

India's Success with the Digital Payment System

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ABSTRACT

Digital payments have recently taken a large chunk of the payments market in India, which is undergoing profound changes. The transition from a purely cash-based economy to one with fewer paper currencies began. The objective of a digitised India is being actively pursued by the Reserve Bank of India and its relevant organisations. India now has one of the largest and fastest-growing digital payment ecosystems in the world thanks to almost one billion cards and more than two billion prepaid payment instruments (PPI), such as online wallets, mobile apps, e-wallets, and other digital payment modalities. In actuality, e-commerce was encouraged by the internet's infrastructure expanding exponentially. For facilitating retail digital payments, the Unified Payment Interface, or UPI, is recognised as a ground-breaking payment system. This paper's major goal is to gradually identify innovations in India's digital payment industry. By using the PESTEL approach to identify political, economic, technological, environmental, and legal issues, it also analyses the payment facilitation sector.

Keywords: digital payment, demonetization, technology, banking, industry

I. INTRODUCTION

In contrast to the antiquated barter system, payment in the currency system typically refers to the transfer of money from one hand to another. The fund transfer process is said to be made easier by the payment system, which is referred to as a supporting framework. Any good or service must be purchased, and the payment must be made using a recognised payment method. The payment system is essential to achieving a high rate of financial inclusion. Thanks to the Reserve Bank's systemic initiatives and roadmaps, India's payments industry has made significant strides over the past three decades. In India's payment sector, the regulator is currently serving as a catalyst and facilitator. For payment and settlement, there are two different approaches: a paper-based payment system and an electronic/digital payment system [1]. Using paper money as payment is a time-honored method that has been used for many years. With the launch of the National Financial Switch in 2004, the development of digital payments in India began. India has currently established itself in the global payment market in the digital payment space as a result of a ground-breaking move made in 2016 with the introduction of the real-time payment system Unified Payment Interface (UPI). This paper's main objective is to analyse the structural evolution of the digital payments market in India. Additionally, it makes use of the PESTEL method to pinpoint variables affecting the development of the digital payment sector. The paper starts off by listing innovations in India's digital payment sector. The focus then shifts to identifying the political, economic, social, technological, environmental, and legal factors influencing the digital payment ecosystem. The paper's final section focuses on identifying key digital payment solutions that are significantly contributing to the growth of a less-cash economy.

1.1 Objective of the Study

The following are the primary goals of the study:

1. To comprehend the development of the digital payments sector in India.
2. To conduct a PESTEL analysis of the digital payments sector in India.
3. Determining the favorable and unfavourable features of the Indian digital payment sector.

II. REVIEW LITERATURE

The usage of digital payment alternatives for retail purchases, bank-to-bank transfers, and online purchases has significantly expanded in recent years. The simplicity of usage and the zero Merchant Discount Rate (MDR) policy of UPI contribute to its popularity [2]. India is experiencing a steady increase in electronic transactions, which has led to an increase in

FinTech investments because of transparency, speed, internet penetration, a rise in smartphone users, inexpensive internet pricing, and other aspects. 95% of digital transactions in the retail industry are electronic fund transfers, whereas only 5% are card payments. Digital payment is a cutting-edge method of payment in the financial services sector. The development of technology and the expansion of the internet on a global scale have both led to promising developments in payment and settlement systems. Using technology instead of stacks of paper on shelves makes banking transactions easier and more comfortable [3].

III. METHODOLOGY

The exploratory research approach is employed in this study to analyse the growth trajectory of the Indian digital payment sector. Information was acquired by looking through secondary sources, including Reserve Bank of India circulars and notifications, working papers, published research papers found through Google Scholar searches, and other online sources.

The PESTEL analysis of the digital payment industry's political, economic, technical, environmental, and legal challenges was done using the information received.

IV. NEW DIGITAL PAYMENT TECHNOLOGIES IN INDIA

A variety of different digital payment modalities make up India's digital payment environment. Cash continues to be the most often used and preferred payment option, even though the nation is moving toward a cashless future. As a result of the RBI and the Union Government's collaborative efforts, digital payments are expanding. The NPCI's introduction of the UPI service gave it a boost because of its distinct benefits of simplicity, innovation, adoption, security, and cost (SIASC). Although the government has established numerous digital payment methods such as NEFT, the Immediate Payment System (IMPS), plastic cards, and e-wallets to facilitate digital transactions in the country.

Phase 1 (2004–2009): With the introduction of the National Financial Switch, India's digital transactions service got underway in 2004. The Payments and Settlement Act of 2007 granted the RBI authority to create guidelines that would benefit the industry. The current digital payment system in India is recognised as having been established by the National Payment Corporation of India [4]. AADHAR, a 12-digit identification number, was introduced for its citizens in 2009. Digital payments now demonstrate their benefits. It gave rise to biometric authentication and electronic know-your-customer (e-KYC) in a number of businesses, including the payments sector.

Phase 2 (2010–2015): On October 12, 2010, the Reserve Bank of India (RBI) granted NPCI permission to set up the Immediate Payment System (IMPS) in order to guarantee real-time money transfers. The IMPS is an immediate, round-the-clock interbank electronic fund transfer service that is accessible by SMS, the internet, mobile devices, and ATMs. There are now 639 members of IMPS, including banks and prepaid payment devices (PPDs). To increase transparency in beneficiary payments, the Aadhar-enabled payment system (AePS) was ideally employed to transfer benefits directly into the bank or postal accounts of targeted beneficiaries. In order to advance the RBI's goal of a "less cash" economy, NPCI introduced the RuPay Card in March 2012. RuPay cards are currently being issued by more than 1,100 banks, including public sector, private sector, regional rural, and cooperative banks. After observing the high density of mobile users, banks started to provide mobile banking services in partnership with telecom service providers using the Unstructured Supplementary Service Data (USSD) platform. In order to reduce the need for several bilateral tie-ups and to ensure interoperability among banks and telecom providers, NPCI developed a single platform for financial services on the USSD platform in 2013. The National Automated Clearing House (NACH), a centralised Electronic Clearing System (ECS), was created by NPCI to manage automatic debit and credit transactions. Using merely an Aadhar number, the Aadhar Payment Bridge (APB) system enables money to be paid to those who are the recipients of various government programmes. The administration views it as a significant advancement in the fight against corruption and money laundering. On August 19, 2015, the RBI approved the establishment of eleven entities as payment banks based on the recommendations of the committee on comprehensive financial services for small businesses and low-income households. This move was made to increase financial inclusion and financial literacy, particularly in the rural sector. In 2015, the Tap and Go contactless payment technology took a novel stride.

Phase 3 (2016–2021): UPI was created in 2016 with the intention of giving everyone in the nation access to a platform as a simple and efficient instrument for digitalizing payment services [5]. For the purpose of collecting tolls and processing payments at toll plazas run by the National Highway Authority of India, NPCI is authorised to operate the National Electronic Toll Collection (NETC) system (NHAI). Bharath QR was developed as an innovative, interoperable, and secure payment method in response to the RBI's Payment Vision 2018 to help India transition to a society with less cash. An established integrated bill payment system called Bharath Bill Payment System (BBPS) offers customers "anytime, anywhere" interoperable bill payment services through online payments and a network of physical agent sites. The BBPS was created to

make it easier for citizens of the country to pay their bills. A number of significant features, such as an overdraft facility, a one-time payment mandate, an invoice in the inbox, and merchant verification, were introduced with UPI 2.0. UPI has simplified investing by requiring the application process for initial public offerings (IPOs). The required sum, known as the "ASBA" (application-supported blocked amount), is frozen to execute the application when a potential investor uses the UPI app to apply for an IPO. If the shares are assigned, funds will be transferred, and if not, funds will be defrosted.

To assist in the satisfaction or resolution of complaints involving acts performed by consumers in the UPI system, an ombudsman scheme for digital transactions was launched in 2019 [6]. Without requiring a physical connection, RuPay contactless cards have been created to make payments more secure and convenient. In order to realise the vision of the RBI of a society with less cash, contactless payments are considered the future of India's payment sector. After launching NETC FastTag for toll payments successfully, NPCI is preparing to roll out the contactless vehicle parking solution throughout the nation. The NPCI introduced UPI AutoPay as a component of the UPI 2.0 updates. Users can set up recurring payments for insurance and mutual fund premiums, cell phone and electricity bills, EMIs, and Over the Top (OTT) subscription fees using the UPI AutoPay feature. In partnership with the State Bank of Mauritius, NPCI also unveiled the RuPay National Common Mobility Card (NCMC) to facilitate easy travel throughout the country on metros and other public transportation systems, as well as for retail shopping and purchasing. The launch of e-Rupee, a cashless and contactless digital payment system, was scheduled by Prime Minister Shri Narendra Modi for August 2, 2021. According to the Prime Minister, the eRUPI voucher will significantly contribute to the success of Direct Benefit Transfer (DBT) in digital transactions throughout the nation and will give digital government a new dimension.

Table 1: Demonstrates the Development of Digital Payments in India.

Phase	Year	Innovation
Phase 1 2004 – 2009	2004	Launching of NFS
	2007	Payments and Settlement Act
	2008	Establishment of NPCI
	2009	AADHAR
Phase 2 2010 – 2015	2010	IMPS and PPIs
	2011	DBT using AePS
	2012	Launch of RuPay USSD 1.0 based mobile payment and NACH
	2013	AADHAR Payment Bridge System
	2014	Initiation of Payments Banks
	2015	Contactless payment guidelines
Phase 3 2016 – 2021	2016	UPI, NETC, and USSD 2.0
	2017	Bharath QR, BBPS, and FasTag
	2018	UPI 2.0
	2019	UPI on IPO option with One-time Mandate Ombudsman scheme for digital payment transactions RuPay NCMC card, RuPay Select Debit Card
	2020	NETC FASTag parking UPI Autopay RuPay Commercial Card and
	2021	IRCTC SBI RuPay Card
		e – RUPI Prepaid voucher

V. DATA ANALYSIS

PESTLE analysis, which is also known as PEST analysis, is a marketing management concept. Companies use this idea as a tool to monitor the environment in which they operate or plan to introduce a new project, product, service, etc. The Political, Economic, Social, and Technological (PEST) framework was developed by Francis Aguilar to analyse the broad environmental influences on business strategy. The macro environmental factors that have an impact on the organisation and the industry are examined and tracked using the PESTEL method. Rifat, Alam, and others used PESTEL analysis to pinpoint important factors having an impact on the banking sector [7]. PESTEL analysis was used by Brian Kampanje to analyse Malwi's non-life insurance business. Researchers Dinçer, H., and F. Pinarbaş evaluated marketing strategies in the European banking industry while taking the PESTEL framework components into consideration. The macro environmental components of the industry study, such as political, sociocultural, technological, economic, and legal aspects, are also examined. The PESTEL analysis-based strategy seeks to capitalize on these elements' strengths, do away with their weaknesses, take advantage of their opportunities, and comprehend their challenges [8]. This research examines the digital payments market in India and identifies favourable and unfavourable factors for its development using the PESTEL framework.

5.1 Politics

- **Digital Payment Initiative:** After the prime minister Sri NarendraModi-led government demonetized high-value notes of Rs. 500 and Rs. 1000, which accounted for almost 86% of the total amount of cash in circulation, adoption of digital payment or cashless transactions gained momentum [9].
- **A Variety of Digital Payment Options:** Including direct benefit transfer via AADHAR, UPI, FASTag, payment banks, e-wallets, and others.
- **Demonetization:** The country's monetary policy has been significantly impacted by demonetization. It aids in the eradication of hawala transfers and black money, both of which mainly rely on paper money. Additionally, it forbids any illegal behavior.
- **Political Stability:** Sri NarendraModi has led India's government to stability for the past eight years. It helped the country come up with a clear plan and vision for creating a digital economy or society.

5.2 Financial

- **Vision:** The RBI's vision statement says that every Indian will have access to a variety of safe, easy-to-use, quick, and cheap ways to pay online.
- **Increase in Income from Disposal:** India's income from disposal went up by 5.2% between 2020 and 2018. Digital payments are a significant part of the current economic transformation, which is being driven and supported by internet behemoths on a global scale and is based on the collection, creation, classification, and tracking of digital data [10, 11].

5.3 Technological

- Increase in smartphone usage, from 34 million to 844 million smartphones was in use in the previous ten years. 88 percent of customers use their smartphones to make online purchases, according to a survey by PayPal. Smartphones and e-commerce coexist and are mutually beneficial.
- Reduced internet costs, when comparing mobile data prices across countries, India have the lowest costs, mostly as a result of fierce market competition. On the one hand, Indian operators offer 1GB of mobile data for \$0.09 (Rs 6.7).
- E-commerce is expanding quickly, and platforms like Amazon, Flipkart, Myntra, etc. are having a big impact on how people use digital payment methods. The use of digital payment systems, particularly on e-commerce websites, has been facilitated by app-based digital payment, which has changed consumer behaviour.
- Real-time Payment Systems thanks to real-time payment and settlement technologies, funds can be swiftly sent to beneficiaries via a range of payment options.

5.4 The Social

- **Impact of the Media:** The media, especially social media, which is seen as a key factor in changing people's payment habits, helps raise awareness of digital payments among the public.
- **Transition to Contactless Payments:** The COVID-19 pandemic crisis has slowed down the adoption of digital payment methods. Users could use QR codes, NFC, and other technologies to make contactless payments while living in a socially isolated environment. To reduce viral transmission during pandemic hours, traders used technology to their advantage in terms of product marketing and implemented digital payment alternatives.
- **Growth of Urban Areas:** Because people in urban and metropolitan areas know more about banking products and how to use them, they use digital payments a lot more.

5.5 Legal

- The Reserve Bank of India's Payment and Settlement Systems in India: The RBI's Vision India's Vision 2018 outlines a plan to increase electronic payments and facilitate the country's medium- and long-term transition to a paperless society or economy.
- Laws: The Banking Regulation Act of 1949, the Payment and Settlement Systems Act of 2007, the Prepaid Payment Instruments in India (Reserve Bank) Directions of 2009, and the Master Circular of 2014 are the main laws that govern the digital payment ecosystem.
- The National Payment Corporation of India (NPCI) was established to support retail digital payments, and its mission is to encourage every Indian to use one or more types of digital payment services.
- Ombudsman Scheme for Digital Transactions: The Reserve Bank of India created the Ombudsman for Digital Transactions (OSDT) with the main goal of reducing fraud, making sure customers trust digital payments, and offering free, quick complaint resolution for problems with customer service in digital transactions done by non-bank entities that are regulated by the RBI.

5.6 Environmental

- Use of technology in payment methods has reduced the need for paper money, including mobile applications, e-wallets, debit and credit cards, and others.
- Virtual banking as the public has come to realise, it is no longer required to drive right away to a branch to handle one's financial business. Due to the use of payment applications in digital mode, the line at the bank cash registers has been significantly shortened. Numerous issues are handled by apps and online financial services.

VI. FAVOURABLE AND UNFAVOURABLEFACTORS DIGITAL PAYMENT

Payments were simpler after demonetization thanks to the deployment of technology at no extra cost. People benefited from payment apps such as Paytm [12]. In the past, urban areas were where it was most popular, but today even those living in rural areas, especially young people, have a positive attitude toward accepting digital payment systems. Online purchasing has seen widespread adoption of digital payment methods, although security and transparency are still problems that need to be resolved. Due to its significant advantages, people are becoming more willing to adopt it. People's willingness to accept innovations in digital payments was influenced by their attitudes, performance expectations, perceived risk, and conducive factors. Banks and other digital payment service providers, as well as other retail and financial sector stakeholders, should take consumer attitudes and perceived risk into account when developing novel digital payment systems [13]. The digital payment industry has seen a significant transformation in recent years as a result of its many advantages. The nation is moving toward becoming a cashless society, according to the authorities. The RBI is putting pressure on companies that provide financial services, especially FinTech companies, to encourage digital payment methods. The RBI's Payment Vision 2021, which emphasises giving every citizen access to a variety of digital payment alternatives that are safer, secure, accessible, rapid, and affordable, has been made possible in part thanks to UPI, one of the digital payment options. The favourable and unfavourable aspects of the expansion of the digital payment sector in India are shown in the table below. The favourable and unfavourable variables that exist in the industry of digital payments are shown in Table 2 below.

Table 2: Displays a List of Favourable and Unfavourable Variables for India's Digital Payment Industry.

Favourable Factors	Unfavourable Factors
<ul style="list-style-type: none"> ➤ The government's Digital India Campaign initiative ➤ Demonetization-related decrease in the amount of paper money in circulation ➤ Shift in payment methods toward contactless as a result of the recent pandemic ➤ Through transactions, RBI hopes to create a "less-cash culture. "Real-time settlement without any associated costs ➤ There are numerous digital payment methods available. ➤ Smartphone usage has steadily increased over the last ten years as internet access has become more affordable. ➤ RBI's stringent rules for regulating digital payments made through third-party payment apps or websites 	<ul style="list-style-type: none"> ➤ Except for payments made using UPI and Rupay debit cards, the merchant discount rate (MDR) is used for online payment gateways. ➤ Retail traders who handle large amounts of paper money are not able to use any digital payment options. ➤ Transaction threshold restrictions on the maximum payment amount, the quantity of payments, etc. ➤ Cybercrime has always been a threat. ➤ terrible system for resolving complaints regarding digital payment solutions ➤ Threat to abolish the current banking system ➤ A single rupee's accountability in digital transactions

VII. FINDINGS

1. There are many digital payment options available in India, including debit/credit cards, internet banking, mobile banking, the AADHAR enabled payment system (AePS), the unified payment interface (UPI), mobile wallets, prepaid payment instruments (PPIs), NEFT, the immediate payment service (IMPS), and others.
2. NPCI was given authorization to develop a hassle-free, simple, and quick real-time payment system architecture in order to improve retail digital payments. Through its several cutting-edge solutions, which include National Electronic Toll Collection (NETC), Unstructured Supplementary Service Data (USSD), Bharath Interface for Money (BHIM), and Unified Payment Interface (UPI), it now processes the majority of digital payments.
3. UPI is a cutting-edge real-time payment system that has helped the payment industry make great strides toward a cashless society.

4. People who use the Bharath Bill Payment System (BBPS), which is an interoperable bill payment system, can quickly and easily pay their bills, such as utility bills, using the UPI platform. UPI 2.0 has added an autopay feature to the UPI platform.
5. The creation of a cashless society is the goal of the flagship government effort known as the Digital India Initiative, which has strong political support. It significantly influences how policies and regulations are created in the area.
6. Digital payment systems are becoming more widely available and secure thanks to technology. India is experiencing an increase in smartphone usage, affordable internet, and the use of digital payment methods for online store transactions.
7. The RBI's goal is to give every Indian access to a variety of quick, simple, affordable, safe, and secure e-payment choices. Its whole focus has been on increasing acceptance of digital payment systems.
8. In 2019, the RBI will launch an ombudsman programme for digital transactions, providing a suitable platform for the grievance redressal system.
9. Payment systems have many benefits, but they are hard to use because they aren't safe and they don't settle correctly.

VIII. CONCLUSION

With the biggest demographic dividend at its side and the world's fastest-growing major economy, India has the potential to be a bright light for the global economy in the current business climate. Major corporations are swarming into the digital payment sector. The government's main programme, Digital India, aims to transform India into a knowledge-based society and economy. Contactless, paperless, and cashless are three of Digital India's stated goals. To encourage cashless purchases and move India toward a cashless society, a number of digital payment options are available. There are many choices, including debit and credit cards, USSD, AADHAR enabled payments service (AePS), the Unified Payment Interface (UPI), e-wallets, m-wallets, prepaid payment instruments (PPIs), points of sale (PoS), Internet banking, mobile banking, and micro-ATMs. With innovative payment systems like UPI, RuPay cards, e-wallets, FasTag toll payments, AePS, and others, NPCI has revolutionised India's digital payment landscape. The e-wallet is a helpful platform for making payment transactions during situations like COVID-19 and other outbreaks while keeping social distance and avoiding lengthy lineups. With digital payment systems, the retail payments sector of the digital payment ecosystem has enjoyed great success. 59 percent of retail payment transactions were made using UPI alone. The industry is steadily expanding due to a number of encouraging factors, including the RBI's vision of a cashless society, the move to contactless payments, the rise in smartphone usage with cheaper internet access, and important laws supporting digital payment systems with improved security against internet fraud. Digital payment transactions are increasing, which is good news for companies that offer payment services like PhonePe, Google Pay, Paytm, Amazon Pay, and others. The spread of digital payment instruments has been aided more by banking clients, bankers, and payment service providers. Future research on their attitudes toward the adoption and use of digital payments can make use of behavioural models.

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