

## Digital Payment System: A Role of Mobile Payment Apps in Promoting Financial Inclusion in India”

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### KEYWORDS

Mobile Payment Apps, Financial Inclusion, Digital Payments, UPI, Cashless Economy, India

### ABSTRACT

Financial inclusion has become a key policy objective in India, aiming to ensure access to affordable and reliable financial services for all sections of society, particularly the unbanked and underbanked population. In recent years, mobile payment applications have emerged as a powerful instrument in achieving this goal by leveraging widespread smartphone adoption, expanding internet connectivity, and the Unified Payments Interface (UPI) infrastructure. Mobile payment apps such as PhonePe, Google Pay, Paytm, and BHIM have simplified digital transactions by offering secure, low-cost, and user-friendly platforms for payments, fund transfers, bill payments, and merchant transactions.

This study examines the role of mobile payment apps in promoting financial inclusion in India by enhancing accessibility to formal financial services, especially in rural and semi-urban areas. The research highlights how these applications reduce dependency on traditional banking channels, minimize transaction costs, and encourage participation in the digital financial ecosystem. Mobile payment apps also support government initiatives such as Pradhan Mantri Jan Dhan Yojana, Direct Benefit Transfer (DBT), and Digital India by facilitating seamless fund transfers and improving transparency.

The study is based on secondary data collected from reports published by the Reserve Bank of India (RBI), National Payments Corporation of India (NPCI), government publications, and existing research literature. The findings indicate that mobile payment apps have significantly increased digital payment adoption, empowered small merchants and self-employed individuals, and contributed to financial awareness and economic inclusion. However, challenges such as digital illiteracy, cybersecurity risks, and uneven internet access remain barriers to universal adoption. The paper concludes that with continued policy support, technological innovation, and digital literacy initiatives, mobile payment apps can play a transformative role in achieving sustainable and inclusive financial growth in India..

## 1. INTRODUCTION

A key goal of economic and social development in India is financial inclusion, which aims to guarantee that people and enterprises, particularly those from low-income and excluded groups, have access to practical and reasonably priced financial products and services. These services include credit, insurance, savings accounts, payments, and remittance facilities that are provided in an ethical and sustainable way. Due to a number of constraints, including geographic isolation, a lack of banking infrastructure, high transaction costs, documentation requirements, and poor levels of financial literacy, a sizable percentage of the Indian population stayed outside the formal financial system for a considerable amount of time. Policymakers and financial organizations have been quite concerned about how to address these issues.

India's financial environment has rapidly changed during the last ten years, primarily due to advances in digital technology. The way financial services are accessed and provided has changed as a result of the widespread use of smartphones, rising internet penetration, and encouraging government regulations. Among these advancements, mobile payment apps have



been essential in helping underprivileged groups connect with the formal financial system. Financial access barriers are greatly reduced by mobile payment apps, which offer a quick, easy, and safe way to make financial transactions without the need for in-person bank visits.

Digital systems that allow consumers to conduct financial transactions with mobile devices are referred to as mobile payment apps. Through these apps, people can receive government benefits straight into their bank accounts, transfer money, pay bills, and pay merchants. Digital payments in India underwent a sea change when the National Payments Corporation of India (NPCI) launched the Unified Payments Interface (UPI). Even new users can now make mobile payments because of UPI's ability to provide smooth, instantaneous, and interoperable bank-to-bank transactions. This infrastructure has been used by well-known mobile payment apps like PhonePe, Google Pay, Paytm, and BHIM to increase their reach in urban, semi-urban, and rural areas.

Through a number of programs, including the Pradhan Mantri Jan Dhan Yojana (PMJDY), Direct Benefit Transfer (DBT), Aadhaar-based identification, and the Digital India goal, the Indian government has aggressively promoted financial inclusion. By offering a productive way to deliver financial services and welfare payments, mobile payment apps support these activities. DBT reduces leakages and improves transparency by immediately transferring wages, pensions, scholarships, and subsidies into beneficiaries' bank accounts. By making it simple for recipients to access and use these monies, mobile payment apps increase confidence in the established financial system.

The potential of mobile payment apps to reach people who were previously shut out of traditional banking services is one of their most important contributions to financial inclusion. Physical bank branches are frequently few in rural and isolated places, and the expense of travel may deter people from using official financial institutions. By facilitating transactions at any time and from any location, mobile payment apps do away with the necessity of being physically close to banks. Farmers, small dealers, daily wage workers, and rural households are now able to engage in the digital economy. These apps' user-friendly UI and multilingual support allow even people with simple cellphones and little digital expertise to utilize them.

Additionally, the integration of micro-entrepreneurs and small merchants into the formal financial ecosystem has been made possible via mobile payment apps. Without having to invest in expensive point-of-sale infrastructure, street sellers, small business owners, and service providers can accept digital payments via QR codes. In addition to increasing transaction efficiency, this has produced digital financial records that can be used to evaluate creditworthiness. Small firms now have easier access to formal credit, which promotes inclusive growth and economic empowerment.

Additionally, by lowering transaction costs and enhancing financial efficiency, mobile payment apps support financial inclusion. Low-income consumers are deterred by the costs, paperwork, and time-consuming procedures associated with traditional banking services. Financial services are now more accessible thanks to mobile payment apps that provide low-cost or free transactions. Peer-to-peer transfers and merchant payments are simple, which promotes consistent usage of digital financial services and eventually develops consumers' financial literacy and responsible financial behavior.

The uptake of mobile payment apps in India is not without difficulties, despite its many advantages. Universal access is nevertheless hampered by problems including digital illiteracy, ignorance, cybersecurity threats, and uneven internet connectivity. Many people are still concerned about data privacy and digital theft, especially in rural areas. Maintaining trust in mobile payment platforms requires addressing these issues through consumer awareness campaigns, strong security mechanisms, and digital literacy programs.

## **2. OBJECTIVES OF THE STUDY**

1. To comprehend the Indian notion of financial inclusion.
2. To examine the expansion of Indian mobile payment apps.
3. To investigate how mobile payment apps can increase the availability of financial services.
4. To research how mobile payment apps affect people who are underbanked and unbanked.
5. To determine the obstacles and potential of mobile payment applications in advancing financial inclusion.

## **3. LITERATURE REVIEW**

Rout and Ray (2024) Examine India's digital payment ecosystem, paying particular attention to mobile wallets, UPI, and how they can increase financial inclusion in rural and semi-urban areas. According to their research, digital payments have improved institutional reach and service coverage among low-income customers by having a major impact on transactional behavior. The adoption of digital payments and greater financial involvement are positively correlated, according to the authors, influencing India's financial inclusion initiatives.

Ray (2025) Key developments that have decreased reliance on cash and given low- and middle-class groups formal financial access are highlighted in How Digital Payments Drive Financial Inclusion in India. These technologies include



UPI, and BBPS. By enabling safe and convenient payment services, mobile payment apps play a crucial role in integrating underserved communities into the financial sector.

Neelam K. and Bhattacharya (2025) Examine the impact of mobile payment apps on urban poor households in Pune to see how user behaviour and socioeconomic factors influence the adoption of mobile technologies. Their study demonstrates the relationship between urban financial activity and the usage of mobile payment apps, indicating that attempts to increase financial inclusion may benefit from a greater understanding of user perception and behaviours.

Sahoo, Patnaik, and Satpathy (2024) According to a review of the literature on UPI, these features of the software have improved digital literacy and decreased reliance on currency, ultimately leading to increased financial involvement.

UPI usage has a favourable impact on rural consumers' access to formal financial services, according to a case study on UPI and financial inclusion in rural India (2025). The study's statistical analysis reveals that rural inhabitants are more likely to use UPI platforms, which allow them to engage in digital economic activities without the need for in-person bank visits—a significant obstacle that previously restricted financial inclusion. The study affirms that addressing historically marginalized communities requires easy-to-use interfaces and free access to mobile payment apps.

(Dr.N.Rameshkumar, March 2023) In the last few years, digital payments have increased significantly, and by 2022, the Indian payments market is predicted to reach US\$ 700 billion. The pandemic has boosted the digital payments market in India, and daily the number of customers migrating to digital channels rises. India has a strong payment system that guarantees efficiency and safety as a result of the government's efforts to reduce the country's reliance on cash. Particularly during the study period, it resulted in extraordinary growth for IMPS, M-Wallet, and PPI Cards in terms of both volume and value metrics. These channels have shown to be revolutionary in the fields of fund transfers, online payment platforms, and digital payments.

(LAKSHMI, 2023) Research indicates that most students use digital payment applications for daily transactions in stores, cafes, canteens, stationery shops, and other locations. We have seen that the use of these apps is growing quickly. Even respondents who are not students use the applications for a variety of purposes, such as bill payment, internet shopping, booking hotels, tickets, and much more. Thus, we can draw the conclusion that digital payment apps allow users to save time, carry less cash, and do much more.

(Mary1, 2022) This study found that Google Pay service was most popular among young people who had finished at least an advanced secondary school. It was mostly utilized for convenience, 24-hour account access, and balance inquiries. Electronic payment systems such as Paytm, Google Pay, BHIM, and Phone-pe allow stoners to make phone payments to shopkeepers and other online customer.

(Dr. R. Sridevi1, May 2021) The goal of the study was to determine consumer preferences and satisfaction levels with Google Pay and Paytm. A vital part of people's hectic lives is digital payments. The majority of educated individuals use digital payments, and they are happy with it. The consumer's time savings in their hectic schedule is the primary motivator for utilizing Google Pay and Paytm. Because they can use digital payments to pay their bills, transfer money, recharge their phones, and shop online, many prefer them. One of the primary challenges is the excessive setup time and associated risk for loss of money in few digital transactions.

(Sanjai, May 2021) Research focused on Payment methods, that have evolved over time, moving from cash to online payment apps like Paytm, Google Pay, Phone Pe, and Bhim App, among others, and now to electronic commerce and mobile banking. This article examines the growing trend of daily online and in-person purchases being made through online payment methods. This article has addressed the problems with online payments as well as the use of electronic commerce by consumers to make payments. Furthermore, clients who are growing accustomed to using this payment method are getting more trusting due to technological improvements that facilitate mobile transactions and make them more convenient and transparent.

(Nirupama, 2021) Although the usage of online payment gates was not common before, the current demonetization impact in India has brought attention to the existence of several online payment gates. Paytm is one of these Payment Ports, thus that's where the study is cantered. The purpose of the study is to analyse people's preferences for Paytm's services. According to the report, Paytm is becoming more and more popular among young people. However, Paytm's success hinges on raising awareness among all demographic groups that help create the foundation for a cashless economy. Paytm is preferred by most responders because it is convenient and time-saving. While Paytm's services are now good to users, there is still need for improvement in a few areas, including security, customer support, and ease of login.

(Sharma, 2021) Paytm is committed to enhancing its offerings in terms of goods, services, and user experience. Paytm has shown to be a leader in the e-wallet space. This study identified the primary motivations for Paytm use. It was discovered that the primary benefits of utilizing Paytm are its ease of use, discounts and coupons it offers, the ease of money returns, its instant payment feature, its secure transaction, and its widespread popularity. The respondents' preferences for quicker transactions and payment methods that are superior to others differ significantly.

#### 4. RESEARCH METHODOLOGY

The current study looks at how mobile payment apps support financial inclusion in India using a descriptive and analytical research design. While the analytical approach allows for the assessment of their impact on financial inclusion indicators including access, affordability, and usage of financial services, the descriptive approach aids in understanding the existing state, growth, and usage of mobile payment applications.

##### The Study's Nature

The analytical study's main objective is to assess how mobile payment apps support financial inclusion for various societal segments, especially the underbanked and unbanked.

##### Data Sources:

The study mostly relies on secondary data that was gathered from trustworthy and legitimate sources, such as:

##### Research Design

Reserve Bank of India (RBI) reports

National Payments Corporation of India (NPCI) publications

World Bank financial inclusion databases

Government of India reports (Digital India, PMJDY, DBT)

Research papers, journals, and published articles

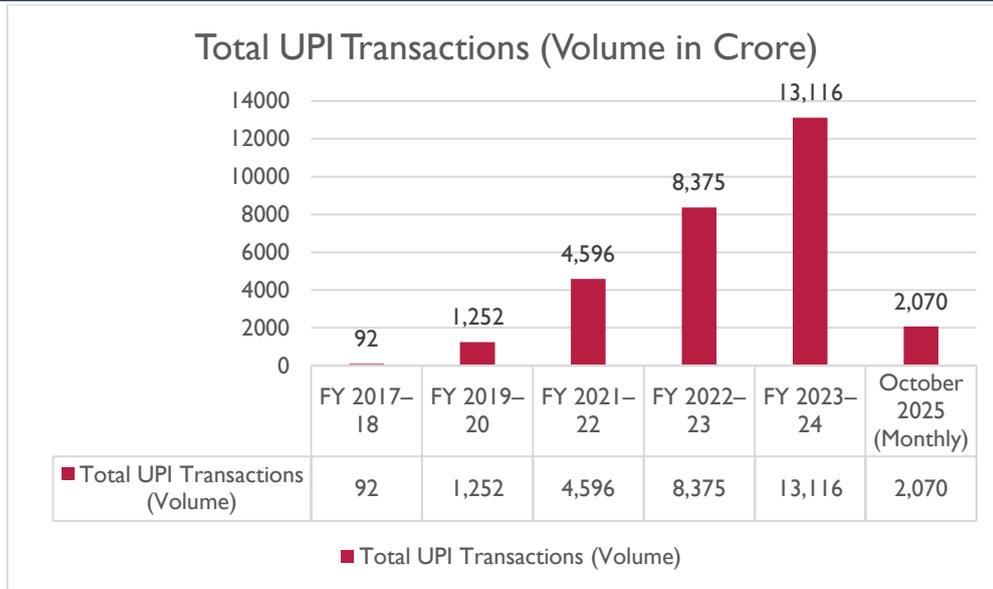
Official websites of mobile payment platforms

##### Data Collection

**Table 1: Growth of UPI Transactions in India**

Year / Period	Total UPI Transactions (Volume)	Transaction Value (₹ Lakh Crore)	Key Observation
FY 2017–18	92 crore	1.09	Initial adoption phase of UPI
FY 2019–20	1,252 crore	21.3	Rapid growth due to smartphone penetration
FY 2021–22	4,596 crore	83.7	Post-COVID surge in digital payments
FY 2022–23	8,375 crore	139.0	Strong acceptance across merchants
FY 2023–24	13,116 crore	200+	UPI becomes dominant payment mode
Oct 2025	2,070 crore (monthly)	27.28 (monthly)	Record-high monthly transactions

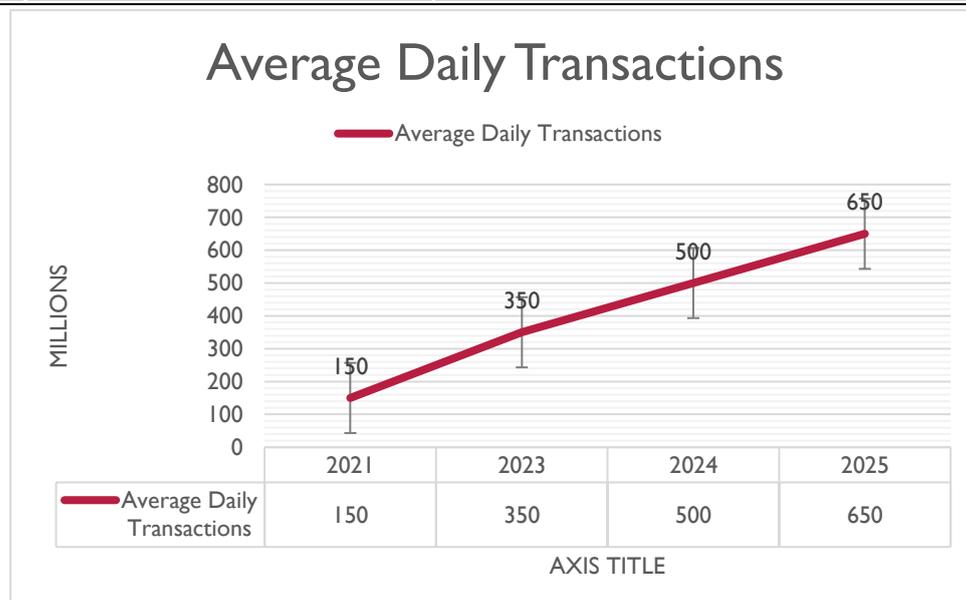




Source : NPCI Data on UPI-Based Mobile Payment Transactions in India

Table 2: Average Daily UPI Transactions (NPCI)

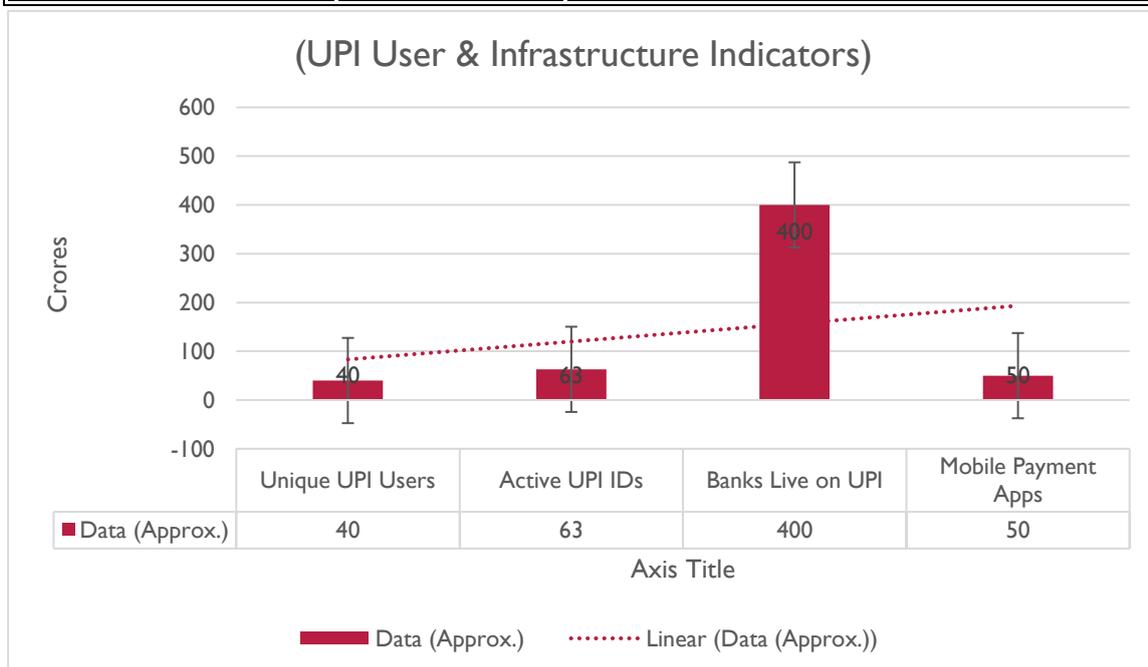
Period	Average Daily Transactions	Implication for Financial Inclusion
2021	150 million	Early mass adoption stage
2023	350 million	Regular use among individuals & merchants
2024	500+ million	Habitual digital payment behavior
2025	650+ million	Deep penetration across all income groups



Source: NPCI Data on UPI-Based Mobile Payment Transactions in India

**Table 3: UPI User & Infrastructure Indicators**

Indicator	Data (Approx.)	Relevance to Financial Inclusion
Unique UPI Users	40+ crore	Wider access to formal financial services
Active UPI IDs	63+ crore	Easy onboarding of new users
Banks Live on UPI	400+	Nationwide interoperability
Mobile Payment Apps	50+	Increased competition and accessibility



Source: NPCI Data on UPI-Based Mobile Payment Transactions in India

**Analysis and Interpretation of Data**

The rapidly growing and increasing importance of mobile payment applications, especially UPI-based platforms, in advancing financial inclusion in India is evident from the NPCI data displayed in the tables. The steady increase in transaction volume, transaction value, daily usage, and user base demonstrates how digital payments are becoming more and more integrated into Indian households' and enterprises' daily financial operations.

Increased Volume and Value of UPI Transactions  
From 92 crore transactions in FY 2017–18 to 13,116 crore transactions in FY 2023–24,

Table 1 demonstrates a notable increase in UPI transaction volume, suggesting exponential development over a very short period of time. This dramatic increase shows how mobile payment apps have advanced.

Past early adopters to become a widely accepted payment method in India. The equivalent rise in transaction value, from ₹1.09 lakh crore to over ₹200 lakh crore, indicates increased trust in mobile payment systems for high-value transactions as well as increased usage frequency.

With more people actively engaging in formal digital transactions, this rise represents improved financial inclusion. According to the findings, mobile payment apps have decreased entry barriers and decreased reliance on cash for people who did not previously have access to traditional banking services.



### Daily and Monthly Trends in Transactions

With a transaction value of ₹27.28 lakh crore, the record 2,070 crore UPI transactions in October 2025 shows continued progress in the use of digital payments. This observation is further supported by Table 2, which demonstrates that average daily transactions rose from 150 million in 2021 to over 650 million in 2025. This dramatic increase in daily usage shows that mobile payment apps are becoming an essential component of everyday financial behavior rather than being used seldom.

From the standpoint of financial inclusion, this trend shows that people of all income levels regularly use formal financial channels. Regular daily use indicates that mobile payment apps are being utilized for low-value transactions like grocery shopping, transportation costs, and utility payments—activities that were previously mostly done with cash. This change is a reflection of low-income and informal sector participants' increased use of digital finance.

### Growth of the User Base and Digital Infrastructure

Table 3 shows that India has more than 40 crore distinct UPI users and more than 63 crore active UPI IDs, backed by more than 50 mobile payment apps and more than 400 banks. Interoperability is ensured by banks' extensive reach, which is essential for advancing financial inclusion. Regardless of their bank or app, users can transact with ease.

The high number of UPI users suggests that a sizable segment of the populace has been successfully integrated into the formal banking system through mobile payment apps. Given the lack of traditional banking infrastructure in rural and semi-urban areas, this is particularly crucial. The availability of numerous apps also boosts competition, which results in improved user interfaces, support for regional languages, and streamlined onboarding procedures—all of which promote acceptance among users who are less tech-savvy.

## 5. CONCLUSION

All things considered, the evidence shows that mobile payment apps have significantly improved financial inclusion in India. While the growth in daily transactions indicates consistent involvement rather than one-time usage, the significant increase in transaction volume and value indicates increased participation in formal financial operations. Digital payment systems have effectively spanned the gap between the formal banking industry and underserved people, as seen by the growing user base and banking connectivity. Additionally, the data lends credence to the idea that mobile payment apps enhance government programs like Direct Benefit Transfer (DBT) and Pradhan Mantri Jan Dhan Yojana (PMJDY) by offering an effective way to access and use funds. Mobile payment apps enable consumers, small businesses, and micro-entrepreneurs by facilitating safe, affordable, and quick transactions.

## 6. LIMITATIONS OF THE STUDY

The NPCI, RBI reports, official publications, and previous research are the main sources of secondary data used in the study. Even though these sources are trustworthy, it's possible that they don't accurately reflect the experiences, opinions, and behavioral shifts of specific users with regard to mobile payment usage.

The lack of primary data, such as surveys or interviews, makes it more difficult to examine user-level elements like awareness, trust, and satisfaction. Because of this, the conclusions are based on aggregated data rather than direct user reactions.

Because of technical advancements and changes in regulations, the mobile payment ecosystem is changing quickly. As a result, as new payment platforms and technologies develop, the study's conclusions might become less applicable.

Despite focusing on India as a whole, the study does not offer a thorough comparison by state or area. It might not accurately reflect regional differences in internet infrastructure, literacy, and adoption rates.

Access, use, effect, and quality of financial services are all aspects of the multifaceted concept of financial inclusion. Long-term financial empowerment may not be fully measured by this study's primary focus on transaction volume and usage indicators.

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