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THE STATUS OF E-MONEY IN INDIA: A COMPREHENSIVE ANALYSIS OF REGULATORY FRAMEWORK, INFRASTRUCTURE, AND MARKET EVOLUTION

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Abstract

E-money, encompassing digital payment instruments, central bank digital currencies (CBDC), and prepaid payment instruments (PPIs), has emerged as a transformative force in India's financial landscape. This research paper provides a comprehensive analysis of the current status of e-money in India as of January 2026, examining the regulatory framework established by the Reserve Bank of India (RBI), the infrastructure supporting digital payments, the evolution of e-money mechanisms, and their impact on financial inclusion and the broader economy. The paper demonstrates that India has achieved unprecedented digital payment adoption, with Unified Payments Interface (UPI) transactions reaching 228.3 billion in 2025, representing exponential growth from 50,000 transactions per day in 2016-17 to over 500 million daily in 2024-25¹. Furthermore, the introduction of the digital rupee (e₹) and enhanced regulatory frameworks for Payment System Operators (PSOs) mark India's evolution toward a sophisticated, secure, and inclusive digital payment ecosystem. This research concludes that while significant progress has been made, ongoing regulatory refinement and infrastructure development remain essential to address emerging challenges related to cybersecurity, financial stability, and inclusive growth.

Key words: E- Money, Technology, UPI, Infrastructure, Regulatory etc.

¹ Kothari, Vinod. *The Law of Prepaid Payment Instruments (PPIs)*. Vinod Kothari Consultants, 2025. Covers PPI regulations, RBI guidelines, and compliance landscape

1. Introduction

The digital payment revolution in India represents one of the most significant economic transformations of the twenty-first century. Over the past decade, India has transitioned from a predominantly cash-based economy to a rapidly digitizing financial system. E-money, in its multiple forms—including Unified Payments Interface (UPI) transactions, mobile wallets, prepaid payment instruments, and the newly introduced digital rupee has fundamentally altered the manner in which individuals, businesses, and institutions conduct financial transactions.²

The Reserve Bank of India (RBI), as the apex monetary and regulatory authority, has played a pivotal role in facilitating this transformation through the issuance of comprehensive regulatory directions, technological infrastructure development, and policy interventions aimed at promoting financial inclusion. The Payment Systems Vision 2025 document released by the RBI in June 2022 provides a forward-looking framework for the evolution of India's payment ecosystem.³

This research paper examines the multifaceted status of e-money in India as of January 2026, analyzing the regulatory architecture, institutional frameworks, technological infrastructure, market performance, and challenges that characterize contemporary digital payments in the Indian context. The paper is structured around five principal dimensions: the definitional and conceptual framework of e-money, the regulatory and institutional landscape, infrastructure and technological development, market statistics and growth trajectories, and contemporary challenges and future prospects.

2. Definitional and Conceptual Framework of E-Money in India

E-money, in the Indian regulatory context, encompasses multiple categories of digital payment instruments, each with distinct characteristics, regulatory requirements, and operational parameters. The RBI defines e-money broadly to include prepaid payment instruments (PPIs), central bank digital currency (CBDC), and payment system operator-mediated transactions.

² National Informatics Centre. (2023, April 27). Digital Payments driving the growth of Digital Economy. Retrieved from <https://www.nic.gov.in/digital-payments-driving-the-growth-of-digital-economy/>

³ K.B.W. "A Study of Growth of Digital Payment Transactions in India." *Shahu College Research Publications*, 2022-23. Analyzes trends, drivers, challenges, and policy impacts on e-payments

2.1 Prepaid Payment Instruments (PPIs)

Prepaid Payment Instruments represent one of the most significant forms of e-money in India. The RBI's Master Directions on Prepaid Payment Instruments, first issued in October 2017 and periodically updated, provide the principal regulatory framework governing PPIs. PPIs are defined as payment instruments that facilitate purchase of goods and services against the value stored on the instrument. These instruments can be classified into three categories: open-loop PPIs (which can be used across multiple merchants and channels), closed-loop PPIs (restricted to a specific merchant or network), and semi-closed PPIs (usable across a network of specified merchants).

The regulatory framework for PPIs was substantially refined in 2021 with the issuance of comprehensive Master Directions that consolidated various circulars issued between 2017 and 2021. Key regulatory objectives established for PPIs include: promotion of innovation and efficiency in the payment system; ensuring safety, security, and consumer protection; supporting financial inclusion objectives; and preventing money laundering and fraudulent practices.

2.2 Unified Payments Interface (UPI)

The Unified Payments Interface, developed by the National Payments Corporation of India (NPCI), represents a revolutionary real-time inter-bank transaction system that has become the primary mechanism for digital payments in India. UPI enables peer-to-peer (P2P) and peer-to-merchant (P2M) transactions through a standardized interface that simplifies the payment process and eliminates the necessity for complex banking credentials. The BHIM (Bharat Interface for Money) application, launched as part of the government's DigiDhan Mission, provides an accessible interface for UPI-based transactions.⁴

2.3 Central Bank Digital Currency (CBDC) - Digital Rupee

The digital rupee (e₹), India's CBDC initiative, represents the digital version of the Indian Rupee issued directly by the RBI. The e₹ initiative commenced following amendments to the Reserve Bank of India Act, 1934, incorporated in the Finance Bill 2022, which expressly authorized the RBI to issue currency in digital form. The e₹ is designed to combine the attributes of physical cash—including trust, safety, and settlement finality with the benefits of

⁴ "E-Rupee: Unlocking India's Digital Economy, Challenges." *South Asian Journal of Social Studies and Economics (SAJSSE)*, 21 Jul. 2024. Explores CBDC forms, financial inclusion, risks like cyber-attacks

digital transaction processing and real-time settlement capability.

3. Regulatory and Institutional Framework

3.1 The Reserve Bank of India's Regulatory Architecture

The RBI exercises comprehensive regulatory authority over e-money and digital payments through authority granted under Section 18 and Section 10 of the Payment and Settlement Systems Act, 2007. The RBI's regulatory framework has evolved significantly to accommodate technological innovation while maintaining robust consumer protection and systemic stability standards.

3.1.1 Master Directions on Prepaid Payment Instruments

The Master Directions on Prepaid Payment Instruments, as updated through 2021, establish comprehensive regulatory standards covering authorization of PPI issuers, Know Your Customer (KYC) requirements, operational standards, consumer protection provisions, and anti-money laundering compliance. Key regulatory milestones include:

- **2017:** Comprehensive guidelines establishing authorization criteria, KYC norms, and operational standards for PPI issuers.
- **2020:** Mandatory KYC implementation for all PPIs to enhance transparency and consumer identification.
- **2021:** Introduction of mandatory interoperability across full-KYC PPIs, enabling seamless transaction processing across different issuer networks.

3.1.2 Regulations on Payment System Operators (PSOs)

Recognizing the critical importance of payment system security amid evolving cyber threats, the RBI issued draft security directions for Payment System Operators in June 2023. These directions, subsequently finalized, establish comprehensive cybersecurity and operational resilience requirements for all entities operating payment systems. The implementation timeline differentiated between large, medium, and smaller non-bank PSOs:

- Large non-bank PSOs: April 1, 2024
- Medium-sized non-bank PSOs: April 1, 2026
- Smaller PSOs: April 1, 2028

The RBI's Cyber Resilience and Digital Payment Security Directions, 2024, mandate multi-factor authentication for all payment transactions, secure IT infrastructure configuration, and

regular cybersecurity audits.⁵ Furthermore, all payment system data must be stored within India's territorial jurisdiction, in compliance with the RBI's 2018 data localization circular.

3.1.3 Payment Aggregator Regulation

The RBI issued comprehensive Regulation of Payment Aggregators Directions in 2025, following extensive stakeholder consultation initiated in April 2024. These Directions provide a robust regulatory framework for Payment Aggregators (PAs)—entities that facilitate proximity or face-to-face payments—establishing standards for governance, transparency, and security. Key requirements include annual audits by CERT-In empanelled auditors and compliance with cybersecurity and digital payment security directions.

3.2 Self-Regulatory Organization Framework

In a significant institutional development, the RBI recognized the Self-Regulated PSO Association (SRPA) as the official Self-Regulatory Organisation (SRO) for Payment System Operators in November 2025. This recognition establishes a cooperative regulatory model wherein industry participants collectively establish and enforce standards complementary to RBI regulations, enhancing governance efficiency and industry accountability.

3.3 RBI's Payments Vision 2025

The RBI's Payments Vision 2025 document, released in June 2022, articulates the strategic objectives for India's payment system evolution. The Vision emphasizes: promotion of interoperable payment systems; enhancement of payment system resilience and security; expansion of digital payment coverage to underserved populations; and regulation of non-traditional payment system actors, including BigTechs and FinTechs. The Vision document provides the overarching strategic framework within which subsequent regulatory directions have been formulated.

4. Infrastructure and Technological Development

4.1 Digital Payment Ecosystem Architecture

India's digital payment infrastructure comprises multiple interconnected layers: banking infrastructure; payment gateways and aggregators; mobile payment applications; and real-time inter-bank settlement systems. The centerpiece of this infrastructure is the NPCI's UPI system,

⁵ "E-Wallet Adoption Among Indian Consumers." *Academy of Entrepreneurship Journal*, 2019. Empirical study on awareness, security, and adoption factors

which operates as a standardized platform enabling seamless inter-bank transactions.

4.2 UPI: The Core Infrastructure

The Unified Payments Interface represents a technological breakthrough in democratizing digital payments. By reducing the technical complexity required for digital transactions and enabling transaction initiation through simple numeric identifiers (the UPI handle), UPI has fundamentally lowered barriers to digital payment adoption among consumers with limited technological literacy. The availability of UPI across all banks and numerous non-bank payment service providers ensures broad accessibility.⁶

4.3 Digital Rupee (₹) Infrastructure

The digital rupee infrastructure, currently in pilot phase, involves a two-tiered model wherein the RBI issues ₹ to commercial banks, which in turn distribute the digital currency to retail consumers. The RBI established the Reserve Bank Innovation Hub (RBIH) to develop the proof of concept and manage pilot projects before nationwide rollout. Current pilots are testing specific use cases for peer-to-peer (P2P) and peer-to-merchant (P2M) transactions, with extensions planned for cross-border payment processing.

4.4 Data Localization and Security Infrastructure

The RBI's mandatory data localization requirements for payment system data represent a critical infrastructure requirement ensuring that sensitive financial transaction data remains within India's regulatory jurisdiction. This requirement, while enhancing data security and regulatory oversight, necessitates substantial investments in domestic data center infrastructure by payment system operators.⁷

5. Market Performance and Growth Trajectories

5.1 Overall Digital Payment Growth

The growth of India's digital payment ecosystem has been unprecedented. Total digital payment transactions increased from 2,071 crore in fiscal year 2017-18 to 18,592 crore in fiscal year 2023-24, representing a compound annual growth rate (CAGR) of 44 percent. The

⁶ "Sentiment Analysis on E-Money in India." *International Journal of Creative Research Thoughts (IJCRT)*, Vol. 12, Issue 8, Aug. 2024. Assesses convenience, security concerns, financial inclusion

⁷ "Digital Transaction in Indian Payment Ecosystem." *Journal of Management Studies and Research (JMSR)*, 2023. Examines RBI reforms, KYC, tokenization, and ecosystem reliability

transactional value dynamics have been even more pronounced, with digital payments reaching ₹18,120.82 crore in value during 2024-25.

5.2 UPI's Exponential Expansion

UPI's trajectory exemplifies the broader digital payment revolution in India. The system advanced from processing 50,000 transactions daily in 2016-17 to exceeding 500 million transactions daily by 2024-25. Annual transaction volumes demonstrate this expansion: from 172.2 billion transactions in 2024 to 228.3 billion in 2025.

More specifically, as of November 2025, UPI processed over 19 billion transactions worth ₹24.58 lakh crore monthly. The year-over-year comparison demonstrates sustained growth momentum: November 2025 recorded 23 percent volume growth and 14 percent value growth compared to November 2024.

The five-year trend (2021-2025) illustrates the structural transformation in India's payment system: transaction volumes increased more than fourfold, while transaction values increased more than threefold. Average daily transaction volumes in 2024-25 reached 516.07 million, representing consistent growth across the entire population.

5.3 State-Level UPI Adoption

UPI adoption demonstrates geographic heterogeneity across Indian states, with differential adoption rates reflecting variations in internet penetration, merchant infrastructure, and financial inclusion levels across regions. Analysis of state-level data indicates that metropolitan and urban states demonstrate higher UPI adoption rates, while rural and less urbanized states exhibit progressive expansion of digital payment infrastructure.

5.4 Government and Financial Services Sector Integration

The integration of digital payments into government-to-citizen and government-to-business transactions has substantially accelerated digital payment adoption. Aadhaar seeding initiatives have enabled Direct Benefit Transfer (DBT) schemes, expanding digital payment usage among rural and marginalized populations. As of FY 2021-22, 87.20 percent of Current and Savings Accounts were seeded with Aadhaar numbers, while 81.05 percent were seeded with mobile numbers.

6. Challenges and Regulatory Responses

6.1 Cybersecurity and Fraud Mitigation

The RBI has identified cybersecurity and fraud mitigation as critical challenges in the digital payment ecosystem. The proliferation of digital payment channels has created expanded attack surfaces for cyber criminals. In response, the RBI mandated multi-factor authentication (MFA) requirements for digital payment transactions through the Cyber Resilience and Digital Payment Security Directions, 2024. Additionally, the RBI has prescribed alternative authentication mechanisms beyond One-Time Passwords (OTPs) to address vulnerabilities associated with OTP-based authentication.⁸

6.2 Consumer Protection and Grievance Redressal

As digital payment adoption has expanded, particularly among less financially literate populations, consumer protection has emerged as a significant regulatory concern. The RBI has mandated that payment system operators establish robust grievance redressal mechanisms and maintain clear disclosure of terms and conditions for digital payment services. The Master Directions on PPIs include specific provisions regarding consumer liability in cases of unauthorized transactions and fraud.

6.3 Financial Stability and Systemic Risk

The rapid growth of digital payments and the involvement of non-traditional financial actors (BigTechs and FinTechs) have raised concerns regarding financial stability and systemic risk. The RBI's Payments Vision 2025 emphasizes the necessity of bringing BigTechs and FinTechs operating in the payment space under comprehensive regulatory frameworks. This regulatory evolution aims to ensure that the expansion of payment services does not create unmonitored risks to financial stability.

6.4 Data Privacy and Localization

The requirement for mandatory data localization, while enhancing regulatory oversight and data security, has created compliance burdens for multinational payment service providers. The RBI's data localization directive mandates that all payment transaction data be stored within Indian territory, necessitating substantial infrastructure investments by payment system

⁸ "A Systematic Review of Literature of Digital Payment in India." *International Journal of Innovative Research in Management and Finance (IJIRMF)*, May 2024. Reviews demonetization, Digital India, UPI impacts

operators.

7. Future Prospects and Regulatory Evolution

7.1 E₹ Nationwide Rollout

The RBI has indicated intentions for phased nationwide rollout of the digital rupee beyond current pilot programs. The success of retail e₹ pilots will determine the timeline and modalities for broader deployment. Full-scale digital rupee implementation may substantially alter monetary transmission mechanisms and require adjustments to RBI's operational frameworks.

7.2 Cross-Border Digital Payment Development

The Payments Vision 2025 emphasizes the development of cross-border payment capabilities through e₹ infrastructure. As India seeks to promote the rupee as an international transaction currency, cross-border digital rupee payments may reduce dependence on traditional foreign exchange mechanisms and enhance India's financial sovereignty.

7.3 Integration of Emerging Technologies

The RBI is examining potential integration of emerging technologies—including blockchain, distributed ledger technology, and advanced cryptographic mechanisms—into payment system infrastructure. However, regulatory cautious approach reflects concerns regarding financial stability and consumer protection implications.

7.4 Continued Regulatory Refinement

The regulatory framework for e-money will continue evolving to address emerging challenges and opportunities. The recent establishment of the Self-Regulated PSO Association (SRPA) as the official self-regulatory organization demonstrates the RBI's preference for cooperative regulatory models combining formal regulation with industry self-governance.⁹

8. Conclusion

India's e-money ecosystem, as of January 2026, represents a transformative achievement in financial technology adoption and regulatory innovation. The unprecedented growth of UPI

⁹ Kothari, Vinod. *The Law of Prepaid Payment Instruments (PPIs)*. Vinod Kothari Consultants, 2025. Covers PPI regulations, RBI guidelines, and compliance landscape

transactions (228.3 billion in 2025), the introduction of the digital rupee, the comprehensive regulation of payment system operators and payment aggregators, and the establishment of self-regulatory organizational frameworks collectively demonstrate India's emergence as a global leader in digital payment infrastructure and governance.

The regulatory architecture established by the RBI—encompassing Master Directions on PPIs, Payment System Operator security directions, Payment Aggregator regulations, and the Payments Vision 2025 framework—balances innovation promotion with robust consumer protection and systemic stability maintenance. This balanced approach has enabled rapid digital payment adoption while mitigating risks associated with financial innovation.

In conclusion, India's e-money landscape exemplifies successful integration of regulatory innovation, technological infrastructure development, and inclusive policy frameworks. The achievement of 228.3 billion UPI transactions annually, coupled with the development of a sovereign digital currency and comprehensive regulatory frameworks, positions India at the forefront of the global digital payment revolution. Continued regulatory refinement, technological innovation, and inclusive implementation will determine whether India's e-money ecosystem achieves its ultimate objective of comprehensive financial inclusion and digital economic transformation.

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