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Analyzing the Growth and Composition of Retail Digital Payments in India: A Comprehensive Study of NPCI Platforms (2022–2025)

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Abstract

This study analyzes the rapid expansion and evolving structure of India's retail digital payments. Findings reveal a fundamental societal shift, with transaction volume increasing much faster than the total value moved, strongly suggesting widespread adoption for every day, low-value purposes. This growth is overwhelmingly dominated by a single payment rail, which accounts for most digital transactions. However, established mechanisms maintain their critical role for high-value and institutional fund transfers. Additionally, specialized channels for bill payments demonstrate robust growth, signifying the formalization of recurring household expenses. Conversely, services designed for rural cash withdrawal maintain a stable, foundational role in supporting financial access. This confirms a profound change in user behavior across the nation.

Keywords: Retail Digital Payment, NPCI, AEPS, BBPS

1. Introduction:

India is currently navigating a profound and irreversible financial transformation, standing as a global benchmark for public digital infrastructure adoption. The ecosystem, managed by the NPCI, has moved beyond mere existence to explosive growth, making digital transactions a norm rather than an alternative. While the sheer volume of this shift is widely acknowledged, a detailed analysis is required to understand the quality and composition of this growth in the latest fiscal years. This paper addresses that gap, seeking to quantify how rapidly the number of payments is growing compared to the value of money exchanged, thereby determining the true extent of mass adoption for everyday commerce. Furthermore, the study identifies the market dominance of individual payment rails and evaluates the effectiveness of specialized financial inclusion channels, providing a critical assessment of the overall health and future direction of India's retail digital payment landscape.

Literature review:

(Balakrishnan, 2017) Analyzed that India's ambitious 25 billion digital transaction target for 2017–18 necessitated an analysis of ten years of historical data to project its feasibility. The paper utilized the Rogers Diffusion of Innovation Curve to place India's adoption progress, proposing strategies such as adjusting pricing decisions, reducing taxation, and widening access as critical levers to rapidly meet national digitization goals.

(Mitali Baj, 2023) Highlighted NPCI's core innovation in the Indian financial system, focusing on products like UPI to drive a cashless economy. Literature confirms that major developments, competition, and internationalization efforts are key to evaluating such innovations. Crucially, the study supports the Corporate Social Innovation (CSI) framework, suggesting that growth is maximized when a company develops innovations that benefit the masses.

(Prof. Sanjeet Singh, 2024) Investigated that the shift toward a digital economy is crucial for transaction transparency and combating illicit finance. Trend analysis focusing on RBI data confirmed exponential overall digital growth, evidenced by a high average annual increase in volume. This growth, however, was shown to be highly variable across indicators, with UPI demonstrating overwhelming acceptance and a massive surge in usage.

(Kumar & Sunilraj, 2020) investigated that the push for a digital economy is essential for transparency and curtailing corruption, necessitating universal awareness of digital payment processes. Analyzing data from the RBI, studies confirm a highly uneven exponential growth in digital transactions, with the volume rising substantially faster than value. This trend highlights the phenomenal success of UPI, which has driven tremendous public acceptability.

(Copestake et al., 2025) highlighted the critical role of interoperability in accelerating the adoption of retail digital payments like India's UPI. This structure frees users to choose their favorite app and compels providers to improve service quality, preventing market concentration. Empirical evidence shows that increasing interoperability significantly drives the overall uptake of digital payments, even relative to cash.

(Cornelli et al., 2025) demonstrated that retail fast payment systems (FPS), such as India's UPI, function as a major catalyst for wider digital finance adoption globally. Analyzing app data across 95 countries, studies confirm that the introduction of an FPS significantly boosts the usage and download rates of various digital finance applications, connecting users to the broader fintech ecosystem.

(Dash et al., 2023) examined that electronic payment methods have fundamentally transformed the Indian financial landscape. A statistical trend analysis focused on UPI reveals significant growth in volume, highlighting its status as the most adopted electronic payment method. However, studies emphasize that challenges like income inequality and the large informal sector continue to persist, despite the rapid digital transformation.

Objectives:

- To analyses overall growth of retail digital payment trend by comparing CAGR (Compound Annual Growth Rate) for total transaction volume and value.
- To determine which retail digital payment system is in the dominance position.
- To evaluate the role of financial inclusion channels like AEPS (Aadhaar Enabled Payment System) and BBPS (Bharat Bill Payment System).

Research methodology:

The research employs a rigorous quantitative, non-experimental methodology based exclusively on secondary time series data sourced from the official public reports of the National Payments Corporation of India (NPCI) for the period spanning FY 2022-23 to FY 2024-25. To address the core objectives-growth, dominance, and inclusion—the data is subjected to three primary analytical techniques: Compound Annual Growth Rate (CAGR) analysis to quantify the overall growth trend (Volume vs. Value); Market Share Analysis to determine the compositional shift and dominance of key systems (like UPI) within the total transaction ecosystem. The role of AEPS and BBPS is examined exclusively through their Volume CAGR. A high CAGR is interpreted as successful deepening of digital inclusion by driving new transaction adoption, whereas a low or negative CAGR is interpreted as a maturing access tool focused on providing stable financial broadening rather than growth volume.

- Analysis of overall growth of retail digital payment trend:

RETAIL PAYMENTS STATISTICS OF NPCI		
Year	Volume	Value
FY 2022-2023	1,17,148.65	3,22,367.02
FY 2023-2024	1,69,686.79	3,98,575.9
FY 2024-2025	2,32,859.64	4,79,857.77

Formula for calculation CAGR:

$$CAGR = \left(\frac{\text{Ending Value}}{\text{Beginning Value}}\right)^{1/n} - 1$$

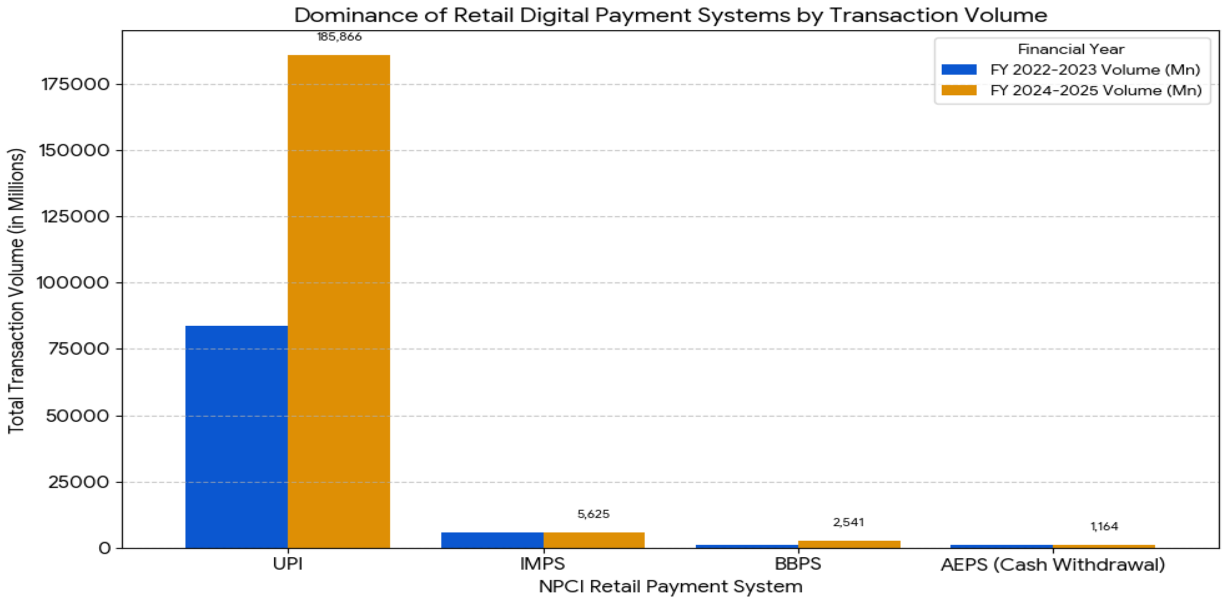
(Where n is the number of years, which is 2 for FY 2022-23 to FY 2024-25)
Source: www.npci.org.in

The overall growth of the retail digital payments ecosystem, as operated by NPCI, shows a clear and bifurcated trend between transactional frequency and currency movement. For the period spanning FY 2022-23 to FY 2024-25, the Total Transaction Volume demonstrates a phenomenal Compound Annual Growth Rate (CAGR) of 41.77%. This high growth figure emphatically confirms the tremendous increase in the adoption and frequency of digital payments among the masses. Conversely, the Total Transaction Value recorded a significantly lower, yet robust, CAGR of 21.28%. This substantial disparity between the volume and value growth rates is the most critical finding for this objective. It indicates a powerful trend toward using NPCI platforms, dominated by UPI, for small-ticket, high-frequency transactions, such as peer-to-peer (P2P) transfers and peer-to-merchant (P2M) purchases. The ecosystem's growth is therefore primarily driven by broadening user inclusion and replacing cash for everyday expenses, rather than being concentrated in large-value, corporate-style transactions.

➢ The table and graph provided below clearly represents that which retail payment system is in dominance position.

Payment System	FY 2022-2023 Volume (in Mn)	FY 2024-2025 Volume (in Mn)
UPI	83,751.34	1,85,866.02
BBPS	1,096.94	2540.68
AEPS (Cash Withdrawal)	1,235.51	1164.05
IMPS	5,653.72	5624.96

Source: www.npci.org.in



The chart confirms the overwhelming dominance of UPI, which is visually represented by its massive transaction volume in FY 2024-25, serving as the core engine for retail payments. Its volume in the final year (FY 2024-25), reaching over 185 billion transactions, completely dwarfs all other systems. UPI’s market share of almost 80% shows that it is the primary choice for users making frequent, everyday digital payments. In contrast, the much smaller bars for IMPS, BBPS, and AEPS highlight their roles as specialty services. IMPS is used for specific bank transfers, while AEPS and BBPS serve niche functions for financial inclusion and bill payments, confirming UPI's status as the indispensable mass-market platform.

➢ The role of financial inclusion channels like AEPS and BBPS:

Payment System	FY 2022-23 Volume (A) (Mn)	FY 2024-25 Volume (B) (Mn)	Volume CAGR
BBPS	1,096.94	2,540.68	51.98%
AEPS (Cash Withdrawal)	1,235.51	1,164.05	-2.85%

Source: www.npci.org.in

The growth metrics reveal distinct roles for inclusion channels. The high 51.98% Volume CAGR for BBPS proves its success in deepening digital inclusion by rapidly digitizing recurring household expenses. Conversely, the negative -2.85% CAGR for AEPS indicates the system is now a stable, mature broadening tool, fulfilling its primary goal of providing basic financial access and cash-out facilities rather than driving volume growth.

Conclusion:

The study conclude that the National Payments Corporation of India (NPCI) ecosystem is experiencing exceptional growth, with the total transaction volume expanding at a robust rate. The central finding is the undisputed dominance of the Unified Payments Interface (UPI), which accounts for nearly 80% of total transaction volume in FY 2024-25, firmly establishing itself as India's main retail payment infrastructure and the primary engine of user adoption and transaction frequency. Furthermore, the evaluation of financial inclusion channels reveals distinct, successful operational roles. The rapid 51.98% Volume CAGR of BBPS confirms its role in deepening digital inclusion by effectively formalizing recurring bill payments. In contrast, the stagnant volume of AEPS confirms its stable function as a broadening access tool, successfully providing basic cash-out facilities to remote populations. In summation, the NPCI platform has achieved broad scale through UPI while simultaneously delivering targeted inclusion success via its specialty services.

Future scope:

- The future research should quantify how much of AEPS usage decline is due to users migrating directly to the more convenient UPI system.
- The further study is needed to analyze UPI's revenue model sustainability for the entire ecosystem.
- To assess the security risks and measures required to safeguard the national payment infrastructure as UPI volume continues its exponential growth could be good future research topic.

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