# UPI- Redefining Digital Payments - A Critical Review

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**Abstract Digital payments are expected to take over the global landscape scenario in the same manner in which internet and telephones have dominated the traditional communication domain. The digital payments industry in India is indispensable since India is home to a rich minority and a poor majority and this level of inequality in income earning and standard of living is unparalleled anywhere else in the world (except of South Africa). In efforts of prepping for this paper, it was found that, without a doubt, UPI is one of the most advanced, innovative and financially inclusive payment system in the world. Unified Payments Interface is an instant real-time payment system developed by National Payments Corporation of India facilitating inter-bank transactions. The interface is regulated by the Reserve Bank of India and works by instantly transferring funds between two bank accounts on a mobile platform.**

**Keywords – UPI Payment, Digital payment, Financial domain.**

## I. INTRODUCTION

India was predominantly a cash economy with 98% of all its economic transactions done in cash (Business Today, 2016). The demonetisation exercise of November, 2016 acted as a catalyst to adoption of digital payments. Demonetisation accelerated electronic transactions and the digital payments industry in India. Demonetisation was seen by many as the next giant economic reform that would lay the path for a digital economy in the country.

As expected, post demonetisation electronic transactions and digital payments gained popularity. Besides demonetisation, government initiative's like Aadhar and Prime Minister's Jan-DhanYojana turned out to be instrumental in increasing electronic transactions. Aadhar provided every citizen with permanent, secure and unique digital identity based on biometrics and demographic data. Prime Minister's Jan-DhanYojana provided improved access to financial and banking services which aimed at increasing financial inclusion in the country.   Mobile penetration surged in all parts of the country which turned out to be advantageous for the outreach of online payments. The government had linked these three together forming a bedrock for the nation that turned out to be the base upon which the government had built preliminary infrastructure for its very popular move Digital India. Following afterwards, National Payments Corporation of India (NPCI) on 25 Aug 2016 launched Unified Payments Interface (UPI) that proved to be the most advanced payments system in the history of digital payments in India. Unified Payments Interface (UPI) is a system that powers multiple bank accounts into a single mobile application (of any participating bank), merging several banking features,

seamless fund routing and merchant payments into one hood. It also caters to the "Peer to Peer" collect request which can be scheduled and paid as per requirement and convenience. Each bank provides its own UPI App for Android, Windows and iOS mobile platforms.

## II. RESEARCH METHODOLOGY

The current study uses explorative approach to understand, discuss and bring out the issue relevant to the title. Statistics extracted from government websites like RBI and NPCI were used.Articles from The Economic Times, Medium,Business Standard and information from e-journals turned out to be extremely informative for the purpose of the study.

## III. LITERATURE REVIEW

(Surabhi Agarwal,2018), The government feels that incentives through the merchants could drive the usage higher than just peer to peer payments. Incentives offered in the scheme include □51 cashback on a minimum transaction value of just □1 for the first time users and □25 cashback per transactions for 20 unique transactions in a month,forconsumers,while merchants could receive cashback of up to 10% of a transaction and upto□1000 per month.

(Salil Panchal and Manu Balachandran, 2018),UPI's success is a proof that India is moving mountains to usher in a less-cash economy. But the scope of BHIM must be widened.BHIM should add more categories to the payment application for user engagement.UPI is the "Refined and Finished" product of IMPS and it is forecasted that at some

stage, it could get merged with the NEFT system, operated under RBI guidelines.

(Sasi Desai, NipunJasuja and Piyush Khandekar,2017), UPI leads to a unified, secure, "form independent", and inexpensive user interface for payments. Before UPI, the only payments system that exhibited this behavior was cold, hard cash. And in a society where 95% of transaction are still based on cash, digital cash will be adopted only if it provides the same level of comfort. UPI takes status quo rails, status quo infrastructure and binds them all together. Such an interoperable system lays the foundation for the conversion of physical cash to digital cash at will, making the need for physical cash obsolete. UPI has the potential to completely transform the face of the nation.

(Roshna Thomas and Dr. Abhijeet Chatterjee,2017), UPI is indeed a revolution in the Indian economy. However it's success depends on various factors. Financial inclusion or access to banking services is a prerequisite for growth of UPI which is being facilitated by PMJDY and the increasing smartphone penetration. The ability of banks to capitalize on customer faith, effectively promoting UPI and facing competition from mobile wallets will also be the deciding factors. If the banks fail to develop an effective front end platform then UPI could fail.

(ShrutiArcot Kesavan,2018), With the coming up of UPI 2.0 on August 16,2018 more number of merchant transactions will happen which were hitherto restricted mainly to peer-to-peer(P2P). UPI transactions are expected to account for 50% of digital transactions by March, 2023. It is expected to grow at 90% per annum over the next 5 years to $400-450 Billion a year.

## IV.    FEATURES

- Immediate money transfer through mobile devices 24*7 and 365 days.
- A unique virtual payment address (VPA) is created by the user for transacting money and no other bank detail is required. In order to create VPA a globally unique mobile number/Aadhar card/Email ID is required.
- It is not necessary that you use the UPI app offered by your bank. For instance, though you have an ICICI bank account, you can still use The HDFC UPI Bank app and it can even link your other various bank accounts with it.
- UPI can be used for both pull and push function. Under Pull Function a money collection request can be sent by the payee to the payer using the UPI app.
- Payment through UPI has been designed for both online and offline purchases as well as cash on delivery.

## V.    FEATURES OF UPI 2.0

- One Time Mandate- Customers can pre-authorise their future transactions. This will provide assurance to the merchants as they would be able to block the specified amount in their customer's account while the debit will take place on a future date.
- Linking of overdraft account- Now in addition to current and savings account, users (i.e. merchants) can also link their overdraft accounts with UPI and enjoy all the benefits associated with it.
- Signed intent and QR code- In order to prevent tampered QR and non-verified entities, additional security in the form of signed intent and verified QR has been added. Users will be notified with information to ascertain that whether the merchant is a verified UPI merchant or not. Also app passcode will not be required in case of signed intent.
- Invoice in the inbox- In case of verified merchants; customer will be able to check the invoice sent by the merchant via a link and thereby verify the details of the transaction prior to making the payment.

## VI.    WHY IS UPI A GAME CHANGER?

- UPI, the innovation in the current payments system in India is revolutionary as it is one of the most advanced, innovative and financially inclusive platform in the world. UPI has addressed the 5C's that underpinned the vision for payments in India; Coverage, Convenience, Confidence, Cost and Convergence. In the other forms of payments, some of these posed a daunting challenge for the service providers, especially Convergence. There was absolutely no Interoperability as far as the other digital payment systems are concerned. The biggest problem with the existing Wallet systems is that the payer and payee on different Wallets cannot transact seamlessly. Hence, UPI was born with one of the sole purposes of enabling interoperability. UPI Interoperability ensures that both parties can use different payment service providers.
- Confidence in the existing digital payments system is not absolute. Security is a concern at each step of the transaction initiated through banks to transmit and authenticate sender's identity as well as that of the receiver. But in UPI each of these payment systems have to meet a strict sender authenticity and receiver identification requirements. UPI standardises the two factor authentication process by leveraging the Aadhar infrastructure. The first factor is authenticated by the Payment Service Provider (PSP) using regular authentication credentials for the PSP which usually takes the form of possession (credit card or cell phone) or knowledge (login details). Since, only VPA is shared, all the sensitive data (pin, password, etc) and private data (Bank Account Number) of the beneficiary remains safe.

The second factor is authenticated by UPI itself which standardises the process and takes the burden away from PSPs. This secondary authentication is based on either biometrics collected by the PSP or Identity using a 4-6 digit numeric pin that is set up the first time the sender uses UPI.

- UPI has increased the Coverage of the Digital Payments sector massively making India move ahead towards a more cashless economy. India's 98% of the population earns below 2.5LPA.   With more electronic transactions; maintaining records of such transactions will be easier thereby making more people fall under the tax net; be it small merchants or professionals. On the other hand, banking system hasn't been successful for retail small ticket transactions as it requires bank details of the recipient and is thus time consuming. UPI has provided a unique solution to this problem with the introduction of VPA's (Virtual Payment Address- a unique ID generated at the time of registering with the UPI app).

- UPI is one of the most convenient modes of payment in existence today. The thinking behind UPI was to make the application as simple as possible. Doing away with all the inefficiencies of the existing infrastructure, it has made making payments as seamless as making calls. All you need to make payments is the VPA of the beneficiary. Also, in comparison to the existing payment methods, UPI is very cost effective as the processing charges are negligible and it provides a plethora of value added services that help people to integrate payments with other financial services (Inventory Management, Tax filling, etc).

- UPI also provides Pull function facility to all of its users. The current payment methods are push systems meaning hereby that you can only send money to another entity but cannot request money from them. UPI has now introduced an additional feature of sending money collection request to entities. A collect request is a transaction where the customer is pulling funds from the remitter by using a Virtual Payment Address.

- The real benefits of UPI lie in how these advantages stack and work together as a cohesive whole. UPI collapses the existing payments process into a more simplified, normalised, authentic, secure, cost-effective and interoperable mechanism.

### 1. UPI vs IMPS

| Basis | UPI | IMPS |
|---|---|---|
| Meaning | **Unified payment Interface** is a payment system that allows money transfer between any two bank accounts by using a smartphone. | **Interbank Mobile Payment Service (IMPS)** is an instant real-time inter-bank electronic funds transfer system. |
| Platform | It is possible through banking as well as payments bank applications. | It is possible only through banking applications. |
| Charges | Most banks don't charge a transaction fee for UPI transactions. | A set fee is levied depending on the amount of money to be transferred. |
| Requirements | Only a Virtual Payment address is required. | Name of account holder, Bank Name, Account Number, Bank branch & IFSC code are required. |
| Security | It is safe as only a VPA is shared (No bank details are shared). | It isn't safe as  sensitive data (Name of account holder, Account Number) is shared. |
| Collection Request | A collection request can be sent to the person who owes money, through the app and one can also set the deadline within which the money has to be paid. | Collection request can't be sent through the IMPS platform. |
| Transaction Limit | UPI has a limit on transactions of maximum  Rs1,00,000 per day | The transaction limit for IMPS differs from bank to bank. Most of the banks have set it to Rs2,00,000  per day. |

### 2. UPI vs Mobile Wallets

| Basis | UPI | Mobile Wallets |
|---|---|---|
| Meaning | **UnifiedPayments Interface (UPI)** is a payment system which facilitates the instant fund transfer between two bank accounts on the mobile platform. | A **mobile wallet** is a type of payment service through which businesses and individuals can receive and send money via mobile devices. |
| Source | Money stays in the bank account along with its benefits such as interest. | Money is to be transferred from bank account to wallet on which interest is not provided. |
| Interoperability | Money can be sent to or received through any UPI ID (VPA). | Money can be sent to or received through same wallets only. |

| Intermediary | UPI involves direct bank to bank money transfer of money. | Wallets act as an intermediary between two bank accounts as funds are transferred in wallets from bank accounts. |
|---|---|---|
| Controlling/ Managing Body | It is an initiative by NPCI& controlled by RBI. | It is privately owned but regulated by RBI. |
| Collection Request | A collection request can be sent to the person who owes money through the app and one can also set the deadline within which the money has to be paid. | Collection request can't be sent through Mobile wallets. |
| Transaction Limit | UPI has a limit on transactions of maximum ▢ 1,00,000 per day. | Wallets have a storage limit of ▢10,000 (For non KYC customer). |

## STEPS IN UPI

I. **Download and install the app**: Users can download the UPI app of their respective banks from the Play Store or the App Store. All you need is an account with one of the banks which has already launched its UPI app and a mobile phone.

II. **Set login and create virtual address**: Launch the app after installation and create the login id and your virtual address. UPI steps in to simplify the process. It plays the role of a central registry and allows complicated account information to be converted into a simple address.

III. **Add your bank accounts**: While banks have and will launch their separate UPI apps, they are interoperable. This means that you can add multiple bank accounts to a single bank's UPI app.

IV. **Set your M-pin**: As with conventional banking apps, set a unique M-pin to start transacting.

V. **Start transacting**: With above formalities cleared, step into the UPI future.



Figure 1 (Business Standard)

## VII. CHALLENGES FOR UPI

- Although smartphone penetration in India has increased enormously over the years, there are many problems still prevalent like lack of connectivity, infrastructure and literacy. This poses a daunting challenge in the acceptance of UPI in the semi-urban as well as the rural areas of the country.

- The four party model of UPI where the customer of one bank is at the liberty to use the application of another bank creates a gap and a quandary in case of failure of transaction and makes grievance redressal confusing as the customer does not know which bank to approach to.

If he goes to his own bank, the bank official might not be able to help him as they would have no record of the transaction.

- Another challenge the UPI faces isin framing its interface. Online systems are prone to competence issues, infringement of security, wrong billing which in turn enables the customers to shift among various service providers.

- UPI requires mobile number which is connected to bank account but most of the times still in rural areas there is no link between mobile and bank account

- Presently, UPI limit is Rs1,00,000. People wanting to make bigger payments still need to use the conventional sources like NEFT, net banking, etc.

## VIII.  OPPORTUNITIES AND POTENTIAL

- Transaction limit of Rs 1,00,000 is a challenge for UPI. However, if this limit is increased by NPCI, UPI has enormous growth potential that will help big businessmen to make large payments thereby tapping a wider market.

- To ensure proper securityand convenience for the Customers, UPI can adopt Biometrics.As in Biometrics,The person is the key, so there's no need to remember the card details or UPI password. Each body part is unique and Biometrics uses a unique identity to enable a purchase or to transfer a specific amount. It encompasses Voice, Vein, Eye, Fingerprint, Facial recognition and more.

- Recurring payment is a muchanticipated feature of UPI which if launched will allow recurring payments like loan EMIs, mutual fund SIPs and other bill payments.

- Cash transactions impose a huge financial burden on an economy. The costs are particularly high in developing economies such as India, where only a minuscule proportion of transactions are carried out through digital platforms. According to a study by Visa (2016), the cost of cash transactions in India was equivalent to 1.7 per cent of the gross domestic product (GDP). Creating infrastructure where citizen to government transactions and all government related transactions such as procurements are executed through digital platforms would logically be the first step for reducing such cost. UPI holds enormous growth potential as Indian population is the second largest user of smartphone with 28.5% Smartphone penetration (NewZoo,2018). This increasing penetration of smartphone will work as a catalyst in reducing cost as well as adding to the potential UPI.

## IX.  CONCLUSION

UPI is till date the biggest revolution in the digital payments sector in India. During the previous financial year (2017-18), 915.23 million transactions worth 1098.32 billion occurred through UPI. During the first quarter of the financial year (2018-19), 625.93 million transactions worth 1011.44 billion occurred through UPI. The value of transactions last year is almost equal to the value of transactions that have occurred in the first quarter this year, which implies that UPI is being increasingly adopted by the masses and it is undeniably the game changer in the digital payments industry because of the level of convenience and low cost services that it provides. UPI will soon make smartphones the primary device for all payments and bring an enormous transformation in the digital payments sector.

With further improved and better smart phone penetration, there is huge potential of expansion for UPI in the country. The vision with which UPI was implemented across the country is finally progressing towards the reaping stage with UPI gradually ending the cash economy in our country which will lead to a much more transparent system.

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