International Journal of Engineering, Management and Humanities (IJEMH)
Volume 5, Issue 3, May.-June, 2024 pp: 33-38 ISSN: 2584-2145
www.ijemh.com

# Understanding the Technological Innovations in the Indian Banking Sector

Mr. Anandbabu Natarajan [1] , Mr. Venkatesh Srinivasan [2]
[1] *Senior Manager, Cholamandalam Investment Finance Company Ltd, Chennai, Tamilnadu*
[2] *Assistant General Manager, Cholamandalam Investment Finance Company Ltd, Chennai, Tamilnadu*

Date of Submission: 28-04-2024 Date of Acceptance: 06-05-2024

**ABSTRACT**: Banking has undergone significant transformation through technology. Within the framework of India's economic development, the banking sector holds paramount importance. Technological advancements have led to enhanced reach, productivity, and efficiency. Indian commercial banks now offer comprehensive services akin to a one-stop shop. There's a noticeable shift from generic banking to tailored services, introducing value-added products. Banking operations now embrace round-the-clock accessibility, facilitated by telebanking, ATMs, internet banking, mobile banking, and e-banking. The surge in transaction volume underscores the banking sector's reliance on modern technology, particularly computerization. This case study delves into the technological evolution within India's banking sector.

**KEYWORDS:** IT, Banking, NEFT, RTGS

## I. INTRODUCTION

Banks were once perceived as imposing structures with distinct counters for specific services, which were also limited in scope. Customers would visit their bank branches and queue up to deposit or withdraw money, or to obtain a demand draft. The range of financial services available was quite limited, with banking hours constrained and customers required to physically be present at the branch counter to access services. However, today, banking and financial services are conveniently accessible at one's fingertips, thanks to technological advancements in our country. The Indian banking system is steadily embracing technological innovations and leveraging their benefits in banking operations. Technology is regarded as the cornerstone of the financial system's overall growth, impacting sectors like manufacturing, education, and banking alike. To fully harness the potential of technology, banks are making substantial investments in new and innovative banking methods, including ATMs, e-banking, mobile banking, CRM, and tele-banking. The adoption of electronic banking services, the Indian Financial Network (INFINET), and Real-Time Gross Settlement (RTGS) by the Reserve Bank of India (RBI) further demonstrates the ongoing integration of new technological payment methods. These developments have contributed to the increasing complexity of the Indian financial system relative to the international financial landscape. The processes of liberalization, privatization, and globalization have significantly altered the dynamics of the Indian economy in recent years, with the banking system not exempt from these changes. These reforms have presented numerous challenges to the Indian banking system, compelling it to either adapt to the pace of new technological methods or risk being left behind by the old traditional system. A robust and effective banking and financial system is crucial for maintaining a healthy economic system, as it serves as the backbone of the economy.

The Indian banking sector must not only ensure hassle-free operations but also adapt to external and internal factors as well as new technological challenges. However, it's important to recognize that simply upgrading technology or introducing innovative products won't suffice unless customers respond positively. Therefore, banks must focus on retaining existing customers while also attracting new ones by offering timely new products and services that align with customer preferences, perceptions, and convenience.

The Indian banking system has undergone several phases of transformation, notably in 1969 when all commercial banks were nationalized by Prime Minister Indira Gandhi and Finance Minister. However, the actual turnaround of the Indian banking system began after the economic liberalization of 1991, when banks started offering improved services to customers.

- Accessible Services Anywhere, Anytime

International Journal of Engineering, Management and Humanities (IJEMH)
Volume 5, Issue 3, May.-June, 2024 pp: 33-38 ISSN: 2584-2145
www.ijemh.com

- Reduced Errors and Enhanced Data Security
- Enhanced Customer Experience
- Utilization of Business Intelligence for Increased Profitability

Information technology enhances both frontend and backend operations, thereby reducing transaction costs for customers. Key milestones in India's banking IT landscape include:

- Introduction of card-based payments (Debit/Credit cards) in the late 1980s and 1990s.
- Implementation of Electronic Clearing Services (ECS) in the late 1990s.
- Adoption of Electronic Fund Transfer (EFT) in the early 2000s.
- Launch of Real-Time Gross Settlement (RTGS) in March 2004.
- Introduction of National Electronic Fund Transfer (NEFT) as a replacement for Electronic Fund Transfer/Special Electronic Fund Transfer in 2005/2006.

Technological developments in the banking sector have significantly contributed to the growth and inclusiveness of the industry, fostering economic development.

## II. LITERATURE REVIEW

1. Dr. Satish Tanaji Bhosale, Dr. B.S Sawant, "Technological Developments in Indian Banking Sector": This paper emphasizes the role of the banking sector in India's economic development and the need for banks to leverage technology to enhance penetration, productivity, efficiency, and customer service. It discusses various technologies such as MICR, RTGS, and NEFT.

2. KPMG, "Technology enabled transformation in Banking," The Economic Times Banking Technology Conclave 2011: The article underscores the evolving role of information technology in banking, predicting transformative changes in the industry. New entrants are poised to capitalize on technology to deliver innovative business models focusing on customer value.

3. RBI's Approach to Information Technology Development in the Banking Sector: Insights from industry experts, including Mr. P. Vohra of ICICI Bank, Mr. V.K. Ramani of UTI Bank, and Mr. Neeraj B Bhat of IDBI Bank, highlight RBI's efforts in modernizing payment and settlement systems. Initiatives like RTGS and SEFT are seen as significant for enhancing business opportunities and efficiency in transactions.

## III. CURRENT STATE OF BANKING TECHNOLOGY

The advancements we witness today are the culmination of initiatives launched several years ago, particularly in the automation of interbank payment and settlement systems. Mr. V. Chandershekher, Chief Technology Officer of Bank of Baroda, notes the progression of technology initiatives, starting with the introduction of PDO-NDS in early 2002, followed by CFMS Phase 1. The rollout of RTGS holds significant importance, addressing customer requirements for fund transfers across bank branches at comparable costs to regular remittance facilities. This technological focus by RBI aims to minimize systemic risks.

Mrs. S.A. Panse, DGM (IT) at Bank of Maharashtra, suggests that NSS, alongside connecting service branches and treasuries with RTGS for real-time transaction settlement, could impact FLOAT funds. Each bank is urged to establish a comprehensive

costing department (if not done already) and reassess its service charges structure.

International Journal of Engineering, Management and Humanities (IJEMH)
Volume 5, Issue 3, May.-June, 2024 pp: 33-38 ISSN: 2584-2145
www.ijemh.com

## IV. SIGNIFICANCE AND OBSERVATIONS OF THE STUDY

The actual force required in the application is need to move the engine valve along with spring that must be considered.

The use of Information Technology in the financial and banking sectors has become an undeniable reality, extending beyond traditional roles and becoming increasingly vital in operations such as securitization, risk management, and liquidity. With the IT revolution, banks are interconnecting their systems across branches and geographic locations, necessitating robust network infrastructure. Customers now have higher expectations, demanding instant and convenient banking services from anywhere. While RBI has formulated policies on IT adoption, there's an urgent need to address associated challenges to compete globally, making this study particularly pertinent.

OBJECTIVES OF THE STUDY

This study aims to:

- Examine the role of technology in banking.
- Analyze banking innovations post-computerization in India.
- Investigate technological developments in the banking sector.

RESEARCH METHODOLOGY

The study is based on secondary data collected from research articles, journals, RBI reports, and the internet, with various studies on the subject also referenced.

HYPOTHESIS

The study posits:

- Technology has a positive impact on bank development.
- Technology has facilitated transformation in banking.

POSITIVE IMPACT OF TECHNOLOGY ON THE BANKING SECTOR

When discussing the impact of technology on banking and financial services, it can be broadly categorized into its effects on banks and financial service providers, as well as on customers. From operational enhancements for banks to improved services and satisfaction for customers, technology has positively influenced various aspects of the banking and financial services sector.

AUTOMATION OF BANKING OPERATIONS:

The advent of computerization in the banking and financial services industry marked the first significant change, automating operations and reducing manual procedures. This led to savings in both time and money, as well as a decrease in per transaction costs. One major positive outcome was the development of a single window for all banking services, made possible by computerization. This streamlined banking procedures, resulting in faster transactions and time savings for customers.

24 X 7 BANKING HOURS:

The transition from limited-hour branch banking to 24-hour banking became feasible with the introduction of Automated Teller Machines (ATMs), Cash Deposit Machines (CDMs), and Multi-tasking Banking Kiosks (MBKs). These mechanical facilities enabled the banking industry to operate round-the-clock, as customers could independently access specific banking services without the need for banking staff. Customers were no longer confined to counter-based services and could avail banking services at their convenience, any time of the day.

CORE BANKING SOLUTION (CBS):

Core Banking Solution (CBS) is centralized banking application software comprising several components designed to meet industry demands. Supported by advanced technology infrastructure, CBS ensures high standards of business functionality. In this system, bank branches can access data from a centralized system, enabling customers to avail services regardless of their branch. CBS has enhanced efficiency and accessibility for both banks and customers.

ELECTRONIC PAYMENT:

Facilities like National Electronic Fund Transfer (NEFT), Real Time Gross Settlement (RTGS), and

International Journal of Engineering, Management and Humanities (IJEMH)
Volume 5, Issue 3, May.-June, 2024 pp: 33-38 ISSN: 2584-2145
www.ijemh.com

IMPS have become possible through CBS utilization. These services facilitate money transfer between parties, minimizing the use of cheques and demand drafts due to the convenience and speed of online transfers.

(i) National Electronic Fund Transfer (NEFT): A nationwide payment system enabling one-to-one funds transfer electronically between individuals, firms, and corporations across participating bank branches.

(ii) Real Time Gross Settlement (RTGS): A funds transfer mechanism where money transfer occurs in real-time on a gross basis, ensuring immediate and irrevocable settlement.

(iii) Interbank Mobile Payment System (IMPS): An instant 24X7 mobile payment system allowing interbank electronic fund transfers via mobile phones, providing secure transactions with immediate confirmation.

SWIFT:

SWIFT facilitates international fund transfers, serving as a messaging network for banks and financial institutions worldwide. It assigns each member institution a unique ID code for accurate and secure transmission of information, including money transfer instructions.

E-BANKING/ INTERNET BANKING:

The evolution of the internet and the World Wide Web paved the way for internet banking, also known as online banking or e-banking. This service, offered by banks and financial institutions, enables customers to access banking services via the internet. Registered customers can perform various banking operations from any computer or even a cell phone, at any time of the day. The advantages of internet banking include:

(i) Advantages to customers:

- Convenience: Customers can carry out transactions from their desks with just a few clicks, including checking account balances, opening fixed deposits, transferring funds, and paying bills.
- Real-time updates: Account information is instantly updated after transactions, providing customers with the latest account status.

(ii) Advantages to banks:

- Reduced personnel requirements: Online banking reduces the need for in-person transactions, thereby relieving pressure on bank employees.
- Efficient publicity: Banks can easily communicate information about new schemes or services to customers without delay.

ENHANCED GEOGRAPHICAL REACH:

Technology has enabled banking services to transcend geographical boundaries, eliminating the need for banks to establish branches everywhere. Customers can access banking services through the internet or mobile devices, expanding the reach of banks.

PHONE BANKING/ MOBILE BANKING:

The widespread use of smartphones allows customers to access banking services via mobile phones, eliminating the need for desktops or laptops. Phone banking enables access to banking services through landline or mobile phones, including trading of instruments.

E-MONEY/ E-WALLETS:

Technological advancements have introduced newer financial services such as e-money and e-wallets, reducing the reliance on physical currency and saving national resources.

GROWTH OF ATMS IN INDIA:

Automated Teller Machines (ATMs) enable customers to perform various financial transactions independently, including withdrawals, deposits, bill payments, fund transfers, and purchasing products or services. ATMs have significantly enhanced customer service and operational efficiency for banks and financial institutions.

PAYMENT SYSTEMS BY RBI:

RBI oversees several payment systems including Inter-bank Clearing System, High Value Clearing

International Journal of Engineering, Management and Humanities (IJEMH)
Volume 5, Issue 3, May.-June, 2024 pp: 33-38 ISSN: 2584-2145
www.ijemh.com

System, MICR Clearing System, Government Securities Clearing System, and Real Time Gross Settlement System.

IMPROVED COMMUNICATION:

Technological advancements enable banks to share transaction information with customers electronically, eliminating the need for physical passbooks. System-generated SMS and email notifications provide instant updates on transactions. Additionally, marketing and advertising efforts are conducted through SMS and email campaigns.

NEWER PRODUCTS:

Technological development has led to the introduction of innovative financial products such as consumer loans and bancassurance, leveraging banks' customer networks to sell insurance products.

NEW MOBILE APPLICATIONS:

Introduction of mobile apps like BHIM, Phonepe, Google Pay, Paytm, and Jio Pay allows customers to access banking services and conduct transactions conveniently via smartphones.

DEMATERIALIZATION OF PHYSICAL DOCUMENTS:

Technology facilitates the dematerialization of documents like shares and debentures, eliminating the need for physical storage and enabling virtual storage in holders' accounts. This boosts trading of equity shares, mutual fund units, and other tradable instruments.

ONLINE TRADING:

Technology enables online trading of shares and other instruments, democratizing access to investment opportunities and increasing participation in financial markets.

TRADING IN FACTIONS:

Dematerialization enables trading in fractional units, encouraging trading in instruments with higher market prices.

INSTANT TRANSFERS:

Technology enables instant transfer of ownership between buyer and seller accounts, streamlining transaction processes.

ENHANCED ACCESSIBILITY:

Technology simplifies banking procedures and expands accessibility to banking and financial products for customers. Online verification processes, such as checking CIBIL scores, are now readily available.

INCREASED CUSTOMER DATABASE:

Technology allows banks and financial institutions to exponentially increase their customer base by offering online services. Cross-selling initiatives leverage customer databases for additional products and services.

DECREASED SERVICE TIME PER CUSTOMER:

Online banking reduces service time per customer by providing efficient, time-bound transactions, enhancing customer experience.

EASE IN USE OF CARDS:

Technological advancements facilitate the use of cards such as debit cards, credit cards, and EMI cards, reducing the need for cash transactions and promoting convenience for customers.

FINDINGS:

The study underscores the significant role of technology in transforming the banking sector in India. Over the past few years, banks have adopted an innovative approach to meet customer needs by introducing new technological products and services. Information technology has played a crucial role in revitalizing the Indian banking system, leading to the development of new products and delivery systems that cater to a wide range of customer needs.

## V. CONCLUSION

The banking sector, one of the oldest industries, has evolved significantly with technological

advancements. Long queues and extensive paperwork have been replaced by efficient delivery systems, telephone services, and internet banking functions. Technology has enabled banks to manage increased transaction volumes accurately and timely, benefiting from a larger customer base. The Information Technology Act, 2000, has provided legal recognition to electronic data, enhancing security and reliability in banking operations. Banks now prioritize customer satisfaction through the delivery of simple, safe, and secure technology, creating a win-win situation for all stakeholders.

## REFERENCES

1. A. Shilpa and Dr. Singh Priyanka; Role of Technology In Banking Industry- A Comparative Study of Public and Private Banks -Post Demonetization; [Link]
2. Jain Megha; Role of Information Technology in the development of Banking Sector in India; [Link]
3. Berger Allen. N; The Economic Effects of Technological Progress: Evidence from the Banking Industry; [Link]
4. Dr. K. Lakshminarayanan and Dr. R. Thennarasan; "Technological advancement in Banking Sector – How it brings effects to the People"; [Link]
5. Aswin Raj. T and Mr. Bala Nageshwara Rao; A Study on Role of Technology in Banking Sector; [Link]
6. Saeid Khajeh dangolani; The Impact of Information Technology in Banking System (A Case Study in Bank Keshavarzi IRAN); [Link]
7. Łukasz Murowaniecki; Banking Services and Distribution Channels – Evolution and Prospects; [Link]
8. Dr. Shrotriya Vikas; Impact of Technology In Banking And Financial Services Sector– A Critical Analysis; [Link]
9. Karen Furst, William W. Lang, and Daniel E. Nolle; Special Studies on Technology and Banking- Technological Innovation in Banking and Payments: Industry Trends and Implications for Banks; [Link]