

Evolution of Digital Payment Modes in India: An Empirical Analysis (2018–19 to 2022–23)

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Abstract

The rapid advancement of financial technology (Fintech) in India has fundamentally reshaped the transaction landscape, positioning digital payment systems at the core of this transformation. This study offers an in-depth examination of the growth and trends in digital payments over the five-year period from 2018–19 to 2022–23. Relying on official datasets, it analyses both the volume and value of transactions across key payment platforms, namely the Unified Payments Interface (UPI), card-based payments, Immediate Payment Service (IMPS), National Electronic Funds Transfer (NEFT), and Real Time Gross Settlement (RTGS). The study traces year-wise trends, examines shifts in payment mode preferences, and highlights the differential growth trajectories of high-frequency low-value instruments (e.g., UPI) compared with low-frequency high-value instruments (e.g., RTGS). The analysis of digital payment data from 2018–19 to 2022–23 reveals a remarkable transformation in India's payment ecosystem. The findings highlight a paradigm shift towards UPI-led digital payments, with cards losing relative share and traditional modes like NEFT and RTGS maintaining niche utility for business and high-value settlements. This work contributes to the literature on digital financial literacy and Fintech adoption by establishing empirical evidence on the dynamic transition of payment systems in a developing economy context.

Keywords: Digital Payments, Fintech Adoption, UPI, IMPS, NEFT, RTGS, Transaction Volume, Transaction Value.

Introduction

India's financial landscape has undergone a profound transformation over the last decade, transitioning from a predominantly cash-based economy to a thriving digital payments ecosystem. This "silent revolution" in the country's payment systems has been driven by a confluence of factors, including concerted government initiatives, rapid technological advancements, and a significant shift in consumer behaviour (Ms Zaiba Khan, 2023). The journey, which began with the computerization of banks and the introduction of electronic fund transfers like National Electronic Funds Transfer (NEFT) and Real-Time Gross Settlement (RTGS) in the early 2000s, has accelerated dramatically. Key policy interventions such as the Digital India campaign (2015), demonetization (2016), and the Pradhan Mantri Jan Dhan Yojana (PMJDY) have been instrumental in pushing millions of citizens towards financial inclusion and digital adoption (Amit Kumar Singh, 2024). The widespread availability of affordable smartphones and internet services has created the necessary infrastructure for this digital shift, empowering a large segment of the population to access financial services conveniently from their mobile devices (RasikaNaik, 2025).

At the heart of this transformation is the Unified Payments Interface (UPI), launched in 2016 by the National Payments Corporation of India (NPCI). UPI revolutionized peer-to-peer and peer-to-merchant transactions by enabling instant, real-time fund transfers using a simple virtual address, eliminating the complexities of traditional online banking. Its convenience, security, and interoperability across various banking apps led to its rapid and widespread adoption, making it the "ambassador of the Fintech revolution in India". Alongside UPI, other digital payment modes such as Immediate Payment Service (IMPS), card-based payments (Credit and Debit), and RTGS for large-value transactions continue to be critical components of India's cashless framework. The COVID-19 pandemic further acted as a catalyst, accelerating the shift towards contactless payments due to social distancing norms and heightened hygiene awareness, which led to a significant dip in cash usage and a surge in the adoption of mobile wallets and UPI (Dr. D. Veena, 2023).

This digital surge has had a conspicuous impact on the Indian economy, promoting financial inclusion, enhancing transparency, and fostering economic growth. Data from the Reserve Bank of India (RBI) indicates an exponential increase in both the volume and value of digital transactions, with cashless payments now accounting for nearly 99.6% of the total transaction volume by 2022-23. While UPI has emerged as the dominant player in terms of transaction volume, other modes like RTGS and NEFT continue to lead in terms of transaction value, highlighting the diverse use cases for different digital payment systems. This growth signifies a massive shift toward a digital economy, where an increasing percentage of total transaction values are derived from digital payments (Dr. D. Veena, 2023).

Given this dynamic and rapidly evolving landscape, a granular analysis of recent trends is essential to understand the trajectory and relative performance of various digital payment modes. This research paper, titled "The Rise of Digital Payment Modes in India: A Volume and Value Trend Analysis (2018-19 to 2022-23)," seeks to provide a comprehensive examination of this digital payment revolution.

Objectives of the Study

The present study seeks to fill this gap by analysing year-wise data on transaction volumes and values from 2018–19 to 2022–23 across major digital payment modes in India. The specific objectives are:

- To examine the year-wise growth trends in the volume of digital payment modes (Cards, UPI, IMPS, and RTGS) from 2018-19 to 2022-23.
- To analyze the value of transactions carried out through different digital payment modes during the study period.

Literature Review

Ms. Zaiba Khan (2023), analyses India's Unified Payments Interface (UPI) to understand its features, evolution, and long-term socio-economic impact. The research is a descriptive review that finds UPI has successfully promoted cashless, safe, and effortless transactions, transforming India's payment landscape. Supported by government initiatives, the BHIM app, and RBI awareness programs, UPI's adoption has spurred a significant increase in digital payments, enhanced financial inclusion, and propelled India into a digital age.

(Dr. D. Veena & et.al. (2023), in the paper "THE OUTGROWTH OF DIGITAL PAYMENTS IN INDIA" aims to describe the growth of digital payments in India and analyse the usage of various innovative payment modes from 2012-2022. The research methodology involves analysing secondary data from the Handbook of RBI Statistics for a ten-year period, calculating annual and compound annual growth rates (AGR and CAGR) for different payment systems. Key findings show that Unified Payments Interface (UPI) has become the dominant mode of credit transfer by volume, surpassing EFT/NEFT, though EFT/NEFT still leads by transaction value. Overall, the study concludes that digital payments are accelerating in India, with credit transfers showing a high CAGR, and UPI's growth rate is the highest among all credit transfer components.

Ms. Aanchal Nigam, & et. al (2021)-(with a by the data range of **2015-2020**), in the paper "Development of Financial Technology through E-Payment System in India" aims to observe the growth of the electronic payment sector in India and analyse the paradigm shift from traditional to e-payment services. The research methodology is descriptive, utilizing secondary data from RBI annual reports and Fintech reports covering the years 2015-2020. The key finding is that payment and settlement systems

showed robust growth during this period, with the volume of digital transactions in non-cash retail payments increasing to 97.0% by 2019-20, indicating a significant consumer shift towards digital methods due to issues with traditional systems like lack of adaptability and security concerns.

Mahesh A. & et.al (2021), in the paper "Digital Payment Service in India - A Case Study of Unified Payment Interface" aims to understand the growth and progression of the Unified Payment Interface (UPI) in India's retail digital payment ecosystem. The research methodology is an exploratory study using secondary data from sources like RBI reports, which are then analysed using a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis format. The key finding is that UPI has shown remarkable growth, now accounting for over half of all digital transactions by volume, largely due to a customer shift towards contactless payments, especially during the COVID-19 pandemic.

Amit Kumar Singh, & et.al, (2024), in the paper "Digital Revolution: Analyzing the Growth of Payment Systems in India" aims to identify the factors driving the expansion of India's digital payment system, study its composition, and analyze its share in the total payment system. The research methodology is descriptive, using secondary data from RBI annual reports and other government websites for the period 2017-18 to 2023-24. Key findings show a massive shift towards a digital economy, with digital payments accounting for nearly 99.6% of total transaction volume and 97.11% of the value by 2023-24. This growth is driven by government initiatives, technological advancements, and a change in consumer behaviour, with credit transfers, especially UPI, becoming the dominant mode of transaction.

Hemant Trivedi (2024), in the paper "Evolution of Digital Payment System in India: Past, Present and Future" aims to study the evolution of digital payments in India, identify the different types of systems used, analyze their current growth status, and find challenges to their adoption. This review article is based on an analysis of secondary data from government reports, published research, and newspaper articles. The key finding is that while digital payments, especially UPI, have seen exponential growth and India now accounts for 40% of global real-time digital payments, cash is still the preferred mode of payment for many. The slow adoption is attributed to challenges like lack of digital literacy, poor infrastructure in some areas, security concerns, and a lack of trust in the new systems.

Harshil Sharma & et.al (2024), in the paper "A Holistic Examination of Digital Payment Adoption in India's Dynamic Financial Landscape,". The paper's objective is to study the transformation of India's economy driven by the digital banking sector, examine the applications of various digital payment methods, and analyze the associated opportunities and challenges. The research is an analytical review utilizing secondary data from existing literature and reports to discuss theoretical models like the Technology Acceptance Model (TAM). The key finding is that while digital payments have seen significant growth due to government initiatives like "Digital India" and changing consumer preferences, challenges remain. The primary obstacles to widespread adoption are a lack of digital literacy (especially in rural areas), inadequate infrastructure, security concerns, and a persistent preference for cash among smaller merchants.

Dr. D. Veena & et.al (2023), in the paper titled "THE OUTGROWTH OF DIGITAL PAYMENTS IN INDIA," aims to describe the growth of digital payments in India and analyze the usage of various innovative payment modes from 2012-2022. The research methodology involves analysing secondary data from the Handbook of RBI Statistics for a ten-year period, calculating annual and compound annual growth rates (AGR and CAGR) for different payment systems. Key findings show that Unified Payments Interface (UPI) has become the dominant mode of credit transfer by transaction volume, though EFT/NEFT still leads by value. The study concludes that digital payments are accelerating, credit transfers show a high CAGR, and UPI's growth rate is the highest among all credit transfer components.

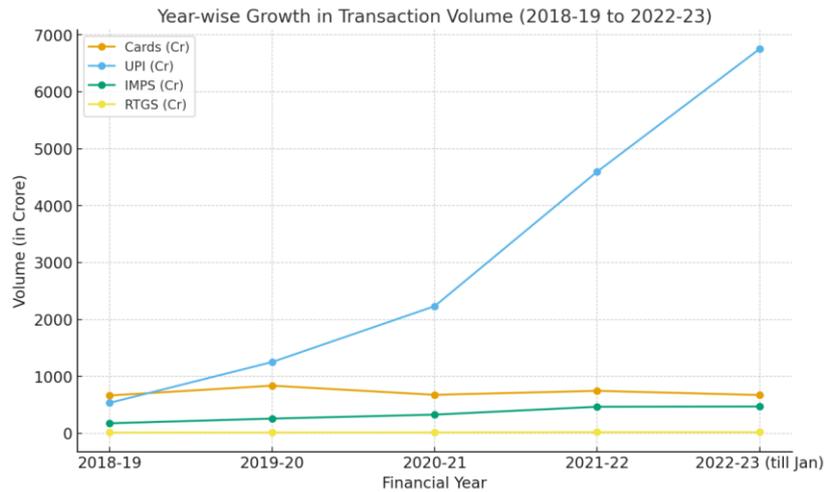
Research Methodology

The present study adopts a descriptive and analytical research design based on secondary data to examine the growth trends in digital payment modes in India. The analysis covers a five-year period from 2018-19 to 2022-23 and focuses on two key variables: the volume of transactions (in crore) and the value of transactions (in ₹ crore/lakh crore) across four major payment modes—Cards, UPI, IMPS, and RTGS. Data for the study has been collected from reliable secondary sources such as the Reserve Bank of India (RBI) reports, National Payments Corporation of India (NPCI) publications, and other official databases. The data is analysed using descriptive statistics, growth rate calculations, and comparative

trend analysis. Graphical representations in the form of line charts and bar graphs are employed to present year-wise variations and highlight shifts in usage patterns. The scope of the study is limited to selected payment modes, and as it relies entirely on secondary data, other instruments like NEFT, mobile wallets, and AEPS are excluded from the analysis.

The scope of the study is limited to the selected payment modes and the specified time period. As the research relies entirely on **secondary data**, other digital payment instruments such as NEFT, mobile wallets, and AEPS have not been included in the analysis. Therefore, the findings of the study primarily reflect trends in the selected payment systems and may not represent the complete digital payments ecosystem in India.

Data Analysis and Interpretation



The chart presents the year-wise growth in transaction volume of major digital payment systems in India—Cards, Unified Payments Interface (UPI), Immediate Payment Service (IMPS), and Real Time Gross Settlement (RTGS)—from the financial year 2018–19 to 2022–23 (till January).



The chart presents the **year-wise growth in transaction value** of major digital payment systems in India from 2018–19 to 2022–23 (till January), including Cards, Unified Payments Interface (UPI), Immediate Payment Service (IMPS), and Real Time Gross Settlement (RTGS).

Findings

- **UPI as the Fastest-Growing Mode:**
 - UPI transactions exhibited exponential growth in both volume and value.
 - Transaction volume increased from 535.34 crore in 2018-19 to 6752.8 crore in 2022-23 (till January).
 - Transaction value rose from ₹8.77 lakh crore in 2018-19 to ₹112.74 lakh crore in 2022-23, making UPI the most significant contributor to digital payment adoption.
- **Cards: Sluggish and Fluctuating Growth:**
 - The volume of card transactions peaked at 836.86 crore in 2019-20, but later declined to 672.24 crore in 2022-23, indicating stagnation.
 - The value of card transactions grew only modestly, from ₹12.25 lakh crore in 2018-19 to ₹18.56 lakh crore in 2022-23, showing slower adoption compared to UPI.
- **IMPS: Steady Growth with Moderate Impact:**
 - IMPS volume increased steadily from 175.29 crore in 2018-19 to 470.84 crore in 2022-23.
 - Its transaction value grew from ₹15.9 lakh crore to ₹45.7 lakh crore during the same period, reflecting consistent but comparatively lower growth than UPI.
- **RTGS: Dominant in Value, Stable in Volume:**
 - RTGS transaction volume showed only marginal growth, from 13.66 crore in 2018-19 to 19.77 crore in 2022-23.
 - However, RTGS continues to dominate in terms of transaction value, though it declined from ₹1715.52 lakh crore in 2018-19 to ₹1217.69 lakh crore in 2022-23, highlighting a shift toward other modes.
- **NEFT: Consistent but Moderate Growth:**
 - NEFT transaction volumes increased from 231.89 crore in 2018-19 to 427.03 crore in 2022-23.
 - Transaction values rose steadily from ₹227.94 lakh crore to ₹271.93 lakh crore, showing stable yet moderate growth compared to UPI.

Discussion

There was an increase in number of digital payment transactions (India) 2018–19 to 2022–23. The Unified Payments Interface (UPI) had the fastest growth, increasing dramatically from approximately 535 crore to more than 6700 crore transactions, indicating its monopoly in digital payments. IMPS continue to be on a steady path of growth, and card transactions seldom exhibit fluctuations barring some marginal upticks or declines. On the other hand, Real Time Gross Settlement (RTGS) has very low transaction volume because it only captures high value transfer. In totality, the trend shows that mobile-based digital payments in India are gaining momentum with UPI being the most preferred method of payment.

The data indicates significant changes in the value of digital transactions over the years. RTGS consistently records the highest transaction value, reflecting its primary use for large-value fund transfers between banks and financial institutions. However, the value declined from around 1700 lakh crore in 2018–19 to about 1050 lakh crore in 2020–21, before recovering slightly in the following years. This fluctuation may be associated with economic disruptions and changing transaction patterns during that period.

In contrast, UPI shows a rapid and continuous increase in transaction value, rising sharply from a relatively small level in 2018–19 to over 100 lakh crore by 2022–23. This highlights the growing popularity of mobile-based payment platforms for everyday transactions. Card payments and IMPS transactions also show gradual growth in transaction value, although their increase is moderate

compared to UPI. Overall, the analysis demonstrates a clear shift in India's payment ecosystem toward digital and instant payment systems, with UPI emerging as a major driver of growth while RTGS continues to dominate in terms of high-value transactions.

Overall it indicates a significant transformation in India's digital payment ecosystem between 2018–19 and 2022–23. In terms of transaction volume, Unified Payments Interface (UPI) shows the fastest and most dramatic growth, becoming the most widely used payment mode for everyday transactions. Card payments and Immediate Payment Service (IMPS) display steady but comparatively moderate growth. In contrast, Real Time Gross Settlement (RTGS) records very low transaction volume but the highest transaction value, as it is mainly used for large-value transfers. Overall, the charts highlight a clear shift toward mobile-based and instant digital payments, with UPI emerging as the dominant platform for retail transactions while RTGS continues to handle high-value payments.

Conclusion

The analysis reveals a remarkable transformation in India's digital payment ecosystem between 2018-19 and 2022-23. Among the major payment modes, UPI has emerged as the undisputed leader, registering the fastest and most consistent growth in both transaction volume and value. Its convenience, interoperability, and wide acceptance have significantly shifted consumer preference away from traditional payment modes. Cards and RTGS, once dominant, have exhibited slower or stagnant growth, while IMPS and NEFT continue to expand steadily but remain overshadowed by UPI's exponential rise.

Overall, the study concludes that the Indian digital payments landscape is undergoing a structural shift from card-based and high-value-centric systems to UPI-led, mobile-first platforms, positioning UPI as the future driver of financial inclusion and digital transformation in India.

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