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Digital Payments driving the growth of Digital Economy - Evidence from India

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Abstract
The rapid expansion of digital payments has become an important component of India's transition towards a digital economy. Technological developments, increased internet and smart phone penetration, financial inclusion initiatives, and innovations in payment infrastructure have significantly changed the way individuals, businesses and government institutions conduct financial transactions. Among the various digital payment mechanisms, the Unified Payments Interface (UPI) has emerged as a major component of India's digital payment ecosystem by enabling instant, interoperable and convenient transactions between bank accounts.

This paper examines the role of digital payments in driving the growth of the digital economy in India. The study focuses on the development of digital payment infrastructure, the growth of UPI and other electronic payment systems, financial inclusion, formalization of economic activities, business efficiency, consumer participation and the emergence of digital commerce. The study is based on secondary data collected from the Reserve Bank of India (RBI), National Payments Corporation of India (NPCI), World Bank and published research studies. Descriptive and comparative analysis is used to examine the growth and economic significance of digital payments.

The study finds that the expansion of digital payments has contributed to greater financial access, reduced dependence on cash, improved transaction convenience, supported digital commerce and strengthened the integration of consumers and businesses into the formal financial system. Digital payments also create an important foundation for other components of the digital economy, including e-commerce, digital banking, fintech, digital lending and data-enabled financial services. However, challenges such as cyber fraud, digital illiteracy, unequal access to digital infrastructure, privacy concerns and dependence on digital connectivity continue to affect inclusive adoption. The paper concludes that digital payments can act as an important enabling infrastructure for India's digital economy when supported by secure technology, financial literacy, consumer protection and inclusive digital infrastructure.

Keywords: Digital Payments, Digital Economy, UPI, Financial Inclusion, Fintech, Digital Commerce, Economic Growth, India

1. INTRODUCTION

The digital transformation of the economy has changed the manner in which economic activities are conducted across the world. Information and communication technologies have become an integral part of production, consumption, trade, banking and financial services. One of the most visible components of this transformation is the rapid development of digital payments.

Digital payments refer to financial transactions conducted electronically through digital channels rather than through physical cash. They include Unified Payments Interface (UPI), internet banking, mobile banking, debit and credit cards, Immediate Payment Service (IMPS), National Electronic Funds Transfer (NEFT), electronic wallets, Bharat Bill Payment System (BBPS), Aadhaar Enabled Payment System (AePS) and other electronic payment mechanisms.

The introduction and expansion of UPI has been particularly significant. UPI enables users to transfer money between bank accounts using mobile applications, virtual payment addresses, QR codes and other mechanisms. Its interoperability has enabled individuals and merchants to conduct transactions across participating banks and payment applications.

The World Bank's Global Findex evidence indicates that digital payments have become an increasingly important mechanism for financial inclusion. In India, 78 percent of adults had an account in 2021, while 35 percent of adults reported making or receiving a digital payment. The World Bank also identified substantial potential for further expansion, particularly among rural users and existing account holders who continued to rely on cash. Therefore, digital payments can be considered an important foundation of the digital economy. However, the relationship is not automatic. Digital infrastructure, affordability, digital literacy, cybersecurity, trust and consumer protection are necessary to ensure that payment digitalisation translates into broad-based economic participation.

DIGITAL PAYMENT ECOSYSTEM IN INDIA

India's digital payment ecosystem consists of several payment instruments and infrastructures.

Unified Payments Interface (UPI)

UPI is an interoperable payment system that enables users to make immediate bank-to-bank transfers. It has become one of the most widely used digital payment mechanisms in India.

Immediate Payment Service (IMPS)

IMPS enables instant interbank electronic fund transfers and is available on a 24-hour basis subject to applicable system arrangements.

National Electronic Funds Transfer (NEFT)

NEFT enables electronic transfer of funds between bank accounts. It is widely used for retail and other account-to-account payments.

Real Time Gross Settlement (RTGS)

RTGS is primarily used for high-value transactions and provides real-time settlement.

Debit and Credit Cards

Cards remain important instruments for retail payments, particularly for point-of-sale transactions and online purchases.

Mobile Wallets

Digital wallets enable users to store value and make payments through mobile applications.

Bharat Bill Payment System (BBPS)

BBPS provides an interoperable mechanism for recurring and non-recurring bill payments.

Aadhaar Enabled Payment System (AePS)

AePS supports certain banking and payment services through Aadhaar authentication and is particularly relevant to financial inclusion and assisted banking.

STATEMENT OF THE PROBLEM

The rapid growth of India's digital economy has created opportunities for consumers, businesses and government institutions. However, the contribution of digital payments to this transformation requires systematic examination.

The increasing volume of digital transactions does not by itself establish that digital payments cause economic growth. Digital-payment adoption may be influenced by income, internet access, financial inclusion, smartphone ownership, education, urbanization and business digitalization. Similarly, economic development may itself encourage greater use of digital payments.

5. OBJECTIVES OF THE STUDY

The major objectives of the study are:

1. To examine the growth of digital payments in India.
2. To understand the relationship between digital payments and the digital economy.
3. To examine the role of UPI in the expansion of India's digital payment ecosystem.
4. To analyse the contribution of digital payments to financial inclusion.
5. To examine the role of digital payments in supporting digital commerce and businesses.
6. To identify the major challenges associated with digital payment adoption.
7. To suggest measures for strengthening India's digital payment ecosystem.

LIMITATIONS OF THE STUDY

The study is based primarily on secondary data and published research. Therefore, it does not directly measure the experiences of individual consumers or businesses.

The study also does not establish a new causal econometric relationship between digital payments and GDP. Transaction growth is used primarily as an indicator of digital-payment expansion, while causal evidence is drawn from previously published empirical studies.

Future studies may use primary survey data, panel-data models, time-series analysis or state-level data to examine the relationship more rigorously.

REVIEW OF LITERATURE

World Bank – Global Findex

The World Bank's Global Findex Database provides substantial evidence on the relationship between financial inclusion and digital payments. In India, account ownership reached 78 percent of adults in 2021. However, digital-payment usage remained lower than account ownership, indicating that access to an account does not automatically result in active digital financial participation. The World Bank identified digital payments as an important opportunity for increasing the use of financial accounts and strengthening financial inclusion. [1]

Azeez, Haque and Akhtar (2022)

Azeez, Haque and Akhtar examined the relationship between digital payments and economic growth in India. Their study used Indian payment-system and macroeconomic data and considered several categories of digital transactions. The study provides empirical evidence for examining digital payments as a factor associated with economic activity and growth. [2]

Birigozzi, De Silva and Luitel (2025)

Birigozzi, De Silva and Luitel investigated the relationship between digital-payment adoption and GDP growth using panel data across countries. Their study reports a positive association between digital-payment adoption and GDP growth and emphasises the roles of transaction costs, financial access, financial literacy and behavioural factors. [3]

Yadav and Das (2025)

Yadav and Das studied digital payment adoption in India and examined the effects of demonetisation and COVID-19 using a quasi-experimental approach. Their findings suggest that COVID-19 and lockdown conditions accelerated the use of newer digital payment channels, while the evidence did not indicate that demonetisation by itself enhanced adoption in value terms. [4]

Sources of Data

Data and information are obtained from:

- Reserve Bank of India (RBI)
- National Payments Corporation of India (NPCI)
- World Bank
- Government publications

GROWTH OF UPI IN INDIA

UPI has become a central component of India's digital payment infrastructure.

According to NPCI data, UPI transaction volume increased substantially over recent financial years. NPCI's reported quarterly statistics show approximately:

Financial Year	Approx. UPI Transaction Volume
2022–23	8,375 crore
2023–24	13,083 crore
2024–25	18,587 crore
2025–26	5,497 crore
2025–26	5,879 crore
2025–26	6,235 crore

Source: NPCI retail payment statistics; figures converted from million transactions to crore transactions.

The data demonstrate the continued expansion of UPI usage. NPCI reported approximately 18,586.6 million UPI transactions for FY 2024–25 based on its quarterly statistics. The corresponding transaction value was approximately ₹260.6 lakh crore. [6]

This growth demonstrates the increasing integration of UPI into everyday economic transactions.

DIGITAL PAYMENTS AND FINANCIAL INCLUSION

Financial inclusion refers to the availability and effective use of appropriate financial services by individuals and businesses. Digital payments contribute to financial inclusion in several ways.

Lower Transaction Barriers

Digital payments can reduce the need to travel to a bank branch for certain transactions. Mobile-based payment systems can allow users to send and receive funds from remote locations.

Increased Financial Participation

Digital payment transactions generate formal transaction records. These records can potentially help users establish financial histories and access additional financial services, although transaction records should not automatically be equated with access to credit.

Rural Financial Inclusion

Digital payment infrastructure can extend financial services to rural areas through mobile phones, banking correspondents and assisted digital-payment channels.

Government Transfers

Digital financial infrastructure can facilitate direct transfers of government benefits into bank accounts. This can reduce the need for physical cash distribution.

Women's Financial Participation

Digital financial services can provide women with greater control over individual financial transactions. However, access and usage gaps can remain because of differences in digital literacy, device ownership, social conditions and financial autonomy.

DIGITAL PAYMENTS AND ECONOMIC GROWTH

Digital payments may contribute to economic growth through several channels.

Reduction in Transaction Costs

Digital payments can reduce the time and physical resources required to transfer money. Faster settlement can improve the efficiency of economic exchanges.

Increased Transaction Efficiency

Businesses can receive payments immediately or within shorter settlement periods. This may improve cash-flow management.

Development of Fintech

The availability of digital payment infrastructure has supported the growth of fintech companies and digital financial services.

Productivity Effects

Digital transactions may reduce administrative and payment-processing costs, allowing businesses to devote resources to other productive activities.

DIGITAL PAYMENTS AND DIGITAL COMMERCE

Digital commerce depends on the ability of consumers and businesses to complete transactions electronically. The relationship can be represented as:

Digital Infrastructure → Digital Payments → Digital Commerce → Business Expansion → Economic Activity.

For example, a small retailer can use a QR code to accept digital payments without installing a traditional card-payment terminal. A consumer can scan the QR code using a mobile application and complete the transaction through UPI. This process reduces the technological barrier to accepting electronic payments.

Digital payments therefore support:

- Online shopping
- Food-delivery services
- Transport applications
- Online education
- Subscription services
- Digital entertainment

NPCI's UPI merchant-category data illustrate the broad use of UPI across groceries, restaurants, telecommunications, fuel and other categories.

DIGITAL PAYMENTS AND SMALL BUSINESSES

Small and micro businesses constitute an important part of India's economic structure. Digital payments can benefit these businesses by providing:

1. Faster receipt of customer payments.
2. Reduced dependence on cash handling.
3. Electronic transaction records.
4. Greater customer convenience.
5. Ability to participate in digital commerce.
6. Integration with digital accounting and business applications.
7. Potential connection to other formal financial services.

The availability of QR-based payment acceptance has particularly lowered the technological entry barrier for small merchants.

However, digital adoption also creates new responsibilities for businesses, including cyber security, customer-data protection and transaction reconciliation.

DIGITAL PAYMENTS AND THE FORMALISATION OF THE ECONOMY

Cash transactions can be difficult to document systematically, particularly when transactions occur outside formal accounting systems. Digital transactions generate electronic records that can contribute to greater transparency. Digital payments can therefore support formalisation through:

- Electronic transaction trails
- Digital invoices
- Digital accounting
- Online tax compliance
- Formal banking relationships
- Digital business platforms

However, digital payment adoption should not automatically be interpreted as evidence of complete formalisation. The economic effect depends on how transaction information is incorporated into accounting, taxation and regulatory systems.

ROLE OF UPI IN INDIA'S DIGITAL ECONOMY

UPI has several characteristics that have contributed to its rapid adoption:

Interoperability

Users can transact across participating banks and applications.

Convenience

Payments can be initiated using mobile devices and QR codes.

Real-Time Processing

Transactions can generally be completed rapidly.

Low Entry Barrier

QR-based merchant acceptance can be relatively simple to establish.

Multiple Use Cases

UPI can be used for person-to-person and person-to-merchant transactions.

Ecosystem Integration

UPI has become integrated into banking applications, fintech platforms and merchant ecosystems.

NPCI statistics show that person-to-merchant transactions constitute a substantial share of UPI activity, demonstrating the importance of UPI to everyday commercial transactions.

DIGITAL PAYMENTS AND FINTECH DEVELOPMENT

The expansion of digital payments has contributed to the development of India's fintech ecosystem.

Fintech firms use digital payment infrastructure to provide services such as:

- Mobile banking
- Payment applications
- Digital lending
- Personal financial management
- Investment platforms
- Insurance technology
- Online merchant services
- Digital accounting

Digital payment infrastructure can therefore act as a foundational layer upon which other digital financial services are built. The relationship may be represented as:

Payment Infrastructure → Transaction Data and Connectivity → Fintech Innovation → New Financial Services → Digital Economy

Nevertheless, innovation must be accompanied by appropriate regulation, cybersecurity and consumer protection.

DIGITAL PAYMENTS AND CONSUMER BEHAVIOUR

Digital payments have changed consumer behaviour by increasing the speed and convenience of transactions.

Consumers can:

- Pay without carrying cash.
- Make payments remotely.
- Purchase goods online.
- Pay bills digitally.
- Transfer money immediately.
- Track transactions through applications.
- Use QR codes for small-value purchases.

The convenience of digital payments can encourage consumers to participate in digital markets.

At the same time, easy digital payments may create concerns relating to excessive spending, fraud, privacy and financial awareness. Therefore, digital literacy is important for responsible digital-payment use.

CHALLENGES OF DIGITAL PAYMENTS

Despite rapid growth, several challenges remain.

Cyber security Risks

Digital payments can be affected by phishing, social engineering, malware, identity theft and fraudulent transactions.

Digital Illiteracy

Some consumers lack sufficient knowledge to use digital payment applications safely.

Digital Divide

Differences in internet access, smartphone ownership and digital skills can create unequal participation.

Network Connectivity

Digital payments depend on telecommunications and digital infrastructure.

Privacy Concerns

The increasing digitalisation of transactions raises questions about the collection, storage and use of financial data.

Fraud and Social Engineering

Users may be deceived into sharing credentials, OTPs or authorising fraudulent transactions.

Rural Adoption

Although rural digital adoption is increasing, differences in connectivity, financial literacy and device access remain relevant.

FINDINGS OF THE STUDY

Based on the secondary data and literature examined, the following findings emerge:

1. Digital payments have expanded substantially in India during the last decade.
2. UPI has become a major component of India's retail digital-payment ecosystem.
3. Digital payments provide an important technological foundation for digital commerce.
4. Digital payment infrastructure has increased opportunities for individuals and small businesses to participate in formal financial transactions.
5. Digital payments can contribute to financial inclusion by making financial transactions more accessible and convenient.
6. Digital payment systems can reduce certain transaction costs and improve payment efficiency.
7. Digital transactions can support greater economic transparency through electronic records.
8. The growth of digital payments has supported the development of fintech and digital financial services.
9. International empirical research provides evidence of a positive association between digital-payment adoption and GDP growth, while the direction and magnitude of causality should be interpreted carefully.
10. India's high level of account ownership does not imply universal digital-payment usage, indicating that access and effective use remain separate policy objectives.
11. Cybersecurity, fraud, digital literacy and the digital divide remain important challenges.
12. The future contribution of digital payments to the digital economy will depend not only on transaction volume but also on the quality, security, inclusiveness and reliability of the digital-payment ecosystem.

SUGGESTIONS

Strengthen Digital Financial Literacy

Government agencies, banks and educational institutions should conduct systematic digital-financial-literacy programmes, particularly for first-time users.

Improve Cyber security Awareness

Users should be educated never to share OTPs, PINs, passwords or authentication credentials and should be encouraged to verify payment requests.

Strengthen Rural Digital Infrastructure

Reliable internet connectivity and affordable digital devices are necessary to ensure inclusive digital-payment adoption.

Improve Consumer Protection

Payment providers should maintain effective mechanisms for reporting fraud, resolving disputes and protecting consumers.

Encourage Small-Merchant Digitalisation

Small businesses should be supported in adopting digital payments, accounting tools and online business platforms.

Promote Women's Digital Financial Participation

Programmes should address barriers that prevent women from accessing and effectively using digital financial services.

CONCLUSION

Digital payments have emerged as an important foundation of India's digital economy. The transformation is particularly visible in the rapid expansion of UPI and other electronic payment systems. Digital payments have changed the way consumers, businesses and government institutions transfer and receive money. The significance of digital payments extends beyond the replacement of physical cash. They facilitate participation in digital commerce, support fintech innovation, improve transaction efficiency and can strengthen the connection between individuals and formal financial services. In conclusion, **digital payments can serve as a critical enabling infrastructure for the growth of India's digital economy**, connecting financial services with digital commerce, businesses, consumers, government services and emerging fintech platforms. Sustained investment in infrastructure, skills, security and inclusion can strengthen this contribution and support India's continuing digital transformation.

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