



The Role of Internet Banking and Mobile Banking in Enhancing Financial Inclusion in India: Trends, Challenges, and Opportunities

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Abstract

With internet banking and mobile banking options serving as a key instrument in connecting India's underserved areas to the financial world, technological advancements in the banking sector are also reaching previously unheard-of levels. This study examines the trends, problems, and opportunities associated with using internet and mobile banking within the January–October time range of 2024. The study highlights the combined characteristics of various systems, including availability, affordability, and ease of use. Mobile banking has been perfect for daily minor and micro transactions because to its enormous user bases, and it has expanded the reach of financial services in less developed and rural economies. However, because of the sophisticated technology it offers, internet banking has a smaller customer base because it is best suited for low payments and big volume businesses. The findings imply that a number of factors, including but not limited to government initiatives like the Digital India program, UPI, and expanding access to smartphones, are driving the growth of these platforms. However, there are still several obstacles, such as the lack of digital skills, infrastructure availability, and cyber security risks. Nonetheless, these platforms present excellent chances to enhance economic marginalization, boost trust in emerging financial structures, and promote economic growth overall.

Keywords: *Mobile banking, Internet banking, Financial inclusion, Digital banking, Unified Payments Interface (UPI), India, Digital economy*

1. Introduction

The way consumers engage with banking services has been completely transformed by the swift digital transformation of India's financial sector. The use of digital banking platforms has increased over the last ten years due to a number of factors, including the growing number of cellphones, reasonably priced internet access, and government programs to encourage financial inclusion. With millions of users nationwide, internet



banking and mobile banking, two of the most well-known digital banking channels have become essential parts of the financial system. Although the objective of both platforms is to enable safe and easy banking transactions, they serve different user groups and transaction types, which makes a comparison of them of great interest.

Mobile banking, powered by the ubiquity of mobile phones, has grown exponentially in India. It has become the preferred medium for individuals and small businesses, enabling quick and convenient access to financial services. With features like real-time money transfers, bill payments, and balance inquiries, mobile banking has bridged the gap between traditional banking and underbanked populations, especially in rural and semi-urban areas. This transformation is largely attributed to the introduction of the Unified Payments Interface (UPI) and the increasing affordability of smartphones, making digital financial services accessible to a broader audience. Internet banking, on the other hand, has been a cornerstone of digital banking for over two decades. It serves as a robust platform for managing high-value transactions, corporate banking, and comprehensive financial planning. Despite the emergence of mobile banking, internet banking remains indispensable for businesses and individuals requiring detailed account management, recurring payments, and other sophisticated financial tools. Internet banking users, although smaller in number compared to mobile banking, typically handle higher transaction values, reflecting its relevance among high-net-worth individuals and enterprises.

The purpose of this study is to examine the growth trends, user engagement, and trends of internet banking and mobile banking in India between January and October of 2024. We aim to comprehend the elements influencing these changes and their consequences for the nation's digital banking industry going forward by utilizing the data in Table 1. The investigation will focus on how online banking is still essential for managing high-value transactions, but mobile banking has become the most popular platform for widespread adoption because of its ease of use and accessibility. Additionally, this study will explore how these platforms interact with one another and look at how they complement one another in the larger financial ecosystem. It will examine how consumer behavior, governmental policies, and technology developments have influenced these platforms' growth paths. In order to improve their policies and promote a more safe and inclusive digital banking environment, governments, financial institutions, and technology suppliers will find great value in the findings.

2. Review of Literature

The contribution of digital banking to the advancement of financial inclusion in India was studied by Kumar (2020). The study emphasizes how the divide between urban and rural residents has been greatly reduced thanks to internet banking and mobile banking. According to the research, the main forces behind this change



are the widespread use of mobile phones and internet access. It further suggests that while mobile banking provides accessibility and convenience for the masses, internet banking remains important for high-value transactions and business operations. Kumar concludes that both platforms are essential in fostering financial inclusion, but mobile banking, in particular, has had a more substantial impact on reaching underserved populations.

Sharma and Yadav (2021) explored the elements impacting the adoption of mobile banking in India. Their research highlights the importance of smartphone penetration, affordable data plans, and government initiatives like the Digital India campaign in driving the growth of mobile banking. According to the study, mobile banking is increasingly preferred for its ease of use, speed, and accessibility. However, it also noted challenges related to cyber security concerns, digital literacy, and internet connectivity in rural areas. The paper emphasizes the need for continued efforts in enhancing security measures and digital literacy to further accelerate mobile banking adoption.

The development of the Unified Payments Interface (UPI) and its effects on mobile banking in India were the main topics of Verma and Gupta's (2022) study. The authors contend that because UPI provides quick, affordable, and secure transactions, it has completely changed how consumers make payments. According to the study, UPI has played a significant role in the quick development of mobile banking, particularly in rural regions with weak traditional banking infrastructure. According to the study, UPI has become the preferred payment method for millions of Indians because to its ease of use and interoperability, which has greatly aided in the expansion of digital transactions.

Rajput (2020) looked at the difficulties Indian internet banking users experience. According to the study, internet banking has been an essential tool for handling big transactions, but it has drawbacks like security lapses, system outages, and a dearth of individualized services. According to Rajput, these difficulties have caused the uptake of internet banking to expand more slowly than that of mobile banking. To overcome these obstacles and improve user experience, the report advocates for increased cyber security, improved customer service, and creative solutions.

Patel and Soni (2023) provided a comparative analysis of mobile and internet banking usage in India. Their study finds that mobile banking dominates in terms of the number of active users, with a significant preference among the younger, tech-savvy demographic. In contrast, internet banking is favoured by older, more affluent users who require detailed account management and business-related services. The authors conclude that while mobile banking's growth has been impressive, internet banking continues to play a vital role in handling larger transactions, particularly in corporate and high-net-worth individual segments. The paper emphasizes the complementary roles of both platforms in the Indian banking landscape.



3. Objectives of the Study

- a) To analyze the trends in internet banking and mobile banking in India.
- b) To compare the usage and transaction behaviour of internet banking and mobile banking in India.
- c) To explore the factors contributing to the growth of internet banking and mobile banking in India.
- d) To assess the role of internet banking and mobile banking in promoting financial inclusion in India.
- e) To evaluate the opportunities and challenges for both internet banking and mobile banking platforms in India.

4. Methodology of the Study

This study employs a quantitative research methodology to analyze the trends and patterns in mobile and internet banking usage in India from January to October 2024. The data utilized in the study has been sourced from the National Payments Corporation of India (NPCI), a reliable and authoritative organization overseeing digital payment systems in India. The dataset includes monthly statistics on transaction amounts (in crores) and the number of active users for both mobile and internet banking platforms.

The analysis focuses on two key parameters: the total transaction amounts processed through each platform and the corresponding number of active users. Descriptive statistics, including standard deviation, mean and monthly trends, are computed to identify variations and growth patterns. Comparative analysis is conducted to evaluate the differences in user engagement and transaction behavior between mobile and internet banking.

Additionally, graphical tools such as line charts and bar graphs are used to visually depict trends and highlight significant peaks or fluctuations over the analyzed period. The study also incorporates contextual factors, such as advancements in financial technology, the introduction of the Unified Payments Interface (UPI), and government-led initiatives like Digital India, to understand the drivers of growth in mobile and internet banking adoption.

5. Analysis of Trends

The analysis of Table 1 reveals distinct trends and patterns in the usage of internet banking and mobile banking in India from January to October 2024. Mobile banking consistently recorded a high number of active users, averaging approximately 248.6 million per month, with steady transaction growth. Transaction amounts ranged from ₹28.15 lakh crores in January to a peak of ₹35.68 lakh crores in October, reflecting a progressive increase over the analyzed period. The standard deviation for transactions (₹2.02 lakh crores) indicates relatively stable month-to-month growth, suggesting the growing reliability and adoption of mobile banking among users.



Table 1: Monthly Statistics of Mobile and Internet Banking (January–October 2024)

Month	Mobile Banking Statistics		Internet Banking Statistics	
	Amount (crores)	No. of active customers	Amount (crores)	No. of active customers
January 2024	2815295.77	254202338	9123990.12	82104916
February 2024	2828120.05	260846671	8867590.93	81839822
March 2024	3131961.29	262282287	10374044.55	83524870
April 2024	2987455.87	240479701	8807528.23	84087169
May 2024	3120174.80	237075744	8705211.74	83844764
June 2024	3056924.14	239096101	9505758.51	84149514
July 2024	3170117.10	243949465	9894531.59	87113110
August 2024	3188004.46	248761095	9520832.45	87031721
September 2024	3164354.88	249143367	10092959.36	86183838
October 2024	3568090.49	250288779	10129152.74	87202225
Mean	3103049.88	248612555	9502160	84708195
Std. Deviation	201678.92	8261010.96	576193.87	1934639
Source: National Payments Corporation of India (NPCI).				

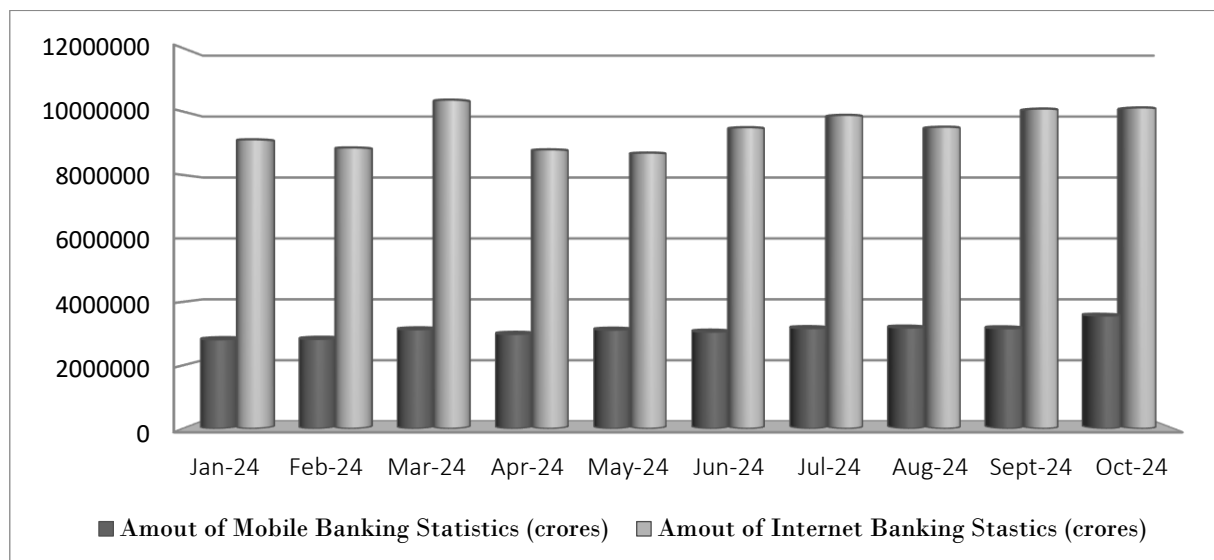
In contrast, internet banking showed a smaller but stable user base, averaging 84.7 million active customers monthly. Despite the smaller number of users, internet banking processed significantly larger transaction volumes, averaging ₹95.02 lakh crores per month. This indicates that internet banking caters to high-value transactions, with March 2024 witnessing the highest amount of ₹1.03 lakh crores, possibly due to fiscal-year-end financial activities. However, the standard deviation of ₹5.76 lakh crores highlights greater variability in internet banking transactions compared to mobile banking.

Comparatively from Figure 1 and Figure 2 Mobile banking outperformed internet banking in user numbers, with over 2.48 times more active customers on average. However, internet banking dominated in transaction amounts, highlighting its preference for high-value transactions. Mobile banking's relatively lower transaction amounts, despite higher engagement, reflect its use for smaller, everyday transactions. Conversely, internet banking caters to corporate and affluent customers managing significant financial activities. The user base for mobile banking displayed a slight dip in April and May, aligning with seasonal or behavioural shifts, before



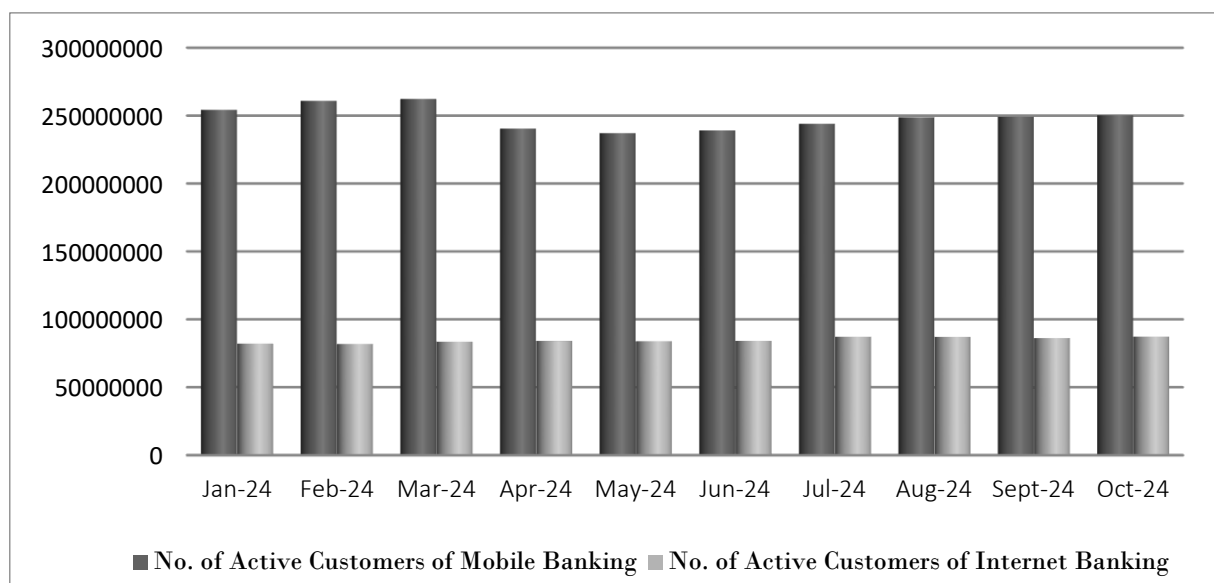
recovering steadily. Internet banking user numbers fluctuated minimally, showing resilience throughout the period.

Fig 1: Amount of Mobile Banking and Internet Banking (crore rupees)



Overall, the data reflects the complementary roles of both platforms in India's digital banking ecosystem. Mobile banking's steady growth highlights its mass adoption, while internet banking sustains its relevance for high-value transactions. These trends underline the evolving digital preferences of Indian consumers and the growing significance of technology-driven financial services.

Fig 2: No. of active customers of Mobile Banking and Internet Banking





6. Factors Contributing to the Growth of Internet Banking and Mobile Banking in India

The growth these banking in India has been driven by a confluence of technological, economic, and policy-related factors. The proliferation of affordable smartphones and low-cost internet data plans has significantly expanded access to digital banking, particularly in rural and semi-urban areas. Government initiatives such as the Digital India campaign, the Pradhan Mantri Jan Dhan Yojana (PMJDY), and the push for financial inclusion have brought millions of unbanked individuals into the formal banking system. The introduction of the Unified Payments Interface (UPI) has been transformative, simplifying digital transactions with its interoperability, real-time processing, and ease of use, making mobile banking the preferred platform for small and frequent transactions.

For internet banking, factors such as the expansion of broadband infrastructure, corporate banking needs, and the demand for high-value financial transactions have driven growth. Internet banking caters to tech-savvy and affluent customers, offering detailed account management and advanced features like automated recurring payments and investment tools. Additionally, trust in banking institutions, bolstered by enhanced cybersecurity measures and user-friendly interfaces, has encouraged wider adoption.

Both platforms have benefited from the Reserve Bank of India's (RBI) policies promoting digital payments, such as waiving transaction fees on UPI and encouraging private-sector innovation. The COVID-19 pandemic further accelerated the shift to digital banking, as customers sought contactless payment options. Together, these factors have created a robust ecosystem, enabling the parallel growth of mobile and internet banking and transforming India's financial landscape.

7. Role of Internet and Mobile Banking in Promoting Financial Inclusion in India

In India, internet and mobile banking have become effective instruments for advancing financial inclusion by bridging the gap between underprivileged groups and traditional banking services. With a vast and diverse population, including millions in rural and semi-urban areas, traditional brick-and-mortar banks have often struggled to provide universal access to financial services. Mobile and internet banking have revolutionized this landscape by leveraging digital technology to offer seamless and affordable financial solutions.

Mobile banking, in particular, has played a pivotal role in expanding financial inclusion. The rapid proliferation of smartphones and low-cost internet access has enabled millions of Indians, even in remote areas, to access banking services. Platforms like the Unified Payments Interface (UPI) and mobile wallets have simplified digital transactions, allowing users to transfer money, pay bills, and shop online with ease. Mobile banking's accessibility, user-friendly interfaces, and integration with Aadhaar (India's biometric identification system) have empowered individuals to open and manage bank accounts, even in regions with



limited physical banking infrastructure. Initiatives like the Pradhan Mantri Jan Dhan Yojana (PMJDY), which links bank accounts to mobile platforms, have further accelerated the penetration of digital banking, helping millions of unbanked individuals participate in the formal financial system.

Internet banking, while catering primarily to urban and semi-urban populations, complements mobile banking by providing a broader range of services, including online fund transfers, fixed deposits, and investment management. Internet banking's role in financial inclusion lies in enabling individuals to access more sophisticated financial tools without visiting a bank branch, saving time and reducing costs. It has also facilitated the digitization of small businesses, allowing them to manage transactions, payrolls, and vendor payments efficiently, contributing to the overall economic ecosystem.

Both mobile and internet banking have played a crucial role in reducing the reliance on cash and encouraging a shift toward a digital economy. They have provided greater financial autonomy, especially to women and marginalized groups, by enabling them to manage their finances independently. Government schemes, direct benefit transfers (DBTs), and subsidies are now credited directly into bank accounts linked to mobile or internet banking platforms, ensuring transparency and reducing leakages in welfare programs.

There are still difficulties in spite of their noteworthy achievements. The use of these technologies is nevertheless constrained by the lack of digital literacy, particularly in rural areas. Progress is also hampered by infrastructure deficiencies like erratic internet availability and a shortage of reasonably priced smartphones. However, efforts to solve these issues and broaden the use of digital banking include the Digital India campaign and financial literacy initiatives.

8. Challenges and Opportunities

Mobile and internet banking platforms in India face several challenges and opportunities as they continue to grow and evolve. One major challenge is cybersecurity, as increasing digital transactions make these platforms attractive targets for fraud and data breaches. Ensuring robust security systems and educating users about safe digital practices are critical. Mobile banking also faces the issue of digital literacy, especially in rural areas, where a lack of technical knowledge and limited access to high-speed internet can hinder adoption. Internet banking, on the other hand, struggles with slower growth in user engagement compared to mobile banking, as it is primarily utilized by tech-savvy, urban, and affluent customers. System downtime and inconsistent user experiences also affect customer trust and satisfaction, especially for high-value transactions.

Despite these challenges, both platforms present immense opportunities. Mobile banking has the potential to drive financial inclusion by reaching underserved and rural populations through innovative features, such as UPI-based payments and voice-enabled banking in regional languages. The widespread penetration of



smartphones and low-cost internet services further bolsters its accessibility. Internet banking, with its ability to handle high-value and complex transactions, has significant opportunities in catering to businesses, corporations, and high-net-worth individuals. Both platforms can leverage advancements in artificial intelligence, blockchain, and data analytics to enhance user experience, improve personalization, and strengthen security.

9. Conclusion

To sum up, internet banking and mobile banking have revolutionized the advancement of financial inclusion in India. These banking services have greatly expanded access to financial services by utilizing digital platforms, especially for underserved and rural communities. While internet banking still serves high-value transactions and business purposes, mobile banking has become indispensable for daily transactions due to its accessibility and usability. Both platforms have played a significant role in fostering economic inclusion, facilitating financial autonomy, and lowering reliance on cash. These platforms' expansion is not without difficulties, though. Their full potential is hampered by problems like infrastructure constraints, digital literacy gaps, and cybersecurity risks. The government, financial institutions, and technological companies must work together to address these issues. To increase the scope and impact of online and mobile banking, initiatives including strengthening financial literacy programs, expanding internet connectivity, and making sure security measures are strong are crucial. In the end, attaining universal financial inclusion in India, boosting general economic growth, and lowering poverty will depend heavily on the ongoing development of these digital banking platforms. Internet and mobile banking will continue to play a key role in determining the direction of India's financial system as the digital economy grows.

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