

Artificial Intelligence and Transformation to the Digital Age in Indian Banking Industry – A Case Study

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Abstract:

Today's banking goes well beyond the traditional brick-and-mortar branch banking that we were accustomed to until a decade ago. Customers queuing in branches, vouchers, piled-up documents, commotion, and confusion, all of which were once synonymous with any bank branch in India, have changed to a considerable part as a result of the use of technology in the banking sector. Beginning with computerization, the Indian banking landscape has changed dramatically over the last several decades, with the whole financial activities being packed into our pockets and we carrying and managing our banks on our own. With the addition of robotic process automation, natural and colloquial language processing, powerful data analytics, predictive analytics, and image analytics, the current AI mechanism is poised to become more dynamic, enhancing the customer experience in a variety of ways. Apart from providing information about banking activities, chatbots and virtual assistants will increasingly aid clients in making financial decisions on their behalf.

Keywords: Artificial Intelligence, Digital Transformation, Banking, Applications, Challenges.

1. INTRODUCTION

Digital transformation is among the most well-known important drivers of how businesses deliver value to their customers in a competitive, fast-changing business environment. Artificial intelligence (AI) is now widely acknowledged as one of the most important digital transformation enablers across a significant number of industries. Artificial intelligence (AI) has the potential to facilitate enterprises. become more imaginative, versatile, and adaptable than they have ever been. AI is already being applied to enhance productivity and competitiveness while also driving digital transformation in a range of organizations (Jewandah, S, 2018).

Since John McCarthy defined AI as "the science and engineering of producing intelligent robots," it has been around for decades (A S Ramasastri, 2020). AI is the gathering of data, algorithms, and processing power that allows robots to mimic human capabilities and act intelligently. Robotic Process Automation (RPA) and Artificial Intelligence (AI) – play a key role in empowering banks to rapidly automate its business operations and effectively transform the entire business (IBS Intelligence, 2018).

AI is fast evolving as the go-to technology for companies across the world to personalize experience for individuals(Vijai. C,2019).The technology is improving and becoming more intelligent every day, allowing more and more sectors to utilize AI for varied applications. The banking industry is becoming one of the first to employ AI. Banks, like other industries, are experimenting with and using technology in a variety of ways. Bringing smarter Chatbots for customer service, personalizing services for individuals, and even deploying an AI robot for self-service at banks are just a few of the basic AI uses(Sindhu, J, 2019).

2. ARTIFICIAL INTELLIGENCE IN BANKING INDUSTRY

Today, AI is being used almost everywhere it can be useful, from the front office to the middle and back offices(Alex Kwiatkowski, 2020). According to a PWC Fintech India research from 2017, global AI application spending reached \$5.1 billion in 2017, up from \$4 billion in 2015(Sindhu, J, 2019). A research report published in Business insider suggests that by switching to an AI banking system, banks can save an estimated amount of \$447 billion by 2023.(IDRBT, 2020).

83% of Indian bankers believed that Artificial intelligence could work along with the humans. The global average was 79%. In addition, 93 percent of Indian bankers said they used data to make decisions (Accenture, 2018) . Banks have long been on the cutting edge of AI. Customers who have used digital assistants and a rising variety of AI-enabled service technologies can experience the impact of Artificial intelligence in banking(Alex Kwiatkowski, 2020).

3. USE OF AI IN BANKING

Banks and financial institutions are applying AI technologies such as Cloud computing, Block chain, Machine Learning, APIS and Robotics to reduce cost, improve efficiency, enhance security and improve customer experience. Majority of the large and global banks are incorporating AI for both back office and customer facing purposes. Several large financial services companies are already working on Proof of concept and implementing some of the technology in development, such as cloud computing, block chain, machine learning into their operation(PWC, 2020).

The use cases of AI in banking can broadly be classified into three categories: i. Customer experience ii. AI empowered employee’s and iii. AI powered Insights. The table below illustrates the sub-categories under these three categories(A S Ramasastri, 2020).

Use of AI in Banking

Customer Experience	AI Empowered Employees	AI Powered Insights
Identity Protection	Relationship Managers	KYC Fraud Prevention
B2C and B2B Digital Assistants	Wealth Advisory	Payments/ AML Fraud prevention
Digitized Customer Service	Risk and Compliance	Customer Retention
Next Best Action/Targeted Offers	Robotic Process Automation	Cross-sell/Upsell opportunities
New Banking Products	Financial Forecasting	Market Surveillance
Credit Scoring	Credit department	

Source: IDRBT, 2020

4. APPLICATION OF AI IN INDIAN BANKING INDUSTRY

AI has several applications in the banking industry. Here are AI's most important applications in banking that will revolutionize the industry.

Chatbots -AI in banking is more than about Chatbots. Chatbots are AI- enabled conversational interfaces(Magzter, 2020). Bots engage with thousands of consumers on the bank's part without incurring significant costs. Example, BI is currently using an SIA chatbot, an AI-powered chat assistant developed by Payjo, a startup based in Silicon Valley and Bengaluru(Denis Ostapchenya, 2020).

Mobile Apps –Mobile app AI functionality is become more responsive, customized, and advanced. Banks generate 66% more revenue from mobile banking users than when customers visit branches(Denis Ostapchenya, 2020). Example: Alexa is an AI-powered virtual assistant from Amazon. This was used by IndusInd Bank to connect with his customers.

Machine Learning – Banks can dramatically reduce risk levels by analyzing a large number of data sources using machine learning techniques. ML algorithms could Accurately determine who are at risk of defaulting on their loans. Machine learning also support the banks the identify frauds, reduce chances of mistakes, human errors and enables the automatic and simultaneous checking of multiple conditions(Marutitechlabs, 2020).

Robotics – Banks implement robotic process automation (RPA) to automate manual business steps in order to stay competitive in the market(RaheelRetiwalla, 2020). Banks use RPA to boost operations and manage with a significant number of transactions, KYC and onboarding requests(Diceus, 2021).

AML and Fraud Detection – Several banking institutions across the world are already using System to help them migrate from rule-based software systems to AI-based systems that are even more powerful and smarter in detecting anti-money laundering and fraudulent activities(DevendraMangani, 2017).

Customer Recommendation Engines – The bank's recommendation system filters data using several algorithms and recommends the most relevant goods or bank offerings such as Credit Card plans, Investment Strategies, Fund etc. to the bank customers(ShivangiMaheshwari, 2021). Example: Easiloan – a startup company from Mumbai, recently launches India's first home loan selection and recommendation engine for home loan borrowers. Easiloan also tie-ups with major financial firms and banks such as HDFC, ICICI, SBI, Bajaj Housing Finance, PNB, IIFL Home finance and others(Presstrustofindia, 2021).

Algorithmic Trading – Algorithmic Trading or Algo Trading shall refer to any trade that is initiated by a software programme that employs automated execution logic(Rabi Sankar, 2018). Algorithmic trading is the practice of using technology to buy and sell stocks automatically. Computer itself analyzed the data such as prices, sector, businesses and place order automatically and more important quickly(Deepak Shenoy, 2020). Global banks already started for tie-up with Indian exchanges and adopting the Algo trading. But, Indian banks under evolutionary stage to implement the same(Anupriya Gupta, 2019).

5. ROLE AI IN INDIAN BANKING INDUSTRY

Indian banks are progressively using technologies of the future in order to serve new-age clientele and expand their development potential. AI is supporting Indian banks in upgrading their operations across the board, from accounting to sales to contracts and cybersecurity (Meha Agrwal, 2019).

Chatbots: AI has been installed in Indian banks since 2016. Chatbots like, SBI – SIA, HDFC – EVA, ICICI – iPal, Kotak Mahindra – Keya, Axis Bank – Axis Aha and Yes Bank – Yes Robot are some of the Chatbots used in leading Indian banks since 2017-18 onwards (Subudhi.S, 2019). State Bank of India's Chatbot SIA helps customers with everyday tasks like a bank representative. SIA has been setup to handle ten thousand requests per second, or 864 million per day (Businessworld, 2017).

Robots: In 2016, ICICI Bank adopted Robots. Which processes about 20 lakh transactions each day (MuqbilAhmar, 2018). ICICI Bank's application robots have minimized response time to clients by 60% and improved precision by 100%, strengthening the lender's productivity and effectiveness tremendously (Exito, 2020). City Union Bank – Lakshmi (2016), Canara Bank – Mitra&Candi (2017), and HDFC – Interactive Robotic Assistant are among the other major banks that have deployed robots for banking tasks (2017). These robots are utilized for a range of functions, including retail, whole-sale banking, currency, treasury, and international trade (Subudhi.S, 2019).

Machine Learning and Algorithm: On Nirav Modi fraud with PNB – PNB Said that it has a zero tolerance to unethical practices with in the system and decided to deploy AI algorithms for reconciliation of Accounts (Bijaya Das, 2018).

Mobile App: Allahabad Bank has launched an AI-based app (Vivek Kumar, 2021) called "empower," while IndusInd Bank has recently launched an Alexa skill called InduAssist, which allows bank account users to execute financial and non-financial activities with Amazon's virtual assistant Alexa (Meha Agrwal, 2019).

Digital Branch – In March 2019, Bank of Baroda opened a hi-tech digital branch at MS University campus in Vadodara (PTI, 2018), complete with innovative devices such as an AI robot named Baroda Brainy and a digital lab with free Wi-Fi access (Prashant Rupera, 2019).

In India, there are 12 banks that have received consistent media attention for their AI initiatives in recent years. To share the AI system, the Banking sector in India should form a consortium. The co-operative and regional banks will be ready to explore with AI at a lower cost and with more security as a result of this. The emerging customer-based humanoid robots that might take over the task of guiding clients through the banking process are the future of developing AI in the banking sector.

6. CHALLENGES IN IMPLEMENTING AI IN BANKING INDUSTRY

According to a 2019 survey, businesses used AI at a rate of roughly 37 percent in 2019. Over the course of only four years (10XDS Team, 2021), AI deployment has increased by 270 percent. It is crucial to emphasise, however, that AI still faces a number of problems. Here are some of the most typical issues that most banks have when attempting to deploy AI.

(i). Lack of Trained Human Resources – The most significant difficulty is a lack of trained human resources; the current workforce is unfamiliar with the most recent technologies and applications (KulBhushan, 2018).

(ii). High Costs – AI's production and maintenance costs were extremely high and complicated. AI is made up of sophisticated software and programmes that need to be updated on a regular basis to keep up with the demands of a changing environment (Padmanabhan & Princy Metilda, 2021).

(iii). Quality of Data Set – Any hazard resulting from unconfirmed data is a major source of concern for businesses. Example: The dangers of using an AI system for KYC compliance if the data source is inaccurate(KrithiChandrashekar, 2018).

(iv). Security and Storage – AI applications make use of significant amount of data for making intelligent decisions. Using vast amounts of data can lead to storage challenges, and data-driven automation can lead to data security concerns(10XDS Team, 2021).

(v). Lack of Infrastructure – Replacing old banking systems remains a significant problem. AI applications which used are high level of computational speed. Expect some of the largest private banks will find it challenging to integrate AI because their systems are 20-30 years old(CuneytBuyukbezci, 2020).

(vi). Trust in AI – Any new concept's adoption requires a high level of confidence in it. AI continues to be feared by many banks, businesses, customers, and clients. AI is untrustworthy, especially in the banking and fintech industries, where money is at stake(Swapna, 2020).

(vii). Others – Apart from the above, AI integration into existing systems, complex algorithms and training of AI models, fear of un-employment, unwillingness of bank employees, many languages create ineffective implementation of natural language processing and unavailability of people with right data science skills are few other challenges in implementing AI with banks(Kumar, K, 2020).

7. CONCLUSION

AI is going to be stronger and smarter in the future, which will help any customer to have a secure banking experience. Artificial intelligence (AI) has the potential to improve company operations, provide customized services, and aid with wider aims like financial inclusion (UtsavPathak, 2020). In the banking industry, AI has been used in areas such as core banking, operational performance, customer assistance, and analytics. Chatbots and Robotics are widely used applications in Indian banking industry and the same time machine learning algorithms also deployed in the fields like KYC, fund transfer, fraud detection etc. AI focus on scaling new heights in customer relationship improvement through digitization is rising on the progress scale. Expected that the future Indian banks are increasingly deploying the brand-new technologies such as machine learning, block chain and analytics to overcome the challenges like cyber threats, conventional banking methods, lack of training etc. provide high end tech-enabled banking services.

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