

# The Growth of Digital Payment System (UPI) In India

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**Abstract-** The rapid digitization of financial services in India has transformed the way people conduct transactions, with the Unified Payments Interface (UPI) emerging as a pivotal innovation in the digital payment ecosystem. Launched in 2016 by the National Payments Corporation of India (NPCI), UPI has revolutionized real-time bank-to-bank transactions through a simple, secure, and seamless platform. This paper explores the growth trajectory of UPI, analyzing its adoption patterns, technological framework, policy interventions, and socio-economic impact on both urban and rural segments.

The study delves into the historical evolution of digital payments in India, highlighting the role of government initiatives such as Digital India, demonetization in 2016, and regulatory support from the Reserve Bank of India in accelerating the shift toward cashless transactions. Through empirical data and market reports, the paper examines key growth indicators including transaction volumes, user base expansion, interoperability, and integration with fintech platforms. Special focus is given to the role of UPI in promoting financial inclusion, especially among previously unbanked populations, and in enabling micro and small enterprises to adopt digital payments.

Moreover, the paper investigates the challenges faced by the UPI ecosystem, such as cybersecurity concerns, infrastructure limitations, digital literacy, and market competition. It also explores future prospects and innovations, including UPI 2.0, internationalization of the platform, and its integration with emerging technologies like blockchain and artificial intelligence.

## INTRODUCTION

The digital revolution in India has significantly transformed the financial landscape, fostering a shift from traditional cash-based transactions to efficient, real-time digital payment systems. Among these, the Unified Payments Interface (UPI), introduced by the National Payments Corporation of India (NPCI) in 2016, stands out as a game-changer. UPI enables seamless, instant bank-to-bank transactions using mobile devices, revolutionizing the way individuals and businesses perform financial operations.

India's journey toward a digital payment ecosystem has been shaped by a confluence of factors, including rapid smartphone penetration, affordable internet access, a robust banking infrastructure, and proactive government initiatives such as the Digital India campaign. A key inflection point came with the 2016 demonetization, which accelerated the adoption of digital payments by creating a pressing need for cashless alternatives. UPI, with its ease of use, interoperability, and minimal transaction costs, quickly gained popularity and became a cornerstone of India's financial inclusion strategy.

The success of UPI is evident in its exponential growth—both in terms of volume and value of transactions—within a few years of its launch. It has enabled millions of users, including those in semi-urban and rural areas, to access digital financial services, thus narrowing the digital divide. Furthermore, UPI has catalyzed innovation in the fintech sector, enabling a wide range of applications from peer-to-peer transfers to merchant payments, bill settlements, and more.

This paper seeks to explore the factors contributing to the rapid growth of UPI, assess its socio-economic impact, and identify the challenges and opportunities that lie ahead. By analyzing the evolution of UPI and its role within the broader context of digital transformation in India, this study aims to provide valuable insights into how such payment systems can drive inclusive and sustainable economic growth in emerging economies.

## LITERATURE REVIEW

The proliferation of digital payment systems in India, particularly the Unified Payments Interface (UPI), has garnered extensive scholarly and industry attention. A review of the existing literature reveals a multi-dimensional narrative that encompasses the evolution of digital payment infrastructure, policy frameworks, user adoption behavior, technological innovation, and financial inclusion.

### 1. Evolution of Digital Payments in India

The transformation of India's payment ecosystem began with the advent of electronic banking and card-based payments in the early 2000s. However, digital payments gained real momentum post-2010, supported by the establishment of the National Payments Corporation of India (NPCI) and the rollout of the Immediate Payment Service (IMPS). According to Dahiya and Gayatri (2018), India's digital journey accelerated with the introduction of Aadhaar and Jan Dhan Yojana, which laid the groundwork for the Direct Benefit Transfer (DBT) system and broadened access to banking services. The demonetization event of 2016, as highlighted by Kapoor (2017), acted as a catalyst for digital payment adoption, nudging consumers and merchants toward cashless alternatives.

### 2. Emergence and Design of UPI

UPI was launched in 2016 as a next-generation real-time payment system. As described by Sharma and Kukreja (2019), UPI offered a significant leap over previous systems by enabling interoperability between banks, allowing peer-to-peer and peer-to-merchant transfers with minimal friction. Its unique feature set—such as instant transfers, use of mobile numbers/virtual payment addresses (VPAs), and support for multiple bank accounts in one app—has been central to its rapid uptake. NPCI's technical documentation and annual reports also emphasize the openness and scalability of the UPI architecture, which facilitated integration with a wide range of financial service providers and fintech platforms.

### 3. UPI Adoption and Usage Trends

Numerous studies, including those by Singh and Bhattacharya (2020), underscore the exponential growth of UPI transactions, both in volume and value. The increasing smartphone penetration, improved mobile internet connectivity, and digital literacy campaigns have been key enablers. Research by Joshi and Patel (2021) shows that urban consumers have quickly adapted to UPI due to convenience and speed, while targeted efforts by banks and fintechs have begun to yield results in rural and semi-urban areas. Monthly data from the Reserve Bank of India and NPCI reveals consistent upward trends, with UPI surpassing other modes such as NEFT and IMPS in transaction numbers by 2020.

### 4. Financial Inclusion and Economic Impact

UPI has been recognized as a critical tool for promoting financial inclusion. According to Mehrotra and Ghosh (2021), UPI has empowered underbanked populations by reducing dependency on cash and offering simple, low-cost access to formal financial services. It has also enabled small and medium enterprises (SMEs) and informal sector workers to accept digital payments, enhancing their financial visibility and creditworthiness. Moreover, studies by World Bank (2022) and NITI Aayog highlight UPI's contribution to the formalization of the Indian economy.

### 5. Role of Fintech and Innovation

The integration of UPI with fintech applications has significantly broadened its use cases. Apps like PhonePe, Google Pay, and Paytm have not only simplified user interfaces but also added services such as bill payments, loans, and insurance. As discussed by Verma and Saxena (2022), the collaboration between banks and fintech firms has been crucial in scaling UPI adoption. Furthermore, innovations like UPI AutoPay and UPI 123PAY (for feature phones) aim to increase UPI's reach and functionality.

### 7. Policy and Regulatory Framework

Regulatory support has been instrumental in UPI's development. The Reserve Bank of India and NPCI have consistently worked to ensure that the digital payments infrastructure is secure, inclusive, and interoperable. Reports by RBI (2020, 2021) stress the importance of continuous innovation and consumer protection. Recent policy moves to internationalize UPI and integrate it with global systems also suggest growing confidence in its scalability and resilience.

### 8. Comparative and International Perspectives

Several scholars have compared UPI with other international payment systems such as China's Alipay/WeChat Pay and the Western SWIFT-based systems. Unlike the closed ecosystems prevalent in other countries, UPI's open and interoperable architecture has been praised as a model for inclusive digital finance (Klein & Arora, 2021). The growing interest from countries like Singapore, UAE, and France in adopting or integrating with UPI reflects its global potential.

METHODOLOGY

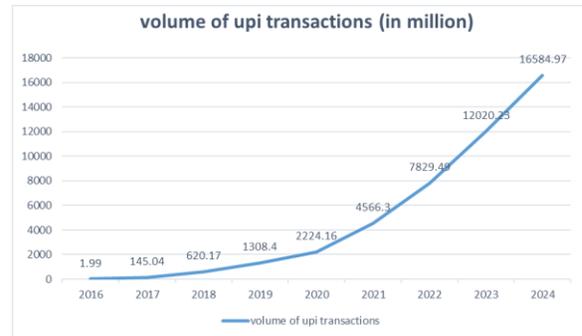
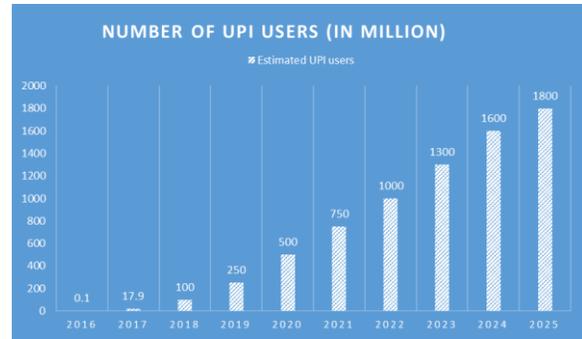
The data used in the report is secondary data that is collected from articles, books, and research reports. The research is all about understanding how digital payments revolutionized India. What were the events that resulted in the revolution? We have derived the observation that there are some major events that resulted in the growth of digital payments, such as the introduction of UPI, the launch of the Digital India program, demonetization, and COVID-19. All these events together made a huge impact on the Indian digital payment system

OBJECTIVES OF THE STUDY

1. Track Growth Trends  
Examine the rise of UPI, mobile wallets, and card payments in India.
2. Assess Government Impact  
Evaluate policies like Digital India and incentives for digital payments.
3. Measure Financial Inclusion  
Analyze digital payments' role in improving access to financial services, especially in rural areas.
4. Identify Adoption Challenges  
Identify obstacles like cybersecurity, digital literacy, and infrastructure issues.
5. Explore Future Opportunities  
Investigate emerging technologies such as AI and blockchain in digital payments.
6. Global Comparison  
Compare India's digital payment growth with other countries.

UPI DATA

Month	No. of Banks live on UPI	Volume (in Mn)	Value (in Cr.)
Apr-25	668	17,893.42	23,94,925.87
Mar-25	661	18,301.51	24,77,221.61
Feb-25	653	16,106.19	21,96,481.69
Jan-25	647	16,996.00	23,48,037.12
Dec-24	641	16,730.01	23,24,699.91
Nov-24	637	15,482.02	21,55,187.40
Oct-24	632	16,584.97	23,49,821.46
Sep-24	622	15,041.75	20,63,994.71
Aug-24	608	14,963.05	20,60,735.57
Jul-24	605	14,435.55	20,64,292.41
Jun-24	602	13,885.14	20,07,081.20
May-24	598	14,035.84	20,44,937.05
Apr-24	583	13,303.99	19,64,464.52



FINDINGS

- In 2016, Numbers of users link with UPI is 0.1 million.
- In present 2023, Numbers of users' link with UPI is 1800 million.
- Volume of UPI Transactions in 2016 is 1.99 million
- Volume of UPI Transactions in present is 16584.97 million
- In April 2024 the number of banks live on UPI is 583
- In April 2024 the number of banks Volume in Mn is 13,303.99
- In April 2024 the number of transaction Value in Crore is 19,64,464.52
- In April 2025 (present) the number of banks live on UPI is 668
- In April 2025 (present) the number of banks Volume in Mn is 17,893.42
- In April 2025 (present) the number of Transaction Value in Crore is 23,94,925.87

DISCUSSION

The Unified Payments Interface (UPI) is a transformative financial technology introduced by the National Payments Corporation of India (NPCI) in April 2016. It enables instant, real-time mobile-based

money transfers between bank accounts. Here's an analysis of its journey and impact from 2016 to 2024:

### 1. Launch and Early Adoption (2016-2017)

**Introduction:** UPI was launched in April 2016 with the goal of simplifying peer-to-peer (P2P) and business-to-customer (B2C) payments. **Initial Adoption:** Initially, 21 banks supported UPI. The traction was slow but promising, as people were unfamiliar with digital payment systems.

**Push from Demonetization:** The Indian government's demonetization move in November 2016 accelerated digital payment adoption, including UPI. However, other methods like wallets (e.g., Paytm) initially overshadowed UPI.

### 2. Rapid Growth Phase (2018-2020)

**Partnership with Apps:** Apps like PhonePe, Google Pay, and Paytm integrated UPI, making it accessible to millions of users. **Awareness and Ease of Use:** Simplicity, no need to memorize account numbers, and interbank operability became UPI's key features.

**Growth Metrics:**

Monthly UPI transactions crossed 100 million in 2018.

By the end of 2020, transactions exceeded 2 billion per month. **COVID-19 Pandemic Impact:** The pandemic accelerated digital adoption, with a massive shift to cashless transactions.

### 3. Maturation and Market Dominance (2021-2023)

□ **Unprecedented Scale:**

UPI became the dominant mode of digital payments in India

Monthly transactions surpassed 10 billion by mid-2023.

**Expansion into Rural Areas:** Efforts like UPI Lite and voice-based UPI enhanced penetration in areas with limited internet connectivity.

**Global Recognition:** NPCI International Payments Limited (NIPL) started promoting UPI internationally, with tie-ups in countries like UAE, Singapore, and Bhutan.

□ **Technological Advancements:**

Introduction of UPI 2.0 features like overdraft accounts, invoice support, and auto-debit functionality.

Launch of credit on UPI in collaboration with RuPay credit cards.

### 4. Recent Trends and Future Prospects (2024)

**Transaction Volume and Value:** As of 2024, UPI processes over 15 billion transactions monthly, accounting for a significant share of India's GDP in digital transactions.

□ **Innovations:**

Enhanced security features using AI and biometrics.

Micro-credit and insurance integration via UPI.

Support for cross-border payments with real-time forex conversions.

**Challenges:** Fraud prevention, maintaining scalability, and managing ecosystem interoperability.

**Vision:** Expanding to new markets globally and introducing offline UPI capabilities for better inclusivity.

### Impact of UPI (2016-2024)

1. **Financial Inclusion:** UPI has brought millions of unbanked individuals into the formal Economy.

2. **Boost to Digital Economy:** It significantly contributed to India's transition to a cashless society.

3. **Reduction in Transaction Costs:** UPI eliminated intermediaries and reduced the cost of small transactions.

4. **Global Model:** UPI is now a benchmark for real-time payment systems globally. UPI's journey has redefined India's financial ecosystem and is projected to continue driving innovations and economic growth in the coming years.

## RESULT

People in cities and villages changed how they use money, especially with the rise of apps like Paytm and GooglePay. But there were challenges too, like

hackers causing trouble in UPI transactions. Still, the Reserve Bank of India (RBI) made sure digital payments stayed safe and even has plans for a Digital Currency in the future. Looking at studies and research, we saw how people's behaviour changed after demonetization. About 83% of people started using digital payments more. Fintech companies and government programs also played a big role in this digital money journey.

By checking out different events like the launch of UPI, Digital India program, demonetization, and the COVID-19 impact, we found out how India became a big player in digital payments. From just over 1,00,000 transactions in 2016 to a mind-blowing 27.65 billion, digital payments have become a part of everyday life in India.

### CONCLUSION

In a nutshell, India's shift to digital payments has been incredible. Imagine, over 100 billion digital transactions happened in India in 2023! Thanks to the success of the Unified Payments Interface (UPI), which made sending and getting money super easy through smartphones. The revolution began in 2016 with demonetization and kept growing, helped by more internet access, the impact of COVID-19, and government support. So, what did we learn? Digital payments are not just changing how we buy things, they are also helping India become a 5trillion-dollar economy by 2025. It is not just about money, it is about making sure everyone, no matter where they live, can be a part of the digital world.

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