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Impact of Digital Transformation on E-Banking Services in Indian Bank

[1]Dr. Preshni Shrivastava, [2]Anusha Khare

[1]Associate Professsor ,IMM New Delhi

[2]JIIT, Sector 62 Noida

Abstract

Technological advancements have significantly transformed the banking industry. Internet banking facilitates financial transactions via specialized software and hardware, enabling convenient and secure banking through the internet. This study aims to assess the adoption and implementation of e-banking services by public and private sector banks in India, exploring how these technologies are embraced by Indian organizations and consumers. The specific objectives of the study are:

- To examine the e-commerce practices followed in the banking industry.
- To analyze the percentage of the urban population utilizing e-banking services for daily transactions.
- To identify the reasons for both the acceptance and non-acceptance of e-banking services.
- To highlight the challenges and constraints faced by banks in implementing e-banking.

The study is empirical, conducted in Delhi and its surrounding regions. Although focused on a micro-level, its findings have broad implications, offering insights for government bodies, the banking sector, and service providers in policy formulation and operations. Additionally, this research is expected to provide a foundation for future studies and assist scholars in their academic pursuits.

Keywords: e-banking, public sector banks, private sector banks, e-commerce

1. Introduction

In the traditional economic framework, consumers had to visit banks for their financial needs. However, with the advent of liberalization, this scenario reversed. Banks began reaching out to customers, understanding their needs, and even offering personalized solutions. Today, banks not only employ professionals from economic backgrounds but also recruit experts from engineering and other scientific fields to better understand the diverse requirements of individual consumers and multinational corporations alike. This evolution led to the development of internet banking, a system designed to eliminate the need for consumers to visit physical branches for routine tasks.

Internet banking (IB) is now one of the most innovative and widely used services in the financial sector. The shift from traditional banking to e-banking represents a significant transformation in how consumers manage their financial affairs.

McMillan defines internet banking as a system that allows customers to use the internet to interact with their bank, check accounts, pay bills, and more. In this system, the bank operates a centralized, web-enabled database, offering a variety of services through an online interface. Customers can select any service, with further interaction based on the nature of the transaction. Internet banking provides a wide range of services, making banking faster, more convenient, and secure, while maintaining privacy for customers.

1.1 Some of the Advanced Services of Internet Banking:

- **Bank Statements**: Access to bank statements with the ability to import data into personal finance software such as Quicken or Microsoft Money.
- **Account Management**: Account opening, closure, and balance inquiries, all handled online.
- **Bill Payments**: Electronic payment of utility bills, taxes, and other services.
- **Money Transfers**: Real-time funds transfers between accounts, whether within the same bank or to other institutions.
- **Deposits and Withdrawals**: Online deposits and withdrawals, reducing the need for physical visits.
- **Cheque Management**: Cheque collections, requests for stop payments, and status tracking.
- **Investment Services**: The ability to purchase or sell investments such as mutual funds or securities.
- **Loan Services**: Online applications for loans, with facilities for managing loan repayments.
- **Account Aggregation**: A consolidated view of all bank accounts, including those at other institutions, providing a complete financial overview.
- **Virtual Banks**: The emergence of banks that operate exclusively online, offering higher interest rates due to their lower operational costs compared to traditional banks.
- **Debit/ATM Card Services**: Online application for ATM/Debit cards, card activation, and management.
- **Secure Communication**: A secure mailbox for resolving queries, changing profile information, and communicating with bank representatives.
- **Mobile Banking Integration**: Subscribing to mobile banking services, including mobile phone recharge, funds transfer, and alerts through smartphones.

With the continuous growth of fintech innovations and the increasing reliance on mobile apps, internet banking has become even more integrated with day-to-day activities. The introduction of features like biometric authentication, voice-activated services, and enhanced security measures has made online banking not only user-friendly but also safer.

2. Brief Review of Literature

In the introduction, an elaborate effort was made to describe the broad concepts related to e-banking. This section presents a review of relevant research literature to provide background for understanding the issues that the study addresses, as well as to clarify why these problems were selected for investigation.

An early study by the Pew Internet & American Life Project (2002) examined the demographics of online banking users, finding that men were slightly more likely than women to bank online. The study also highlighted that younger and middle-aged internet users, particularly those between the ages of 30 and 49, were the most frequent users of online banking, while individuals over 65 were the least likely to engage with these services.

M. Warren Hutchinson (2003) explored the strategies e-banking organizations must develop to address risks. His study provided guidelines on crucial areas such as information security, authentication, legal compliance, transaction monitoring, and consumer disclosure. These guidelines remain relevant today as banks continually refine their cybersecurity protocols.

Hill (2004) conducted research aimed at identifying the characteristics of online banking users, concluding that users tend to be young, trendy, and high-earning individuals, reflecting a demographic trend that persists as financial services increasingly cater to tech-savvy, affluent customers.

Abhay Jain and B.S. Hundai (2005) focused on the challenges of mobile banking, particularly among private bank customers. Their study revealed that access issues, customer dissatisfaction, and the limitations of service

providers were the primary barriers to mobile banking adoption. Today, while mobile banking has grown significantly, issues such as connectivity, user experience, and service quality continue to influence customer satisfaction.

J. Venkatesh and P. Periswamy (2006) discussed the e-banking landscape at an international level, emphasizing the importance of value, payments, communication, and networks. Their focus on the global perspective remains pertinent as cross-border e-banking services and digital currencies grow in importance.

Curran M. James and Meuter L. Matthew (2007) argued that electronic banking is providing a wide range of services, allowing customers to manage their finances without time or geographical constraints. This flexibility remains a hallmark of modern e-banking, with digital wallets and fintech integrations now enhancing customer experiences.

Qureshi, T. Zafar, and M. Khan (2008) highlighted how rapid technological advancements have transformed the global economic and business environment. Their study focused on factors influencing customer acceptance of online banking, such as accessibility, user-friendliness, and awareness of technology. Today, these factors still play a critical role, with user-centric mobile banking apps, digital customer onboarding, and seamless integration with other financial tools driving adoption.

The work of Gopala Krishna and C. Vidya (2009) tackled the legal challenges associated with internet banking in India, particularly focusing on the scope of internet transactions, security, and privacy concerns. Legal and regulatory frameworks have since evolved, with initiatives such as India's Personal Data Protection Bill (PDP) and the Reserve Bank of India's (RBI) digital banking guidelines, reflecting ongoing efforts to adapt to the dynamic internet banking environment.

A.J. Joshua and Moli P. Koshi (2011) examined usage patterns of technology-enabled banking services, finding that while ATMs had widespread adoption, services such as internet banking, telebanking, and mobile banking had yet to achieve their full potential. Recent studies, however, indicate significant growth in mobile and internet banking usage, driven by factors such as the rise of smartphones, 4G and 5G networks, and the increasing trust in digital payment systems.

Recent Studies:

- **RBI Digital Banking Report (2021)**: The Reserve Bank of India’s report highlighted the surge in digital banking adoption during the COVID-19 pandemic, noting that mobile banking transactions grew by over 50% year-on-year. The report also emphasized the role of fintech partnerships in accelerating digital banking innovation.

- **Accenture’s Global Banking Report (2022)**: This study noted that consumer preferences have shifted towards a more personalized and seamless digital banking experience. The report found that 88% of consumers are willing to switch banks for better digital experiences, underlining the importance of user-friendly interfaces, robust security features, and integrated financial services.

- **Deloitte’s India Banking and Fintech Study (2023)**: This research explored the growing collaboration between traditional banks and fintech companies in India. It noted that banks are leveraging fintech innovations such as artificial intelligence, blockchain, and cloud computing to enhance their digital offerings. The study also found that the adoption of digital wallets and Unified Payments Interface (UPI) services in India has reached unprecedented levels, with over 50 billion transactions processed in 2022 alone.

These recent studies highlight the rapid evolution of e-banking services, the growing importance of customer experience, and the ongoing legal and regulatory developments shaping the future of digital banking in India and beyond.

3. Objectives

The present study seeks to conduct a comparative analysis of e-commerce adoption in public and private sector banks in India, and to assess its acceptance among Indian organizations and consumers.

The specific objectives of the study are:

3.1 To study the practices followed by public and private sector banks in implementing e-commerce.
3.2 To determine the percentage of urban population using e-banking services in their day-to-day transactions.
3.3 To identify the reasons behind the acceptance and non-acceptance of e-commerce in public and private sector banks.
3.4 To pinpoint the shortcomings and constraints faced by the banking industry in the implementation of e-commerce.

4. Hypothesis

HA1: E-commerce adoption in industries like banking has not yet reached widespread popularity.

HA2: Lack of awareness and the required mindset are major reasons for the non-adoption of e-commerce practices.

HA3: The banking industry has not adequately equipped itself to handle e-commerce transactions efficiently and reliably.

HA4: Customer issues related to e-commerce are not being addressed promptly by the banking industry.

5. Research Overview

The present study focuses on the e-banking services offered by public and private sector banks, using both secondary and primary data. This empirical research utilizes qualitative data, which has been categorized and analyzed through proper sampling methods. The data was processed using **SPSS 26.0**, which provides better capabilities and improved accuracy over older versions.

5.1 Population

The study examines both public and private sector banks, making it important to gain a fundamental understanding of the banking population and their adoption of e-commerce practices.

5.1.1 Indian Banking Industry

In recent years, every commercial bank in India has adopted internet banking services, with a significant push toward digital transformation. This has been driven by the government's "Digital India" initiative and the increased use of **Unified Payments Interface (UPI)**, which saw over 10 billion transactions processed in September 2023. Banks are also expanding their presence in rural areas and promoting internet banking to boost adoption.

The commercial banks in India are broadly categorized as:

- **Public Sector Banks (PSBs)**, where the government holds a majority stake.
- **Private Sector Banks**, where the majority shares are held by private investors.

5.1.1.a Public Sector Banks

Public Sector Banks continue to dominate India's banking landscape, holding around **60-70% of market share**. Some of the leading public sector banks are:

- **State Bank of India (SBI)**
- **Punjab National Bank (PNB)**
- **Bank of Baroda (BOB)**
- **Union Bank of India (UBI)**

These banks have been at the forefront of e-banking adoption, with SBI launching initiatives such as **YONO (You Only Need One)**, a digital banking platform with over 60 million registered users.

5.1.1.b Private Sector Banks

Private sector banks, especially **ICICI Bank**, **HDFC Bank**, and **Axis Bank**, have made significant strides in digital banking, with over 90% of their transactions now processed digitally. They have also been early adopters of **AI-driven banking**, **chatbots**, and blockchain technology.

5.2 Sample Selection & Design

5.2.a Sampling Technique

For this study, a **Non-probability sampling method** was employed. The sample consists of randomly selected consumers from public and private sector banks, as well as employees working in digital banking services. Respondents were selected using judgment sampling based on their involvement in online banking.

5.2.b Sample Size & Design

The research was conducted in **Delhi** and its surrounding areas. A total of **6 branches** (3 public sector and 3 private sector banks) were chosen. Data was collected from **100 customers** (50 from private sector banks and 50 from public sector banks). The sample also included branch managers and employees involved in digital banking.

5.2.c Data Collection & Instrument

Primary data was collected via structured questionnaires, distributed both online and offline. Two sets of questionnaires were developed: one for banks (managers and employees) and one for consumers. An online provision was made for respondents to fill in their answers, ensuring greater reach and convenience.

5.3.d Statistical Tests Used in Analysis

The collected data was analyzed using **SPSS 26.0**, with **Chi-Square tests** used to measure associations between variables, and **correlation analysis** employed to determine relationships between customer satisfaction, e-commerce adoption, and banking performance. Tests were conducted at a **5% significance level**, ensuring robustness and reliability in the findings.

6. Hypothesis Testing & Analysis

HA1: The adoption of e-commerce in industries like banking has not yet become widespread.

Recent findings show that while e-banking services have seen an uptick in usage, regular use of these services remains limited, especially among public sector bank customers. According to a 2023 **RBI report**, over **70% of digital transactions** in India occur in private banks, highlighting a clear disparity in adoption between public and private sectors.

- **Public Sector Banks**: Only **53.3%** of public sector customers use e-banking services monthly, compared to higher usage rates in private banks.
- **Online Bill Payment Services**: These are widely adopted, with **70%** of users across both sectors using them regularly. However, **30% of public sector** customers and **32% of private sector** customers still refrain from using such services due to concerns over security.
- **Balance Enquiry & e-Banking Statements**: Usage rates are **54%** for public sector users and **56%** for private sector users, showing that while these services are convenient, they remain underutilized.
- **Electronic Funds Transfer (EFT)**: Non-usage of EFT services is significant, with **70%** of public sector and **62%** of private sector customers not using EFTs due to perceived risks and unfamiliarity.
- **Debit/Credit Card Usage for Online Transactions**: Only **2%** of customers from both sectors use debit cards online, while **72% of public sector** and **62% of private sector** customers avoid using credit cards for online transactions.

HA2: Lack of awareness and mindset issues are major reasons for the non-adoption of e-commerce practices.

The findings suggest that a lack of awareness and digital literacy remains a significant hurdle, particularly in public sector banks, where customer outreach efforts are limited:

- **Public Sector Banks**: **40%** do not offer sufficient consumer awareness programs. Meanwhile, private banks are more proactive, leveraging digital campaigns and roadshows to enhance awareness.
- **Private Sector Banks**: **28%** of private banks engage in roadshows and **8%** in symposiums, whereas public sector banks lag behind in such efforts.
- **Customer Perception**: Many customers, particularly those over 50 years old, still view e-banking as complex and risky. Even among younger users, there are concerns about security and ease of use. **80% of public sector** and **20% of private sector** banks consider lack of knowledge a significant factor for non-adoption of e-banking.

HA3: The banking industry has not fully equipped itself to handle e-commerce transactions efficiently and reliably.

Both public and private sector banks have made strides in digital banking, but concerns over reliability and security remain prevalent among customers:

- **Trust & Security**: **96% of public sector** and **98% of private sector** customers identify trust and security as critical factors influencing their e-commerce usage. Incidents of data breaches and hacking continue to erode confidence, with **34% of public sector** and **36% of private sector** customers stating that current security measures are inadequate.
- **Customer Data Protection**: **36% of public sector** and **38% of private sector** respondents consider privacy and data protection as highly significant concerns, urging the government and banks to enhance security protocols.
- **Technological Barriers**: Approximately **48% of customers** from both sectors find technology to be a barrier to using e-banking services efficiently, signaling a need for more user-friendly interfaces and improved customer support.

HA4: Customer problems related to e-commerce are not addressed in a timely manner by the banking industry.

One of the most significant issues identified in the study is the lack of timely response to customer complaints related to e-banking services:

- **Internet Connectivity**: **82.4% of salaried** and **75% of self-employed** respondents cite poor internet connectivity as a major hindrance to adopting e-banking services. Public sector banks, in particular, struggle with infrastructure issues, with **60% of public sector** and **58% of private sector** customers reporting difficulties in accessing services due to connectivity problems.
- **Software & Browser Issues**: **36% of public sector** and **32% of private sector** respondents report frequent technical issues, such as incompatible software or outdated browser support.
- **Customer Service Delays**: **62% of public sector** users report long waiting times for issue resolution, while **12%** have stopped using e-banking services altogether due to repeated dissatisfaction with customer service.

7. Conclusion

The comparative study of e-commerce adoption in the Indian banking industry, based on data from **50 customers** from both public and private sectors, reveals several factors contributing to the slow growth of e-commerce services, even in tech-savvy regions like Delhi NCR.

Despite the many benefits of e-commerce, such as convenience and accessibility, the adoption of e-banking services remains uneven. This is particularly concerning in regions where consumers are generally well-educated and familiar with online transactions. While private banks have made considerable strides in digital transformation, public sector banks continue to lag behind in infrastructure, customer awareness, and service quality.

Key Findings:

- **Infrastructure & Legal Gaps**: Both public and private sector banks must prioritize enhancing their e-banking infrastructure and addressing the legal challenges associated with digital transactions. **Techno-Legal Measures** should be adopted to ensure secure, efficient operations.

- **Customer Education**: The study underscores the urgent need to educate customers about the safe use of e-banking services. Without proper knowledge and awareness, even the most secure systems can be rendered ineffective.

- **Global Competitiveness**: As Indian banks face increased competition from multinational corporations offering advanced financial services, they must invest in modernizing their e-banking platforms. In the coming years, internet banking will shift from being a "nice-to-have" service to a "need-to-have" service.

Future Outlook: The growing awareness and value placed on e-commerce in banking, particularly in regions like Delhi NCR, suggest that the industry is on the cusp of a digital revolution. Service providers must work closely with customers to overcome existing barriers and establish trust. If well-executed, the future of banking in India will be marked by widespread acceptance and usage of internet banking services.

8. Suggestions

Based on the study's findings, the following recommendations are proposed to enhance e-banking adoption and address current barriers:

8.1 Promote Digital Literacy: Addressing computer illiteracy and a lack of proper knowledge is essential. Banks should focus on educational initiatives and provide technical support to help customers feel confident in using online banking.

8.2 Encourage Public Participation: To foster a digital banking culture, banks should run regular awareness campaigns. Public participation can be driven through educational programs that highlight the advantages and security of e-banking.

8.3 Expand Training Programs: Banking professionals should conduct training sessions in schools, colleges, and corporate settings. Weekend workshops in local communities, malls, and social gatherings can be effective in raising awareness.

8.4 Introduce Online Banking Certifications: Banks could offer diploma or certificate programs on online banking basics, targeting both employees and customers. These should be accessible both online and offline, with particular encouragement for older adults to participate.

8.5 Improve Infrastructure in Semi-Urban and Rural Areas: Banks need to increase the number of computerized and networked branches, especially in rural and semi-urban areas, to enhance accessibility and reliability.

8.6 Recognition Programs for Security Initiatives: Banks should implement programs that recognize institutions excelling in security practices, such as data confidentiality, privacy protection, and hacking prevention.

8.7 Incentivize Security Efforts: The government could offer tax relief or other financial incentives to banks that invest significantly in secure e-banking infrastructure and customer education.

8.8 Reassure Customers of Banking Motives: Banks should convey that e-banking services are intended for customer convenience and not merely a means to cut operational costs, which may include fewer branches or reduced staffing.

8.8 Adopt Techno-Legal Measures: Both technical and legal aspects of e-banking must be fortified. Banks should invest in training IT staff and upgrading technological systems, ensuring legal compliance with privacy and security standards.

8.9 Offer Cross-Account Access: Creating a platform that allows customers to view multiple accounts in one interface would streamline services. Banks should avoid additional charges for mobile and online banking activations to encourage usage.

8.10 Provide a Demo Platform: A demo version of e-banking software on bank websites can familiarize customers with the platform. This interactive guide would allow customers to explore features and provide feedback, facilitating future improvements.

9. Bibliography & References

Primary Sources

1. State Bank of India Act, 1955

2. Technology Development Board Act, 1995

3. Reserve Bank of India (Amendment and Miscellaneous Provisions) Act, 1953

4. Gramm-Leach-Bliley Act (privacy and security of customer data)

5. FACTA (Fair and Accurate Credit Transactions Act), 2003

6. Right to Information Act, 2005

7. Computer Fraud and Abuse Act, 1994

8. RBI (Internet Banking in India) rules, 2001

Secondary Sources

1. Books

1. Buhalis, D. (2003). *e-Tourism: Information Technology for Strategic Tourism Management*. London, UK: Pearson (Financial Times/Prentice Hall).

2. Benson, C. C., & Loftiness, S. (2010). *Payment Systems in the U.S.* Glenbrook Partners.

3. Montague, D. A. (2006). *Essentials of Online Payment Security and Fraud Prevention*. Trafford Publishing.

4. Egger, R., & Buhalis, D. (2008). *e-Tourism Case Studies: Management and Marketing Issues*. Burlington, MA: Elsevier Ltd.

5. Bose, J. (2008). *E-Banking in India: The Paradigm Shift*. ICFAI University Press.

6. Saunders, M. N. K., Thornhill, A., & Lewis, P. (2009). *Research Methods for Business Students*. Prentice Hall.

7. Mehra, R. (2010). *Information Technology and Cyber Laws*. Global India Publications Pvt Ltd.

8. Singh, S. (2011). *Cyber Laws*. Global India Publications Pvt Ltd.

9. Turban, E., King, D., McKay, J., Marshall Lee, J., & Viehland, D. (2008). *Electronic Commerce: A Managerial Perspective*. Upper Saddle River, NJ: Pearson-Prentice Hall.

2. Journals/Articles

1. Pew Internet & American Life Project. (2002). Pew Internet Project Data Memo. Retrieved from Pew Internet Reports.

2. Hutchinson, M. W. (2003). "A Security Risk Management Journal for E-commerce," *Information Management & Computer Security*, 238-242.

3. Hill, K. (2004). Study: Demographics Vs. Marketing CRM Daily [Online]. Available at CRM Daily.

4. Jain, A., & Hyundai, B. S. (2005). "Barriers in Mobile Banking Adoption in India," *ICFAI Journal*, 15.

5. Venkatesh, J., & Periswamy, P. (2006). "Role of Banking in Emerging Scenario," *ICFAI Journal*, 30-35.

6. Curran, M. J., & Meuter, L. M. (2007). "Encouraging Existing Customers to Switch to Self-Service Technologies," *Journal of Marketing Theory and Practice*, 15(4), 283-298.

7. Qureshi, T., Zafar, M., & Khan, M. (2008). "Customer Acceptance of Online Banking in Developing Economies," *Journal of Internet Banking and Commerce*, 13(1).

8. Krishna, G., & Vidya, C. (2009). "Legal & Security Regime for Internet Banking in India-Issues & Regulations."

9. Joshua, A. J., & Koshi, M. P. (2011). "Usage Pattern of Electronic Banking Services by Urban Educated Customers: Glimpses from India," *Journal of Internet Banking and Commerce*, 16(1). Available at ArrayDev.

E-Bibliography

1. www.rbi.org.in

2. www.hdfcbank.com

3. www.hsbc.co.in

4. www.icicibank.com

5. www.yesbank.in

6. www.db.com

7. www.scribd.com