



Digital Payments Infrastructure and its Impact on India's Banking Sector Growth

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ABSTRACT

The banking sector in India has undergone a significant transformation in the past decade, with the rise of digital payment systems playing a crucial role in this evolution. The government's push for a cashless economy, driven by initiatives like Digital India and the development of infrastructure like the Unified Payments Interface (UPI), has altered the way financial transactions are conducted. This paper explores the development of digital payment infrastructure in India, its impact on the banking sector's growth, and the broader implications for financial inclusion, economic growth, and regulatory frameworks. The development of digital payment infrastructure has had a profound and transformative impact on India's banking sector. It has facilitated financial inclusion, improved operational efficiency, and fostered competition within the sector, contributing to the overall growth of the banking industry.

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Introduction

The digital payment landscape in India has evolved rapidly over the last decade, from basic mobile banking services to sophisticated platforms such as UPI, mobile wallets, and online banking. The Indian banking sector has been central to this transformation, adapting to new technologies and providing services that cater to an increasingly digital-first customer base. The implementation of digital payment infrastructure has not only facilitated financial transactions but has also spurred economic growth, financial inclusion, and competition among banks. This research aims to examine how the growth of digital payment infrastructure has impacted the banking sector in India. It will discuss the evolution of digital payment systems, assess their influence on the banking sector, and explore the broader implications on the economy and regulatory frameworks.

The digital payment infrastructure in India has rapidly transformed the financial landscape, playing a pivotal role in the growth and modernization of the banking sector. The widespread adoption of digital payment systems, such as UPI (Unified Payments Interface), mobile wallets, and NEFT (National Electronic Funds Transfer), has made financial services more accessible, efficient, and secure for millions of Indians. As of FY 2023-2024, India's digital payment transactions crossed a total value of **₹,550 lakh crore (approximately \$200 billion)**, with over **7.4 billion transactions** recorded, highlighting the massive shift towards cashless transactions. This shift has been instrumental in driving economic growth, improving financial inclusion, and enhancing the efficiency of the banking sector.

One of the key contributors to this transformation has been the growth of the UPI platform, which has become a significant driver of digital payments in India. As of December 2023, UPI recorded over **8.7 billion transactions**, marking a **56% year-on-year growth** in transaction volumes. The success of UPI, which enables real-time, low-cost, and secure payments, has fostered the growth of digital payments across various sectors, from retail to government services, further integrating the banking system into everyday transactions. This rapid adoption has revolutionized the way people interact with the financial system, reducing reliance on cash and providing a seamless alternative for a wide range of payments.

In addition to UPI, the rise of mobile wallets and other digital payment platforms has significantly boosted financial inclusion, especially in rural and underserved areas. Digital payment systems have reached millions of people who previously had limited access to traditional banking services. According to the National Payments Corporation of India (NPCI), mobile wallet transactions



grew by over **50%** in the past year alone, reflecting the increasing trust and reliance on mobile platforms for day-to-day financial activities. This has empowered individuals, small businesses, and merchants, enabling them to engage in the formal economy and participate in digital financial services that were once out of reach.

The impact of digital payment infrastructure on India's banking sector is undeniable. Not only has it increased the efficiency and accessibility of financial services, but it has also spurred innovation within the sector. Banks are increasingly adopting new technologies such as AI, blockchain, and data analytics to enhance user experiences, streamline operations, and reduce fraud. With the government's ongoing push towards a cashless economy, backed by initiatives like **Digital India** and **Jan Dhan Yojana**, the future of India's banking sector looks promising, with digital payment systems playing an integral role in shaping its continued growth.

Literature Review

Harchekar (2018) studied the banks to deal with globalization, the need for new business models (BMs), more rules, and faster technology. Here, new competitors called fintech are making banks think about their plans and structures because they are giving them a run for their money. Businesses and their leaders are having a hard time making BMs that have been around for decades into digital ones. People who work at 407 German banks were asked to find, rate, and talk about the practical hurdles to digitalization in banks from the point of view of decision-makers. Structural equation modelling was used to figure out how many problems there were and how they affected how much banks went digital. As variables, hurdles were seen as things like workers, technology and rules, human involvement, and strategic corporate management. The study found structural links between these variables and the amount of digitalization of banks, which was seen as a secret variable. People who work in banks can learn more about the things that make automation harder from the results. They also help make banks more digital.

Deshpande and Bhagyashri (2018) found that the digitalization of the banking industry has changed the tastes and needs of clients. The primary objective of the study is to ascertain how digitization has affected e-banking services and the one-to-one interactions that have historically existed between banks and their clients. As banks see the value of digital technologies like mobile and telepresence in addressing their customers' ever-evolving needs, the financial industry has witnessed a new wave of innovation in recent years. They described a few technological advancements in the banking industry, including Google Glass, robotics, smart watches, facial recognition software, in-car applications, and



biometrics. The goal of the Digital India Program, they described and examined, is to support the nine pillars of progress. The study concluded that, despite the rapid advancements in DFS technology over the past ten years, there hasn't been much scholarly discussion on the role that DFS plays in influencing company profitability and performance.

Abbasov et al. (2019) studied the digitalization of the global economy has increased competition in the financial services market, forcing the banking sector to adapt. This research aims to determine the impact of digitalization on the banking sector's transformation and identify practical recommendations for improving efficiency. The study uses a resource-based approach, finance theory, probability theory, and mathematical statistics. The information base includes annual financial statements of Ukrainian banking institutions and scientific works. The main findings of the study the proposed methodological approach allows for a comprehensive analysis of banking institutions' sustainability and timely response to globalization and internal challenges.

Joshi et al. (2019) studied the findings of a study titled "A Study on Customers' Perception of Adoption of Digital Banking in the Indian Banking Sector." Within the context of the modern world, when individuals are seeking alternatives to the conventional method of travelling to the bank to complete their banking activities, digital banking plays an extremely important function. The conventional method of banking has been revolutionized by the advent of Internet banking, which has also introduced new aspects to the banking industry. This study describes the present state of digital banking and explores the many perspectives that consumers have regarding the adoption of digital banking in the context of India. According to the findings of the survey, clients are now in the process of becoming accustomed to the concept of digital banking, and despite the many obstacles that they face, their perspectives on digitalization are rapidly shifting.

Shaikh and Anwar (2022) studied the goals to reduce bank expenses and identify the features of digital transactions that impact financial and operational results. A panel data collection, consisting of 32 governmental and private enterprises, was developed for the period 2011 to 2020. When compared to private sector banks, the proportion of public sector banks using digital modes of transaction with their counterparties has decreased. It has been demonstrated that for every one percent increase in the value of RTGS and NEFT, respectively, there is a 0.03% and 0.08% growth in the business per employee. The CASA to Deposit ratio is better understood as a result of shifts in RTGS and NEFT operations (0.016



and 0.0078%, respectively). Alterations to RTGS (0.7%) also have a significant impact on the trends. Using credit cards at the register or an ATM has cut down your money expenses.

Bousrih (2023) studied that banking services are offered in several formats and titles. New financial services and commodities greatly affect bank performance, according to research. This study examines how online banking affected banks pre-pandemic. The report covers 13 countries, including top fintech centres. they used 2012–2019 World Bank and International Settlements Institute data for this investigation. The data show a strong link between non-cash payments and banks' ROA. Mobile users substantially influence a bank's performance The pandemic has increased banking computer use. Digitization's influence on banking before COVID-19 has been neglected in the literature. This study examines pre-pandemic banking industry-digitization links in many top fintech nations. This work will help future researchers comprehend pre- and post-pandemic banking conditions.

Sharma and Khurana (2023) in their research have stated that India is a country that is growing quickly. Why would people want to use mobile banking services (MBSs)? That's the main question this research aims to answer. This study also looks at the different ways that men and women use their phones for banking questionnaires that the 143 people who took part in this study filled out on their own were used to gather information. Not at all. The results of other studies were checked to see how true the results of a made-up study were. Four main reasons why people in India choose to use MBS were found by this study using principal component analysis and confirmatory factor analysis. The four are thought worth, thought danger, thought ease of use, and thought value. The Chi-square test, on the other hand, showed that MBS was pretty much the same for men and women. The study's results are important for both lenders and practitioners because they can help them change how they do business to reach more people in the mobile banking space.

Objectives

- To understand the Evolution of Digital Payment Infrastructure in India.
- To analyse the Impact of Digital Payment Infrastructure on the Banking Sector.
- To study the Expansion of Financial Inclusion.

Research Methodology

The research stands out only for being descriptive. Using secondary sources of material is essential while investigating the problem. Considered secondary data comes from a wide range of sources: reports gathered by specialized investigative teams, media-published articles, Reserve Bank of India (RBI) maintained websites, and research papers written by eminent experts.

Data Interpretation

1. Evolution of Digital Payment Infrastructure in India

The foundation of India's digital payment infrastructure began with the introduction of mobile banking and online transactions in the early 2000s. However, significant changes came with the government's *Digital India* initiative, launched in 2015. The initiative aimed to increase internet penetration, expand digital literacy, and promote e-governance. This laid the groundwork for the rapid development of digital payment systems, which were further accelerated by the 2016 demonetization policy.

Key milestones in the evolution of India's digital payment infrastructure include:

- **UPI (Unified Payments Interface):** Launched in 2016 by the National Payments Corporation of India (NPCI), UPI allowed instant, secure, and seamless interbank transactions using mobile phones. This became a game-changer for the digital payment ecosystem.

Table: Overall Growth of UPI

Year	Volume (Millions)	Yearly Growth Rate	Value (Billions)	Yearly Growth Rate
2016-2017	17.90	--	69.00	--
2017-2018	915.20	5012.85%	1,098.32	1491.77%
2018-2019	5,391.50	489.11%	8,769.71	698.47%
2019-2020	12,518.60	132.19%	21,317.30	143.08%
2020-2021	22,330.70	78.38%	41,036.58	92.50%
2021-2022	45,956.10	105.80%	84,159.00	105.08%
2022-2023	83,714.40	82.16%	139,149.32	65.34%
2023-2024	131,129.50	56.64%	199,950.86	43.70%

Sources: Trend and Progress Compilation of Reserve Bank of India Reports from Various Issues



The overall growth of UPI from 2016 to 2024 shows a remarkable upward trajectory, with an explosive surge in 2017-2018, marked by an extraordinary 5012.85% growth in volume and 1491.77% growth in value. Over the next few years, UPI continued to expand significantly, though at a slower pace, with volume and value growth rates gradually declining. By 2023-2024, the volume and value growth rates had slowed to 56.64% and 43.70%, respectively, indicating a maturing market. Despite the slower growth, UPI's overall adoption and market value have grown substantially, reflecting its increasing importance in the digital payment landscape.

- **Mobile Wallets:** Services like Paytm, PhonePe, and Google Pay have become ubiquitous in India, offering easy-to-use digital payment solutions for both consumers and merchants.
- **Aadhaar-Linked Payments:** The integration of India's biometric-based Aadhaar identity system with payment systems has facilitated easier authentication and transaction processes, boosting the adoption of digital payments.
- **Demonetization and the Push for Cashless Transactions:** In November 2016, the Indian government demonetized ₹500 and ₹1,000 currency notes, further accelerating the adoption of digital payments as an alternative to physical cash.

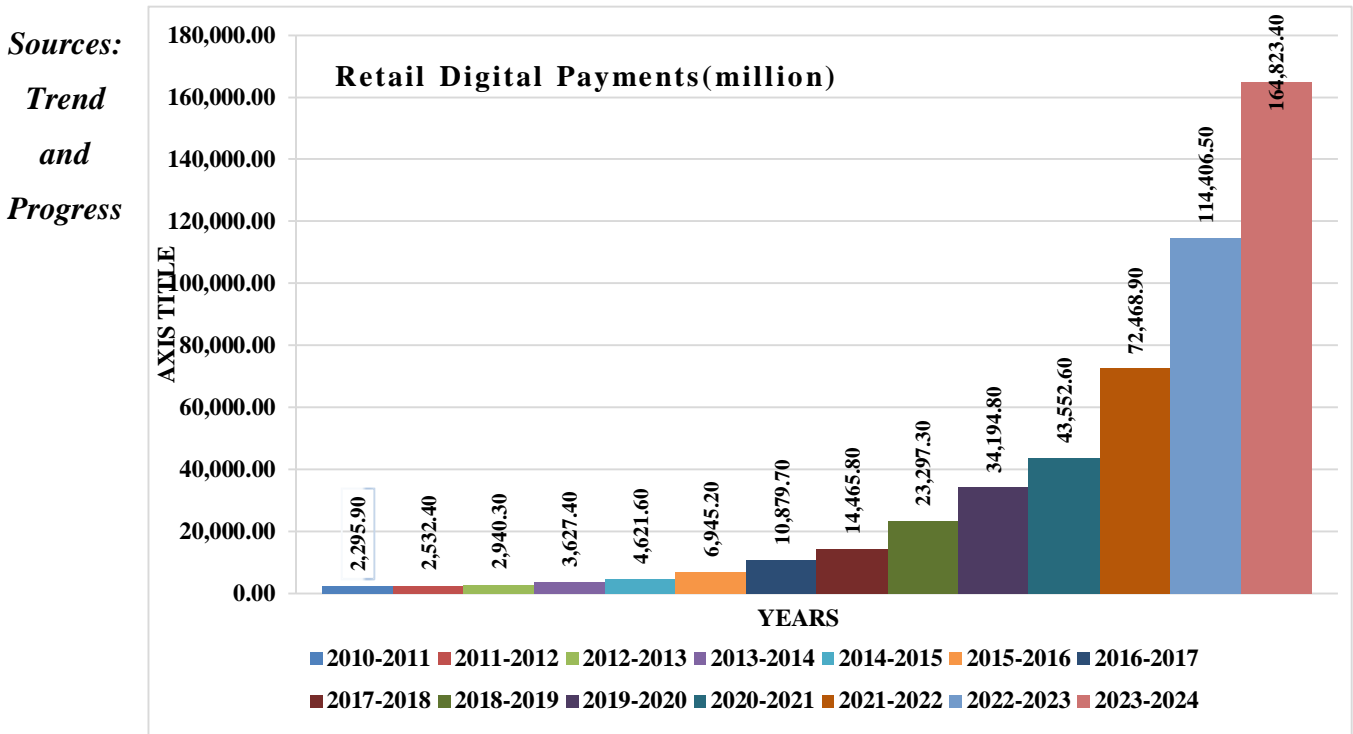
2. Impact of Digital Payment Infrastructure on the Banking Sector

The growth of digital payment infrastructure has had several significant impacts on India's banking sector:

➤ **Retail Digital Payments Increased Transaction Volume**

Digital payment systems have contributed to a dramatic rise in the volume and value of electronic transactions. The most dramatic growth is observed from 2021-2022 to 2023-2024, where the volume of digital payments more than doubles, jumping from 72,468.90 million to 164,823.40 million. This exponential increase is likely influenced by the COVID-19 pandemic, which accelerated the adoption of digital payment solutions due to social distancing measures and lockdowns. Overall, the data reflects a robust and exponentially growing trend in retail digital payments, highlighting the increasing reliance on and acceptance of digital payment methods over the years.

Figure: Retail Digital Payments(million)



Compilation of Reserve Bank of India Reports from Various Issues

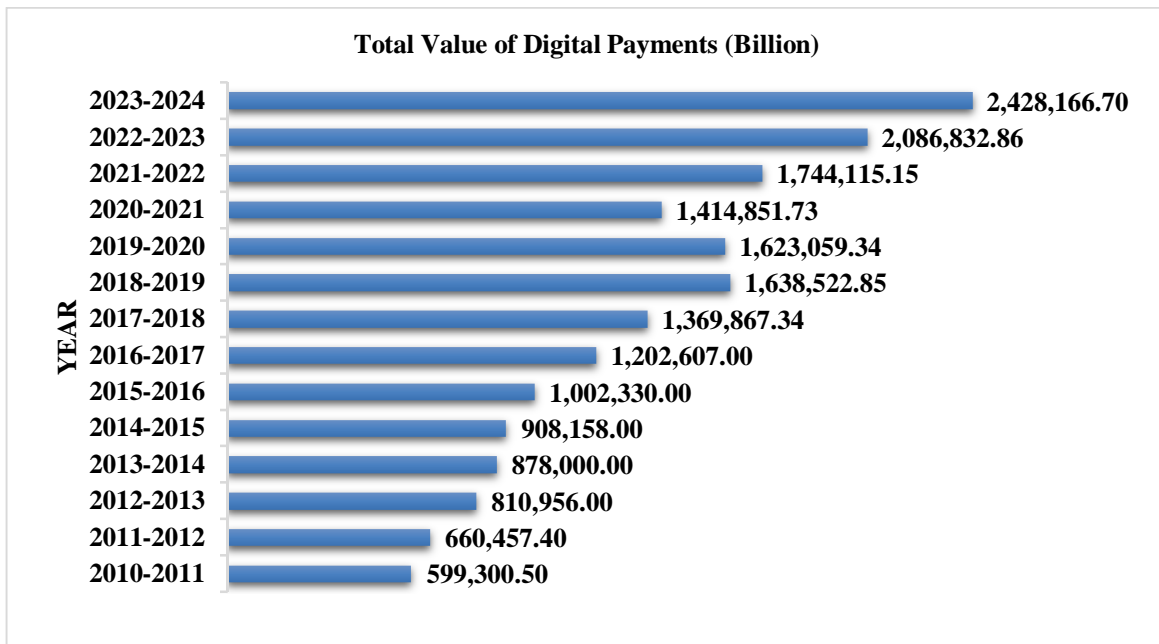
The data provided showcases a significant and steady increase in retail digital payments from 2010-2011 to 2023-2024. In the initial years, from 2010-2011 to 2014-2015, there is a gradual rise in digital payment volumes, indicating a steady adoption of digital payment methods. However, starting from 2015-2016, there is a noticeable acceleration in growth, reflecting a more rapid acceptance and use of digital payment systems. The period from 2016-2017 onwards sees an explosive growth in digital payment volumes, with a substantial jump from 10,879.70 million in 2016-2017 to 43,552.60 million in 2020-2021. This surge can be attributed to factors such as increased internet penetration, the rise of smartphones, government initiatives promoting digital transactions, and fintech innovations.

➤ **Value of Digital Payments: A Billion-Dollar Transformation**

The overall volume of digital payments has seen a significant upward trend over the years, reflecting the growing adoption of digital transactions. The total value in 2010–2011 was 599,300.50 billion, and it consistently increased in subsequent years. Digital payments exceeded 1 trillion by 2015–2016, indicating a steady rise in digital transactions. The years 2016–2017 and 2017–2018 had a

significant increase, presumably due to government initiatives, enhanced digital utilization, and the expansion of online payment methods.

Figure: Total Value of Digital Payments (Billion)



Sources: Trend and Progress Compilation of Reserve Bank of India Reports from Various Issues.

The post-pandemic years had a significant increase, particularly in 2021-2022, when digital payments rebounded robustly after a small drop in 2020-2021, possibly influenced by economic slowdowns during the COVID-19 pandemic. Achieving 2,086,832.86 billion in 2022-2023 and thereafter increasing to 2,428,166.70 billion in 2023-2024, the trend exhibited very rapid growth. The rapid advancement, propelled by technological enhancements, governmental policies endorsing a cashless economy, and evolving consumer preferences favouring online transactions, indicates a growing dependence on digital payment systems.

3. Expansion of Financial Inclusion: Digital payment systems have provided banking access to underserved and unbanked populations in rural areas. Services like Aadhaar-enabled payments and mobile wallets have enabled people without traditional banking access to participate in the financial ecosystem.

- **Cost Reduction and Operational Efficiency:** Digital payments have allowed banks to reduce their dependency on physical branches and infrastructure. This has led to significant cost



savings, as banks can now offer services remotely. The shift to digital has also improved operational efficiency and reduced human errors in transactions.

- **Competition Among Banks:** The rise of fintech companies and digital wallets has intensified competition in the banking sector. Banks have been forced to innovate and upgrade their technology to keep up with the offerings of digital-only platforms. This competition has led to better services, more personalized banking experiences, and lower transaction costs.
- **Improved Customer Experience:** Digital payments have transformed customer experiences by providing faster, more secure, and convenient ways to make transactions. Mobile apps and digital wallets have given customers the ability to perform a wide variety of banking services from their smartphones, improving customer satisfaction.

Broader Implications for Economic Growth and Financial Inclusion

Digital payment systems have a profound impact on India's broader economic growth:

- **Boost to the Formal Economy:** The shift toward digital payments has helped bring a larger share of economic transactions into the formal economy, reducing the reliance on cash and minimizing tax evasion. This has led to better tax compliance and more efficient public sector revenue generation.
- **Improved Transparency:** The traceability of digital transactions has enhanced transparency in financial dealings, reducing the risk of corruption and improving trust in the banking system.
- **Financial Literacy and Inclusion:** By making financial services more accessible, digital payments have driven financial inclusion in rural and semi-urban areas. Programs aimed at increasing digital literacy have empowered more individuals to engage with banking services, from savings accounts to insurance and credit.
- **Economic Resilience:** The use of digital payment platforms can enhance the economy's resilience during economic shocks, such as the COVID-19 pandemic, by enabling continued transactions and reducing physical contact. This ensures the continuity of business operations and access to financial services during challenging times.

Challenges and Obstacles

Despite the remarkable growth of digital payment infrastructure, several challenges remain:



- **Cybersecurity Risks:** As the volume of digital payments increases, so does the risk of cyberattacks, fraud, and data breaches. Banks and payment platforms need to invest in robust security measures to protect users' financial data.
- **Digital Divide:** While urban areas have embraced digital payments, rural regions still face challenges related to internet connectivity, digital literacy, and access to smartphones.
- **Regulatory and Policy Concerns:** The rapid growth of digital payments has posed challenges for regulators. There is a need for clear guidelines and regulations that balance innovation with consumer protection, especially in areas like data privacy, fraud prevention, and anti-money laundering.
- **Adoption Resistance:** Despite growing awareness, some sections of society, particularly older generations, remain resistant to adopting digital payments due to concerns over security and technological barriers.

Conclusion

The development of digital payment infrastructure has had a profound and transformative impact on India's banking sector. It has facilitated financial inclusion, improved operational efficiency, and fostered competition within the sector, contributing to the overall growth of the banking industry. However, challenges related to cybersecurity, the digital divide, and regulatory frameworks must be addressed to ensure sustainable growth. As India continues its journey toward becoming a cashless economy, the role of digital payment infrastructure will remain central. The ongoing evolution of digital payment systems, coupled with supportive policies and technological advancements, will play a pivotal role in shaping the future of banking in India and driving the broader economic growth of the nation.

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