

Kinds of Digital Payment Technology: Exploring the Evaluation

Jahnvi Valera^{1,*}, Amul Kotadia²

Abstract

Digital payment technology has revolutionized financial transactions, immolating faster, safe, and more approachable solutions. This study inspects the evolution and types of digital payment systems, embrace Near Field Communication (NFC), Quick Response (QR) codes, mobile wallets, blockchain-based payments, and biometric authentication. It examines key drivers of adoption, such as accessible and technological advancements, while addressing threats like security risks and regulatory compliance. The study provides the role of these technologies in encouraging financial inclusion and economic growth. By analysing real-world applications and rising trends, the research provides perceptions into the possibility and challenges of digital payment ecosystems. Additionally, the research investigates the development of digital payment systems, ranging from conventional card-based transactions to AI-driven and blockchain-based solutions, emphasizing their effects on financial inclusion and global trade. Moreover, it examines the difficulties linked to digital payments, including cybersecurity threats, regulatory issues, and the digital divide. This paper offers insights into the ongoing influence of digital payment technologies on the future of financial transactions, promoting a cashless and more interconnected economy by examining current trends and future developments.

Keywords: Digital payment technologies, financial inclusion, blockchain-based payments, UPI, QR codes, NFC, biometric authentication

INTRODUCTION

In the modern era, the digital payment options are popular to pay at anywhere with the QR codes, mobile number etc. People have no need to carry the cash with them to purchase anything or doing any payment. They can easily pay with different kinds of digital payment options. It is very easy to pay with digital payment options in comparison to carry cash with a threat of theft. Nowadays as we know that each and every shopkeeper from the small peddler to large scale developed showrooms, they all have the digital payment facilities at their place.

*Author for Correspondence

Jahnvi Valera
E-mail: jahnvivalera09@gmail.com

¹Research Scholar, Department of Management, Noble University, Junagadh, Gujarat, India

²Professor and Research Guide, Department of Management, Noble University, Junagadh, Gujarat, India

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These digital payment options are evaluated from the Internet Banking facilities like NEFT (National Electronic Funds Transfer) and RTGS (Real Time Gross Settlement), which are given by Nationalised Banks to their customers to transfer money from one account to another account. These NEFT and RTGS facilities are the base of the digital payment options [1].

WHAT IS DIGITAL PAYMENT OPTION?

Transactions carried out online or through digital means are referred to as digital payments. This indicates that both the payer and the payee exchange

money via electronic means. A digital payment has the same meaning as an electronic payment. Digital payments transfer funds between payment accounts via a digital platform or device. They may be entirely, mostly, or partially digital.

LITERATURE REVIEW

The goal of the study of Julie and Sujith was to pinpoint the problems and difficulties with electronic payment systems and provide solutions to enhance them. Additionally, e-payment systems offer new opportunities. According to the analysis, the digital revolution has made digital payments simple. The study also discovered that digital payments are becoming more widely available in rural locations due to the expansion of mobile networks, the Internet, and electricity. There will undoubtedly be more digital payments because of this [2].

Abbigeri *et al.* emphasised on the different payment methods, the advantages of a cashless economy, and the Indian government's readiness to adopt a cashless economy. According to the survey, non-cash payment methods have been more widely accepted and have penetrated deeper because of government and RBI payment system initiatives [3].

Garg *et al.* considered people's opinions regarding the way the cashless economy is presented in India. The study was conducted in the Delhi region, and the data was collected with the aid of a planned survey before being analysed using a simple rate technique. Respondents' responses indicate that a cashless economy will enhance our country's financial development, combat illegal intimidation, reduce money-related burglaries, and check dark cash and counterfeit currency. Digital extortion, a high rate of ignorance, people's personalities, and the lack of clarity and efficacy in digital payment systems are major obstacles that can disrupt the strategy's implementation. According to the inquiry, India's implementation of a cashless economy can be seen as a positive step. It contributes to the growth and progress of India's economy [4].

Jaiswal and Joge sought to clarify how wallet money is used and approved by various businesses, as well as the many elements that influence a consumer's choice to use a mobile wallet and the risks and difficulties that users encounter [5].

Rajat concentrated on "how these new digital payment systems affect customers and any issues they may have had." He allowed small sellers to increase their clientele by offering them the opportunity to display their goods on the website [6].

By integrating digital technologies into the public service ecosystem using information technology (IT), the Modi government launched the Digital India (DI) program in July 2015 with the goal of making India a digitally empowered society and preparing the nation to become a leading knowledge-based economy [7].

Puri concentrated on e-wallets, one of the most widely used digital payment systems. E-wallet usage among Indians has been on the rise due to the country's growing smartphone population and the improved internet connectivity provided by major mobile network telecoms operators. The study tries to examine the causes of the rise in e-wallet usage among Indian working women. E-Wallet is gradually but surely taking the lead among the various digital payment methods accessible to working Indian women [8].

Shukla has talked about the types, functions, benefits, and drawbacks of mobile wallets. Retailers' and consumers' perceptions of mobile wallets were part of his investigation. He concluded that digital firms and marketers will use mobile wallets to interact with customers. Marketers should seize the new chances regardless of the state of the market for these mobile wallets [9].

Tressa and Priya outlined the characteristics that a UPI system supported by blockchain technology should have in order to contribute to high security for all financial transactions and operations [10].

In order to determine user tendencies towards e-payment systems, Sabaawi *et al.* suggested an e-payment adoption model based on technology usage models [11].

TYPES OF DIGITAL PAYMENT OPTIONS

By selecting your chosen digital payment methods, such as the following, you can now efficiently complete transactions online:

Bank Cards

In the Bank Cards there are Debit Cards and Credit Cards that people are using in place of Cash for multiple reasons like convenience, safety and mobility etc. [12].

Unstructured Supplementary Service Data (USSD)

USSD is a Mobile Short Code. This feature is used for doing financial and banking transactions by mobile phone. With the use of USSD, a customer can check the balance of their account, send money, make fund transfer, generate bank statement etc. Customers have to dial *99# code to use USSD services without internet [12].

Aadhaar Enabled Payment System (AEPS)

AEPS is a bank load Model; with this feature, a customer can do online transactions like check bank balance, deposit cash, withdraw cash, send remittance and other transactions. For usage of AEPS, Aadhaar card number and finger print is necessary. With the usage of India post payment service of bank, a customer can get cash on hand without going to Bank or ATM machine.

United Payments Interface (UPI)

UPI is a mobile banking system in which with the help of different payment options a customer can transfer the money any time anywhere. Due to UPI, the need for cash is becoming lower. To do UPI transaction, UPI ID, UPI pin and QR code are necessary. The UPI pin is a 6-digit code or 4-digit code with special numerical combination.

Mobile Wallets

A Mobile wallet is digital system that stores credit or debit cards' information on a mobile device, such as a smartphone, tablet etc. It allows users to store, send and receive funds and to make purchases online and in those stores that accept mobile wallet.

Internet Banking

The Internet is used to complete all bank transactions. To use this kind of service, there are E-corner or E-gallery services available at the bank. In this kind of transaction, bank gives Unique Code (Password) to their customers. There are two kinds of transaction which take place in the Internet banking: (1) Financial Transaction, and (2) Non-Financial Transaction.

Mobile Banking

Mobile banking is a kind of service in which a person can do all kinds of banking transactions without visiting the bank with the help of electronic gadgets like Mobile phone or Smart phone which have internet connection. In this service, transactions take place like check balance available in account, pay electricity bill, telephone bills, gas bills, different kinds of taxes and another payments.

EVALUATION OF DIGITAL PAYMENT OPTIONS

A number of factors, including regulatory actions, technology improvements, and shifting consumer behaviour, have contributed to the rapid growth of digital payments in India. Here are some evaluations of digital payments in India:

Growth

Digital payment transactions varying from months to months for 6 months are analysed and shown in the provided Table 1 and Figure 1.

Benefits

Digital payments have helped people access their bank accounts digitally, which has increased financial inclusion and reduced the cost and time of traveling to a bank branch. Digital payments have also helped businesses by reducing the time and cost of paying employees and processing payments for permits.

Challenges

However, there are still challenges to digital payments, such as the need for businesses and employees to have bank accounts, digital devices, and a reliable technology infrastructure.

Government Initiatives

The government has taken several initiatives to promote digital payments, including the DigiDhan Mission, which sets targets for banks to increase digital payments, expanded the payment infrastructure, and developed new digital payment modes.

International Recognition

India's use of digital payments to directly transfer benefits to citizens has been recognized internationally. For example, the World Bank praised India's DBT program during the pandemic.

FASTER UPI ADOPTION IN INDIA

UPI Transactions in volume and value in Year 2023–24 have been discussed in Table 2.

DIGITAL OR E-COMMERCE GROWTH

In India, there are multiple banks linked to top digital payment systems in India as shown in Table 3.

Table 1. Month on month digital payment transactions.

Volume	Apr' 2024	May' 2024	Jun' 2024	Jul' 2024	Aug' 2024	Sep' 2024
Volume (crore)	1,684	1,764	1,738	1,783	1,768	1,767
Volume (lakh crore)	238	476	243	443	287	251

Source: <https://financialservices.gov.in/beta/en/page/growth-various-modes-digital-payment>
<https://www.indiabudget.gov.in/economicsurvey/doc/echapter.pdf> <https://indiabudget.gov.in>

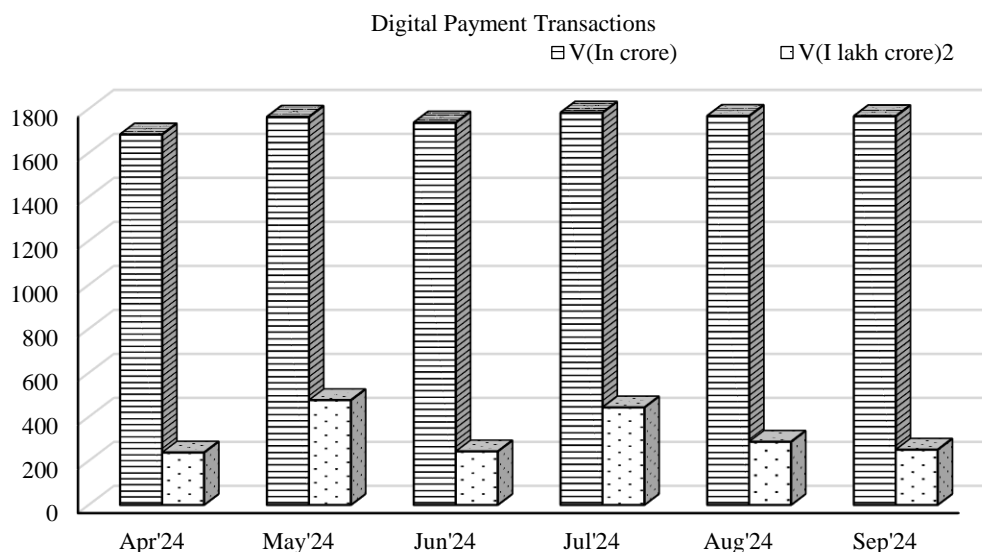


Figure 1. Month on month digital payment transactions.

Table 2. UPI transactions in volume and value in FY 2023–24.

Sl. No.	FY 2023–24	No. of Banks live on UPI	UPI Transactions Volume (Cr)	UPI Transactions Value (Rs. Lakh Cr.)
1	April 2023	414	890	14.07
2	May 2023	445	942	14.89
3	June 2023	458	934	14.75
4	July 2023	473	996	15.34
5	August 2023	484	1058	15.77
6	September 2023	492	1056	15.79
7	October 2023	505	1140	17.16
8	November 2023	516	1123	17.40
9	December 2023	522	1202	18.23
10	January 2024	550	1220	18.41
11	February 2024	560	1210	18.28
12	March 2024	572	1344	19.78
	Total		13,115	199.87

Source: National Payments Corporation of India (NPCI), Government of India, Delhi Accessed on 14 June 2024.

Table 3. Banks linked to Top Digital Payment Systems in India as of May 2024.

S. No.	Payment System	Number of Banks Linked
1	Unified Payments Interface (UPI)	598
2	RuPay	1254
3	Immediate Payment Service (IMPS)	871
4	National Automated Clearing House (NACH)	1360
5	National Financial Switch (NFA)	1304
6	Aadhaar Enabled Payment Systems (AePS)	149
7	National Electronic Toll Collection (NETC)	38

Source: National Payments Corporation of India (NPCI), Accessed on 6 June, 2024.

CONCLUSION

The way that individuals and companies conduct financial transactions has been revolutionised by digital payment systems. They provide fast, secure, and convenient alternatives to traditional cash-based methods. By embracing systems like UPI, mobile wallets, and blockchain-based payments, individuals and organizations are experiencing increased accessibility and financial inclusion. These advancements are also fostering economic growth and enabling more efficient payment processes in both urban and rural areas.

Notwithstanding their advantages, digital payments have drawbacks, including infrastructure constraints, security threats, and the requirement that customers be digitally literate. Government initiatives like the DigiDhan Mission and international recognition for India's efforts highlight the country's progress in creating a robust digital payment ecosystem.

The evaluation of various payment methods shows that technologies like NFC, QR codes, and biometric authentication are shaping the future of transactions. With continued innovation and collaborative efforts to address existing barriers, digital payment systems have the potential to further enhance financial inclusion, boost the economy, and redefine how we engage with money in our everyday lives.

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