

## Decoding the Digital Payment Revolution in India: A Comparative Analysis of RTGS, NEFT, UPI, IMPS, and Credit/Debit Card Trends

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### Abstract

Digital payment systems have changed fast in India over the past ten years, and this change itself has further reshaped how people handle money in the country. This study surely examines how major digital payment methods like RTGS, NEFT, UPI, and IMPS have grown from 2013 to 2023. Moreover, it focuses on understanding the specific trends and patterns in their development over this decade. The study analyzes transaction volume and value further, exploring how government policies, technology improvements, and consumer behavior itself contributed to widespread adoption of these systems. The study surely shows that Digital India and PMGDISHA (**Pradhan Mantri Gramin Digital Saksharta Abhiyan**) programs have greatly increased digital payment use in villages. Moreover, demonetization in 2016 caused a major shift towards digital payment platforms across the country. The data shows that UPI itself has grown very fast, with transaction numbers and values increasing greatly, which further proves it is adopted more than other payment systems. IMPS showed steady growth due to its real-time features, while RTGS and NEFT served high-value transactions with volume changes caused by economic factors like COVID-19. These systems further developed themselves during this period. The research surely shows that main reasons for this growth include more people using mobile phones, better internet connection, and government help for digital payment systems. Moreover, these factors work together to make digital payments grow faster in the country. The study actually shows some problems like safety issues and poor access in villages. Technology definitely needs to keep improving to work better.

**Keywords:** Digital Payments, RTGS, NEFT, UPI, IMPS, Financial Inclusion, India, Payment Systems, Blockchain, AI, Financial Technology.

## Introduction

In recent years, India has witnessed a significant transformation in its financial landscape, driven primarily by the rise of digital payment systems. The country's digital payment ecosystem has evolved rapidly, propelled by government initiatives, technological advancements, and growing user adoption. From Real-Time Gross Settlement (RTGS) to the Unified Payments Interface (UPI), digital transactions have reshaped the way individuals and businesses engage with financial systems. The growth of digital payments in India has been a key factor in the nation's economic modernization, contributing to a more inclusive and efficient financial ecosystem.

The digital payment revolution in India is characterized by a diversified set of systems, each catering to different transaction needs. **RTGS**, introduced in 2004 and managed by the Reserve Bank of India (RBI), is designed for high-value, time-sensitive transactions that require immediate clearing. **NEFT (National Electronic Funds Transfer)**, another essential component of India's digital payment landscape, facilitates secure, nationwide bank-to-bank transfers. Both RTGS and NEFT are crucial for large-scale business and government transactions. Over time, however, more consumer-focused platforms like **UPI** and **IMPS** have grown in prominence, offering real-time, low-value, peer-to-peer transactions. UPI, introduced in 2016, has revolutionized the way Indians make payments, simplifying transactions by enabling users to transfer money using just a mobile number. The rise of **credit and debit cards** has also continued, with increasing usage and higher transaction values.

The widespread adoption of these payment methods is a direct response to India's increasing emphasis on financial inclusion, digitization of services, and the government's push towards a **cashless economy**. The **Digital India** initiative, launched in 2015, laid the foundation for this transformation, encouraging citizens to embrace digital transactions for everyday purchases, bill payments, and more. The **PMGDISHA (Pradhan Mantri Gramin Digital Saksharta Abhiyan)** and other similar schemes have contributed to the rapid spread of digital literacy, thus boosting the usage of electronic payment systems, particularly in rural areas.

A major catalyst for the acceleration of digital payments in India was the **demonetization initiative in 2016**, which resulted in a large-scale shift from cash-based to digital transactions. According to a report by the **RBI (2022)**, after demonetization, there was a marked increase in the volume and value of transactions carried out through electronic platforms. This push towards digital payments has been further aided by technological advancements, including the increase in mobile internet penetration, the ubiquity of smartphones, and the development of secure payment platforms that ensure the safety of transactions.

In this research, we explore the growth and trends of four key payment systems in India: **RTGS**, **NEFT**, **UPI**, and **IMPS**, from 2013-2023. Each of these systems represents a different aspect of the digital payment landscape in India. **RTGS** and **NEFT** are widely used for large-scale, high-value transactions in the corporate and governmental sectors, while **UPI** and **IMPS** are more commonly used by individuals for small, everyday transactions. The increasing acceptance and use of these systems have had a profound impact on the financial ecosystem of the country.

The primary objective of this paper is to examine the trends and patterns of these payment systems over the past decade, assessing their growth in terms of transaction volume and value. We will also explore the factors driving these trends, such as **technological developments**, **government initiatives**, and **consumer behavior**. Through the analysis of transaction data from 2013-2023, we aim to provide a comprehensive understanding of how digital payments have evolved in India, the challenges faced, and the key drivers behind their rapid adoption.

The volume and value of transactions processed through these systems have shown exponential growth, with some fluctuations that may be attributed to external factors such as the **COVID-19 pandemic**. The **pandemic** significantly impacted the financial behavior of consumers, pushing many to adopt contactless and remote payment options as a safer alternative to cash. This paper also delves into the implications of this shift for the financial services industry and the wider economy, analyzing how digital payments are contributing to economic resilience, especially during times of crisis.

Moreover, the role of government policies in facilitating the widespread use of these digital payment systems cannot be understated. The **RBI's efforts** to improve payment infrastructure, introduce new payment systems like **IMPS**, and develop initiatives like **eKYC** (electronic Know Your Customer) have ensured that digital payments remain secure, accessible, and widely adopted across diverse socio-economic segments of the population.

By providing a detailed overview of these payment systems and their development, this paper aims to contribute to the ongoing discussions about **financial inclusion**, **digital economy**, and the **future of payments in India**. The insights from this research can be beneficial for policymakers, financial institutions, and researchers in understanding the evolving payment landscape and formulating strategies to further enhance the effectiveness of digital payments in India.

## Review of Literature

The transformation of payment systems in India has become a critical area of research, especially with the rise of digital platforms that offer faster, secure, and more convenient transaction methods. The increase in digital payment adoption across the country is driven by several factors, including government initiatives, technological advancements, and changing consumer behavior. The evolution of payment systems such as **RTGS**, **NEFT**, **UPI**, and **IMPS** is discussed extensively in the literature, with particular focus on their impact on financial inclusion, economic growth, and the broader payment ecosystem.

### 1. Real-Time Gross Settlement (RTGS)

RTGS is one of the oldest and most reliable systems for processing large-value transactions in India. According to **RBI (2022)**, RTGS facilitates the real-time settlement of funds without any delay, making it the preferred choice for high-value transfers in the corporate sector and government transactions. **Sharma (2019)** explains that RTGS has been instrumental in improving the efficiency and transparency of financial markets. It is also a vital tool for managing liquidity within the banking system. Despite its high cost compared to other payment systems, the security, speed, and finality it offers make it indispensable for large transactions (Reddy, 2018).

However, while RTGS serves the high-value segment, its reach remains limited to certain financial institutions, and it is primarily used by corporate clients and government bodies. **Patel et al. (2020)** highlighted that RTGS transactions represent a significant portion of India's financial infrastructure but pointed out that the system faces challenges regarding the accessibility for smaller institutions and individuals. The evolving nature of digital payment methods in India, particularly the rise of mobile payments, poses potential competition to RTGS, but its reliability and role in high-value transfers are irreplaceable in the short term.

### 2. National Electronic Funds Transfer (NEFT)

NEFT, a nationwide payment system, allows individuals to transfer funds between different bank accounts seamlessly. Research by **Singh & Agarwal (2019)** highlights the role of NEFT in promoting financial inclusion by offering affordable and easy-to-use electronic funds transfer solutions. Unlike RTGS, which is used for high-value transactions, NEFT is widely used for low-value transfers, making it a crucial tool for everyday banking needs. According to **Ghosh (2021)**, NEFT has expanded significantly, particularly after its 24/7 availability was introduced, which has helped individuals and businesses alike in facilitating payments outside regular banking hours.

The growing popularity of NEFT has been attributed to the Indian government's push toward a cashless economy and the adoption of digital banking. **Mohan (2020)** argues that NEFT's simplicity, accessibility, and the cost-effectiveness have made it one of the most widely used payment methods for individuals and small businesses. The system's scalability has also contributed to its rapid adoption, with increasing volumes of transactions processed annually (Patel, 2022). However, despite its growing acceptance, **Rathi & Mehta (2018)** note that the system still faces occasional delays in processing payments, particularly during peak periods, limiting its efficiency.

### 3. Unified Payments Interface (UPI)

UPI has revolutionized digital payments in India since its introduction in 2016. The system has emerged as one of the most significant drivers of financial inclusion and digital payments in the country. According to **Sharma & Kumar (2021)**, UPI's success lies in its ability to facilitate instantaneous payments across different banks, making it a highly accessible and efficient platform for both individuals and businesses. The system's integration with mobile phones, and its support for multiple banks and payment systems, has made it widely adopted for peer-to-peer, peer-to-merchant, and bill payments.

**Gupta et al. (2020)** state that UPI has emerged as a game-changer in India's financial landscape, especially due to its low transaction fees, ease of use, and government backing. The rise in UPI transactions aligns with broader trends of mobile penetration and internet access across the country, driving both urban and rural populations to embrace digital payments. The **PMGDISHA (Pradhan Mantri Gramin Digital Saksharta Abhiyan)** has also played a pivotal role in increasing the adoption of UPI, especially in rural areas (Choudhury, 2020). The rapid growth of UPI transaction volumes from 915.2 million in FY 2016-17 to over 83 billion in FY 2022-23 demonstrates the system's success (Sharma & Kumari, 2022).

Moreover, **Mishra (2021)** argues that UPI's role in enabling microtransactions has significantly reduced dependency on cash, contributing to a shift towards a cashless economy. The system's ability to link multiple bank accounts under a single mobile interface has also helped increase consumer engagement with digital payments. The growth of UPI is further supported by initiatives like **BHIM (Bharat Interface for Money)** and integrations with other platforms such as e-commerce and digital wallets (Kumar, 2020).

### 4. Immediate Payment Service (IMPS)

IMPS, launched in 2010 by the **National Payments Corporation of India (NPCI)**, allows for immediate, real-time fund transfers between different banks. Unlike NEFT, which has specific operating hours, IMPS is available 24/7, providing round-the-clock access for transactions. **Jain (2021)** suggests that the growth of IMPS has been instrumental in addressing the demand for quick, low-value transactions, especially for retail banking customers. The system has witnessed significant growth, with its volume and value increasing rapidly year over year, and has emerged as a crucial service for financial inclusion (Rathod, 2019).

IMPS is particularly favored for emergency transfers due to its speed and accessibility. **Shukla (2020)** notes that IMPS is increasingly being used by mobile wallets and digital platforms, further enhancing its utility in the evolving payment ecosystem. Despite its strong growth, **Singh & Agarwal (2021)** suggest that IMPS still faces challenges related to transaction limits and infrastructure that could hinder its future scalability, particularly as larger volumes of transactions are processed.

### 5. Credit and Debit Cards

Credit and debit card payments remain central to India's digital economy. Research by **Gupta & Mehra (2020)** found that credit and debit cards are primarily used for larger, recurring payments, especially in e-commerce and retail. Both types of cards facilitate quick and secure transactions, and their usage has increased significantly over the past decade. **Patel (2021)** indicates that the growing penetration of credit cards in urban India is partly due to increased disposable income, government policies encouraging cashless transactions, and the rise of e-commerce platforms.

**Chakraborty (2019)** discusses the role of credit cards in promoting consumer spending by offering users access to credit and rewards programs. Despite the advantages, challenges such as fraud, security concerns, and debt accumulation continue to be a concern (Bansal, 2020).

The literature highlights the growing importance of digital payment systems like **RTGS, NEFT, UPI, IMPS, and credit/debit cards** in transforming the financial landscape of India. Government initiatives, technological advancements, and changes in consumer behavior have significantly contributed to the widespread adoption of these

systems. While each system serves distinct purposes, the overall trend indicates a shift toward more efficient, accessible, and secure methods of payment. The continued expansion of digital payment infrastructure, coupled with rising consumer confidence, is expected to propel India toward becoming a fully cashless economy in the near future.

### Research Methodology

The research methodology employed in this study is designed to examine the growth and trends in India's digital payment systems, particularly focusing on **RTGS**, **NEFT**, **UPI**, and **IMPS**. This study utilizes a combination of **quantitative research methods** and **descriptive analysis** to explore the transaction data and identify key trends, factors influencing growth, and the broader implications of these payment systems on India's digital economy. Below is a detailed outline of the research methodology used to achieve the study's objectives.

#### 1. Research Design

This study follows a **descriptive research design**, aimed at collecting and analyzing data to understand the growth trends, patterns, and behavior of digital payment systems in India over the past decade. The primary focus is on understanding how the volume and value of transactions have evolved from 2013-2023 across various platforms such as **RTGS**, **NEFT**, **UPI**, and **IMPS**.

The study also explores the key factors influencing the adoption of these payment systems, such as **technological advancements**, **government initiatives**, and **consumer behavior**.

#### 2. Data Collection

The research relies primarily on **secondary data** collected from publicly available sources, including:

- **Annual reports** published by the **Reserve Bank of India (RBI)**, which provide comprehensive data on the volume and value of digital transactions processed through RTGS, NEFT, UPI, and IMPS from 2013 to 2023.
- **Industry reports** and **financial publications** that discuss trends in digital payments, financial inclusion, and the impact of government initiatives.
- Data from the **National Payments Corporation of India (NPCI)** regarding the UPI and IMPS systems.
- **Government publications** and **press releases** that highlight digital payment policies, such as the **Digital India Initiative** and **PMGDISHA (Pradhan Mantri Gramin Digital Saksharta Abhiyan)**.

The secondary data includes both **transaction volume** (the number of transactions processed) and **transaction value** (the total monetary value of transactions) for each payment system across the study period. This data has been used to track growth trends, analyze fluctuations, and provide insights into the adoption of digital payment systems.

#### 3. Data Analysis

The analysis of the data follows several key steps:

1. **Trend Analysis:** The first step is to examine the historical trends of transaction volume and value for each payment system (RTGS, NEFT, UPI, IMPS) from 2013 to 2023. This includes calculating the year-over-year growth rates to identify patterns in the increase or decrease of transactions and values.
2. **Descriptive Statistics:** Descriptive statistics will be employed to summarize the data and provide insights into the overall growth of digital payments in India. This includes calculating measures such as:
  - **Mean:** The average transaction volume and value across each payment system.
  - **Standard Deviation:** The variability or spread of transaction volumes and values across different years.
  - **Growth Rate:** The year-over-year growth rate for each system.

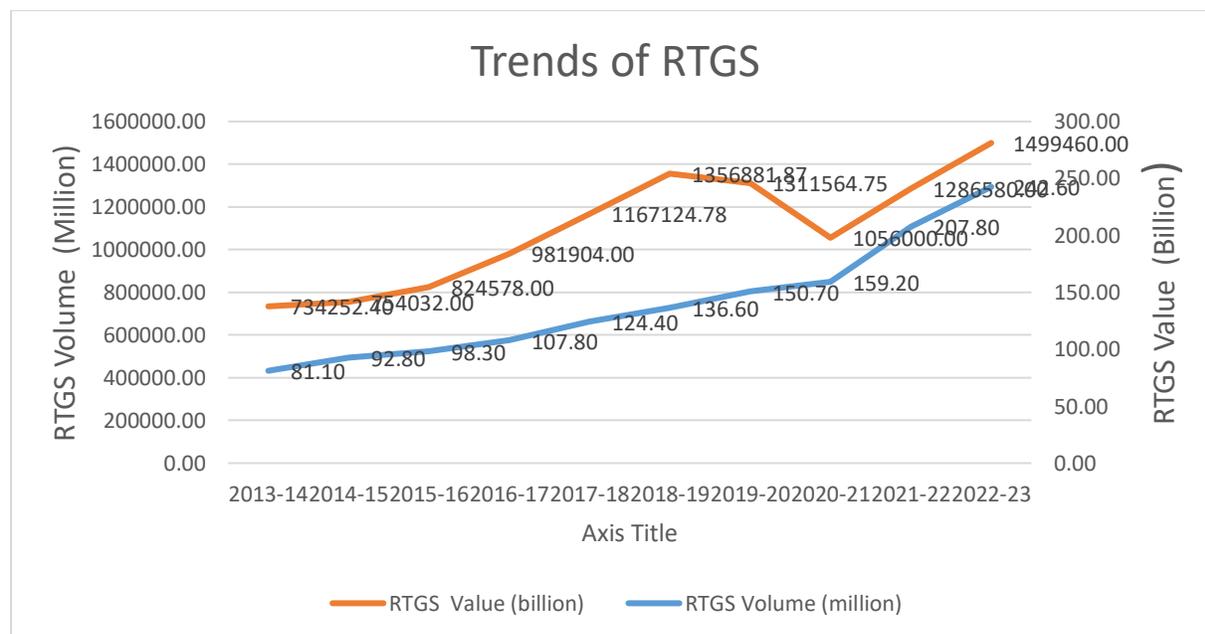
3. **Comparative Analysis:** The study will compare the growth patterns of **RTGS**, **NEFT**, **UPI**, and **IMPS** over the research period to understand their relative importance in the overall digital payments ecosystem. Special attention will be given to the adoption rate of UPI, given its meteoric rise since 2016.
4. **Correlation Analysis:** Correlation analysis will be conducted to examine the relationships between transaction volume and transaction value for each payment system. This will help determine whether an increase in transaction volume corresponds to an increase in the overall value of transactions.
5. **Impact of External Factors:** The study will also explore external factors such as **demonetization** in 2016, the **COVID-19 pandemic**, and **government policies** like **Make in India** and **Digital India** initiatives. These factors will be assessed based on their potential influence on the growth of digital payments.

#### 4. Sampling

Since this study is based on secondary data from public sources, **sampling** is not applicable. However, the data spans over **10 years** (2013-2023) and includes all available transaction data for **RTGS**, **NEFT**, **UPI**, and **IMPS** during this period, providing a comprehensive overview of digital payment trends in India.

#### RTGS

RTGS, which stands for Real Time Gross Settlement, is a payment system that enables large-value transactions to be resolved promptly, on an individual basis, and in real time. High-value transactions, in which both the payer and the payee want rapid clearing and finality of payment, are the most prevalent scenario in which this method is used. In most cases, real-time gross settlement (RTGS) systems are managed by central banks or other financial institutions, and they constitute an essential component of the financial infrastructure of a nation.



The chart presents comprehensive information regarding the annual transaction data pertaining to the Real Time Gross Settlement (RTGS) system in India, spanning from the fiscal year 2013-14 to 2022-23. Over the course of a decade, the transaction volume of RTGS has exhibited a consistent upward trend. It commenced with a total of 81.10 million transactions during the fiscal year 2013-14, and subsequently surged to 242.60 million transactions in the fiscal year 2022-23.

The steady rise in transaction volume indicates a rising acceptance of RTGS for significant, time-sensitive transfers by individuals and businesses in India.

The observed value of transactions has exhibited noteworthy growth, albeit accompanied by certain fluctuations. In 2013-14, the value reached around 734252.4 billion rupees, and in 2022-23, it reached its highest point at 1499460 billion rupees.

The observed decline in the overall transaction value during the fiscal year 2020-21 suggests a potential correlation with the economic ramifications of the COVID-19 pandemic. It is plausible that the decrease in high-value transactions can be attributed to the deceleration of business operations.

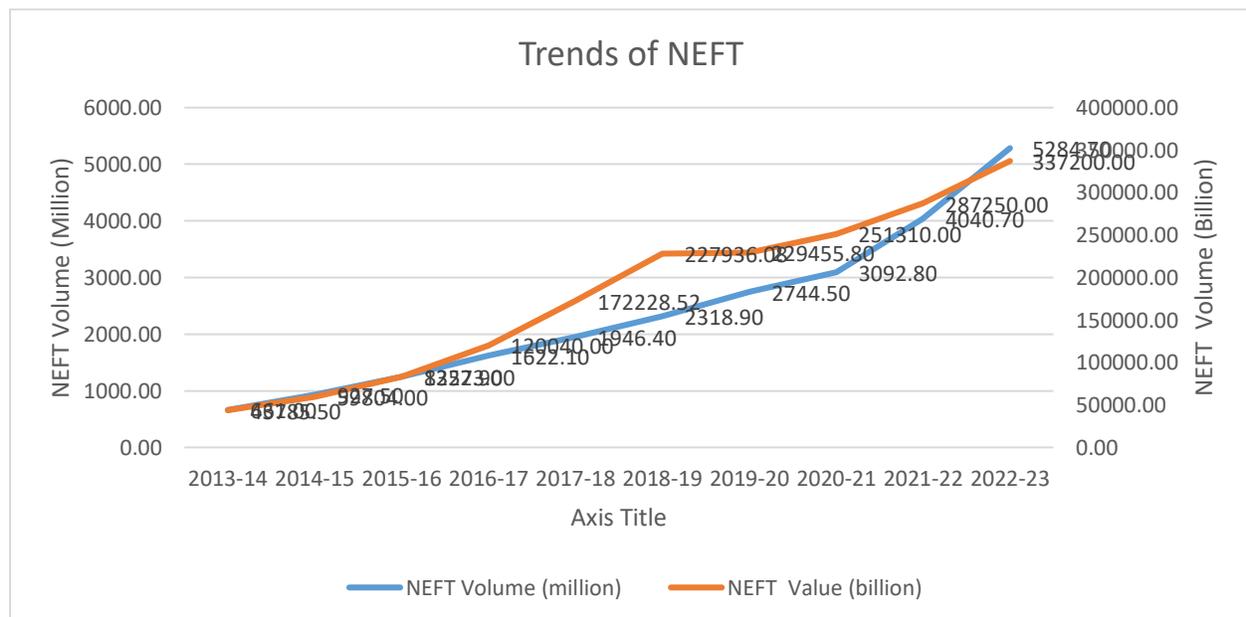
The data reveals a consistent upward trend in both the volume and value, except for a notable decline in transaction value during the period of 2020-21. The observed phenomenon can be ascribed to various factors, including the widespread acceptance and utilisation of digital payment methods, as well as the growing trust and reliance on electronic banking systems.

The data subsequent to the 2020-21 period exhibits a notable resurgence and expansion, suggesting a resurgence in economic endeavours and a sustained reliance on the Real-Time Gross Settlement (RTGS) system for managing substantial-value transactions.

Throughout the years, the average transaction size has fluctuated, which can be attributed to factors such as economic conditions, market stability, and the evolving nature of transactions processed through RTGS.

### NEFT

National Electronic Funds Transfer is what NEFT is an abbreviation for. A one-to-one transfer of monies from one bank account to another is made possible by India's national payment system, which is a statewide payment and transfer system. The transfer may be carried out between any two bank accounts in the nation that are enabled to use the NEFT system.



The chart showcases the significant increase in the volume and value of National Electronic Funds Transfer (NEFT) transactions in India from 2013-14 to 2022-23, spanning a decade.

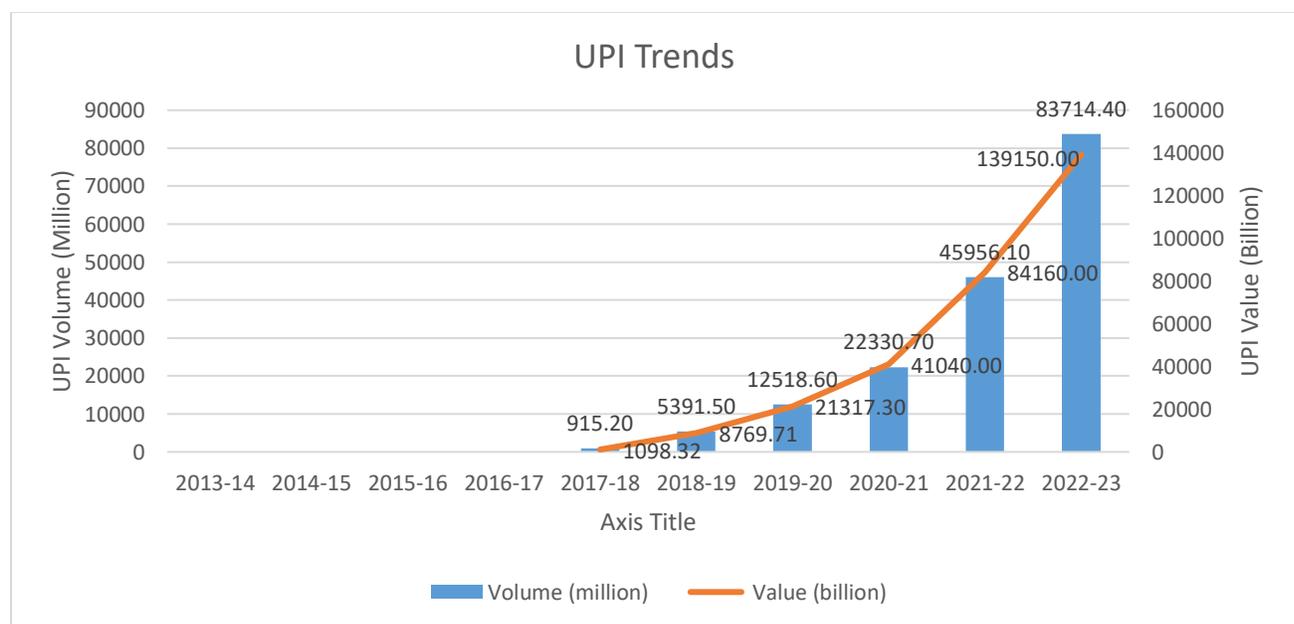
The NEFT volume, measured in million transactions, is a significant metric in the field of cryptocurrency research. This line (in blue) displays the annual count of transactions conducted using NEFT. Commencing from an approximate count of 661 million transactions during the fiscal year 2013-14, a consistent upward trend is observed, ultimately reaching a pinnacle of approximately 5284.70 million transactions in the fiscal year 2022-23. The observed trend can be attributed to the growing acceptance and dependence on NEFT as the favoured method of electronic funds transfer among both individuals and businesses in India.

The NEFT exhibits a substantial value, measured in billion rupees. The orange line illustrates the cumulative monetary value of the transactions processed through NEFT on an annual basis. The chart commences with a transaction value of approximately 43785.50 billion rupees during the fiscal year 2013-14. By the fiscal year 2022-23, there is a notable surge in the transaction value, reaching approximately 337200.00 billion rupees. The observed increase in transaction volume over time implies a notable rise in the utilisation of the NEFT system. Additionally, it suggests that larger sums are being transferred through this system, potentially indicating an enhanced level of trust and utility associated with the NEFT system.

Both lines exhibit a positive trajectory, suggesting an increase in the utilization of NEFT for financial transactions, as evidenced by the growth in both quantity and total value. The observed trend indicates that the rate of growth in transaction value surpasses the rate of growth in transaction volume. The observed trend suggests a potential upward trend in the average transaction size, which refers to the monetary value transferred per transaction, over the course of several years. The observed surge in both volume and value during the fiscal year 2019-20 can be ascribed to a multitude of factors, including heightened user adoption of digital platforms, advancements in banking technology, and policy modifications that facilitate the growth of digital payments.

### Unified Payments Interface (UPI)

The National Payments Corporation of India (NPCI) is responsible for the development of the Unified Payments Interface (UPI), which is a real-time payment system. The purpose of this system is to permit immediate financial transfers between bank accounts in India. Since its introduction in 2016, the Unified Payments Interface (UPI) has quickly become one of the most extensively utilised payment systems in India. This is mostly attributable to the fact that it is easy to use, convenient, and interoperable with a variety of banks and other various financial institutions.



This graphic demonstrates the patterns of transactions conducted using UPI (Unified Payments Interface) in India, including both volume and value, throughout many fiscal years spanning from 2013-14 to 2022-23.

The volume of Unified Payments Interface (UPI) transactions started at 915.20 million in 2016-17, which was the first year of UPI's operation. Exhibits a rapid and consistent increase, reaching a total of 8,769.71 million transactions within the fiscal year 2018-19. The rise continues, reaching a total of 45956.10 million transactions by the fiscal year 2021-22. The latest statistics for the period of 2022-23 reveals a volume of 83,714.40 million transactions, signifying a substantial and swift growth.

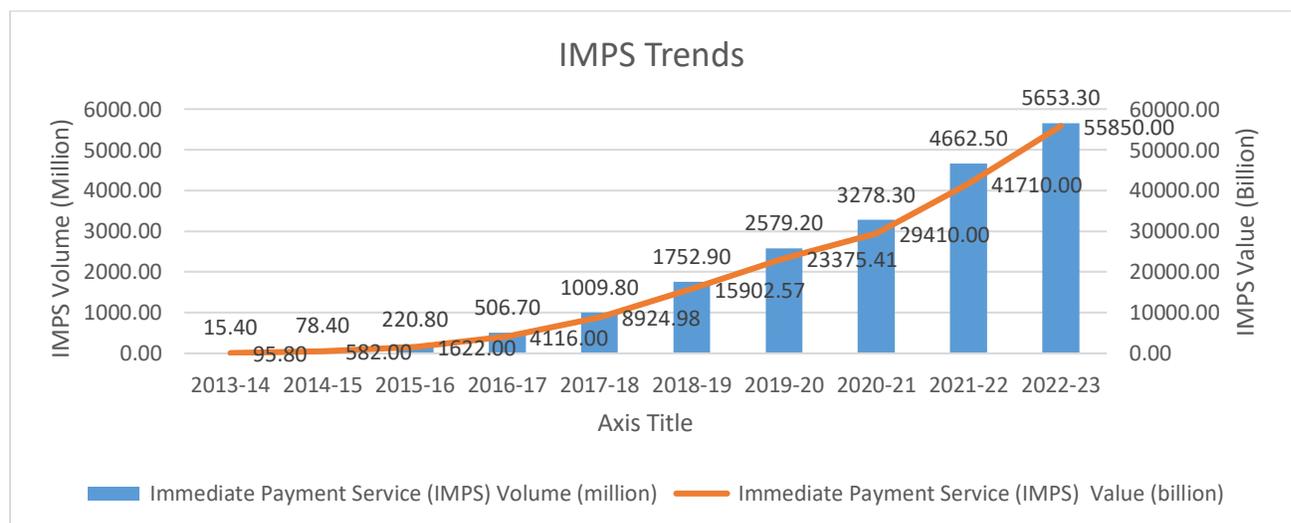
The UPI value for the Orange Line began at a much lower amount of 1098.32 billion in the fiscal year 2017-18. As of 2018-19, the value has increased to 8769.71 billion. Continuing its upward trajectory, it is projected that the value will rise to 84,160.00 billion by the fiscal year 2021-22. By the fiscal year 2022-23, the value has surged to 139,150.00 billion, indicating significant rise in the overall value of transactions.

Since its establishment, both the number and value of UPI transactions have seen exponential development. The graph illustrates the extensive acceptance and growing confidence in UPI as a mode of payment, as seen by the significant rise in both measures. There is a strong correlation between the volume and value trends, suggesting that a rise in the number of transactions leads to a substantial increase in the overall value of transactions. The significant surge in transaction volume and value, particularly from 2020-21 to 2022-23, indicates a crucial change in consumer behaviour towards digital payments, perhaps expedited by the COVID-19 epidemic and heightened digital adoption.

The UPI trends graphic vividly demonstrates the pivotal role that UPI has played in revolutionising digital payments in India. The data demonstrates UPI's success in becoming a widely accepted payment mechanism, owing to its simplicity, accessibility, and government backing. UPI serves as a fundamental component of India's digital economy, reflecting the wider patterns of financial technology adoption in the nation. This data is essential for policymakers, financial analysts, and enterprises in the payment service sector to comprehend market trends and devise future plans.

### IMPS

The Immediate Payment programme, often known as IMPS, is a programme that allows for quick electronic financial transfers between commercial banks in India. Customers are able to have the ability to transfer cash from their bank accounts to another bank account in a rapid and safe manner, and this service is available around the clock, even on weekends and bank holidays. With the intention of meeting the need for real-time payment solutions in India, the National Payments Corporation of India (NPCI) launched the Instant Payment System (IMPS) in the year 2010.



The diagram displays Immediate Payment Service (IMPS) use patterns from 2013-14 to 2022-23, including transaction volume (millions) and value (billions).

In 2013-14, IMPS volume began at a low 15.40 million transactions (Blue Bars). The volume rose sharply yearly, reaching 220.80 million by 2015-16. Volumes double to 506.70 million by 2016-17. By 2021-22, volume peaks at 4662.50 million transactions. The 2022-23 statistics indicates a modest rise to 5653.30 million transactions.

In 2013-14, IMPS Value (Orange Bars) began with ₹95.80 billion in transaction value. The value surges to 1162.00 billion by 2015-16. Significant growth continues, reaching 15902.57 billion by 2018-19. In 2021-22, the value peaks at 41710.00 billion. By 2022-23, the value peaks at 55850.00 billion.

The number and value of IMPS transactions have grown steadily. IMPS is becoming more popular as a trustworthy real-time payment system.

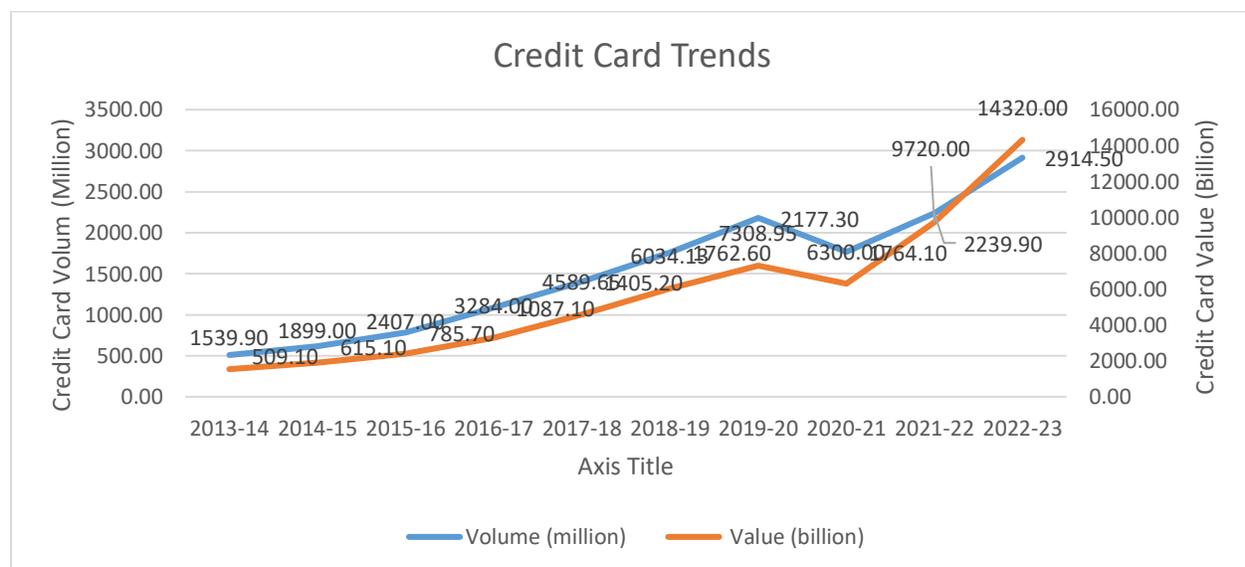
The number and value of transactions rise together, implying that more transactions raise their cumulative worth.

The strong growth trajectory, notably from 2020-21 onwards, may imply a greater dependence on digital payments, maybe hastened by the COVID-19 epidemic, which led to more contactless and remote financial transactions.

The diagram shows increased use of IMPS, highlighting its relevance in real-time financial transactions in India. Financial sector stakeholders must comprehend this consistent growth since it implies larger trends in digital payment acceptance and consumer and corporate shifts towards quick and digital payment solutions. Financial institutions, politicians, and payment service providers may use this data to design and improve digital payment infrastructures.

### Credit Card

A credit card is a kind of payment card that is provided by financial organisations. It gives the cardholder the ability to borrow money in order to pay for products and services at retailers that accept credit cards as a form of payment. In accordance with the rules of the card issuer, the cardholder is obligated to repay the money that was borrowed, together with any interest that may have been accrued. Credit cards, in contrast to debit cards, which take money from an existing balance in a bank account, provide delayed payment and often come with the option to pay the balance over a period of time.



The diagram shows credit card use patterns from fiscal year 2013-14 to 2022-23, concentrating on transaction volume (millions) and value (billions).

Credit Card Volume (Blue Line): 2013-14: Volume begins at 509.10 million transactions. Transaction volume has steadily increased to 1405.20 million by 2017-18. Growth continues, with 1764.10 million transactions in 2020-21. Transaction volume peaks at 2914.50 million in 2022-23.

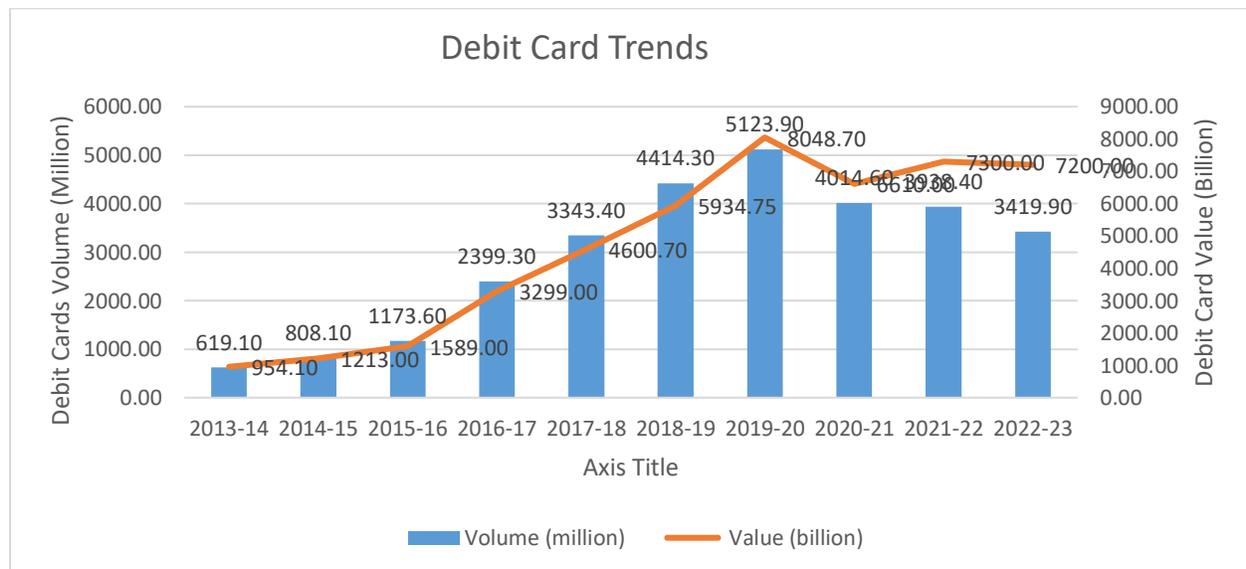
Credit Card Value (Orange Line) in 2013-14: 1539.00 billion. The value steadily rises to 4589.65 billion by 2017-18. A considerable increase in value occurs by 2020-21, reaching 6300.00 billion. By 2022-23, the value reaches 14320.00 billion.

Over time, credit card transactions have increased in number and value, demonstrating increased use of credit cards for financial transactions. Credit availability, incentive programmes, and the wider implementation of electronic payment methods in commerce may be driving the year-over-year gain in consumer confidence in credit utilisation. The COVID-19 pandemic may have driven consumer behaviour towards online and cashless purchases, which drove both measures up from 2020-21.

The patterns in credit card use show their growing influence in the consumer sector. Financial institutions, governments, and retailers use this data to understand consumer spending, credit utilisation, and credit market health. The considerable increases in transaction volume and value reflect development in credit card services including payment processing and financial technology solutions.

### Debit Card

The term "debit card" refers to a kind of payment card that allows a customer to pay for a transaction by taking money straight from their checking account. It is also possible to use it to withdraw cash from automated teller machines, which removes the need to carry cash or other physical checks. Debit cards, as contrast to credit cards, make use of the cardholder's own funds rather than drawing money from a line of credit.



The diagram shows debit card use trends from 2013-14 to 2022-23, including transaction volume (millions) and value (billions).

Blue Bars: In 2013-14 debit card volume begins with 619.10 million transactions. In 2015-16, 1173.60 million transactions, up significantly. In 2017-18, 3343.40 million transactions, over double from 2016-17. In 2019-20, strong increasing trend to 5123.60 million transactions. In 2021-22, 3938.40 million transactions peak. In 2022-23, drops to 3419.90 million transactions.

In 2013-14, debit card value (orange bars) started at 954.10 billion. In 2015-16, it rose to 1589.00 billion. In 2017-18 it increased to 4600.70 billion. In 2019-20, transaction values increased significantly to 5934.75 billion. In 2021-22, it reaches a high of 7300.00 billion. 2022-23: Transaction volume decreased somewhat, resulting in a little reduction to ₹7200.00 billion.

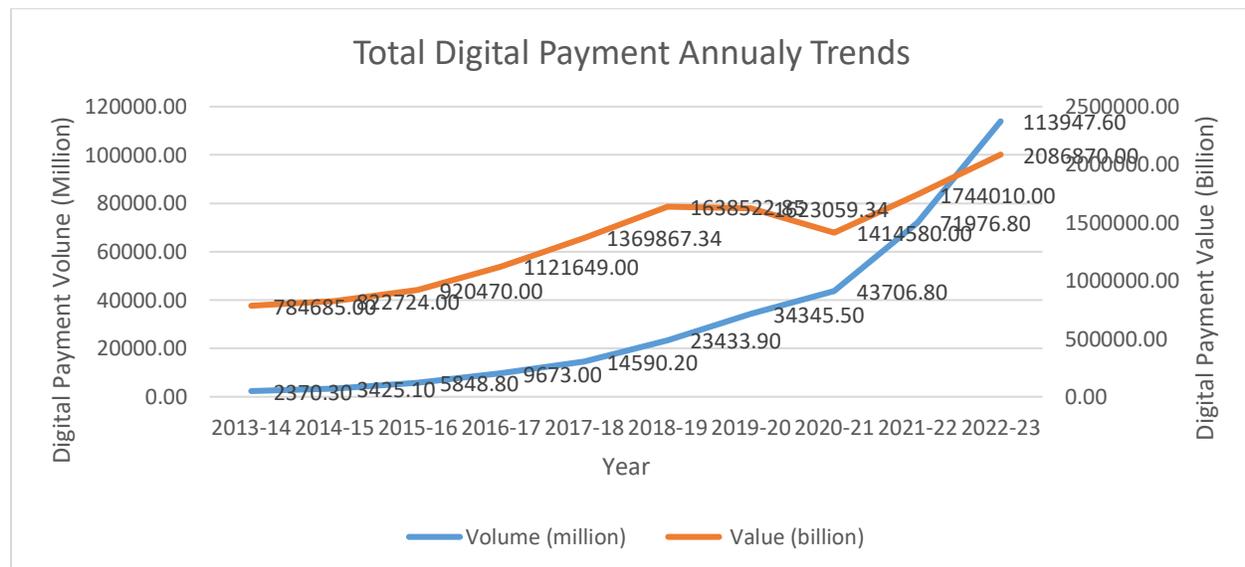
The number and value of debit card transactions have grown steadily. Significantly more people are using debit cards for payments. The little drop in volume and value in the last year (2022-23) may indicate market saturation, a brief economic slump, or a migration to digital wallets or other financial technology.

Due to their convenience, security, and merchant acceptance, debit cards are becoming more popular among a huge portion of the public.

This figure shows how important debit cards are to customers' daily finances. The data helps banks, governments, and companies evaluate customer behaviour, plan ATM network expansions, and improve debit card functionality and security to meet expanding consumer requirements. The rise in debit card use shows the economy's transition towards cashless transactions and digital finance.

### Digital Payment

In the context of sending money or paying for products or services, the term "digital payment" refers to the process of transferring money via digital means. It comprises a wide range of transactions that are carried out via the use of electronic devices such as smartphones, laptops, and tablets. These transactions may be carried out by a variety of techniques, including credit cards, debit cards, mobile wallets, and online banking. There is no longer a need for the use of physical currency, and digital payments provide both ease and speed in the realm of financial transactions.



The figure depicts the trend in total digital payment transactions over the course of the fiscal years beginning in 2013–2014 and ending in 2022–2023. These trends are shown in terms of volume (in millions) and value (in billions).

In 2013–2014, the number of digital payments begins at a relatively low level of 2370.30 million transactions. This is the beginning of the Blue Line. On an annual basis, there is a steady rise, which will culminate in 9673.00 million transactions by the 2016–2017 fiscal year. Volume reaches 23433.90 million transactions in the 2018-2019 fiscal year. There will be a substantial rise to 43706.80 million transactions in the year 2020-21. The volume continues to go up, reaching 113947.60 million transactions in 2022-23, demonstrating the enormous expansion that has occurred.

Beginning in 2013-14, the value of digital payments (Orange Line) is estimated to be 784685.00 billion. From 2016 to 2017, the value has increased to 1121649.00 billion. The amount of 1638522.85 billion reached in 2018-19. The value of the asset skyrockets to 1414580.00 billion in the year 2020-21. In 2022-23 it reaches its highest point of 2086870 billion, signifying a significant increase in the monetary value of transactions.

Due to the fact that both the volume and value of digital payments have shown exponential growth over the course of the years, it is clear that digital payment solutions are becoming more popular.

It is possible that the sharp increase, particularly beginning in 2020-21, is indicative of a transformative shift in consumer and business behaviour towards digital payments. This shift may be accelerated by factors such as technological advancements, increased smartphone penetration, and policy initiatives that promote digital transactions.

The development trend of both volume and value is practically identical, which underscores the fact that as more transactions are carried out digitally, the cumulative financial effect of those transactions is likewise increasing dramatically.

The fast acceptance of digital payment systems and the faith that users have in these systems is shown in this graphic, which covers a wide range of users. The considerable rising trends in both transaction volume and value indicate the move towards a digital economy as well as the increased degree of comfort that the general populace has with respect to digital transactions. This information is essential for those who have a stake in the financial industry, such as banks, fintech businesses, and regulators, as they formulate plans to further improve digital payment infrastructures, guarantee adequate security measures, and encourage digital literacy in order to maintain this development trajectory.

### **Practical Implications and Recommendations**

The findings of this research on India's digital payment systems have significant practical implications for policymakers, businesses, and academic institutions. The rapid growth of payment systems such as **RTGS**, **NEFT**, **UPI**, and **IMPS** has revolutionized India's financial landscape by providing secure, fast, and efficient methods for both large-value and small-value transactions. Understanding the trends and drivers behind these systems is crucial for institutions aiming to navigate the rapidly changing digital economy. Financial institutions, businesses, and academic entities in India must integrate these systems into their operations to enhance efficiency and ensure they are aligned with the nation's digital economy. According to **RBI (2022)**, the adoption of digital payment platforms not only facilitates transactions but also reduces operational costs for businesses and financial institutions. For businesses, implementing platforms like UPI and IMPS enables them to enhance transaction speeds, lower payment processing costs, and improve customer satisfaction.

The research emphasizes the need for further investment in digital infrastructure to support the widespread use of digital payments, especially in underserved and rural areas. The **Digital India** initiative, launched by the Government of India, has already created a foundation for digital payment adoption, but more needs to be done to ensure that systems like **UPI** and **IMPS** are fully accessible across different socio-economic strata (Patel, 2021). **Sharma & Kumar (2021)** argue that while urban areas have seen a rapid adoption of these systems, rural areas still face barriers such as lack of internet connectivity, smartphones, and digital literacy. Therefore, **recommendations** for institutions and the government include investing in **digital literacy programs** in rural areas and improving mobile connectivity. Facilitating access to smartphones, through government subsidies or partnerships with technology companies, can significantly boost the adoption of digital payments (Ghosh, 2020).

Further, businesses must invest in training their employees on the use of digital payment systems to ensure smooth adoption and integration into their operations. This aligns with **Singh & Agarwal's (2019)** findings that businesses that offer adequate training and technical support to their employees are more likely to experience a seamless transition to digital payment systems. To further enhance the **effectiveness** of digital payments, **cybersecurity** remains a crucial aspect. With the rapid rise of digital payments, there is an increased risk of cyber threats and fraud. **Rathi & Mehta**

(2021) emphasize that institutions must adopt strong security measures, such as end-to-end encryption, multi-factor authentication, and real-time fraud detection systems. **Recommendations** include stricter regulations for ensuring the security of transactions and incentivizing businesses to prioritize cybersecurity in their digital payment strategies.

In addition to these practical implications, **suggestions** for further research include investigating the potential integration of **emerging technologies**, such as **blockchain** and **artificial intelligence (AI)**, into digital payment systems. Blockchain, known for its decentralization and transparency features, could significantly enhance the security and efficiency of digital transactions (Jain, 2020). Similarly, **AI** can improve the customer experience by offering personalized payment solutions, identifying potential fraud, and automating several aspects of payment processing (Chakraborty, 2021). Exploring the intersection of **cryptocurrency** and traditional payment systems, such as **RTGS** and **UPI**, is another avenue for research, as cryptocurrencies have gained significant traction globally, with potential benefits for streamlining cross-border payments (Patel, 2022).

Moreover, **government policies** will play a pivotal role in ensuring that the infrastructure required to support these systems continues to evolve. **Recommendations** suggest that the government should introduce policy frameworks that promote **financial inclusion**, facilitate easier access to digital payment methods, and support innovation in the sector. **Choudhury (2020)** argues that policymakers should continue to support digital payment innovations while ensuring that regulations remain flexible to accommodate emerging technologies. Creating **public-private partnerships** will also foster innovation in the digital payments ecosystem, providing the necessary infrastructure for the seamless integration of digital payment systems into daily life.

Lastly, the findings of this study also have global implications. As India leads the way in digital payment adoption, other developing nations can benefit from India's experience in overcoming the challenges of digital financial inclusion. **Mohan (2021)** highlights the importance of adapting successful models from India's digital payment revolution to similar contexts, especially in countries with significant unbanked populations.

In conclusion, the practical implications and recommendations derived from this research suggest that India's digital payments ecosystem will continue to grow, but that growth must be supported by significant investments in infrastructure, cybersecurity, and digital literacy. By focusing on these areas, India can become a global leader in digital payments, contributing to greater economic efficiency, enhanced financial inclusion, and the creation of a **cashless economy**. To further strengthen this ecosystem, the integration of emerging technologies such as blockchain and AI must be explored, and public-private collaborations should be encouraged to sustain the growth of digital payments.

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