UPI Adoption and the Transformation of India's Digital Payment Ecosystem: Comparative Growth Patterns of P2P and P2M Transactions (2018-2024)

18

Dr. Priyanka Jaiswal
Rritam Mitra
Debjit Dutta

Abstract

Digital transformation has emerged as one of the most powerful forces reshaping economies and societies across the globe. The rapid advancement of digital technologies such as mobile internet, artificial intelligence, cloud computing, and digital payment systems has significantly improved accessibility, efficiency, and participation in economic activities. One of the most important impacts of digital transformation is its role in promoting economic inclusion by enabling underserved populations, small businesses, and rural communities to access financial services, markets, and information. Digital platforms have become essential tools for connecting consumers, businesses, and institutions, while digital payment systems have enhanced transaction speed, transparency, and financial participation. In sectors such as agriculture and small-scale enterprises, technology adoption has improved productivity, reduced operational barriers, and expanded market reach. However, challenges such as digital literacy gaps,

Dr. Priyanka Jaiswal
Assistant Professor, Army Institute of Management, Kolkata.
Email: jaiswal.priyanka@aim.ac.in
Rritam Mitra
Student, Army Institute of Management, Kolkata. Email: mitrarritam21@gmail.com
Debjit Dutta
Student, Army Institute of Management, Kolkata. Email: imdebjit.dutta@gmail.com
Book Name: Panch Parivartan: A Five-Fold Journey from Tradition to Transformation
Pub: Anu Books. ISBN:978-93-7847-006-6
DOI: https://doi.org/10.31995/book.ab371-a226.ch.18 Plagiarism Report: 14%

infrastructure limitations, cybersecurity risks, and unequal access to technology continue to hinder inclusive growth.

This paper explores the impact of UPI adoption on transaction growth and economic inclusion, highlighting its rise from a 34% share of digital payments in 2019 to 83% in 2024. Transaction volumes surged from 375 crore in 2018 to 17,221 crore in 2024, while transaction values expanded from ₹ 5.86 lakh crore to ₹ 246.83 lakh crore, reflecting a strong compound annual growth rate (CAGR). Comparative analysis of person to person (P2P) and person to merchant (P2M) transactions reveals that while P2P growth remained steady, P2M transactions experienced explosive expansion, particularly in high value categories (above ₹ 2000), with CAGR reaching 109% in volume and 123% in value.

Keywords: *Digital Transformation, Unified Payments Interface (UPI), Digital Payments, Person to Person (P2P), Person to Merchant (P2M).*

1. Introduction

Digital transformation refers to the integration of digital technologies into various sectors of society and business to improve processes, efficiency, and access. Over the past decade, digital transformation has become a major driver of economic growth and social development. Governments, businesses, and individuals increasingly rely on digital tools for communication, financial transactions, education, and commerce.

Economic inclusion means providing equal opportunities for individuals and businesses to participate in economic activities, regardless of income, location, or social background. Digital technologies play a crucial role in achieving this by removing traditional barriers to access. For example, mobile banking allows people in remote villages to access financial services without visiting a bank branch.

The combination of digital transformation and economic inclusion creates opportunities for poverty reduction, employment generation, and overall development. However, ensuring that these benefits reach all sections of society remains a major challenge.

2. Digital Platforms and Financial Inclusion

Digital platforms have revolutionized the way individuals and businesses interact with financial services. Platforms such as mobile banking applications, e-commerce websites, and digital lending systems have significantly expanded financial accessibility.

2.1 Role of Digital Platforms

Digital platforms act as intermediaries connecting users with services. Examples include: Mobile banking applications, Digital wallets, Online lending platforms, E-commerce marketplaces, Government digital service portals. These platforms simplify access to banking, savings, credit, and investment opportunities.

Table 1: Benefits of Digital Platforms for Financial Inclusion

Benefit	Description
Accessibility	Services available anytime and anywhere
Lower Costs	Reduced banking and transaction expenses
Convenience	Easy use through smartphones
Transparency	Better record keeping and reduced fraud
Empowerment	Greater financial independence

Digital platforms especially benefit rural populations, women entrepreneurs, and low-income households.

3. Digital Payments and Economic Participation

Digital payments are one of the most visible outcomes of digital transformation. They include transactions conducted electronically through mobile apps, cards, QR codes, and online banking.

3.1 Types of Digital Payments

Common digital payment methods include:

- Unified Payments Interface (UPI)
- Mobile wallets
- Debit and credit cards
- Internet banking
- QR code payments
- Contactless payment systems

In countries like India, platforms such as UPI have transformed everyday economic participation.

3.2 Benefits for Economic Participation

Digital payments encourage wider participation in the formal economy by: increasing transaction speed, reducing cash dependency, improving financial transparency, supporting tax compliance, enabling small vendors to accept digital payments

Figure 1: Impact of Digital Payments on Economic Participation

3.3 Challenges in Digital Payments

Despite advantages, challenges remain: cybersecurity threats, internet connectivity issues, lack of digital literacy, privacy concerns and resistance to technology adoption.

Governments and financial institutions must address these barriers through education and secure systems.

4. Literature Review

Author/Source	Focus	Key Findings
World Bank (2023)	Digital development overview	Digital transformation drives inclusive growth by expanding access to financial services and markets.
IMF (2023)	Digital financial inclusion & growth	Digital payments reduce transaction costs and increase GDP participation.
OECD (2023)	Role of digital platforms	E-commerce and mobile banking lower entry barriers, expand customer reach, and improve efficiency.
United Nations (2022)	Technology & innovation report	Digital tools in agriculture and small enterprises improve productivity and market access.
RBI (2023)	Digital payments in India	UPI adoption has transformed everyday transactions, improving transparency and compliance.

4.1 Research Gap

While existing literature strongly supports the role of **digital transformation** in enhancing efficiency, customer reach, and financial inclusion, most studies remain **broad and macro-level**, focusing on national or global trends. There is limited empirical evidence on how **small businesses specifically** experience these benefits in diverse contexts such as India, where SMEs form the backbone of the economy.

Research by the **World Bank (2023)** and **OECD (2023)** highlights the potential of digital platforms and payments, but these studies often overlook the **practical barriers** SMEs face—such as resource constraints, lack of technical expertise, and cybersecurity risks. Similarly, while the **RBI (2023)** documents the exponential rise of UPI transactions, it does not fully explore how digital payments reshape everyday operations and participation of micro and small enterprises.

This gap underscores the need for **focused research** that examines both the **positive impacts** (efficiency, customer expansion, transparency) and the **challenges** (financial limitations, literacy gaps, resistance to change). Addressing this gap will provide actionable insights for policymakers, training institutions, and SME owners, ensuring that digital transformation translates into **inclusive and sustainable growth** rather than widening the digital divide.

4.2 Research Objectives

- To analyse the impact of UPI adoption on the growth and transformation of India's digital payment ecosystem from 2018 to 2024, focusing on transaction volume, value, and the decline of traditional payment systems.
- To investigate the differential growth patterns of UPI transactions across P2P and P2M categories between 2019 and 2024.

4.3 Research Hypotheses

- **H1:** UPI adoption has significantly increased the overall transaction volume of digital payments in India between 2018 to 2024.
- **H2:** P2M transactions have grown at a significantly higher CAGR than P2P transactions across all transaction ranges.
- **$H_0$1: ($H0_1$):** UPI adoption has **not** significantly increased the overall transaction volume of digital payments in India between 2018 and 2024. Any observed growth in transaction volume is due to other factors or random variation.
- **$H_0$2:** P2M transactions have **not** grown at a significantly higher CAGR than P2P transactions across transaction ranges. Any difference in growth rates between P2M and P2P is statistically insignificant or attributable to chance.

4.4 Research Methodology

This study adopts a descriptive and analytical research design to examine the impact of digital transformation, particularly UPI adoption, on economic inclusion and digital payment growth in India. The research is based on secondary data collected from RBI reports, NPCI publications, World Bank reports, IMF reports, OECD publications, and other government sources.

The study covers the period 2018–2024 and focuses on trends in UPI transaction volume, value, and the growth of Person-to-Person (P2P) and Person-to-Merchant (P2M) transactions. Data are analyzed using trend analysis, percentage analysis, CAGR (Compound Annual Growth Rate), and comparative analysis to assess growth patterns and digital payment adoption.

5 Data Analysis

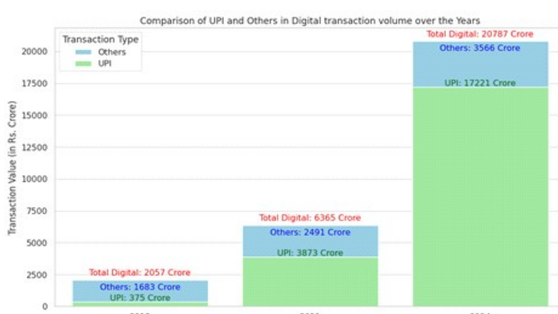
5.1 UPI and its enhancements

The Unified Payments Interface (UPI) has truly changed the way India thinks about money. By treating digital payments as a public good, India has shown the world that technology can be inclusive, reaching even the smallest transactions and the most remote communities. This approach is something other countries, no matter their stage of development, can learn from — it's about making payments simple, accessible, and democratic.

Since its launch in April 2016 by the National Payments Corporation of India (NPCI), UPI has reshaped the nation's financial landscape. Imagine having all your bank accounts linked to one mobile app — that's the power of UPI. With features like the Virtual Payment Address (VPA), people no longer need to share sensitive bank details to send or receive money. It's fast, secure, and designed with everyday users in mind.

The impact has been nothing short of phenomenal. Today, UPI handles more than sixteen billion transactions every month, making it India's favourite way to pay. Whether it's splitting a bill with a friend or paying a shopkeeper, UPI makes it instant and effortless. It's not just about convenience — it's about creating a system where everyone, from urban professionals to rural households, can participate in the digital economy.

5.2 The growth of UPI payments



Source: Payment system report, RBI

UPI has become the major contributor to digital payments growth in India, with its share rising from 34% in 2019 to 83% in 2024. The volume of UPI transactions increased from 375 crore in 2018 to 17,221 crore in 2024, while transaction value grew from ₹5.86 lakh crore to ₹ 246.83 lakh crore. This rapid growth reflects a strong CAGR in both transaction volume and value. At the same time, the share of traditional payment systems like RTGS, NEFT, and cards declined significantly. The adoption of UPI is mainly driven by its ease of use, instant money transfer facility, QR code payments, and secure authentication features, making it the largest retail payment system in India.

5.3 Comparative Analysis of P2P and P2M Transactions

Table 1- CAGR of UPI transaction for P2P transaction bucket-wise

CAGR (CY-2019 to CY-2024	UPI P2P (Below ₹500)	UPI P2P (500 ₹ to ₹ 2000)	UPI P2P (Above ₹ 2000)	UPI P2M (below ₹ 500)	UPI P2M (500 ₹ to ₹ 2000)	UPI P2M (Above ₹ 2000)
Volume	56%	49%	57%	99%	101%	109%
Value	56%	44%	63%	92%	102%	123%

Source: Payment system report, RBI (2025)

Both person to person (P2P) and person to merchant (P2M) payments thrive on UPI's hallmark strengths: speed, security, and simplicity. For everyday users, this means sending money to a friend or paying a shopkeeper happens instantly, without the hassle of traditional, time consuming methods. For businesses, it's a seamless way to accept payments and build trust with customers.

When we look at how these two transaction types have grown, we see both shared patterns and unique differences. The overall trajectory reflects India's rapid embrace of digital payments, yet the nuances — highlighted in Chart 2 — reveal how P2P and P2M have carved distinct paths in shaping the country's financial ecosystem.

Further, the distribution of UPI transactions for P2P and P2M value bucket-wise, shows that the P2M transactions grew at the faster rate than P2P in terms of volume and there is variation in the growth across various bucket size (Table 1).

The table 1, highlights the **growth trajectory of UPI transactions between 2019 and 2024**, comparing person to person (P2P) and person to merchant (P2M) categories across different transaction sizes. The data shows that while P2P transactions have grown steadily, their CAGR in both volume and value remains moderate, especially in the mid range (₹ 500– 2000). In contrast, P2M transactions demonstrate explosive growth, with volume and value nearly doubling across all ranges. The most striking trend is in high value P2M transactions (above ₹2000), where the CAGR reaches 109% in volume and 123% in value, indicating that merchants and consumers are increasingly adopting UPI for larger payments. This suggests a shift in digital payment behaviour: UPI is no longer confined to small, everyday transfers but is becoming a mainstream channel for significant commercial transactions. Overall, the analysis underscores that **merchant adoption and high value digital payments are driving UPI's rapid expansion**, reflecting both consumer trust and institutional support for cashless ecosystems.

An in depth look at Person to Person (P2P) and Person to Merchant (P2M) transactions has been carried out across three value ranges: low (below ₹500), medium (₹500–₹ 2000), and high (above ₹2000). The analysis draws on a daily dataset spanning the past five years, offering a strong and reliable base to uncover meaningful trends in digital payment behavior.

6. Findings

- UPI has become the largest contributor to digital payments in India, with its share rising from 34% in 2019 to 83% in 2024.
- Transaction volume grew from 375 crore (2018) to 17,221 crore (2024), while value increased from ₹5.86 lakh crore to ₹246.83 lakh crore.
- This reflects a strong CAGR in both transaction volume and value, making UPI the dominant retail payment system.
- As UPI expanded, the share of RTGS, NEFT, and card payments declined significantly.
- This indicates a structural shift in India's payment ecosystem, with digital-first solutions replacing conventional methods.
- P2P (Person-to-Person) transactions grew steadily but moderately, especially in the mid-range (₹500–₹2000).
- P2M (Person-to-Merchant) transactions showed explosive growth, with CAGR nearly doubling across all ranges.
- High-value P2M transactions (above ₹2000) recorded 109% CAGR in volume and 123% CAGR in value, highlighting merchant adoption and consumer trust in UPI for larger payments.

- Digital tools (e-commerce, cloud accounting, CRM, digital payments) helped SMEs expand customer reach, reduce costs, and improve efficiency.
- UPI integration enhanced **credibility, transparency, and compliance**, enabling small businesses to participate more actively in the formal economy.

7. Challenges to Inclusive Digital Transformation

While digital transformation offers significant opportunities, several issues can limit economic inclusion:

- **Digital Divide:** Unequal access to internet and devices creates disparities between urban and rural populations.
- **Digital Literacy:** Many individuals lack the knowledge needed to use digital technologies effectively.
- **Cybersecurity and Privacy Risks:** Data breaches and fraud reduce trust in digital systems.
- **Infrastructure Limitations:** Poor internet connectivity and electricity shortages hinder adoption in many regions.

8. Recommendations:

To ensure that digital transformation effectively promotes **economic inclusion**, the following measures are recommended:

- **Expand affordable internet access:** Broaden the reach of reliable and low cost internet services to bridge the digital divide between urban and rural populations.
- **Improve digital literacy programs:** Implement structured training initiatives to enhance the ability of individuals and small businesses to use digital technologies effectively.
- **Strengthen cybersecurity regulations:** Establish robust legal and technical frameworks to safeguard users against fraud, data breaches, and privacy violations.
- **Support digital innovation in SMEs and agriculture:** Encourage the adoption of digital tools in small businesses and agricultural enterprises to improve productivity, efficiency, and market access.
- **Encourage public private partnerships:** Foster collaboration between government, industry, and civil society to expand infrastructure, develop inclusive solutions, and scale innovation.

- **Provide financial incentives for technology adoption:** Offer subsidies, tax benefits, and affordable financing options to reduce barriers for SMEs and underserved communities in adopting digital technologies.

9. Conclusion

Digital transformation has become a critical driver of economic inclusion by improving access to financial services, enabling digital payments, and supporting technology adoption in agriculture and small businesses. It has the potential to reduce inequality, empower underserved communities, and accelerate economic growth. However, the full benefits of digital transformation can only be achieved through inclusive policies, infrastructure investment, and digital education. Governments, businesses, and communities must work together to ensure that no one is left behind in the digital economy.

The study concludes that **UPI adoption has transformed India's digital payment ecosystem**, driving rapid growth in transaction volume and value, while simultaneously reshaping small business operations and promoting economic inclusion. However, to ensure **sustainable and equitable progress**, challenges like literacy, infrastructure, and security must be addressed through supportive policies and capacity building.

References

1. World Bank. (2023). *Digital development overview*. World Bank Group.
2. International Monetary Fund. (2023). *Digital financial inclusion and economic growth*. IMF Publications.
3. United Nations. (2022). *Technology and innovation report*. United Nations Publications.
4. Organisation for Economic Co-operation and Development. (2023). *The role of digital transformation in economic inclusion*. OECD Publishing.
5. Reserve Bank of India. (2023). *Annual report on digital payments and financial inclusion*. RBI Publications.
6. Reserve Bank of India. (2025, January 27). *Payment systems report: Half year ended December 2024.* Reserve Bank of India.