buzz word in financial circles. Fintech players, world over are challenging the status quo of financial services industry by bringing in a fresh trade on problems faced by customers as seen through the lens of technology. Indian banks are therefore at the threshold of welcoming AI in a wide spread banking applications to reap the benefits of this new technology. With this background the proposed paper will focus on the existing level of AI technology in banking industry and will explore the future possibility of its application in diversified banking activities, its advantages and the major challenges in this regard. Methodology adopted in this paper is descriptive in nature and is mainly based on secondary data.

Key Words; *Banks, Artificial Intelligence, Fintech, Financial trading and Automation*

“Machine Intelligence is the last invention that humanity will ever need to make” Nick Bostrom

Artificial intelligence is a reality today and it is impacting our lives faster than we can imagine. It is already present everywhere. From SIRI in our phone to NETFIX recommendations that we receive on our smart phone. Banking industry is not an exception to it. In the present scenario the banks in order to remain competitive in the existing market and also to cope up with virtual Banking are looking at a way to deliver the best possible customer experience to their customers, to maximize efficiency internally and also to maximize security levels. The solution for all these is Robotic process Automation (RPA). Ever since the RPA was introduced to the financial world, the virtual work force has helped banks minimize human intervention in the execution of tasks and decision making and dramatically improved operational efficiency. According to Accenture’s recent “*Accenture Banking Technology vision 2018 report*”, 85% of Indian Bankers believe that Artificial Intelligence (AI) will work alongside humans in the next two years a higher than the global average of 79% and 93% Bankers in India said they increasingly use data to drive critical and automated decision making. But due to lack of proper data access 77% of Banks agree that they face stiff challenge in this regard. Vision 2020 by “Deloit” identifies that, in the light of mergers and acquisitions, technology based solutions are going to be the reality. It involves Cognitive Technology, Artificial intelligence, Block Chain Technology, Robotic process Automation, Fintech and cyber security. With this changing scenario in the tech based banking activities in India, the present paper is an attempt to focus on the following objectives.

Objectives

1. To explore the existing technology usage specially Artificial Intelligence in Indian Banking system.
2. To explore the possibilities of adapting to emerging RPA.
3. To identify the challenges in upgrading to emerging RPA technology.

Methodology: This paper is descriptive in nature and draws required data information from secondary sources.

A Brief History of Evolution of AI

The study of mechanical or formal reasoning began with philosophers and mathematicians in antiquity. The study of mathematical logic led directly to Alan Turing's theory of computation, which suggested that a machine, by shuffling symbols as simple as "0" and "1", could simulate any conceivable act of mathematical deduction. This insight, that digital computers can simulate any process of formal reasoning, is known as the Church-Turing thesis. Along with concurrent discoveries in neurobiology, information theory and cybernetics, this led researchers to consider the possibility of building an electronic brain. Turing proposed that "if a human could not distinguish between responses from a machine and a human, the machine could be considered intelligent." The first work that is now generally recognized as AI was McCulloch and Pitts' 1943 formal design complete for turning "artificial neurons".

The field of AI research was born at a workshop at Dartmouth College in 1956. Attendees Allen Newell (CMU), Herbert Simon (CMU), John McCarthy (MIT), Marvin Minsky (MIT) and Arthur Samuel (IBM) programs that the press described as "astonishing": computers were learning checkers strategies (1954) (and by 1959 were reportedly playing better than the average human), solving word problems in algebra, proving logical theorems (Logic theorists first run 1956) and speaking English. By the middle of the 1960s, research in the U.S. was heavily funded by the Department of Defense and laboratories had been established around the world. AI's founders were optimistic about the future: Herbert Simon predicted, "Machines will be capable, within twenty years, of doing any work a man can do". Marvin Minsky agreed, writing, "Within a generation the problem of creating 'artificial intelligence' will substantially be solved".

They failed to recognize the difficulty of some of the remaining tasks. Progress slowed and in 1974, in response to the criticism of Sir James Lighthill and ongoing pressure from the US Congress to fund more productive projects, both the U.S. and British governments cut off exploratory research in AI. The next few years would later be called an "AI winter, a period when obtaining funding for AI projects was difficult.

In the early 1980s, AI research was revived by the commercial success of expert systems, a form of AI program that simulated the knowledge and analytical skills of human experts. By 1985 the market for AI had reached over a billion dollars. At the same time, Japan's fifth generation computers project inspired the U.S. and British governments to restore funding for academic research. However, beginning with the collapse of the Lisp Machine market in 1987. In the late 1990s and early 21st century, AI began to be used for logistics, data mining, medical diagnosis and other areas. The success was due to increasing computational power, greater emphasis on solving specific problems, new ties between AI and other fields (such as statistics, economics and mathematics), and a commitment by researchers to mathematical methods and scientific standards. Deep Blue became the first computer chess-playing system to beat a reigning world chess champion, Garry Kasparov on 11 May 1997.

In 2011, a Jeopardy! quiz show exhibition match, IBM's question answering system, Watson, defeated the two greatest Jeopardy! Champions, Brad Rutter and Ken Jennings, by a significant margin. Faster computers, algorithmic improvements, and access to large amounts of data enabled advances in machine learning and perception; data-hungry deep learning methods started to dominate accuracy benchmarks around 2012. The Kinect, which provides a 3D body-motion interface for the Xbox 360 and the Xbox One, uses algorithms that emerged from lengthy AI research as do intelligent personal assistants. Like this AI took its birth and now in its youth with enormous potential to succeed in every where including banking sector.

AI and Indian Banking Sector

According to Rishi Amora, a managing director, financial services, Accenture, AI adoption by Indian Banks is still in its nascent stage. According to various Industry reports more than 30% of large financial institutions already investing in such technologies and close to 70% are planning to do so in the

near future. SBI the largest Bank in India, last year conducted 'code for banks' hackathon to encourage developers to build solutions leveraging futuristic technologies such as AI and Block chain into the banking section. Private Banks like HDFC Bank and ICICI Banks have already introduced chat bot for customer service. Some have even gone ahead with placing robots for customer service. Last year Canara Bank installed *Mitra* and *Candi* robots at some of its offices.

In this way AI is entering Indian Banking Industry. In the future, AI will be able to autonomously analyze what is out in the digital world, combine internal data and open data, and pursue ideas suggested by the AI algorithm. In the not too distance future we may even see one AI solution creating another. So now it becomes essential to see the role of AI in banking industry.

The following are the important areas of application of AI in banking industry.

*** Wealth Management for Masses.**

UBS a heavy weight in the wealth management business tested the ability of 'Sqreem' a seven year old AI to analyze large amount of data and were amazed by the way it worked and about its end results. Automation is able to offer personalized tax optimized investments to clients who have far less in investable assets than what would usually quantify for professional wealth management. This is going to cut the cost of offering wealth management service. Tailored products can be offered to client by looking at historical data, doing risk analysis and eliminating human error from hand crafted models.

Customer Support and help Desk.

Everyone hates being 'Next in line' on some phone call when all they want is just to have their online bank work. As speech processing and natural language processing technologies mature they can handle most customer service questions for us. Humanoid Chatbot interfaces can be used to increase efficiency and reduce cost for customer interactions.

*** Fraud Detection**

Anomaly detection can be used to increase the accuracy of credit card fraud detection and anti money laundering. *Feedzai* and *Siftscience* are helping their customers catch over 89% of fraud cases while reviewing only 1% customer order.

*** Under Writing**

The new comers in the underwriting business like *zest finance* is more effectively price personal credit risk. One of its philosophies is 'All data is credit data' that means that they trade everything they legally can about the user to identify what interest rate he should pay.

*** Security:** Suspicious behaviors, logs analysis and spurious e-mails can be tracked down to prevent security breaches.

*** Digitalization and automation in back office processing.**

Documents data using machine learning AI to generate insights from the text data can greatly cut down back office processing times.

*** ATMS**

Images / face recognition using real time camera images and advanced AI techniques such as deep learning can be used by ATM to detect and prevent frauds / Crimes.

Challenges

A wide implementation of a high end technology like AI in India is not going to be without challenges. Due to lack of credible and quality data to India's diverse language set, experts believes a number of challenges exist for the Indian Banking sector using AI

* According to Rishi Aurora “A Key Challenge is the availability of the right data. Data is the life blood of AI and any vulnerability arising from unverified information is a serious concern for business. Imagine for example, the risks that could arise from KYC compliance AI System, if the data source is incorrect, or consider the efficacy of fraud detection AI, system without the right kind of data structured mechanism for collecting, validating, standardizing, correlating, archiving and distributing AI relevant data is crucial”

* “Abhay Pandey Says” India has 150 plus languages with sizable spoken population. Applications which use speech to text or text to speech rely on normal language processing (NLP) libraries and technique but in order to effectively reach out to wider population in India, much more progress is required on NLP front”.

* Data access and data privacy is a central aspect of any AI work that banks do. These aspects will be of paramount importance with introduction of regulations in Europe such as General Data Protection Regulation (GDPR) GDPR is currently applicable to European citizens, but India and other countries have their own data privacy regulations. Banks in India will have to build AI system with GDPR and similar privacy regulations in mind.

* The biggest challenge is the scarcity of trained human resources. The exiting work force in India is not familiar with latest tools and applications.

* The AI technology is a big threat to redundant employees in the banking sector. The mass adoption of AI may cause a grave unemployment problem in the sector.

* Another important challenge faced by industry and not just banks in India is unavailability of people with right data science skills.

* Another unseen challenge is the moral implications of using AI. There is no universal right or absolute wrong in this case.

Future with AI

Banks in general are under threat by fin techs. A big reason for this is the extent to which tech startups embrace the emerging AI technologies and leverage them to outperform banks at their own game. But by building internal competencies in the field of data science and machine learning, banks can adopt the same AI tools currently used by fin techs. But this takes commitment from a high level in the organization and a realization that properly understanding the data which is assuming growing importance every single day. Indian Banks are striving their level best to match with the global technology and are already caught in the wave of AI controlling and helping almost all the functions that they do.

Conclusion

Today’s banking firms are facing increased demands to adapt to these changing technologies and also for delivering exceptional client experience at the lowest cost. Robotic process automation is making it possible for financial institutions to achieve these goals and remain competitive in an ever changing environment. Therefore, now it is time for the banks to seize the opportunity to shift gear in the efficiency game and use AI to their best advantage.

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