A Contemporary Artificial Intelligence (AI) developments and Challenges in Indian Banking Sector

Dr. V.Mouneswari [1], Palla Madhan[2]

1.Assistant Professor, Department of MBA, Annamacharya institute of technology and sciences (Autonomous) , Rajampet: E-Mail id mouni.vangimalla@gmail.com
2.Research Scholar, Department of Commerce and Business Administration, Acharya Nagarjuna University Email Id: madhan.palla@gmail.com

Abstract:

The field of artificial intelligence (AI) is one of the most rapidly expanding areas of technology. The financial industry is rapidly becoming one of the first to implement AI. There are a wide range of technological avenues that banks are investigating and pursuing. The state of AI is always improving and becoming more sophisticated. Challenges facing Indian banking sector was readdressed by Artificial Intelligence. Development that Artificial Intelligence offers to FinTech and the different ways in which it can improve the operations of an Indian banking sector. The article will focus on the applications of AI in banking, as well as the difficulties that AI in India now faces. The advancements in AI and how they apply to FinTech, and the myriad ways that these advancements might enhance the efficiency of India's banking system.

Key words: Artificial Intelligence, Banking sector, Reduction of time,

1. Introduction:

Artificial intelligence, also known as AI, is quickly becoming the technology of choice for businesses all over the world that want to provide individuals with a more individualized experience. The technology makes it possible for many industries, even emerging ones, to adopt AI for use in a variety of applications. The financial services industry is quickly becoming one of the earliest users of AI. And just like other industries, banking is experimenting with and putting the technology into practice in a variety of different ways.

The most fundamental applications of artificial intelligence include enhanced chatbots for customer service, the personalization of services for individual users, and even the deployment of AI robots in financial institutions to facilitate client self-help. In addition to these fundamental applications, banks may also implement the technology in order to bring it to their back offices in a more efficient manner and even to lower the risks of fraud and security breaches.

It should come as no surprise that research firms are optimistic about the possibilities of AI in the banking industry. Sector. There is a significant amount of interest in the banking industry of India as well.
Artificial intelligence has quickly evolved into a fundamental component of today's most competitive and high-pressure fields of business. The use of artificial intelligence (AI) and machine learning (ML) in the manufacturing business has led to a significant increase in productivity, which in turn has led to an astounding number of incredible results. In this fast-paced digital world, these industries successfully leverage AI to achieve corporate growth, profitability, and sustainability. Among these, the banking industry stands out as a sector that could make significant use of AI due to its undeniably enormous potential.

The global market for AI-powered financial technology was expected to be worth USD 6.67 billion in 2019, and Mordor Intelligence projects that this figure will rise to USD 22.6 billion by 2025. The rise of artificial intelligence in the banking and financial sector, as well as its influence there, has been tremendous, and it is radically altering the ways in which banks operate, create products and services, and improve the experience of their customers.

In the world of banking, this is one of the effects of artificial intelligence that gets the least attention. One of the most highly regulated and closely watched businesses in the world is the financial services sector. Banks are required to adhere with stringent rules, regulations, and guidelines in order to avoid, identify, and rectify any and all deviations, illegalities, and nonconformities that may occur in their business operations. In addition, compliance requirements are susceptible to rapid change, which means that banks are required to continually update their processes and workflows in order to be in compliance with these regulations. However, if banks were to harness the power of AI in the area of regulatory compliance, they could simplify, automate, and streamline the activities and workflows associated with regulatory compliance. As a result, banks are able to prevail over the formidable difficulties associated with regulatory compliance that are present in today's environment if they strategically leverage solutions driven by AI.

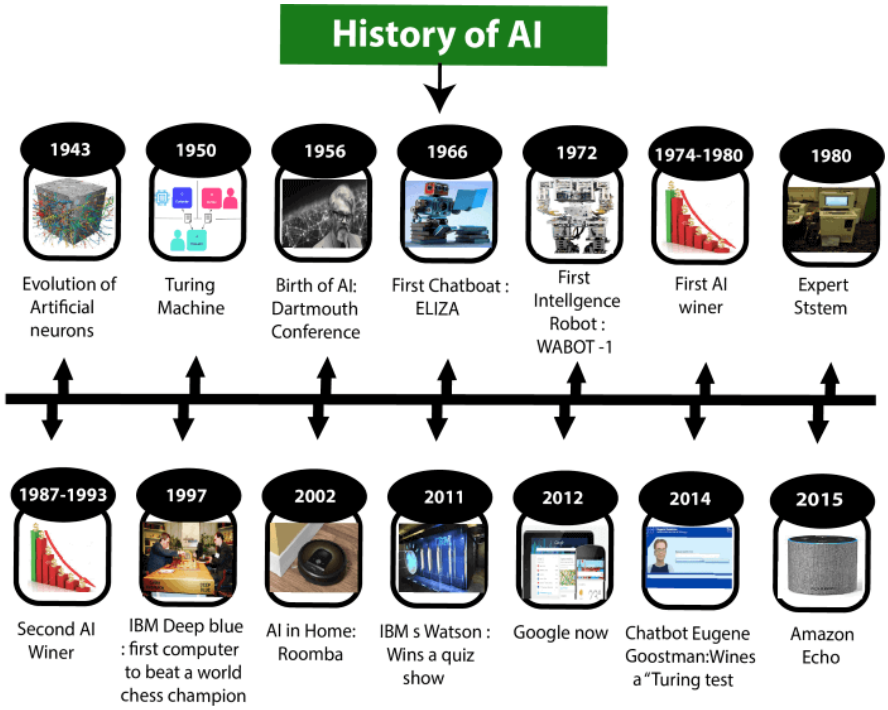
The present moment is the future of banking. In the years to come, artificial intelligence and other forms of cutting-edge technology will play an even more important role in the banking sector, given the rapid pace at which the world is moving toward a fully digitalized society. As a result, the application of artificial intelligence in banking has had a significant influence, and it will continue to play a significant role in the banking industry by delivering business models that are more adaptable and flexible to meet the expanding requirements of the digital world. At Intone, we provide the cutting-edge expertise as well as the skills that are necessary to deliver the banking of the future today. Our banking consulting services equip our clients with data-driven insights and the appropriate tools to excel in today's digital landscape. Whether we're helping to transform and modernize core banking operations, enabling a mobile banking

experience to become a social one, creating world-class payment and credit processes, or providing data monitoring, analytics, and quality assessment and compliance and assurance reporting, our clients are given the ability to compete successfully in today's digital environment.

The influence of artificial intelligence in banking, particularly in the area of customer assistance, has assisted financial firms in molding the perceptions that their customers have of such organizations. The performance and revenue of any firm are directly impacted by the level of customer happiness, and the banking industry is not an exception to this rule. Chatbots and voice assistants powered by artificial intelligence have made it possible for financial institutions to provide service to consumers around the clock and in any time zone. In addition, by utilizing AI and ML for more rapid and detailed research, banks are able to efficiently serve the needs of their customers by deriving compelling insights from the customers' digital footprints as well as their payment behaviours. Additionally, AI assists in the customization of the bank's offerings for a completely different audience, which helps the bank to continually increase their existing base. As a result, AI assists financial institutions in meeting the requirements of their customers at the precise moment they require the most relevant services.

2. **History of Artificial Intelligence**:

Artificial Intelligence is not a new word and not a new technology for researchers. This technology is much older than you would imagine. Even there are the myths of Mechanical men in Ancient Greek and Egyptian Myths. Following are some milestones in the history of AI which defines the journey from the AI generation to till date development. Of AI.



2.1 Applications of AI in banking and finance:

Artificial intelligence has become an integral part of the world we live in, and banks have already started integrating this technology into their products and services.

2.2 Cybersecurity and fraud detection

Bills are paid, cash is withdrawn, checks are deposited, and a whole host of other financial operations are all conducted digitally every day. Therefore, the banking sector must increase its focus on cyber security and fraud detection.

Here's where AI comes in handy for banks, as it can be used to strengthen online banking safety, monitor for vulnerabilities, and cut down on potential losses. Artificial intelligence and machine learning make it possible to detect and warn clients and financial institutions about fraudulent actions.

For instance, Danske Bank, the largest bank in Denmark, switched to a fraud detection algorithm from a rules-based system. The bank's ability to detect fraud was improved by 50% while the number of false positives was cut by 60% thanks to this deep learning tool. Important decisions were also automated by the system, while others were sent to human analysts for review.

AI can also aid financial institutions in dealing with cybercrime. The banking industry was the primary target of cyber assaults in 2019, contributing about 29% of all attacks. Banks can respond to suspected cyber assaults before they have an impact on their

workers, customers, or internal systems thanks to the continuous monitoring capabilities made possible by artificial intelligence in the financial services industry.

2.3 Chatbots:

Without a shadow of a question, chatbots stand out as one of the most impressive examples of real-world applications of artificial intelligence in the banking industry. Once deployed, they are capable of functioning around the clock, in contrast to people, who must adhere to set working hours.

In addition to this, they continue to acquire knowledge on the consumption pattern of a specific customer. They are better able to comprehend the needs of a user in an effective manner as a result of this.

By incorporating chatbots into banking apps, financial institutions are able to guarantee that they are available to their clients at all hours of the day and night. Additionally, because chatbots are able to analyze client behavior, they can provide individualized customer care and make appropriate recommendations for financial services and products in accordance with that behavior.

Erica, a chatbot developed by the Bank of America, is considered to be one of the most successful examples of AI used in mobile banking applications. This artificial intelligence chatbot is able to undertake a variety of duties, including debt reduction and card security upgrades.

2.4 Loan and credit decisions:

Banks have started implementing AI-based systems in order to make decisions on loans and credit that are better informed, safer, and more profitable. When determining whether or not an individual or firm is creditworthy, many banks are still overly reliant on looking at their customers' credit histories, credit scores, and references from other customers.

On the other hand, it is impossible to deny the fact that these systems for providing credit information frequently contain inaccuracies, omit real-world transaction history, and incorrectly categorize creditors.

In order to establish a customer's creditworthiness, an AI-based loan and credit system can analyze the behavior and patterns of a consumer, even if the customer has a limited credit history. Additionally, the system issues warnings to financial institutions regarding particular practices that may raise the likelihood of a default. In a nutshell, technologies of this kind are playing a significant part in the transformation of the future of consumer finance.

2.5 Tracking market trends:

When it comes to financial services, artificial intelligence helps banks evaluate vast volumes of data and make accurate predictions about the most recent market movements, currencies, and equities. Innovative approaches to machine learning are utilized in order to analyze market sentiments and provide investment recommendations.

The use of AI in banking also provides advice on when it is most advantageous to make stock investments and issues alerts when there is a possibility of loss. This developing technology has a large data processing capacity, which not only helps speed up decision making but also makes trading simple for banks and their customers.

2.6 Data collection and analysis:

Every every day, the world's banking and financial institutions record millions upon millions of transactions. The vast amount of information that is produced results in the collection and registration of that information becoming a difficult and time-consuming task for the staff. It is impossible to correctly organize and record such a massive amount of data due to the possibility of making errors.

In situations like these, innovative solutions based on artificial intelligence can aid with the effective collection and processing of data. The result of this is an improvement to the user experience as a whole. Additionally, the information can be put to use in determining whether or not credit should be granted.

2.7 Customer experience:

Customers are always searching for improved ease of use and overall satisfaction with their purchases. For instance, automated teller machines (ATMs) have been very successful because customers can use them to perform necessary financial transactions like depositing and withdrawing money even while banks are closed.

Because of the high level of convenience, there has been an increase in the amount of innovation. Customers can now open bank accounts using their mobile devices while remaining in the convenience of their own homes.

A further improvement of the customer experience and an increase in the level of convenience for end users will result from the implementation of artificial intelligence in banking and financial services. The use of AI technology shortens the amount of time needed to record Know Your Customer (KYC) information and eradicates the possibility of making mistakes. In addition, brand new offerings in the realm of finance and consumer goods can be distributed promptly.

Using AI, eligibility determinations for scenarios such as asking for a personal loan or credit can be automated, relieving customers of the need to manually go through the full procedure. This saves customers time and reduces the potential for error. In

addition, the approval process for facilities such as loan disbursement can be sped up using software that is powered by AI.

AI banking also helps to precisely record client information so that accounts may be set up without making any mistakes, which ensures a smooth experience for the customers.

2.8 Risk management:

There are significant repercussions for the banking and financial industries when external global variables, such as swings in currency, natural disasters, or political upheaval, occur. During such uncertain times, it is essential to make judgments concerning business with an increased degree of caution. The use of AI-driven analytics can provide a relatively clear picture of what is to come, which can assist you in being prepared and helping you make decisions in a timely manner.

AI also helps detect dangerous applications by calculating the likelihood of a customer not paying back a loan and providing this information to the user. This future behavior can be predicted by evaluating previous patterns of behavior and the data from smart phones.

2.9 Regulatory compliance:

The financial industry is one of the most strictly regulated parts of economies all around the world. The regulatory authority that governments possess allows them to ensure that banking customers do not use banks to commit financial crimes and that banks have appropriate risk profiles in order to prevent large-scale defaults. This is accomplished through the employment of regulatory oversight.

When carried out by hand, these procedures take a great deal more time and necessitate a significant financial expenditure; nonetheless, in the majority of situations, banks keep an internal compliance staff to deal with these issues. The regulations governing compliance are also susceptible to regular changes, which means that financial institutions are required to continually update the procedures and workflows that they use to comply with these regulations.

Deep learning and natural language processing are two areas of AI that are being used to help financial institutions interpret new compliance requirements and improve their decision-making process. In spite of the fact that AI banking cannot take the job of a compliance analyst, it can make banking processes more productive and quicker.

2.10 Predictive analytics

General-purpose semantic and natural language applications as well as extensively applicable predictive analytics are examples of one of the most prevalent use cases for artificial intelligence. Artificial intelligence has the ability to recognize specific patterns

and correlations hidden within the data that older forms of technology were unable to recognize.

These patterns could imply unmet sales prospects, potential to cross-sell products, or even measures based on operational data, all of which could have a direct impact on the company's income.

2.11 Process automation:

Through the automation of labor-intensive and time-consuming repetitive operations, robotic process automation (RPA) algorithms improve operational efficiency and accuracy while simultaneously lowering costs. This frees up users' attention to concentrate on more complex procedures that require the participation of humans.

As of this day, financial institutions have been able to successfully employ RPA to raise their efficiency and the speed at which they process transactions. For instance, the technology used by JPMorgan Chase examines documents and extracts data from them in a far more expedient manner than is possible for humans.

2.12 Why Use AI:

This generation is defined by their relationship to technology. This generation contributes to the growing demand for various answers to all of the problems that have been occurring. And the answers are right at their fingertips, where they are desperately searching for them. On the opposite side of the screen, there may be a person working as a relationship manager or it may be a computer that is answering questions.

Big data regarding artificial intelligence is the current industry standard, and every industry is aiming toward gleaning as much as it can from the various reservoirs of unstructured data. The banking industry is undergoing a sea change as a result of the uses of big data. Here comes artificial intelligence. Not only are the benefits of AI being used to extract and structure the data at hand, but the banking and finance sectors are also stepping in to leverage this data to strengthen their relationships with their customers.

3. Impact of AI in Banking:

AI can reduce the wait time by streamlining the processes and protocols used for front-office banking. While you may need to speak with an officer,much of the necessary data can be gathered while you wait.

3.1 Artificial Intelligence Banking In India:

Many banks like SBI, HDFC, ICICI, HSBC and Axis banks in India have turned towards AI.

State Bank of India (SBI)

Developers, startup companies, and students were invited to participate in a national hackathon organized by SBI under the name "Code For Bank." The objective of the hackathon was to generate novel concepts and solutions for the banking industry, with a particular emphasis on emerging technologies such as predictive analytics, fintech/blockchain, digital payments, IoT, AI, machine learning, BOTS, and robotic process automation. The bank is presently utilizing a solution that is based on artificial intelligence and was developed by Chapdex, the team that won the bank's first hackathon. This solution records the facial expressions of consumers and assists the bank in better understanding the behavior of its customers.

HDFC Bank

HDFC bank has developed an AI-based chatbot called "Eva" (Electronic Virtual Assistance), which was produced by Senseforth in Bengaluru. Eva has responded to more than 2.7 million client enquiries, communicated with more than 530,000 unique customers, and participated in more than 1.2 million discussions. The answer may be provided by the device in less than 0.4 seconds, and in the first few days after its launch, it has already responded to more than 100,000 questions from thousands of consumers in 17 different countries. Additionally, the bank is conducting research and development on a line of retail robotic applications known as IRA (Intelligent Robotic Assistant).

ICICI Bank

HDFC bank has developed an AI-based chatbot called "Eva" (Electronic Virtual Assistance), which was produced by Senseforth in Bengaluru. Eva has responded to more than 2.7 million client enquiries, communicated with more than 530,000 unique customers, and participated in more than 1.2 million discussions. The answer may be provided by the device in less than 0.4 seconds, and in the first few days after its launch, it has already responded to more than 100,000 questions from thousands of consumers in 17 different countries. Additionally, the bank is conducting research and development on a line of retail robotic applications known as IRA (Intelligent Robotic Assistant).

Axis Bank

Axis Bank recently launched an AI and NLP (Natural Language Processing) enabled app for conversational banking, to help consumers with financial and non-financial transactions, answer FAQs and get in touch with the bank for loans.

4. Challenges Faced by Banking Sector:

1. New worries regarding data security and transparency have arisen in response to the recent uptick in AI investment in the financial services sector. These and other challenges of AI in financial services are especially critical to overcome as data management practices shift in response to the introduction of new AI technologies. Businesses can prepare for the following challenges by putting in place preventative measures.
2. One problem that many financial institutions have is that they are resistant to change. Some places in tier two and three cities around the country encounter this difficulty because they are standardized with fixed processes in conventional methods. In addition, many departments lack the dedication necessary to invest in training and development for their staff.
3. There is a chasm between the banking industry's requirement and customers' responses because there is insufficient data to undertake operational adjustments. The financial institutions modify their systems to accommodate a change that does not meet the needs of the general public.
4. Third, as the use of AI grows in financial institutions, so does the necessity for such institutions to comply with government regulations. Increasingly, banks are being held accountable for adhering to privacy to regulation policies that apply to services like net-banking and online transactions.
5. Fourth, it is clear that the current workforce is not adequately trained to exploit the cutting-edge technology and applications associated with AI in the financial sector. There is a clear need for a competent labour force in light of the growing prevalence of AI applications. Credibility in the data at hand requires the expertise of engineers in fields such as data science and machine learning.

6.Conclusion:

The financial services industry may gain a lot from AI. In India's banking industry, AI is altering both internal operations and front-facing interactions with customers. It is also used to check for fraud and determine an individual's creditworthiness as well as for regulatory compliance. Artificial intelligence (AI) has the ability to improve business processes, provide more individualized services, and contribute to broader initiatives like financial inclusion. There's no denying that the recent push toward digitalization is having a major impact on more conventional forms of banking. However, it has also made the institutions more vulnerable to cyber-attacks. In order to build a proactive defense system against cybercrimes, banks are increasingly interested in new technologies like block chain and analytics.

References:

1. M. Bhuvana, P. G. Thirumagal and S .Vasantha, Big Data Analytics - A Leveraging Technology for Indian Commercial Banks, Indian Journal of Science and Technology, Vol 9 (32), August 2016 .
2. Dr Monika Sharma,(2020) Amity International Business School, Banking 4.0: -The Influence of Artificial Intelligence on the Banking Industry & How AI is Changing the Face of Modern Day Banks, June 2020, t, 11(6):577-585.
3. C. Vijai, St.Peter's(2019) Institute of Higher Education and Research, Chennai,India, Artificial Intelligence In Indian Banking Sector: Challenges And Opportunities, April 2019, International Journal of Advanced Research 7(5):1581-1587.
4. Mr. Amer Awad Alzaidi (2018),IJCSNS International Journal of Computer Science and Network Security, VOL.18 No.10, October 2018 Manuscript received October 5, 2018 Manuscript revised October 20, 2018 Impact of Artificial Intelligence on Performance of Banking Industry in Middle East
5. Akalya. A (2020) "Impact and challenges of Artificial Intelligence in Banking" Journal of information and Computational Science, Volume 10 Issue 2.
6. Amer Awad Alzaidi (2018) "Impact of Artificial Intelligence on Performance of Banking Industry in Middle East" IJCSNS International Journal of Computer Science and Network Security, VOL.18 No.10.
7. Erol Pala (2021) "Artificial intelligence in customerfacing financial services: a systematic literature review and agenda for future research" International Journal of Bank Marketing.
8. Geetha. A (2021) "A STUDY ON ARTIFICIAL INTELLIGENCE (AI) IN BANKING AND FINANCIAL SERVICES" International Journal of Creative Research Thoughts (IJCRT) Volume 9, Issue 9