



## NEW TECHNOLOGY INNOVATIONS IN THE INDIAN BANKING SECTOR

**P. Geetha**

Assistant Professor, Department of Commerce

V.H.N. Senthikumara Nadar College (Autonomous), Virudhunagar.

E-mail: [geetha.p@vhnsnc.edu.in](mailto:geetha.p@vhnsnc.edu.in)

---

**Received:** September 04, 2024, **Accepted:** September 21, 2024, **Online Published:** October 10, 2024

---

### ABSTRACT

The banking sector is one of the most booming sectors in India. Also, the banking industry is one of our economy's most essential and active sectors. It is also the most vulnerable sector since it is dealing with capital. So, bringing innovations that make banking easier and more feasible is critical. This paper highlights the importance of emerging technologies in the banking industry and examines the features of products that leverage these technologies. As the banking sector continues to evolve rapidly, digital transformation has become a key focus, offering significant benefits to customers. Technological advancements are pivotal in delivering personalized and diverse services to a wide range of clients, often at a reduced cost. This study also suggests that certain banking products, driven by modern innovations, may surpass existing market demands. The paper further explores the technological advancements in banking. It analyzes the impact of innovation factors, such as Internet banking, mobile banking, ATMs, NEFT, and RTGS, on the sector's performance, positively influencing public engagement.

**Keywords:** Banking sector, Technology, Innovations, Security, and Efficiency

### Introduction

Technology is the implementation of new solutions that will meet the upcoming and current requirements. This is possible through new fruitful products, services, processes, technologies, and ideas attainable to markets, society, and governments. Presently, technological innovation is appraised as one of the most critical aspects impacting the banking and economic sectors. Technological development will destroy the

models used in delivering and developing services in banks and replace them with new and primary ones. Hence, the banks are anticipated to create and adopt new technological innovations to execute in this highly competitive environment. In the past years, the banking sector in India has had vast growth and changes. This is mainly because of the enormous benefit of information technology. It is more helpful to the banking and financial industries for new product design and delivery transformations. The latest technologies allow banks to construct new systems that address an expansive range of customer needs.

### **Objectives:**

This research has several key objectives. First, it seeks to identify and examine the recent technological advancements that are revolutionizing the Indian banking sector. This includes exploring innovations such as AI-powered tools, blockchain technology, biometric security measures, and open banking platforms. The study will also assess how these technologies have improved operational efficiency by automating routine banking processes and reducing the time and costs associated with traditional banking methods.

Another objective is to evaluate the impact of these technological innovations on customer experiences. The research will investigate how innovations such as mobile banking, digital wallets, and personalized services have enhanced customer convenience and engagement. It will explore how digital tools have simplified banking for customers, allowing them to access services from anywhere, thereby increasing the overall bank client base.

Additionally, the study aims to examine the role of these technologies in strengthening security protocols. The research will provide insights into how banks address security challenges in a digital landscape by analyzing the effectiveness of biometric authentication, encryption technologies, and AI-driven fraud detection systems.

The study will also evaluate the challenges and risks associated with adopting these new technologies, including concerns related to data privacy, cybersecurity, and the digital divide among customers.

### **Advantages of Innovations in Banking**

#### **1. Convenience**

The primary goal of innovations in the banking sector is to make banking convenient for its customers. With the vast growth of innovations in current banking, they can obtain their accounts, move money, and settle bills from their smartphones or computers.



## **2. Increase in Client count**

It is found that the extension of innovations in the banking sector increases the number of its clients. Considering that the digitalization of banking is so easy and efficient, more people are obsessed with banking for money transactions.

## **3. Efficiency**

The efficiency of banking operations has increased due to automation and digitalization, which has improved data processing accuracy and reduced transaction processing times.

## **4. Strengthen security**

The security of financial transactions has been enhanced by using biometric authentication and encryption technologies, which reduce the risk of fraud and illegal access.

## **5. Personalization**

Technology has enabled banks to personalize their services to meet the particular demands of their customers, leading to a better customer experience and increased customer loyalty.

## **Recent Innovations in the Banking Sector in India**

### **1. Artificial Intelligence**

Artificial intelligence comprises a collection of technologies enabling systems to perform complex tasks, such as interpreting and processing spoken and written language, analyzing data, making recommendations, and more. In the banking sector, AI enhances service quality while helping to control operational costs. AI-powered tools, including virtual assistants and chatbots, automate customer service interactions, providing users with account information and resolving queries. AI-driven biometric systems are highly effective at detecting fraud, strengthening security, and improving AML (Anti-Money Laundering) processes and KYC (Know Your Customer) checks. Additionally, machine learning algorithms facilitate alternative credit scoring models, aiding banks in making more accurate lending decisions. Computer vision technologies further streamline document analysis, supporting banks in customer onboarding and compliance management. Furthermore, AI enables the analysis of vast financial data sets, leading to better risk assessment, economic forecasting, and more informed investment decisions.

### **2. Open Banking**

Open banking fosters cooperation between banks and non-banking financial companies (NBFCs), providing clients with more convenient and accessible financial services. Third-party developers can safely obtain clients' financial data without sacrificing

its integrity by using application programming interfaces (APIs). Account aggregation is another open banking feature that enables customers to manage several bank accounts from a single interface. Banks' APIs empower NBFCs to integrate banking functionalities into their applications and services. This integration automates customer details verification, reducing the necessity for manual checks and expediting the customer verification process.

### **3. Hyper-Personalized Banking**

A personalized banking experience plays a critical role in customer retention. Consequently, banks today are adopting various approaches and technologies to customize their offerings, including Buy Now, Pay Later (BNPL), omnichannel banking, and financial advisory tools. For example, omnichannel banking offers a seamless, customer-focused view of financial information, allowing clients to interact with their bank through multiple platforms. Wealth management and financial advisory tools also deliver tailored advice and investment recommendations, enhancing investor satisfaction and customer loyalty. To achieve this level of personalization, banks leverage AI and machine learning to provide real-time, customized financial insights.

### **4. Blockchain Banking**

Utilizing a decentralized and distributed ledger system, blockchain technology allows secure and transparent transactions between two parties without requiring a trusted intermediary. Blockchain technology regulates the banking process, thus reducing the time and cost of these transactions. The use of blockchain ensures that all financial transactions are recorded in an unchangeable manner, improving transparency and security. Automating transactions and replacing manual and paper-based operations increases trade efficiency. Financial transactions are automated, and intelligent contracts enhance the execution of these contracts. Intermediaries are eliminated, and peer-to-peer (P2P) payments are allowed, thus speeding up the process and improving transaction effectiveness, especially for cross-border payments.

### **5. Banking of Things**

The banking industry utilizes the Internet of Things (IoT) to gather data efficiently, automate the collection process for tasks like KYC and lending, and facilitate real-time response to events. For example, IoT-equipped ATMs can alert for low cash levels and malfunctions, ensuring prompt maintenance. Additionally, digital wallets integrated into smart devices enable customers to make purchases, providing real-time customer-specific data to aid in fraud detection and reduce losses.



## 6. Cybersecurity

The cyber attackers find the banking industry a lucrative target because it handles vast volumes of sensitive consumer and transaction data. Emerging businesses provide data compliance management and tailored security methods, especially for financial systems, to address this problem. For instance, banks protect sensitive data using cybersecurity solutions. Additionally, data encryption solutions support security protocols by lowering the chance of data exposure. To prevent unwanted access to their networks, banks also use anti-hacking software.

## 7. Immersive Technologies

Immersive technologies produce excellent experiences by integrating the physical world with digital or simulated reality. Interesting technologies diffuse personalized and interactive customer experience. The two major immersive technologies are augmented reality (AR) and virtual reality (VR). Virtual Reality permits banks to train their employees on numerous banking procedures, products, and regulations in interactive environments. It is also beneficial for its customers. Artificial reality provides an interactive and visual way to view customers' portfolio performance.

## 8. Banking Process Automation

Automation in the banking sector involves using software robots to streamline repetitive and time-consuming tasks. This allows bank employees to concentrate on more important tasks rather than repeatedly carrying out mundane activities. Banks utilize robotic process automation (RPA) to identify fraudulent activities and flag suspicious transactions when processing credit cards.

## 9. Neo banking

Neo banking reduces capital and operating costs by enabling banks to have a digital-only presence. It extends a flawless and unified banking experience to its customers through cloud computing, open API, and many more. Neo banks also pay lesser charges as they need less capital and operational expenses than traditional banking systems.

## 10. Quantum Computing

The field of quantum computing combines computer science, physics, and mathematics to leverage quantum mechanics for solving complex problems beyond traditional computers' capabilities. Traditional computing requires significant time and resources to process large amounts of data. Quantum computing addresses this challenge by providing fast, efficient, and secure computing capabilities.

## Literature Gap

While extensive research exists on the digital transformation of the banking sector, there are still notable gaps in the literature, especially regarding the Indian banking context. Most existing studies focus on the general benefits of technology in global banking but often lack in-depth analyses specific to the unique challenges and opportunities faced by Indian banks. Furthermore, previous research has not adequately addressed how emerging technologies such as AI, blockchain, and IoT are being tailored to suit the needs of the diverse Indian customer base.

Another gap lies in exploring how these technologies impact smaller banks and rural areas, where digital adoption may be slower. There is also limited research on these technological innovations' long-term sustainability and scalability in the face of evolving cybersecurity threats. Lastly, while customer experience improvements through technology are frequently discussed, there is insufficient data on how these innovations have influenced customer loyalty and trust in the Indian banking system. This study aims to fill these gaps by offering a focused analysis of technology-driven innovations in the Indian banking sector and their broader implications.

## Conclusion

In this modern framework, an individual goes with the renovation and most recent technologies to get their work done much livelier and sharply. The upgrades are renewable and feasible and will raise revenue and increase the industry value while notably reducing the cost and resource obligation, thereby making the environment. The banking sector needs to address the issues of customers accessing and using financial services. The satisfied customers can continue with the same branch. The banks combine their products and services with third-party applications to give their clients various products or services through the banking ecosystem. The new solutions authorize them to furnish a one-stop shop for their customers, and the banks strengthen their security systems and Cloud Services.

## References

- Balasantil, R. S., & Jothimurugan, T. (2024). Adoption and implementation of fintech solutions in the Indian banking sector. *Journal of Inventive and Scientific Research Studies, Special Issue*, 102-107.
- Berger A. (2003) e Economic Effects of Technological Progress: Evidence from the Banking Industry. *Journal of Money, Credit, and Banking*, Volume: 35(2), PP: 141–176. <https://doi.org/10.1353/mcb.2003.0009>.



- Bueno E., Longo M., Salmador M., and Morcillo P. (2017) La Innovación del Modelo de Negocio Bancario: El Reto de la Banca Digital. AECA: Revista de la Asociación Española de Contabilidad y Administración de Empresas, Volume: 120(3–6), PP: 1–28.
- Jebasheela, T., & Anupriya, C. (2024). Banking technologies trends in 2024: Advantages and challenges. Journal of Inventive and Scientific Research Studies, Special Issue, 108-115.
- Kowalski, T. and Shachmurove, Y. (2011). The financial crisis: What is there to learn? Global Finance Journal, Volume: 22 (3), PP: 238-247.
- Paramasivan C & Ravichandiran G (2022), A Study on Technology Driven Innovation Practices in the Banking Sector in Tiruchirappalli District, International Journal of Early Childhood Special Education. 2022, Vol. 14 Issue 5, p3949-3959. 11p
- Pinto, S. and Ferreira, F. (2010), Technological dissemination in the Portuguese payments system: An empirical analysis to the region of Santarém, International Journal of Human Capital and Information Technology Professionals, Volume: 1(4), PP. 55-75.
- Ramos, J., Ferreira, F. and Monteiro Barata, J. (2011), Banking services in Portugal: A preliminary analysis to the perception and expectations of front office employees, International Journal of Management and Enterprise Development, Volume: 10 (2/3), PP:188-207.

<https://www.linkedin.com/pulse/top-10-banking-innovations-amp-trends-2024-sivaprakash-kumma-mani>

<https://bfsi.eletsonline.com/future-proofing-the-indian-banking-sector-with-advanced-it-solutions/>

<https://www.startus-insights.com/innovators-guide/banking-technology-trends/>