

UPI (UNIFIED PAYMENT INTERFACE): AN ENABLER IN EXPANDING DIGITAL FINANCIAL STRENGTH**DR. SANJEEV KUMAR BANSAL**Associate Professor,
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Department of Commerce,
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The digitization of the payments in the country got a push by the launch of a payment system that allows a person to link multiple bank accounts into a single application on the mobile phone to transfer funds, make bill payments seamlessly and on 24*7 basis. This payment system is termed as UPI and it is launched by the NPCI (National Payments Corporation of India). The system is managed by the RBI since its launch on April 11, 2016. The launch of UPI has brought DIGITAL REVOLUTION in the payment systems in the country. Since its introduction it has grown tremendously from handling 17.86 million transactions in 2016-17 to 12,518 million in 2019-20.

The increasing growth in the volume and the value of the transactions highlights the increased acceptance of the UPI by the masses to perform their routine settlements of the funds.

The Research paper focuses on the detailed study of the concept of the UPI and its unique features that contributed in its increased acceptance by the residents of the country.

The Phases of the Introduction, Implementation and the Growth of UPI are discussed in detail in the research paper. The distinguishing features of UPI 2.0 are also highlighted in the paper.

The data is collected from the various sources to analyse the share of UPI in total digital transactions during the said period through the available digital modes of transacting. With the objective to have more clear understanding of the concept the latest updates in the year 2020 has also been highlighted.

Keywords: UPI, BHIM app, Digitalization, Digital Wallets, PSP (Payment Service Provider), Issuer, QR Codes, USSD 2.0.

INTRODUCTION

The concept of digitising the financial transactions is not new rather various efforts are being carried out since decades by RBI and financial institutions to encourage the masses to transact digitally. The launch of ATM Cards, Credits Cards, CTS clearing, Rtg, Neft etc. are among the various modes available for online transactions since many years but the adoption rate of these modes by the masses was very low especially among the rural households. One of the main reason that can be accounted for this low adoption is heavy reliance on hard/ physical cash.

This belief of the masses got a hit by the introduction of Demonetisation wherein the govt. banned the notes of the denominations of Rs 500 and Rs 1000. At that time people started looking for the available digital modes for transacting. As a result of which the transactions through the wallets increased tremendously.

The % of CIC to GDP has reached to 8.7% owing to the demonetisation, post demonetisation the

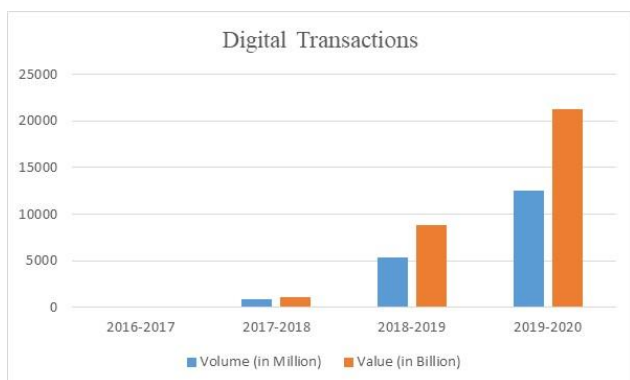
% although has increased but is still below the level of pre demonetisation indicating the increasing acceptance of digital modes of payments over the cash.

Although UPI was launched before the demonetisation but yet the transactions through UPI did not get a sudden hit and increased gradually with the passage of the time.

As on today UPI has become the most preferred mode of transacting digitally owing to its simplified process and quick registrations. Most of the Banks these days have launched their own UPI supporting apps for their customers and are registered on NPCI platform, such banks are termed as Payment Service Providers and few banks which relies on third party software for transacting UPI are known as Issuers.

The detailed study of the concept of the UPI brings insights into its unique features and growth of UPI in the Indian digital payment landscape. The volume and the value of the UPI transactions has been increased on the yearly basis as shown in the following table.

Year	Volume (in Million)	Value (in Billion)
2016-2017	18	69
2017-2018	915	1,098
2018-2019	5,353	8,770
2019-2020	12,519	21,317



OBJECTIVES OF THE STUDY:

- * To study the concept of UPI highlighting its unique features.
- * To study the Phases of the Introduction, Implementation and the Growth of UPI.
- * To throw light on the introduction of UPI 2.0.
- * Comparative study of the digital modes to study the share of UPI in the total Digital Financial Transactions.
- * Latest updates brought by NPCI in 2020 are also highlighted along with the RBI guidelines on Harmonization of Turnaround Time for the digital transactions.

RESEARCH METHODOLOGY

This is a conceptual paper. The study mainly includes literature review from secondary data. The secondary data includes reports of the RBI, NPCI and the banks and other related information published on bank and other internet websites. The data is collected from national and international journals, published government reports, Newspaper, websites.

Concept of UPI

The main features of UPI are:

- Immediate transfer of funds through the mobile phone (with or without internet)
- Round the clock facility.
- Integration of multiple bank accounts in one mobile application.
- Facilitates transfer of funds through any mode such as Mobile Number, VPA (Virtual Payment Address), Account no and IFSC

code, Scanning the QR code, Aadhar number (now discontinued)

- No human intervention facilitates frictionless/straight through transfer of funds.
- Covers all types of C2C, C2B and mostly B2B payments.
- Raise complaints over the phone itself.
- Supports all types of bill payments and Donations too.

The 2 important components of UPI are:

- a) **BHIM UPI:** BHIM stands for Bharat Interface for Money. It is an Indian app that facilitates instant transfer of funds through UPI. The app was developed by NPCI and was launched in 2016. The app is very simple to use and is available in 13 languages. The transfer of funds can be done on 24*7 basis. The prerequisite for using BHIM is a bank account number linked with the mobile phone, internet connection, debit card.
- b) **USSD:(Unstructured Supplementary Service Data)** In order to facilitate the transfer of funds and balance enquiry for the users which do not have the mobile phone and the internet connection, NPCI has launched USSD in 2012 which was later updated in 2016 and renamed as USSD 2.0 wherein the user can perform digital transactions by just dialing *99# from the registered mobile number. ATM cum Debit card is must for setting the UPI pin. The transfer of funds is instant and can be done by using MMID, Account number and IFSC code or Mobile number.

Phases of Introduction, Implementation and Growth of UPI in India

Keeping in mind the success of digital technologies in the foreign countries such as Vodafone M pesa in Kenya and to cater the growing needs of the Indian young population NPCI developed UPI and undertook a pilot launch with 21 member banks on 11 April ,2016. It was launched by Dr. Raghuram G Rajan, then Governor RBI, Mumbai. The banks have been advised to launch their UPI enabled apps in the google play store from 25 August, 2016.

Before launching of app the banks were required to fulfill certain conditions as circulated by NPCI from time to time. Some of the important guidelines that supported the launch and implementation of the UPI nationwide are:

On July 14,2016 NPCI issued guidelines to its member banks that before launching of their respective app to the general public they should open

up the app for their employees (at least 1000) so that the employees can well acquaint themselves about the process flow as well as can share any issue in the app to their internal IT team, so that the public should not face any problem in using the app.

On July 22, 2016 NPCI issued following guidelines regarding prerequisites for UPI public launch:

- UPI enablement for 1000 employees(customers)
- Confirmation to NPCI for 5000 plus successful transactions.
- Completion of third party audit.
- Call Centre Activation
- User manual /instructions to be displayed on the bank's website.

On August 02, 2016, keeping in mind the involvement of all the parties associated in the UPI transaction and the commission matrix of all the participants NPCI instructed the member banks to focus on the daily reconciliation of the transactions done.

On 12 August 2016, NPCI instructed the member banks to fulfill all the stipulations before launching the app to the general public and confirm it in writing to NPCI. The capacity of the respective app of the member banks as decided by NPCI is to process 150 transactions per second and 5 lakhs transactions per day.

On 25 August 2016, UPI was launched for the general public. The app can be downloaded from the play store.

On 6 September 2016, after the launch of UPI to the general public the security of the transactions was an important consideration therefore the NPCI instructed the member banks as follows:

- Creation of VPA (Virtual Payment Address)
The transfer of the funds in UPI takes place through VPA also which is somewhat similar to the email address of the customer for example 1234@abcbank. The customer has the option to use either name or mobile no in their VPA. In case the mobile no is to be used in VPA then the number should be same on which the SMS has been sent, for the authentication purpose.
- Setting up of Login password

The member banks have been advised by the NPCI to use OTP verification for resetting of the app login password. Some banks are providing the OTP over the mobile phones only but for the security purposes NPCI advised them to use mode other than mobile such as email for allowing resetting of login password or UPI pin.

Since its launch, the member banks shared their experiences with the NPCI along with the suggestions to enhance the usability of the UPI for the general public which were approved by the

steering committee from time to time. For example, changing of the term pin to UPI pin to remove any ambiguity, Using ATM pin as a second factor for authentication while on boarding of the customer due to security considerations, QR codes were allowed for Merchant acquisitions.

On 8 December 2016, keeping in view the increase in the usage of UPI supported apps the NPCI has revised benchmarking criteria from 150 transactions per second to 500 transactions per second and 5 lakhs transactions per day to 50 lakhs transactions per day.

On 30 December 2016, with an objective to give a push to the financial inclusion and formation of a digitally empowered economy, BHIM app developed by NPCI was inaugurated by the Prime Minister of India and all the member banks were permitted to use the name BHIM in their app name (example BHIM <ABC Bank>UPI) as well as its logo in order to take the advantage of the popularity of the government sponsored app.

USSD 2.0 was also launched on the same day for those customers who do not have a smart phone and internet facility. These customers can also perform balance enquiry and fund transfer by dialing *99# from the registered mobile number.

On April 14, 2017 to popularize the BHIM app the following 2 schemes were introduced for the initial six-month period to increase the usage of the digital payments through BHIM and USSD 2.0:

- Referral Bonus Scheme for the Individuals
- Cashback Scheme for the Merchants

On August 4, 2017, keeping in mind the increased customer complaints owing to the increased usage of the apps NPCI has issued PROCESS FLOW guidelines for the member banks so as to settle the customer complaints in the minimum time frame so that the trust of the customers remains in the system. NPCI has instructed its member banks to take a note that the high technical and business declines cannot be more than 1% for both existing as well as the new members.

On 11 October 2017, the various guidelines issued by NPCI provided freedom to the member banks to make changes in their respective apps based on the customer needs and demands such as APP login password, ATM pin optional for setting UPI pin.

On 1 November 2017, NPCI has imposed penalty of Rs 25 + GST on the member bank in case it fails to make arrangements for credit in the concerned accounts in case of the failed transactions. With the objective to create a robust mechanism for handling customer complaints the member banks are

required to acknowledge the complaints of the customers in a proper time frame and the SMS must be sent to the customer regarding its status.

On May 9 2018, owing to the increased usage of the UPI RBI has approved processing of the domestic leg of the foreign inward transaction through UPI as well along with NEFT and IMPS.

On June 11 2018, Bill payment facility has also been integrated with the BHIM app providing convenience to the customers to make payments over the mobile phone only.

On July 17 2018, the member banks were instructed by NPCI to remove Pay to AADHAR facility from their UPI enabled apps by 31 August 2018.

On August 14 2018, viewing the increasing use of UPI by the masses for performing financial transactions. On October 15 2018, NPCI has sought permission from RBI for crediting/debiting nonresident accounts in UPI and IMPS for domestic transactions to be performed in Indian rupees.

On February 8 ,2020 SEBI has approved UPI as a payment mode for applying for the public issues provided the application should be made through the customer’s own account number. In such cases PAN number will be used as an identifier for establishing the unique identity of the subscriber.

UPI 2.0

On August 14 2018, viewing the increasing use of UPI by the masses for performing financial transactions **UPI 2.0** was launched by NPCI with the following advanced features:

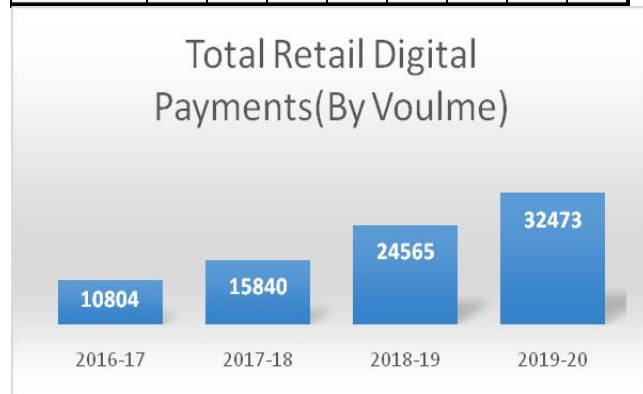
- One-time Mandate with Block Functionality wherein the customer can sign a digital mandate for authorizing the debit of a specific amount in the account to be performed later, whereas the amount is blocked instantly.
- Linking of overdraft account with UPI as a result along with saving and current account the customer can now link the overdraft account availed from the bank with his UPI and the bank should provide 2 balances in UPI Balance enquiry i.e. available and actual/ usable balances.
- Invoice in the inbox (View Attachment and Pay) authorizes the customer to verify the bill before making the payment.
- Signed QR /Intent with the objective to provide more security while making payments through QR codes NPCI instructed member banks to convert them (QR codes) by March 31,2019.
- UPI per transaction limit increased to 2 Lakhs for certain specific cases as permitted by the steering committee.

The introduction of the UPI 2.0 has led to the origination of the concept of USSD 2.0 and BHIM 2.0 with the advanced features such as increased support of different languages, validation of payments before making the final transaction, linking of overdraft accounts etc. with the objective of making them at par with the other available digital modes of transacting online. It results in increased acceptance of these digital modes by the customers and growth in the transactions done through these means.

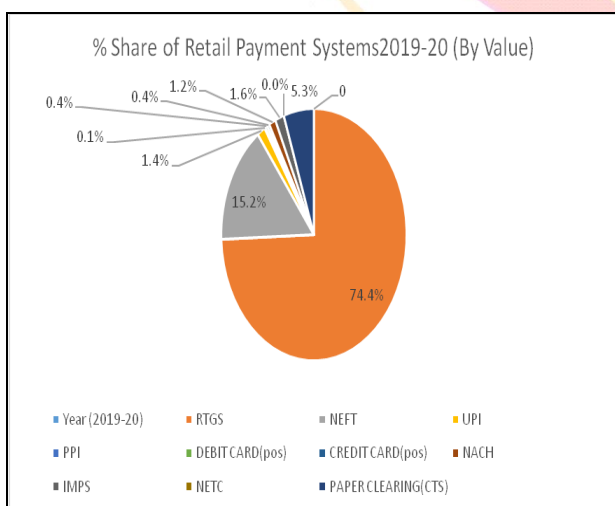
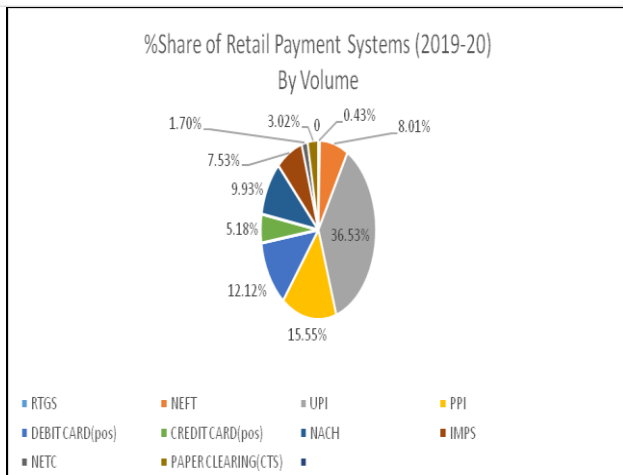
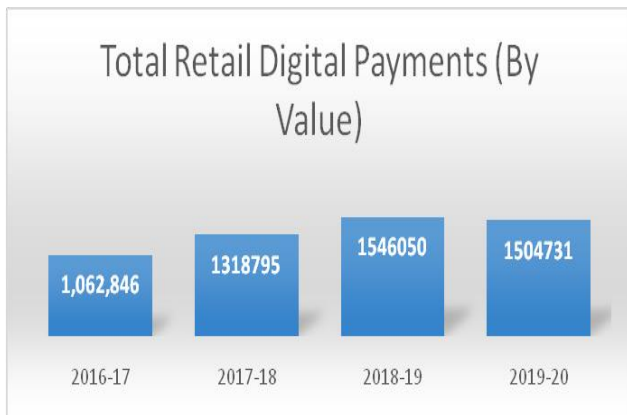
UPI share in total digital financial transactions.

Since its introduction in the digital payment landscape UPI has been slowly becoming the most preferred mode of digital payment when compared with other modes such as RTGS, NEFT, PPI, DEBIT CARD, CREDIT CARD etc. For the purpose of analysis data has been collected from the RBI MONTHLY BULLETIN and the statistics published by NPCI regarding the usage of the various retail digital payment modes over the period of 4 years from 2016-2017 to 2019-2020. The growth of various retail payment system indicators over the period can be highlighted from the following table and the charts:

YEAR	2016-17		2017-18		2018-19		2019-20	
	VOLUME(in Mn)	VALUE(in Bn)	VOULME(in Mn)	VALUE(in Bn)	VOLUME(in Mn)	VALUE(in Bn)	VOLUME(in Mn)	VALUE(in Bn)
RTGS	104	8,49,951	121	10,36,639	133	11,84,368	148	11,19,727
NEFT	1,622	1,20,040	1,946	1,72,229	2,318	2,27,936	2,745	2,29,456
UPI	18	69	915	1,098	5,353	8,770	12,519	21,317
PPI	1,964	838	3,459	1,416	4,604	2,129	5,330	2,151
DEBIT CARD(AT POS)	2,399	3,299	3,343	4,601	4,414	5,934	4,155	5,912
CREDIT CARD(AT POS)	1,087	3,284	1,405	4,590	1,762	6,034	1,777	5,875
NACH	1,968	7,208	2,375	9,753	2,861	13,384	3,402	17,630
IMPS	507	4,116	1,010	8,925	1,753	15,903	2,579	23,375
NETC	24	7	127	33	254	57	583	113
PAPER CLEARING(CTS)	1,112	74,035	1,138	79,451	1,112	81,536	1,036	79,175
TOTAL	10,804	10,62,846	15,840	13,18,795	24,565	15,46,050	34,273	15,04,731



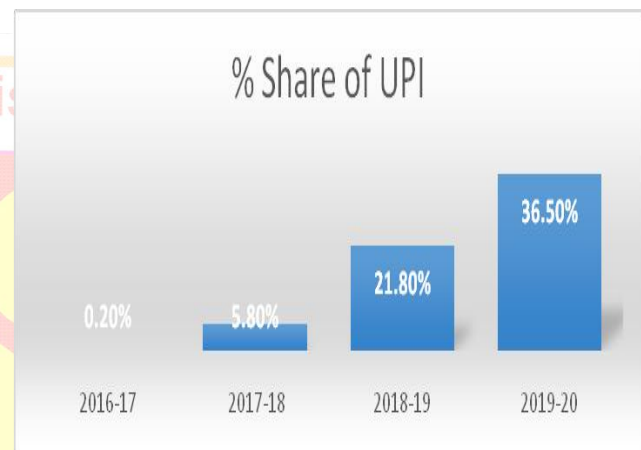
The total retail digital payments have although increased in volume in all the four years' period but the value of the transactions has decreased in 2019-20 as compared to 2018-19



As far as volume is concerned the share of UPI is highest among all the available modes but the when compared on the basis of value the % share of RTGS is highest. Thus UPI is preferred for small value transactions and can contribute in digitizing the large volume, small value transactions of the rural

households. The % increase in the share of UPI transactions in the above mentioned period is highlighted through the following chart and graph:

YEAR	% Share of UPI (By Volume)
2016-17	0.2%
2017-18	5.8%
2018-19	21.8%
2019-20	36.5%



The above chart highlights the following:

- During the initial period of its launch UPI was not accepted as a preferred mode of transacting digitally although demonetization was done by the government and there was shortage of cash during the period. Various reasons can be accounted for the same, the important one is lack of awareness among the masses about the benefits of the UPI.
- The % share was also low in the next year which forced NPCI and UPI to come up with advanced features in the form of UPI 2.0 and focused on increased convenience to the users.
- As a result, the % share increased in the next years to 21.8% and 36.5% in the year ending 2019 and 2020 respectively.

UPI Awareness Campaign by NPCI.

In order to create awareness among the masses regarding the benefits of using UPI for their daily requirements NPCI has launched **UPI Chalega** Campaign highlighting how UPI can be used for daily transactions such as for Payment of Bills, for shopping, at fuel stations, at grocery shops etc. It is aimed at bringing a change in the habit of using cash for the routine transactions by highlighting that UPI is easy, safe and secure medium of transacting online.

The campaign is launched on all the media channels like television, radio, newspaper to reach the masses. The funny character of Mrs. Rao used in the campaign motivates people for using UPI every time when they take out the wallet to pay cash using the tagline *‘Batwekejagah mobile nikalo; len den kinaiadatdalo’*. The campaign encourages the attention of the users towards the **UPI CHALEGA.com** microsite wherein various videos and messages on how to use UPI for the daily transactions are provided for the masses with the focus on creating awareness of using it safely and not sharing of PIN and personal details. The aim of 360-degree campaign is to reduce the cash usage and encourage the masses to go Digital while performing their routine activities.

Latest updates in UPI (in 2020)

Some of the important updates that are to be made in the coming year 2020 for enhancing the usability of UPI (as examined and recommended by the various committed from time to time) are:

➤ **Allowed cash withdrawal from merchants at some outlets using UPI.**

In line of the RBI directives to the banks in 2009 that has permitted withdrawal of cash at merchant POS devices using debit cards or prepaid cards, NPCI has instructed the member banks to provide cash withdrawal facility at certain merchant points using the UPI.

This service will be available from **1 JUNE 2020** and the maximum amount capped is Rs 1000 per day in Tier 1 and Tier 2 cities and Rs 2000 per day in Tier 3- 6 cities. The customer is provided with the facility of making maximum 3 withdrawals per day on each VPA. The customer will be required to pay 1% fee for the transaction while the merchant is not required to pay any fees.

➤ **Launch of first TIER IV Data Centre in Chennai**

On 19 May 2020 NPCI has issued circular highlighting the laying down the foundation stone of **Smart Data Centre in Chennai**. The objective is to create a highly secured infrastructure for the critical setup that is used nationwide. The IoT based building management system will have 8 layers of the security system

created with the objective of enhancing acceptance infrastructure for the digital payments.

➤ **UPI to go live internationally by FEB 2020.**

With the launch of the pilot project in Nov 2019 in Singapore, NPCI is expecting to go live there by Feb 2020 wherein the travelers across both the countries will be able to use UPI for doing their financial transactions seamlessly and conveniently. Last year in 2019 NPCI’s UPI allowed all NRI bank account holders in DUBAI to send and receive money instantly using the smartphone without the need of entering bank account details or net banking information. Thus the safe, secure, seamless and instant fund transfer features of UPI enabled it to cross the domestic border and serve internationally.

Harmonisation of Turn Around Time for Failed Transaction in the payment system

The important hindrance in the growth of the Digital transactions in the country is the failure of the transactions due to the non-availability of the technological support to complete the transaction which results into dissatisfaction among the peoples and as a result people hesitates to transact digitally. Moreover, if there are no clear guidelines regarding the settlement of the failed transactions, it adds to the non-acceptance of the digital modes of the payments. Therefore, on September 20,2019 in consultation with the various stakeholders, RBI issued guidelines for the harmonisation of the Turn Around Time and Customer Compensation for the failed transactions using authorised payment systems.

The detailed guidelines are as follows:

S. No.	Description of the incident	Framework for auto-reversal and compensation	
		Timeline for auto-reversal	Compensation payable
Unified Payments Interface (UPI)			
a	Account debited but the beneficiary account is	If unable to credit the beneficiary account, auto	₹100/- per day if delay is beyond T + 1 day.

	not credited (transfer of funds).	reversal (R) by the Beneficiary bank latest on T + 1 day.	
b	Account debited but transaction confirmation not received at merchant location (payment to merchant).	Auto-reversal within T + 5 days.	₹100/- per day if delay is beyond T + 5 days.

allowing Cash withdrawal up to a certain specified limit in case of emergency using UPI.

The data analyzed and reported highlights the increasing share of UPI in total digital transactions. The need of the hour is to focus on stability and security along with the scalability of UPI Transactions. The awareness about the benefits of UPI must to be increased by the service providers.

One of the important reason for resistance among the masses for adopting digital means such as UPI for performing their transactions is fraudulent calls received by them wherein they are attracted by lucrative offers to share the OTP which ultimately led to reduction of their account balances and also people are still not aware about RBI support in case of failed digital transactions. Therefore, it is important not only to increase the awareness but also the confidence of the masses for going digital.

CONCLUSION:

The introduction of the UPI by NPCI has completely revolutionized the digital payments systems and the procedures. The UPI has facilitated the banks to develop their UPI supportive apps along with various private players in the system provider landscape with the objective of shifting the trend from branch banking to digital banking. Keeping in mind the increase the increasing importance of this payment interface, the detailed study of UPI in expanding the Financial strength was chosen as an objective for the study.

The data is collected about the origin, introduction and growth of UPI in digital payment landscape from NPCI website. The two important components of UPI i.e. BHIM UPI and USSD2.0 are also studied in detail highlighting their important features and importance in the digital payment landscape. Keeping in mind the increasing acceptance of UPI, NPCI launched UPI 2.0 with some additional features such as linking of Overdraft accounts with the objective to increase its acceptability.

NPCI is focusing on making the UPI acceptable for international transactions too and making it available for the peoples living in other countries who wishes to remit the funds into the account of Indian account holders. UPI has been launched in Singapore and Dubai.

The targets for the year 2020 wherein, the important modification is expected to be expected is

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