A Study of the Revolution in Digital Banking and it's Connection with Artificial Intelligence

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Abstract: *This paper analyzes the performance of Indian banks over the period of the last five year. The paper also conducts an empirical analysis the connection between digital banking and artificial intelligence. In addition it also finds Challenges in Adopting AI in banking industry. The study find that due to the concerted efforts of the entire government and all interested parties, the number of digital payment transactions has greatly increased, rising from 2,071 crore in FY 2017–18 to 8,840 crore in FY 2021–22. With regard to the AI Due to the numerous advantages of the technology, AI and banking go hand in hand. According to a McKinsey analysis on a global AI survey, 60% of financial services organizations have at least one AI capability in place to speed up business operations.*

Keywords: Digital Banking, artificial intelligence, Internet Banking, India

I. INTRODUCTION

Digital banking means providing digital banking products and services available through different digital devices on user friendly way" Banking Product refers to processed without any paper or verbal communication with the client/customer under "user friendly way". Complex tasks like user interface management, channel segmentation, online processing, CRM, and legacy system upgrades. Daniel (1999) "inferred that e-banking was the new delivery channel by the retail banks in developing countries. The object of the study was to analyze the current trend of e-services of major retain banking organizations in UK. Through this study he found to make services more adaptable the customers should be given maximum choices and convenience".

II. HISTORY

The Indian banking industry recognized the need for computerization in the late 1980s to enhance bookkeeping, MIS reporting, and customer service. A committee on bank computerization was established by the Reserve Bank of India in 1988 and was led by Dr. C. Rangarajan. With the development of standalone PCs and subsequent migration to Local Area Network (LAN) connectivity, banks started utilizing information technology. Banks adopted the Core Banking platform as technology advanced. Branch banking evolved into bank banking as a result. With the help of the Core Banking Solution (CBS), banks were able to give clients more comfort features as a promising first step toward boosting customer convenience through Anywhere and Anytime Banking. Numerous Core Banking platforms, including Finacle by Infosys, BaNCS by TCS, and FLEXCUBE by i-flex, became well-known. The openness of the economy in 1991–1992 hastened the computerization process. The increased competition from private and foreign banks served as a primary catalyst for this development. To be competitive and relevant in the market, several commercial banks started converting to digital consumer services.

The Indian financial system now includes digital banking as a crucial component. Traditional branch-based banking was the norm up until the early 1990s, but after that, non-branch banking services were introduced. ICICI Bank deserves credit for introducing internet banking in India. In 1999, internet banking services were introduced by HDFC Bank and Citibank. With effect from October 17, 2000, the Government of India passed the IT Act, 2000, which gave electronic communications legal legitimacy. o guarantee that digital banking develops along sound lines and that problems related to e-banking do not endanger financial stability, the Reserve Bank continuously monitors and examines the legal and other requirements of digital banking. Digital banking is one of several efforts Indian

ISSN 2581-9429 IJARSCT

commercial banks have adopted to deal with the challenge of escalating competition. Due to the newly founded foreign and private sector banks' leading positions in the implementation of digital banking, the rivalry has been particularly fierce for the public sector banks. Digital transactions are being aggressively promoted by the Indian government. The National Payments Corporation of India (NPCI) has taken important efforts toward innovation in the field of payment systems with the introduction of United Payments Interface (UPI) and Bharat Interface for Money (BHIM). UPI is a smartphone interface that allows users to instantly transfer money between accounts in various banks based on a virtual address without disclosing the actual bank account. Today's banks strive to give their consumers a quick, precise, and high-quality banking service. Today, digitisation is the primary priority for all Indian banks. The most popular electronic payment technique in India for moving money from one bank branch to another is called National Electronic Funds Transfer (NEFT). It runs in batches of 30 minutes. High-value transactions that are based on "real time" are typically handled using Real Time Gross Settlement (RTGS). The minimum amount that can be transferred via RTGS is two lakh rupees. There is no maximum amount. The National Payments Corporation of India (NPCI) provides the instant electronic payments transfer service known as Immediate Payment Service (IMPS), which is accessible around-the-clock.

III. REVIEW OF LITERATURE

Sharma & Bhalla, (2018) For the purpose of understanding how comfortable Indians are with online transactions, secondary materials were gathered from newspapers, journals, and the Internet for this article. The outcome showed that Indian citizens collaborated with the government's decisions on digitization. However, the Indian government makes every effort to improve the country's cashless economy.

Shettar, (2019) the study found that bank operating costs have dramatically decreased as a result of digital banking. Because of this, banks have been able to lower their service fees and raise their deposit interest rates. Bank profits have increased while operating expenses have gone down. The paper claims that digital banking has a great potential to change the perception of financial inclusion. The simplicity of digital banking can speed the mainstreaming of the unbanked economy.

Kanungo & Gupta, (2021) to determine whether overall socio-economic well-being had been attained, research was done on how public banks and the socially disadvantaged part of Indian society were affected by digitalization-driven financial inclusion. The findings showed that banks have made an effort to move in the right direction with sound financial coverage. Furthermore, digitalization hasn't done much to advance financial inclusion.

Kaur et. al., (2021)Investigation of how digitalisation has affected consumer happiness. The SERVQUAL model was employed by the researcher to carry out the investigation. The findings showed that Northern Indian users of digital banking were pleased with the offerings made possible by banks' digitization.

IV. RESEARCH METHODOLOGY

The study is descriptive in nature. It is based on secondary data, collected from the concerned sources as per need of the research. The relevant books, documents of various ministries/departments and organizations, articles, papers and web-sites are used in this study.

4.1 Period of the Study
Data for this study is collected from 2017-18 to 2021-22

4.2 Objectives
- To study the importance of digitization in banking sector
- To know the prospectus opportunity and challenges with banking industry
- To analyze the progress of digital transaction over the period of time
- To study the connection between digital banking and artificial intelligence

4.3 Role of Digitization in Banking Sector
- Service excellence has increased.

- By adopting ATMs and other cashless transactions, banks and customers save money and time.
- Experiences for customers have improved.
- Banks may employ digital analytics to make data-driven, dynamic decisions now that they have more digital data at their disposal.
- Technology does not discriminate in how it is used. Everyone will receive the same treatment at banks.
- The number of customers for banks will rise as a result of the better financial services.
- Digitalization lowers the risk of human error.
- There won't be any need to manage huge sums of money.
- Simplify the process of storing and retrieving data.
- The paradigm of financial inclusion may change a s a result of digitization, possibly in a significant way. The unbanked economy's integration into the mainstream can advance thanks to the simplicity of digital banking

V. OPPORTUNITY AND CHALLENGES WITH BANKING INDUSTRY

The managing director of the IMF, Kristalina Georgieva, said in a statement to the press that "India deserves to be called a bright spot on this otherwise dark horizon because it has been a fast-growing economy, even during these difficult times, but most importantly, this growth is underpinned by structural reforms." The financial systems in India are undergoing substantial disruption and change, and they have made significant investments to bet on technological revolutions, according to IBM's report titled "Banking on India." Some of the significant financial enablement and digitization efforts launched by the central government are showing promising outcomes. The opportunities that India can seize as a result of these initiatives include the following:

- Financial Inclusion: Since the government's 2014 Pradhan Mantri Jan Dhan Yojana drive to make financial services available and cheap to the general public, 300 million people have established their first bank accounts. The number of people without bank accounts has decreased by 50% since 2011. Additionally, 67% of Jan Dhan account holders live in rural and semi-urban areas, while 55% of account holders are women.
- Digital Payments: The National Payments Corporation of India (NPCI) and the Indian government introduced BHIM and the UPI (Unified Payment Interface) System in 2016. This has enhanced online payments and mobile banking, sparking a digital revolution.

VI. CHALLENGES FACED BY THE BANKING SYSTEM

- Although India's financial system has seen great heights and has a relatable stable approach given the current global economic outlook, this is not to say that the banking system in India hasn't faced issues. Some of the most recent challenges that continue to have a heavy influence on India's financial system include the following:
- The increase in non-performing assets (NPAs), such as defaulted loans or issues in the corporate and agricultural sectors. NPAs in the nation have already surpassed 10 lakh crores, with the corporate sector accounting for more than 70% of the total.
- The rise in scams, such as accounting fraud, fraud involving demand drafts, fraud involving uninsured deposits, fraud involving loans, and others. The greatest fraud cases, including the PNB scandal that cost 11,000 crores, Vijay Mallya's defaulting on loans of Rs. 9000 crores, and countless more that we have lately seen, were recorded by the RBI as totaling 9103 in 2022..
- The underserved and rural population, which makes up over 69% of India's total population, lacks access to banking. According to a World Bank estimate, 1.4 billion Indians lack access to formal banking.
- Lack of reach in rural areas, where technical enablement and use of financial services remain a big challenge.

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DOI: 10.48175/IJARSCT-12432

ISSN
2581-9429
IJARSCT

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VII. PROGRESS OF DIGITAL TRANSACTION OVER THE PERIOD OF TIME

TABLE 1

Years	Number	Value (in lakh crore)
2017-2018	2,071	1,962
2018-2019	3,134	2,482
2019-2020	4,572	2,953
2020-2021	5,554	3,000
2021-2022	8,840	3,021

The Indian government is dedicated to enhancing the quality and strength of the financial sector as well as the standard of life for its people by increasing the number of digital transactions in the Indian economy. Due to the concerted efforts of the entire government and all interested parties, the number of digital payment transactions has greatly increased, rising from 2,071 crore in FY 2017–18 to 8,840 crore in FY 2021–22 (Source: RBI, NPCI and banks).

Immediate Payment Service (IMPS), National Electronic Toll Collection (NETC), and Bharat Interface for Money-Unified Payments Interface (BHIM-UPI), among others, have experienced significant growth over the past five years and have transformed the digital payment ecosystem by increasing both person-to-person and person-to-merchant (P2M) payments. As the nation's preferred method of payment, BHIM UPI conducted 803.6 billion digital payment transactions worth 12.98 lakh crore in January 2023.

VIII. DIGITAL BANKING AND ARTIFICIAL INTELLIGENCE

Since its inception, AI has had a significant disruptive impact, transforming how businesses, especially those in the banking and finance sector, function and provide services to clients. The sector has become more customer-focused and technologically relevant with the addition of AI to banking apps and services. AI-based technologies are currently assisting banks in lowering expenses by boosting productivity and making judgments based on data that is incomprehensible to a human. Furthermore, in just a few seconds, clever algorithms can detect false information. According to a Business Insider report, about 80% of banks are aware of the potential advantages of AI in the banking industry. According to a different McKinsey estimate, the potential growth of AI in banking and finance might reach $1 trillion. Our environment now includes artificial intelligence, and banks have already begun incorporating this technology into their goods and services. Following are some significant applications of AI in the financial sector:

- **Chatbots:** One of the best instances of how artificial intelligence is used in banking in practice is chatbots. They operate continuously once deployed, as opposed to humans who have set working hours. They also continue to learn more about a certain customer's usage habits. It effectively aids in their comprehension of user requirements. Banks may guarantee they are accessible to their consumers 24 hours a day by adding chatbots into their banking apps. Additionally, chatbots can provide individualized customer care, lessen the pressure on emailing and other channels, and promote suitable financial services and products by learning client behaviour.

- **Risk Management:** The banking and financial sectors are significantly impacted by external events on a worldwide scale, such as changes in exchange rates, natural disasters, or political upheaval. Making business judgments with increased caution is essential in such uncertain times. Generative AI in banking provides analytics that help you stay organized and make timely decisions by providing a pretty clear picture of what is to come.By calculating the likelihood that a customer would default on a loan, AI for banking also assists in identifying hazardous applications. By examining historical behavioral patterns and Smartphone data, it forecasts this future behaviour.

- **Tracking Market Trends:** Banks can evaluate massive amounts of data and forecast the newest market trends with the use of AI-ML in the financial services industry. Modern machine learning methods offer investment suggestions and assist in evaluating market sentiment.AI banking solutions also recommend the ideal period for stock investments and issue alerts when there is a potential risk. This cutting-edge technology also helps to speed up decision-making and makes trading convenient for banks and their clients because of its high data processing capability.

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DOI: 10.48175/IJARSCT-12432

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ISSN
2581-9429
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8.1 Cyber security and Fraud Detection:

Users utilize apps or online accounts to pay bills, withdraw cash, deposit checks, and carry out a variety of other digital transactions every day. As a result, the financial industry needs to step up its efforts to detect fraud. This is when banking artificial intelligence enters the picture. AI and machine learning assist banks in spotting fraudulent activity, tracking system flaws, reducing risks, and enhancing overall online financial security. Danske Bank, the biggest bank in Denmark, is one example of a bank employing AI for fraud detection. Danske Bank is one of the first Danish banks to use a fraud detection algorithm in its operations. The bank's ability to detect fraud was enhanced by 50%, and false positives were decreased by 60% thanks to the deep learning technique. In addition to automating many important choices, the AI-based fraud detection system also routes select instances to human analysts for additional examination.

8.2 Challenges in Adopting AI in banking industry:

Widespread use of cutting-edge technology like AI is not without difficulties. Banks utilizing AI technologies have a number of difficulties, including a shortage of reliable and high-quality data and security concerns.

Let's look at them now without further ado:

- **Security problem:** To prevent any breaches or violations, the amount of data collected in the banking sector requires sufficient security measures. Therefore, it's crucial to find the correct technology partner who has a solid understanding of AI and banking and offers a range of security choices to guarantee that your customers' data is handled properly.
- **Absence of Quality Data** Before implementing a comprehensive AI-based banking solution, banks must first gather organized and high-quality data for training and validation. To guarantee that the algorithm works in real-world scenarios, high-quality data is needed.
- **Lack of Explainability** Additionally, data that cannot be read by machines may cause AI models to behave unexpectedly. Therefore, banks moving quickly to implement AI must change their data policies to reduce any privacy and regulatory issues.

IX. CONCLUSION

The study find that due to the concerted efforts of the entire government and all interested parties, the number of digital payment transactions has greatly increased, rising from 2,071 crore in FY 2017–18 to 8,840 crore in FY 2021–22. Due to the numerous advantages of the technology, AI and banking go hand in hand. According to a McKinsey analysis on a global AI survey, 60% of financial services organizations have at least one AI capability in place to speed up business operations.

This suggests that artificial intelligence in banking has a bright and exciting future. With the ability to improve client experience, minimize errors, and streamline procedures, AI is poised to transform the banking industry. Thus, in order to provide consumers with innovative experiences and top-notch services, all banking institutions must invest in AI technologies.

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