

CHAPTER

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Growth and Challenges of Unified Payment Interface

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Abstract

The Unified Payment Interface(UPI) is a simple smartphone Interface app which is emerged as the most transformative digital payment innovations, enabling seamless, realtime fund transfers without any bank details. It is launched by the National Payment Corporation of India (NPCI) in the year 2016. It shows the massive growth not only in value of the transactions but also the volume of transactions over a period of 9 years due its enriched features like convenience, interoperability, security and user friendly interface.. The study focus on the understanding the theroetical concept of UPI, it highlights the growth and milestone of UPI and examine the major challenges faced by the user while using it. Even though its success at the peak level it face the issues relating the the technical failure, security, digital literacy gap, revenue sustainability and regulatory limitations. The paper utilised the secondary data from the NPCI and RBI websites and other published sources. The finding emphasis that there is need for the rebust infrastucture, enhanced fraud preventions and greater digital awareness to ensure the UPI's continue growth and contribution to the digital economy of India.

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Introduction

In the year 2016 National Payment Corporation of India launched Unified Payment Interface(UPI) which changed the scenario of the digital payment ecosystem by providing the instant, seamless and interoperable financial transactions through the mobile applications. Over the past few years UPI become one of the most preferable mode of payment as it allows the user to integrate multiple bank accounts to a single platform. Efficiency of UPI can be measure through the speed, reliability, accessibility and security. User experience can be judge based on the factors like ease of use, convenient, benefits, rewards, grivances and redressal mechanism which influence the user towards the usage of UPI apps.

Secured, quickest and interoperable features of UPI has transformed the digital payment landscape in India. There is a rapid growth in the usage of UPI platform in rural and urban areas of the country.

Year	No. of Banks	Volume (in mn.)	Value (in cr.)
March 2017	44	6.37	2,425.14
March 2018	91	178.05	24,172.60
March 2019	142	799.54	1,33,460.72
March 2020	148	1,246.84	2,06,462.31
March 2021	216	2,731.68	5,04,886.44
March 2022	314	5,405.65	9,60,581.66
March 2023	399	8,685.30	14,10,443.01
March 2024	572	13,440.00	19,78,353.23
March 2025	661	18,301.51	24,77,221.61

Source: <https://www.npci.org.in/product/upi/product-statistics>

The above table shows that there is a significant growth in the Unified Payment Interface over a period of 9 years from March 2017 to March 2025. This growth indicates that there is increase in the adoption of these UPI by the users and banks. The number of banks involved in the UPI was 44 in the year March 2017 it raised to 661 member banks in the year March 2025. This indicates that there is wide acceptance of UPI across

the banking sector. There is a massive growth in the volume of UPI transactions from 6.37 million in the year March 2017 to 18,301.51 million in the year March 2025. There is not only increase in the volume of transactions of UPI but also the value of transactions are also increased from 2,425.14 crore in March 2017 to 24,77,221.61 crores in the year March 2025

Inspite of wide acceptance and usage of UPI still there is a lot challenges are facing in technical & operational area, Fraud and Security issues, business and financial area, Societal and Demographic issues, Regulatory and Policy issues. The study focused on the Growth and Challenges of UPI.

Review of Literature

P. Satishkumar (2018) “ A Study on growth of UPI in Digital empowerment.” In this research article researcher highlighted that Unified Payment Interface, a new age payment system introduced in India by NPCI. It is a mobile centric real time interbank payment system to transform digital payment in India. The main objective this paper was to analyse the growth and trend of UPI transactions and also to compare the UPI system with other payment system. The study completely based on secondary data collected from NPCI and RBI websites. For analysing the data descriptive statistics has been used. The conclusion of this research paper was UPI apps are very simple and easy to used compared to other digital payment system. And also these UPI are having more incremental growth in the future.

Mahesh A and Ganesh Bhat (2021) studied about the “Digital Payment Services in India- A case study of Unified Payment Interface.” The researcher focused on UPI Growth system and assessed the UPI position in digital payment system also studied on progression of UPI in retail digital payments and finally did the SWOT analysis about UPI system. The conclusion of the paper was Users are benefited from the convenience and speed of digital transactions through UPI. Because it is easier to access via smartphone than other digital payment options, it is gaining in popularity, especially in the retail payment industry

Jayaram Narayan (2022) “ A study on growth of UPI apps in India after Covid outbreaks.” The major objective of this paper was to study the growth of UPI due to covid pandemic and also

to know the challenges faced by UPI. The study completely based on secondary data. The conclusion of the paper was in India the growth of UPI after covid outbreak is contributing to digitalisation and payment system recorded 2 billion transactions in a month.

Satindu Bal Gupta, Rajkumar Yadav and Shivani (2020) “ A study of growing popularity of payment apps in India.” In this research paper researcher made an attempt to study the reasons for increasing the popularity of UPI payments apps among the respondents. The researcher focused on three popular apps such as Google pay, PhonePay and Paytm. Among all these three apps Google pay is gaining a lot of popularity among the respondents because of its specified features.

Objectives

1. To understand the theoretical concept of Unified Payment interface.
2. To analyse the growth of Unified Payment Interface.
3. To examine the Challenges faced while using the Unified Payment Interface.
4. To provide some valuable suggestions to overcome the challenges of Unified Payment Interface.

Methodology

The present study is based on the Descriptive and Analytical Research Methodology which focuses on the analysing the growth and challenges of UPI. For the study data has been gathered from secondary sources from NPCI and RBI official websites and from various published sources.

Theoretical Framework of UPI

UPI system was developed by National Payment Corporation of India. It facilitate the customer real time transfer of money between two bank accounts using the smartphone. UPI is the single mobile app which allows the users to send or receive the money and pay all the kinds of bills instantly.

In UPI mode of payment no need to enter the bank information for every transactions easily users can make the payment

through QR codes, Virtual Payment Addresses(VPAs) or with registered UPI mobile numbers.

Features of UPI

Introduction of UPI has transferred the payment landscape in India by taking it to the cash less economy. Now a days UPI become very popular and user friendly because of its unique and wide range of features. Some of the key features are as follows:

1. **Instant Transfer:** UPI allows the user 24/7 fast transfer of money to any bank account at any time.
2. **Single app:** Users can use only one single UPI app and can add mutple bank accounts and easily process their financial transactions.
3. **Multiple Payment Methods:** Users of UPI can send the money using the mobile number, Virtual Payment Address (VPA), QR code and even we can directly transfer from one bank account to another by entering the bank details.
4. **Recurring payment:** In UPI apps user can set up the autopay for recurring payments like utility bills.
5. **Security:** Every transactions on UPI are secured through two factor authentication which gives a high level of security to the users in their financial transactions

UPI system involved few simple steps in order to process the financial transactions.

Step 1- User Registration

In the first step user should download UPI apps from playstore in their smartphones. After the installation user need to add their single or multiple bank account to create unique Virtual Payment Address which ultimately serve as UPI Id.

Step 2- Initiating a transactions

When a user want to process the payment they can do by using the payee's VPA, scanning QR code or entering the UPI Ids.

Step 3- Authentication

User of UPI must enter their UPI pin which had created during the registration. This steps authorises and approve the transactions.

Step 4- Transaction Processing

Once the UPI Pin has been entered the UPI app send the payment request to the server. The server verifies the request and process it with the sender bank and recipient bank.

Step 5- Confirmation

Once the bank confirm the transactions the user receive the instant notification about the success or failure of the payment.

Step 6- Settlement

In UPI system within a short span of time funds are settled between the banks and immediately the transactions are reflected in their accounts

In India UPI had widely accepted due to its efficient, secure and convenient method.

Milestones of UPI

- National Payment Corporation of India (NPCI) lauched the Unified Payment Interface (UPI) in the year 2016 in association with the Reserve Bank of India and Indian Bank Association in order to facilitate the real time transfer of money between two bank accoounts using a smartphone.
- In the year 2017 first UPI transactions was initiated as banks and merchant have started accepting the new payment system.
- In the year 2018 UPI started gaining its popularity amount the Users which lead to the significant growth in the value and volume of UPI transactions.
- During the year 2019 NPCI announced UPI 2.0 which enhanced the features of UPI. It improved the security measures, one time mandate and focused on preventing the frauds.
- In the year 2020 in order to make the payment of utility bills Bharat Bill Payment System was integrated with UPI 2.0 Covid 19 pandemic forced the people to adopt the UPI apps for their digital payments.
- During the year 2021 NPCI enhanced the security of UPI transactions by incorporating biometric authentication such as finger print, scan. Here to enhance the convenience and

flexibility in transactions UPI 2.0 initiated the scheduled payment system.

- In 2022 UPI allows the aadhar integration which permit the user for seamless financial transactions by linking aadhar number to the bank account. In order to facilitate the low value transactions NPCI launched the UPI lite to deal the small amount of transactions.
- In the year 2023 we could find the expansion of UPI transactions the different section including the commere and retail. To enhance the security level two factor authentication such as OTP was initiated.
- In the year 2024 UPI reset the maximum limit for the transaction upto Rs. 1,00,000 The UPI ATM was launched to allow the user to withdraw the cash from ATM using the QR codes. Recently UPI introduced the contactless payment. UPI lite has been used for low value payment without using the internet

Challenges Faced by UPI

As UPI secured the massive success in its journey, but still a lot of challenges are crucial which are hurdles for UPI to continue its growth and maintain their user trust. They are broadly categorised into the following areas:

1. Technical and Operational Challenges

- Lot of time there is a common problem in UPI Platform is transaction failure and server issues to the many reasons like overload of server during the peak hours of a day, poor internet connectivity from user end, sometime technical issues in the bank's or problems in backend systems of UPI apps.
- When transaction fails usually user account is debited and it takes some hours or even day to refund their amount which creates the frustrations among the users.
- The volume of UPI transactions has grown drastically. The infrastucture of banks and NPCI must upgrade themselves to handle this scale of transactions without compromising with the speed and reliability

- As UPI is interoperability some banks have specific issues with the certain UPI apps which may lead to transactions failures.

2. Security and Fraud

- Cybersecurity is the another biggest challenge in UPI platform. Scams like phishing, where the criminals send some fake links to force the users to share their UPI PIN or other sensitive financial informations.
- There is the lack of digital literacy among some users which makes the work of Fraudsters easy to exploit the user sensitive informations.
- The NPCI has a very slow dispute redressal mechanism to resolve the fraudulent issues.

3. Business and Financial Challenges

- As the UPI transactions are at a free cost or with very low transaction cost its very difficult for banks and Payment Service Providers to generate the revenue and to invest money in improving the UPI infrastructure and User experience.
- The main aim of NPCI is to regulate the market and ensure the fair competition but actual in UPI eco system only few large players like Phonepe and Google pay have significant market share.
- There is a transaction limitations in the UPI Platform which is the barrier for high value payment to those businesses and individuals who wants to make a large payment of money.

4. Societal and Demographic Challenges

- Due to poor internet connectivity, lack of smartphone usage and low digital literacy is the greatest challenge faced by UPI in rural and semi-urban areas.
- Some portion of the populations are have cash centric behaviour as still they believe and prefer of using cash for their daily transactions

5. Regulatory and Policy Challenges

- UPI platform coming with the new features like credit on UPI and cross border payments but there is lack of

regulatory framework to manage these risks and also to ensure the protection to the consumers.

- As the volume of digital transactions are increasing on the UPI platform the issue of data privacy and protection of user informations are also becoming challenging.

Suggestions to Overcome the Challenges of UPI

- UPI should focus on its Grievance Redressal Mechanism by implimenting the Fast Track Unified Dispute and Issue Resolution(UDIR). The Mechansim should provide the 24/7 helpline services in the languages to build the trust among the users.
- Government should take some intitutive on arranging the digital literacy campaigns all over the country. It should expand and stabilize the high speed internet and power infrastructure in the rual and semi urban areas of the country.
- There is a need to develop the balanced and sustainable revenue model for the banks and Payment Service Providers (PSPs).
- It is essential to take some advanced security measures such as biometric authentication and multi factor authentication in order to strengthen the cybersecurity.
- UPI should give some simple and clarity in the regulatory enviroment to cover the emerging services like credit on UPI and Cross border transactions.

Conclusion

The Unified Payment Interface (UPI) has transformed India's digital payment ecosystem by offering a fast, secure, and highly convenient platform for real-time transactions. Its rapid growth from limited adoption in 2016 to becoming the most widely used payment mode by 2025 highlights its scalability, user-friendliness, and strong technological foundation. Despite this progress, UPI continues to face challenges such as technical issues, transaction failures, fraud risks, limited digital literacy, and regulatory constraints. Addressing these concerns through stronger infrastructure, enhanced security measures, improved customer support, and inclusive digital awareness programmes

will further strengthen UPI's reliability and ensure its sustainable growth. Overall, UPI remains a revolutionary step toward a fully digital, cashless economy in India.

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