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THE ROLE OF ARTIFICIAL INTELLIGENCE IN DIGITAL TRANSFORMATION OF BANKING SECTOR**Dr. S. SASIKALA,***Assistant Professor & Head, Department of Commerce, D.K.M. College for Women (Autonomous),
Vellore-1, Tamilnadu, India.**E-mail Id: sasikalasridhar121110@gmail.com***Abstract**

Artificial intelligence (AI) is the simulation of human intelligence processes by machines, particularly computer systems, to perform tasks such as learning, reasoning, problem-solving, perception, and decision-making. It encompasses technologies that enable computers to understand language, recognize patterns, and adapt to new inputs to achieve specific goals. The banking sector is undergoing a significant transformation with the advent of Artificial Intelligence (AI). AI is being increasingly adopted by banks to improve operational efficiency, enhance customer experience, and mitigate risks. The main objective of the study is to analyze the AI in banking sector and to identify the challenges and opportunities in AI. The study also evaluated the impact of AI on customer experience and satisfaction in banking. This study provided a detailed explanation about the meaning and concept of artificial intelligence. The study was based on conceptual analysis only. The secondary data are collected from various books, Research papers, Journals, publications and websites. The study concluded that AI provides more strength and helps the banking sector to boost up the success and achievement of the goals. Banking sector can implement the technology to enhance back office work, performance, profitability, risk reduction, reduce fraud and security. AI sets a unique determination of the competitive position of Indian Banking Sector.

Key Words: Artificial intelligence, technology, banking system.**Introduction**

The banking sector is undergoing a significant transformation with the advent of Artificial Intelligence (AI). AI is being increasingly adopted by banks to improve operational efficiency, enhance customer experience, and mitigate risks. One of the primary applications of AI in banking is in customer service, where AI-powered chatbots are providing instant support to customers, answering frequently asked questions, and helping with simple

transactions. This not only reduces the workload of human customer support agents but also provides customers with a seamless and efficient experience. AI is also being used to detect and prevent fraudulent activities, such as money laundering and identity theft. Machine learning algorithms can analyze vast amounts of data to identify patterns and anomalies, enabling banks to flag suspicious transactions and prevent potential losses. Additionally, AI-powered predictive analytics is helping banks to

better understand their customers' behaviour and preferences, enabling them to offer personalized financial recommendations and services. For instance, AI can analyse a customer's transaction history and credit score to provide them with tailored loan offers or investment opportunities.



Another significant application of AI in banking is in credit scoring and loan approvals. Traditional credit scoring models rely on manual data collection and analysis, which can be time-consuming and prone to errors. AI-powered credit scoring models, on the other hand, can analyse vast amounts of data, including social media and online behaviour, to provide a more accurate assessment of a customer's creditworthiness. This enables banks to make faster and more informed lending decisions, reducing the risk of defaults and improving overall portfolio performance.

The use of AI in banking is also expected to improve regulatory compliance and reduce costs. AI-powered tools can help banks to monitor transactions and identify potential compliance issues, reducing the risk of fines and penalties. Additionally, AI can automate many manual processes, such as data entry and document processing, freeing up resources for more strategic tasks. As AI continues to evolve, we can expect to see even more innovative applications in the banking sector,

transforming the way banks operate and interact with their customers.

Objectives

1. To study and analysis the AI in Banking Sector.
2. To study about the opportunities and challenges impact of artificial intelligence in Banking Sector.
3. To evaluate the role of AI in enhancing in Banking Sector.

Research Methodology

- This study was detailed explanation about the meaning and concept of artificial intelligence.
- The study was discuss about the opportunities and challenges impact of artificial intelligence in Banking Sector.
- The study was based on conceptual analysis only.
- The secondary data are collected from various books, Research papers Journals, publications and websites.

Review of Literature

Neharika et al., (2024), “The impact of artificial intelligence on banking Operations.” The study was examined that artificial intelligence is integrated in the operations of banking activities a few application of AI like Chatbots in customer Care, Software for fraud detection. AI impact of banking industry to increases in operational effectiveness and lower expenses, automation technologies, time consuming manual tasks, customer services responsibilities. The study was concluded that AI must continue to be adopted in banking sector in order to healthy balance between innovative development and responsibility. Financial institution should improve the ability to

serve their customer and maintain their competitiveness, performance to expanding the digital market Strategy.

Mohit Kumar et al., (2024) “The impact of artificial intelligence on the banking sector.” Artificial intelligence (AI) has become one of the most groundbreaking technological innovations in recent years. The field of artificial intelligence has expanded at a rate never seen before due to a greater acceptance of new technological developments, and its applications are currently being investigated in a wide range of commercial sectors. The study was concluded that AI's impact on the financial industry, both now and in the future. A new era of efficiency, enhanced customer experiences, and better risk management has been brought forth by AI.

Krutika Sawant et al., (2023), “A study of AI Banking System.” The banking industry is undergoing groundbreaking reforms, with a focus on the client as the primary driver. Artificial Intelligence (AI) and Machine Learning are terms used to describe comparable features displayed by machines. The term "artificial intelligence," which describes the most notable ability of a machine to mimic a human being in thinking as a human does and making a logical and the best choice from among the available alternatives aimed at achieving a specific goal. The study and analyze the key applications of AI in banking and impact on its operations and performance. The study was found that financial services that are focused on building a personal connection with the client in order to offer automated financial advice as well as professional guidance for helping clients make financial decisions. The study was concluded that the conclusion that banks are experimenting with and utilising artificial intelligence (AI) to modify how customers are handled, as the technology is growing in popularity.

Chandrima Bhattacharya, (2022), the study was examined that the evaluation and theoretical studies is completed for diverse worldwide and Indian banks with admire to the combination of AI to enhance client interactions and inner banking processes. Chatbot use-instances on banking systems are ranked primarily based totally on client experience. Practical/Theoretical implications: Based at the entire image of AI integration with banking operations, evolving Indian banks should recognition at the maximum famous use-instances to draw customers. The correlation among Chatbotuse-instances can also additionally gain the Installed Indian banks to similarly amplify business.

What is Artificial Intelligence (AI)?

Artificial Intelligence (AI) is the simulation of human intelligence processes by computer systems, enabling machines to learn, reason, solve problems, perceive environments, and understand language. It moves beyond static programming to enable, for example, self-driving cars, chatbots, and predictive data analysis.

Definition of Artificial Intelligence

Artificial intelligence (AI) is the simulation of human intelligence processes by machines, particularly computer systems, to perform tasks such as learning, reasoning, problem-solving, perception, and decision-making. It encompasses technologies that enable computers to understand language, recognize patterns, and adapt to new inputs to achieve specific goals.

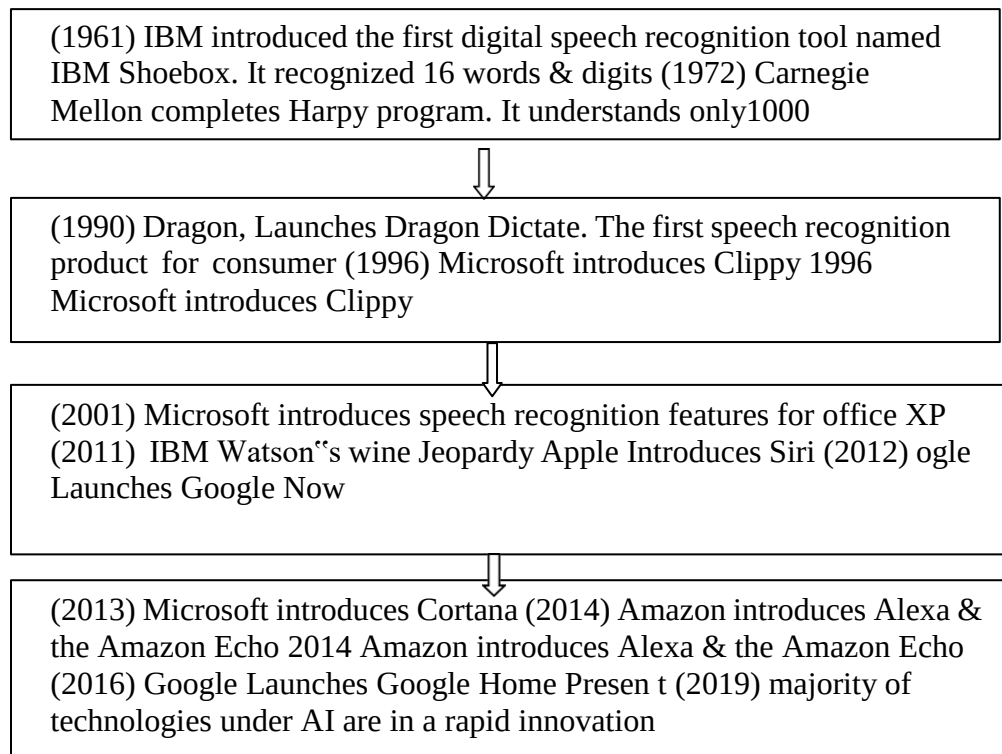
History of Artificial Intelligence in India

AI technologies and the development of intelligent bots' retailers began to implement messaging chat bots that allowed customers to engage conversationally. The natural progression was for these messaging bots to become

voice enabled, driving the rise in voice bots we are seeing today. This progressive voice technology was born at Seattle worlds in 1962 where IBM added a tool referred to as “Shoebox” that may carry out mathematical functions. The technology has come an extended way via

the creation of voice assistants by means of leading generation organizations Apple’s Siri in 2011, in 2012, Google Now; In 2014 Microsoft Cortana; in 2014, Amazon Alexa, and Google Assistant in 2016.

Figure1: History of Artificial Intelligence



Source: World Economic Forum, New Physics of Financial Services, August 2018

It is predicted that there can be great increase inside the range of voice-enabled assistants, it is estimated to 1.83 billion by 2025. The ability to make voice commands on our smart phones was introduced through the Google voice search app for mobile in 2008 and followed by the launch of Apple's Siri in 2011. Further, the quickly evolved in using voice commands for sending texts and emails, as well as performing basic searches. Thus, voice recognition software that turned our verbal commands in to text in order to carry out the necessary actions.

Artificial Intelligence in Banking

Artificial intelligence (AI) is an increasingly important technology in the

banking sector. It is being used to power both internal operations and customer-facing applications. As a result, banks are improving a wide range of functions across the front, middle and back office including customer service, fraud detection, wealth management and regulatory compliance.

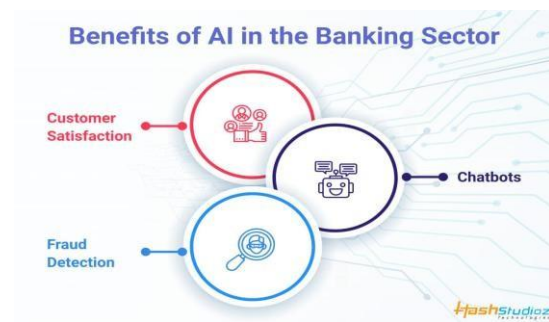
Opportunities of AI in Banking

Enhanced APIs: Banking operations increasingly depend on the use of application programming interfaces (APIs) to enable customers to track their money on various applications. For example, banks must give API permission to third-party budgeting apps so customers can monitor multiple bank accounts. AI enhances API usage by enabling more

security measures and automating repetitive tasks, making them more powerful.

Smarter credit scoring:

Determining creditworthiness is a critical banking service activity. Banks need to crunch significant amounts of customer data to make important credit decisions, such as whether they accept a credit card application or approve a credit increase. AI algorithms and machine learning techniques can help financial institutions approve or deny credit cards, credit increases and other customer requests at fast speeds.



Enhanced cybersecurity and fraud detection: Cyber attackers increasingly use AI to create more sophisticated ways to defraud financial institutions. As a result, those financial institutions can use AI algorithms to protect their employees from cybersecurity threats in real-time, while creating tools to help customers avoid the same tricks

New markets and opportunities: AI-driven predictive analytics and forecasting tools can identify new areas of growth, improve the processes for better estimate the customer. For example, banks can analyze their customers' habits, such as how often they log in or deposit money and compare it to other data points to determine whether individual customers can be on the verge of canceling their accounts.

Challenges to AI in Banking

Introducing AI in banking is not without risks and complications. A 2025 IBM IBV study found that 55% of business and financial markets CEOs say the potential productivity gains from automation are so great they must accept significant risk to stay competitive. Some of these risks include:

Cyber Security: Generative AI technology can be used for fraud prevention and compliance management, but it also produces risks. Embedding open AI tools and technologies into banking IT systems creates some security challenges because AI models are especially valuable targets for malicious actors. That's why banks need a holistic AI governance approach that effectively balances innovation and risk management.

Legal Uncertainty Related to Operations: Generative AI models need training on existing datasets to be effective. There are still some unsolved issues on whether analyzing publicly available data, like news stories and explainer videos, constitutes copyright infringement.⁶ 77% of BFM CEOs say that inconsistent standards and regulations are inhibiting their ability to grow their business.² One way to avoid this issue is to use AI models that have been trained on data that the bank owns, such as customer service interactions or its own proprietary research.

Difficulties in Controlling Outcome Accuracy: Currently, AI models do not reason or "understand" their outputs. Instead, AI models detect patterns in the data they're given and generate results. Therefore, the model cannot tell the human employee if the data is incorrect or inaccurate. This makes explainability critical, especially in a regulated industry like banking, where understanding how a model reached its decision is essential.

Prejudice from Model Bias: Banks are increasingly investing in

environmental, social and governance (ESG) initiatives as a way to demonstrate transparency and accountability for their actions. Because AI models are trained on human-created data, they can inherit some of the biases that influence humans. Banks need to eliminate bias in how they market products and determine factors like creditworthiness, which historically has negatively affected certain demographics.

Key Application of AI in Banking to Reduce Costs

The AI Chatbot: One of the most cutting-edge and fascinating applications of artificial intelligence (AI) software is the Chatbot technology. In order to provide courteous, efficient contact and prompt issue resolution, it interacts with clients using preprogrammed inquiries (Int. J. Emerg, Mark, 2022).

Customer Experience: The degree of client satisfaction and the quality of their experience are strongly tied to the adoption and usage of digital financial services in banks. Customer's preferences have shifted significantly over time, and they now demand timely responses along with content that is specially customized for them. (2022; Kuala Lumpur, Malaysia).

An Examination of feelings: Artificial Intelligence (AI) technologies known as sentiment analysis can predict the feelings, attitude, and reactions of customers (Int. J. Emerg, Mark, 2022).

Automated Management: When digital computers count cash quickly and accurately, the need for human intervention. The bank's daily business volume increases as a result of this automation technological support, which also reduces the amount of stress related to the job and the arithmetic errors that come with cash counting. Mohit Kumar et al., (2024).

Fraud Detection: More frequently than not, financial institutions face the risk of fraud because of the volume of corporate financial transactions and the intricacy of their work responsibilities. As previously said, artificial intelligence uses complex algorithms and mathematical computation to help monitor employee and consumer behavior through unsupervised learning programs (Dr. M. Surekha, Dr. M. Rajaraj).

Conclusion

In the past few years, India is focusing on new digital era. Technology Improvement is the important element of economic development. AI is technology enabling machines to perform tasks needing human intelligence like learning, problem solving, understanding language and decision-making. AI is a tool of banking sector acts as a transformative factor to enhancing efficiency, reducing cost, improving customer experience and other personalized service. In banking sector faced many challenges like data privacy, data security, ethical concern and regulatory complaints. With the help of AI banks are manage huge volume of data at record speed to derive valuable insights from it. Digital payment advisers and biometric fraud detection mechanism lead so higher quality of services to a wider customer base. The study was concluded that AI provide more strength and help the banking sector to boost up the success and achievement of the goals. Banking sector can implement the technology to enhance back office work, performance profitability, risk reduction, reduce fraud and security. AI is set a unique determination of the competitive position of Indian Banking Sector.

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