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The Rise of UPI in India's Digital Financial Services: A Catalyst for Financial Inclusion and Cashless Transactions

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ABSTRACT

This paper examines the role of the UPI service from its inception as part of the Digital India vision to the current scenario. The rapid evolution of digital financial services in India has been greatly influenced by the Unified Payments Interface (UPI), which has transformed the country's payment ecosystem. This study explores the historical development and growth trajectory of UPI, emphasizing its impact on digital transactions and financial inclusion. The research examines how UPI features and functionalities have transformed traditional payment methods and enhanced Bharat's digital economy. Furthermore, the study examines UPI's primary challenges and limitations, such as security issues, regulatory problems, fintech service provider barriers, and transaction issues. By using a detailed analytical approach, this paper offers insights into the contribution of UPI service as a driver for financial inclusion and cashless transactions in Bharat. The results add to the ongoing discussion regarding digital financial services and provide policy suggestions for improving UPI's effectiveness and sustainability in India's financial ecosystem.

***Keywords**: Unified Payments Interface (UPI), Digital Financial Services, Cashless Transactions, Financial Inclusion, Digital Payment Ecosystem.*

Introduction

The UPI service was launched by NPCI eight years ago, in the year 2016. The aim was to increase digital payments in India and accelerate financial inclusion. UPI is an innovative, advanced digital technology system. A large number of people accept it, which is assuredly revolutionary in the digital payment industry or system. (Gupta et al. 2018)

UPI, or Unified Payments Interface, is India's widely used **mobile-based real-time payment system** that facilitates instant personal and merchant transactions. In May 2024, it processed over **14 billion transactions**, accounting for more than **seventy-five percent** of the country's retail digital payments. With its complete interoperability, UPI has effectively democratized payment access in India, ensuring that every Indian with a mobile device can benefit from financial services. (European Payment Council).

With the use of the UPI service, we can immediately transfer money through mobile devices, 24/7, 365 days a year. Another benefit is that it provides the best solution to the cash-on-delivery issue, eliminating the need to run to an ATM or give the exact amount. It also provides a utility bill payments facility, over-the-counter payments, and QR code (scan and pay) -based payments.

This source or service is Faceless, paperless, and cashless. The framework of this system runs through the Application Programming Interface (API).

According to the Report of PwC, UPI continues its remarkable growth trajectory with a 57% YoY growth in transaction volume. In FY 2023–24, the total transaction volume was slightly over 131 billion and is expected to grow to 439 billion by FY 2028–29. UPI now accounts for over 80% of the overall retail digital payments in India and is expected to contribute 91% by 2028-29.

Financial Inclusion with UPI Service

Financial inclusion is crucial for eradicating poverty and driving global economic growth. Fintech plays a key role in advancing this effort. UPI makes a perfect payment solution for individuals and organizations lacking access to traditional banking services or without a visit to the bank. UPI's simplicity has fueled its rapid growth, contributing to the global expansion of financial inclusion. (Sreevas. et al)

The Unified Payments Interface (UPI) has become a transformative force in Bharat's financial service ecosystem, significantly advancing financial inclusion while driving economic growth. UPI has empowered millions, especially in underserved and rural areas, by providing a seamless and user-friendly platform for digital transactions. It has enhanced financial independence while integrating previously unbanked populations into the formal economy, fostering a more inclusive financial ecosystem. (Averineni, A. et al)

The Logo & Colours of UPI Service

The primary colors used for the UPI logo have been taken from the NPCI color palette. Two colors are used for the logo on the left side. Orange brings an element of the future and freshness to this new payment solution, while green represents the technology that powers the UPI platform.

UPI
UNIFIED PAYMENTS INTERFACE

Source: https://www.npci.org.in/PDF/npci/upi/BHIM-UPI-Guidelines.pdf

Literature Review

Khan, A. & Badgaiyan, S. (2024) This research paper aimed to show the growth of UPI in cashless transactions. In addition, it was to inform about the various methods used in cashless transactions. In which mainly electronic and paper-based methods were discussed. The research was done based on secondary data. Due to UPI service, the value of digital transactions increased by 46% from 2016 to 2021. Which shows its growth. In the financial year 2022, UPI had a share of 63% of the digital payment system. While the remaining services accounted for the remaining 37%. In this case, PhonePe was the main contributor with 46%, Google Pay with 34%, and Paytm with 14%. This research paper also made some suggestions, such as increasing security measures, increasing merchant acceptance, and increasing awareness among the people. The digital initiatives launched by the government, such as Digital India and Jan Dhan Yojana, also received support from the UPI service. Due to UPI service, people are less dependent on cash financial transactions. In the end, it can be said that UPI's performance has been a game-changer compared to other digital methods.

Averineni, A. et al. (2024) essentially, this paper can be considered as the digital service available through UPI controls tax evasion and black money transactions. About 300 banks were connected to UPI by the year 2023. About 70% of the rural population benefited more from the integration of AEPS service with UPI. The sales of traders also increased. Small units got more opportunities, which enabled them to contribute to the growth of the economy. Through UPI service, features like reduction in transaction costs, empowerment of the unbanked population, direct benefit transfer and accessibility were available, which were the main factors that increased financial inclusion in India.

Baliyan, D. & Singh, N. (2023) This research paper was related to presenting the role of UPI service in the digital transformation in India. The main objectives were to provide information about the UPI payment system and its application. The research paper had a descriptive research design. Secondary data was collected. It was found in this research that payment through virtual customer addresses and QR codes removes the limitations of cash transactions. In which various information was also presented. It was a service that provided a simple interface to merchants. UPI offers services for financial as well as non-financial transactions. This service was available in both Android and iOS versions. There was a positive response from people regarding the use of the BHIM UPI application. UPI Lite service was also found to be equally useful. It was also very useful in terms of filing IPOs. UPI contributed 72.01% in terms of payments.

Sreevas, V. et al (2023) This research paper was published considering the last six years of information on the banks providing UPI services and their financial indices. NPCI does not charge any charges for transactions in UPI service. There was also an increase in business growth. Which, especially the people of the villages got more opportunities to pay through digital means. Which gives a boost to financial inclusion. The credit for this result also goes to the RBI and the Government of India.

Saikia, H. & Jacob, M. (2021) This research paper has studied in detail the advantages and limitations of the UPI service. This research has explored how important UPI has been in the increase in digital payments in India. The study of this paper has revealed that the Indian economy has become digital with the help of the UPI service through the use of mobile in interbank transactions. Some of the advantages of UPI are that it is a very easy-to-use platform, reduces costs, and is a fast and secure service. Banks, merchants, and customers all benefit from UPI service. UPI works better than other digital payment methods, such as NEFT and RTGS. The slow pace of cash transactions can be overcome due to the UPI service. UPS has been seen to have developed continuously during the period from 2016 to 2020. The limitations of the UPI service include lack of awareness, security, lack of digital literacy, technical issues, and limited adoption in rural areas. Such factors were shown. However, at the end of the study, it can be said that UPI has made a very important contribution to making India's economy digital. It will promote financial inclusion in the future as well.

Objectives of the Study

The key objectives of the study are…

- To analyze the historical evolution and growth trajectory of UPI in India
- To analyze UPI services' diverse features and functionalities and their role in shaping India’s digital payment ecosystem.
- To investigate the challenges and limitations faced by UPI in the Bharatiya digital payment ecosystem.

To analyze the historical evolution and growth trajectory of UPI in India.

Here is a short breakdown of the historical evolution of unified payment service in Bharat

Year	***Milestone (History of UPI)***
2016	NPCI launched UPI with support from the apex bank (RBI), and 21 banks adopted it.
2017	BHIM app introduced; UPI adoption grows with private banks & fintech companies.
2018	UPI 2.0 launched with overdraft accounts & invoice features.
2019	International transactions enabled; UPI crosses 1.3 billion monthly transactions. One-time mandates, signed QR, invoice in the inbox
2020	COVID-19 accelerates UPI adoption; recurring payments are introduced.
2021	UPI AutoPay launched; transactions surpass 4 billion per month. Partnership with NIPL.
2022	UPI Lite was introduced for small-value offline payments, with global expansion to the UAE, Bhutan, and Singapore.
2023	Credit lines on UPI enabled; monthly transactions exceed 10 billion.
2024	Further global partnerships. UPI 3.0 was introduced in 2024. UPI circle, Voucher, short-term loan, and conversational Voice payment.

We can see from the above journey of UPI service that it is steadily increasing year by year. It was stated from the year 2016. In the table mentioned above, we can see that many changes, innovations, and various types of services have been continuously added since the launch of UPI payments**.** UPI 2.0 was launched in 2018. The adoption rate increased significantly during 2019 and 2020 when online payments increased due to the coronavirus pandemic. Then UPI Auto Pay, UPI Lite, UPI One Two Three Pay Global Expansion, etc. helped in developing its journey. UPI 3.0 was launched in the year 2024. At that time, Services like conversational voice payments, credit lines, UPI Circles, and UPI Vouchers made it more efficient.

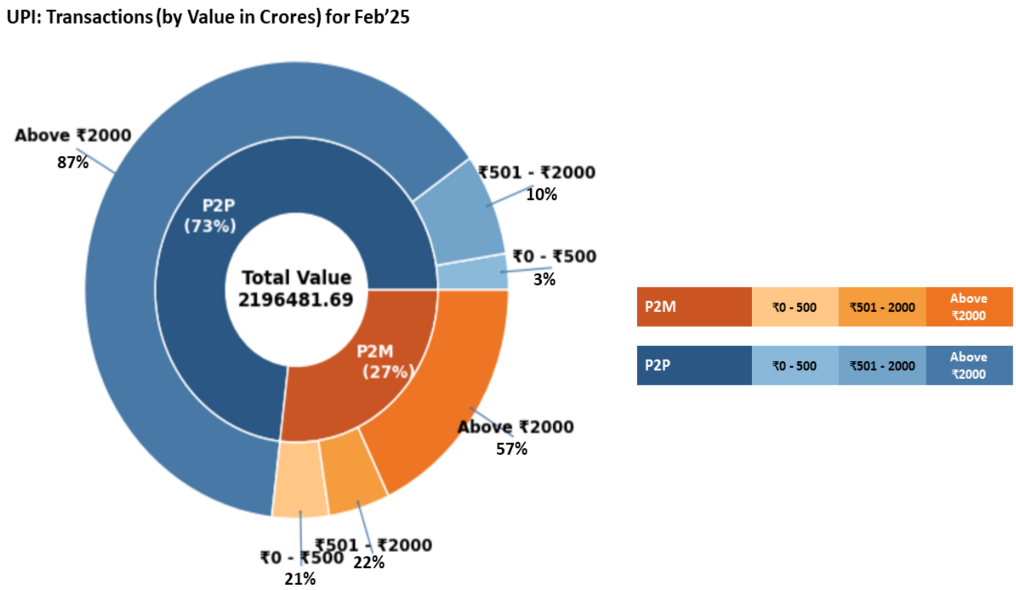
UPI Service Statistics from 2021 to 2025

Year	No. of Banks live on UPI	Volume (in Mn)	Value (in Cr.)
December-2021	282	4,566.30	8,26,848.22
December-2022	382	7,829.49	12,82,055.01
December-2023	522	12,020.23	18,22,949.42
December-2024	641	16,730.01	23,24,699.91
February- 2025	652	16,106.19	21,96,481.69

Source: *NPCI official website*

The above-mentioned data presents the continuous growth journey of UPI services in India. From 2021 to 2025, the number of live banks increased from 282 to 652. In the last five years, 370 new banks have joined, and the transaction volume has also increased fourfold.

UPI P2P and P2M Transactions



Source: NPCI official website

As can be seen in the donut chart above, the UPI transaction data for February 2025 indicates a total transaction value of ₹21,96,481.69 crores, with Person-to-Person **(P2P)** transactions representing 73% and Person-to-Merchant **(P2M)** transactions comprising 27%.

A **majority of P2P transactions (87%)** involve amounts **above ₹2000**, indicating high-value money transfers between individuals. On the other hand, in P**2M transactions**, while the **largest share (57%) is above ₹2000**, smaller transactions (₹0-₹500 and ₹501-₹2000) still contribute significantly (43% combined). This data provides valuable insights into **UPI adoption trends** as well as digital **financial inclusion**, showing that UPI is not only used for microtransactions but also plays a major role in **high-value transactions**, especially in P2P transfers.

UPI services' diverse features and functionalities and their role in shaping India's digital payment ecosystem:

The Unified Payments Interface (UPI) has revolutionized India's digital payment landscape with its seamless, instant, and secure transaction capabilities. Key features include in the below table,

Types (Features) of UPI Payment Services

Type	Category	Description	Example
Person-to-Person (P2P)	Individual Transfers	Direct transfer between individuals	Sending money to friends or family
Person-to-Merchant (P2M)	Retail & Online Payments	Customers pay merchants for goods/services	Buying groceries, online shopping
UPI Collect (Pull)	P2P & P2M	The recipient has requested payment, and the sender has approved it.	Rent, payments, merchant invoicing
Split Bills	P2P	Users can easily split expenses with friends or family.	Sharing Restaurant or Hotel Bill Payment
UPI QR Code	P2M	Payments by scanning QR codes	Paying at shops, street vendors
UPI Intent	P2M	Merchant's website/app triggers payment	E-commerce transactions
UPI AutoPay	P2M	Automated recurring payments	Subscription services, electricity bills
UPI Mandates	P2P & P2M	Pre-authorized future payments	Loan EMIs, insurance premiums
UPI Lite	P2P & P2M	Small transactions without UPI PIN(Personal Identification Number)	Fast payments for small purchases. Payment for the tea shop.
UPI 123PAY	P2P & P2M	UPI without internet for feature phones	Rural & offline digital payments

According to regulatory data, **PhonePe's share of UPI payments stood at 47.8%** in November 2024, while **Google Pay's share was at 37%**. The two firms processed a combined 13.1 billion transactions in November. With continuous advancements and regulatory support, UPI has positioned India as a global leader in digital payments, setting a benchmark for other nations to follow.

Key Player in the UPI Payment Network

The UPI payment network thrives due to the collaboration of multiple key players, each with a specific role**:**

- **Payer PSP (Payment Service Provider)**: The entity, typically a bank or fintech, that offers UPI services to the payer (sender), and includes applications such as Phone-Pe, Paytm, Mobikwik, and others.
- **Payee PSP (Payment Service Provider)**: The entity that facilitates UPI transactions for the payee (receiver), including a merchant's bank or apps like Razorpay and Paytm Business.
- **Remitter Bank**: The sender's bank debits the amount from the payer's account. For example, if a user sends money via Google Pay linked to HDFC Bank, then HDFC Bank acts as the remitter bank.
- **Beneficiary Bank:** The bank of the receiver (payee) is responsible for crediting the transferred amount to their account. For instance, if the receiver's account is held with PNB, then PNB is designated as the beneficiary bank.
- **NPCI (National Payments Corporation of India)**: This entity oversees and handles UPI transactions, functioning as the central switch that facilitates the seamless processing of transactions between the payer's and payee's banks.
- **Bank Account Holders**: These are individuals or entities with bank accounts who utilize UPI for transactions. They can function as payers, initiating payments, or payees, receiving funds.

- **Merchants**: Businesses that accept UPI payments can utilize QR (Quick Response) codes, UPI IDs, or payment gateways to receive funds from customers.

Challenges and Limitations

Despite the many benefits of UPI, it is also beset by certain challenges. It is still very difficult to conduct UPI transactions because there is still a significant percentage of the population without access to the internet or smartphones. This question is Natural in a large and developing country like India.

- **Fraud:** Fraudsters use various tactics to deceive UPI users and steal money. Misleading UPI Handles involve scammers creating fake UPI IDs resembling genuine ones, tricking users into sending money to the wrong recipient. **Request Money Fraud** occurs when fraudsters send fake payment requests, often posing as legitimate entities, and convince users to approve transactions, unknowingly transferring money. **Remote Screen Monitoring Frauds** happen when scammers trick users into installing screen-sharing apps, gaining access to sensitive banking details, and making unauthorized transactions.
- **Transaction limit on UPI:** The Unified Payments Interface (UPI) in India has transaction limits to ensure security. The standard limit is ₹1 lakh per transaction, while certain categories like capital markets and foreign remittances can go up to ₹2 lakh. Transactions related to IPOs and RBI Retail Direct Schemes may reach ₹5 lakh. Individual banks, such as HDFC Bank, may have different limits, allowing ₹1 lakh per transaction or 20 transactions per day. So UPI limits vary based on the bank and transaction type.
- **Lack of digital Awareness:** It is a major challenge in the adoption of digital financial services, including UPI. Many users, especially in rural and semi-urban areas, are unfamiliar with digital payment methods, leading to hesitation or misuse of financial apps. This lack of understanding increases the risk of falling victim to fraud, including phishing scams and unauthorized transactions. Additionally, many users have difficulty grasping transaction limits, security measures, and basic troubleshooting. To address this issue, financial institutions and the government must focus on digital literacy programs, awareness campaigns, and user-friendly interfaces to make digital transactions accessible and secure for everyone.
- **Customer Support & Grievance Redressal:** Limitations in UPI grievance redressal include delayed resolutions, lack of a unified complaint system, accessibility issues in rural areas, and complex escalation processes. Fraud-related disputes often face slow responses, making fund recovery difficult. Improved support and faster resolution are essential for user trust.
- **Transaction Failures**: Some technical glitches, bank server downtime, and poor internet connectivity lead to delays or unsuccessful payments. High transaction volumes can overload the system, causing failures. Additionally, refunds for failed transactions are often delayed, and users face challenges in tracking or resolving issues efficiently. Addressing these issues through infrastructure upgrades, better server management and faster dispute resolution is essential for improving UPI reliability.

Conclusion

Thus, after discussing the above purposes of UPI, it can be concluded that it has become an indispensable service in today's technological era. Most of the population of India is now getting the benefit of financial services through digital technology. The adoption rate of people has also increased significantly. There has also been an increase in awareness among people towards digital services. The participation of banks and companies providing fintech services also provided support. A positive trend is also seen in person-to-merchant and person-to-person transactions. About 87% of P2P transactions were above Rs 2000. This can be said that people feel comfortable making large amounts of transactions. Various types of UPS services were seen updating and adding innovations on time. Based on the above information, PhonePe was the first platform providing digital financial services with 47.8%. Therefore, the contribution of other providers was still relatively low. The network structure for UPI payments was also found to be reliable, secure, simple, and fast. Apart from this, some challenges related to UPI service were also faced. Such as transaction limits on UPI, lack of digital awareness, customer support, scams, and transaction failures can be included. Apart from this, UPI service has played a prominent role in financial inclusion in India. Hence, the title of this paper justifies that digital financial service provided by UPI acts as a catalyst for financial inclusion and cashless transactions in India.

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