



A Study of IMPS and its Benefits Vs Security

• Anjali Jacob • Shivangi • Pooja Kumari
• Manisha Prasad

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Corresponding Author : Manisha Prasad

Abstract : *Immediate Payment Service (IMPS) is an instant real-time inter-bank electronic funds transfer system of India.*

IMPS offers an instant, 24x7, interbank electronic funds transfer service through mobile phones under the aegis of National Payment Corporation of India (NPCI). It is an emphatic tool to transfer money instantly within banks across India through mobile, Internet and ATM which is, not only safe but also economical, both from financial and non-financial perspectives. IMPS facilitate customers to use mobile instruments as a channel for accessing their bank accounts and remitting funds therefrom.

This paper starts with the brief introduction of IMPS, followed by exploring data about IMPS, how safe it is, how customer friendly it is in "any time anywhere service" and how it has revolutionised the idea of money transaction using mobiles.

Keywords: *IMPS, NPCI, P2A, P2P, ABRS, UPI.*

Introduction:

Cashless Transaction: As the country moves towards a cashless environment after demonetisation, the initial awe and confusion have given way to a flurry of concerns. To motivate towards a cashless economy, the government has come up with many discounts and freebies on digital transactions.

The ease of conducting financial transactions is probably the biggest motivator to go digital. It would no longer be needed to carry cash, plastic cards, or even queue up for ATM withdrawals. It is also a safer and easier spending option while travelling. There is no need to be physically present to conduct a transaction or be forced to do so only during working hours.

If all transactions are on record, it will be very easy for people to keep track of their spending. It will also help while filing income tax returns and, in case of a scrutiny, people will find it easy to explain their expenditure. Various apps and tools will help people analyse their spending patterns and throw up good insights over a couple of years. Controlled spending could also result in higher investing.

Anjali Jacob

BCA III year, Session: 2014-2017,
Patna Women's College, Patna University, Patna,
Bihar, India

Shivangi

BCA III year, Session: 2014-2017,
Patna Women's College, Patna University, Patna,
Bihar, India

Pooja Kumari

BCA III year, Session: 2014-2017,
Patna Women's College, Patna University, Patna,
Bihar, India

Manisha Prasad

Asst. Professor, Department of BCA,
Patna Women's College, Bailey Road,
Patna – 800 001, Bihar, India
E-mail : manisha_prasad@yahoo.com

If stolen, it is easy to block a credit card or mobile wallet remotely, but it is impossible to get the cash back. In that sense, the digital option offers limited security.

It may not seem like much of an advantage, but being cashless makes it easy to ward off borrowers. Another plus point is that one can pay the exact amount without worrying about not having change or getting it back from shopkeepers.

The biggest fear is the risk of identity theft. Since we are culturally not attuned to digital transactions, even well-educated people run the risk of falling into phishing traps. With the rising incidence of online fraud, the risk of hacking will only grow as more people hop on to the digital platform.

Since there is a great dependency on phone for all the transactions on the move, losing it can cause many problems. It makes one susceptible to identity theft & the person could also be rendered helpless in the absence of physical cash or any other payment option. This can be especially problematic, if one is travelling abroad or in smaller towns or villages with lack of banking infrastructure or other payment options.

While there is no denying the convenience of card or mobile wallet transactions, it could open a spending trap for an unsuspecting population. According to behavioural finance theorists, the pain of parting with money is felt more acutely when physical cash is used instead of a card. This is the reason why people could end up overspending, throwing their budgets into disarray. Despite all the above mentioned issues, people are preferring digital transactions and IMPS is one of the most preferred modes for the same.

IMPS: Immediate Payment Service (IMPS) public launch happened on 22nd November 2010 by Smt. Shyamala Gopinath, DG RBI at Mumbai . It offers an instant, 24X7, interbank electronic fund transfer service through mobile phones. IMPS is an emphatic tool to transfer money instantly within banks across India through mobile, internet and ATM, which is not only safe but also economical, both from financial and non financial perspectives. This facility is provided by NPCI through its existing NFS switch. The eligible criteria for the Banks who can participate in IMPS is that the Bank should have approval from RBI for Mobile Banking Service.

NPCI: National Payments Corporation of India (NPCI) is an umbrella organization for all retail payments system in India. It was set up with the guidance and support of the Reserve Bank of India (RBI) and Indian Banks' Association (IBA). The objectives of NPCI is to consolidate and integrate all retail payment systems, so that they are, Inclusive, Customer friendly, varied yet simple, universally accessible, available round the clock, affordable to all, fully automated and world class.

NPCI has ten promoter banks, namely, State Bank of India, Punjab National Bank, Canara Bank, Bank of Baroda, Union Bank of India, Bank of India, ICICI Bank, HDFC Bank, Citibank and HSBC.

Objectives of the study:

To evaluate the awareness about the IMPS facility provided by the banks amongst the general masses and their apprehensions about its security.

Hypotheses of study:

There are certain apprehensions regarding the safety of IMPS in the present times. However, it is assumed that IMPS is one of the most customer friendly, safe, and easy way of doing money transactions in the present tech-savvy society.

Methodology and Tools used:

- **Area of Study:** Websites, Different banks which are part of IMPS, Interviews, Social Networking, Reports and some Research works.
- **Sample size and sampling method:** A questionnaire was prepared and nearly 100 people were interviewed.
- **Tools and Techniques for data collection:** Questionnaires, Onsite observations and various other resources. Websites of various banks were visited, & a few, 10-20, research papers were also referred to.
- **Methods of Data Analysis:** Data collected through a questionnaire were analysed and represented through charts and tables using MS Excel.

Money Transfer using IMPS

To make a transfer through the IMPS system, all

that is needed is a registered mobile number and MMID number. MMID number is a 7 digit random number which is got by registering for IMPS facility from the Bank. Both sender and receiver should have their phone and MMID number from their respective banks. Once one has that, the transfer of money using sms or internet banking is possible. A lot of banks also provide a mobile application which can be downloaded from a bank website and installed on the phone. Before sending the money to the receiver, the sender should register it once, just as for any bank account. The image below gives a good idea of what needs to be done for carrying out an IMPS transfer.

How does IMPS money transfer work?

In an IMPS transfer, the sender mobile first sends the information to the sender bank, which checks the data; whether the MMID is correct or not and if it matches with what it has in its system. If it's all correct, it debits the money from the sender's bank account and transfers this to the NCPI server, which then transfers it back to the receiver's bank. The receiver bank goes about checking everything again and then sends the status of the whole transaction to NCPI, which passes it back to Sender's bank. Both Receiver and Sender are then updated about the transaction through SMS. All this normally takes just about 15-30 seconds for everything to happen and the money gets transferred nearly instantaneously.

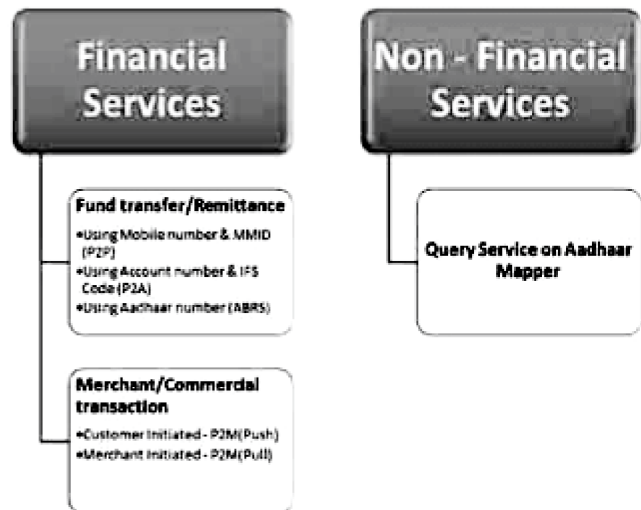
Advantages of IMPS over NEFT and RTGS

IMPS offers some major advantages over NEFT or RTGS money transfer and they are:

- 1. Instant Transfer of Money :** In IMPS transfer, it happens instantly within a few seconds, so it is practically a real time money transfer, unlike NEFT or RTGS which works in batches and takes time in money transfer. Which means, in case of emergencies, one can use IMPS and it will act like a fast money transfer mechanism.
- 2. Transfer without Internet Connection:** One does not need an internet connection or a computer for IMPS transfer. The money transfer can be done using a mobile phone through SMS or using the mobile application, All that is needed is a mobile connection.

- 3. Money transfer even on Holidays and outside working Hours :** Money can be transferred anytime, 24X 7. With NEFT or RTGS, money cannot be transferred on holidays and outside the working hours defined by the banks. But with IMPS, money transfers can be done early in the morning, at midnight or at whatever time one desires.
- 4. No Need to disclose Bank account number and other details :** For making the money transfer, all that is needed is a mobile number and MMID, there is no need to disclose the actual account number or even the bank name.
- 5. Easy, Simple and Secure :** Making an IMPS money transfer is easy. All one requires is the MMID, registered phone number and the amount to be transferred. The money gets transferred easily and very fast. It makes it easy for those who fear technology and do not want to deal with it.

IMPS SERVICES



Fund transfer/remittance

- Using Mobile number & MMID (P2P)
- Using Account number & IFS Code (P2A)
- Using Aadhaar number (ABRS)

Using Mobile number & MMID (P2P)

IMPS offers an instant, 24*7 interbank electronic fund transfer service capable of processing person to person, person to account and person to merchant

remittances via mobile, internet and ATMs. It is a multichannel and multidimensional platform that makes the payments possible within fractions of seconds with all the standards and integrity maintained for security required for even high worth transactions.

Sender & Receiver - Have to register for Mobile Banking & get a unique ID called "MMID" i.e. Mobile Money Identifier (7 digit code). Generation of MMID is a One-time process.

The Remitter (Sender) transfers funds to the beneficiary (Receiver) using a Mobile no. and a seven digit MMID of beneficiary. Each MMID is linked to a unique Mobile Number. Different MMIDs can be linked to same Mobile Number

Using Account number & IFS Code (P2A)

Presently, IMPS Person-to-Person (P2P) funds transfer requires the Remitter customer to make funds transfer using Beneficiary Mobile Number and MMID. Both Remitter and Beneficiary need to register their mobile number with their respective bank accounts and get MMID, in order to send or receive funds using IMPS.

There may be cases where the Remitter is enabled on Mobile Banking, but the beneficiary mobile number is not registered with any bank account. In such cases, the Remitter will not be able to send money to the Beneficiary using Mobile Number & MMID.

Hence, on the merit of the feedback received from the banking community, as well as to cater the above mentioned need, the IMPS funds transfer has been made possible using Beneficiary account number and IFS code as well, in addition to Beneficiary mobile number and MMID.

IFS Code - 11 digit alphanumeric number, available in the users Cheque book.

Using Aadhaar number (ABRS)

In Aadhar Based Remittance services, a remitter can initiate an IMPS transaction using the beneficiary's AADHAAR number, which acts as a financial address &

which will be linked to the beneficiary's account number. ABRS facilitates in simplifying the IMPS payment initiation process as, in this service, the customer will have to input only AADHAAR number of the beneficiary for initiating an IMPS transaction. Another important utility of this service is in disbursal of subsidy payment i.e. Electronic Benefit Transfer (EBT)/ Direct Benefit transfer (DBT) by the Government. ABRS acts as a catalyst in expanding financial Inclusion reach.

MERCHANT/COMMERCIAL TRANSACTION

- Customer Initiated - P2M (Push)
- Merchant Initiated - P2M (Pull)

Customer Initiated - P2M(Push)

IMPS Merchant Payments (P2M - Person-to-merchant) service allows customers to make instant, 24*7, interbank payments to merchants or enterprises via mobile phone. IMPS enables mobile banking users a facility to make payment to merchants and enterprises, through various access channels, such as, Internet, mobile Internet, IVR, SMS, USSD.

The following services are available on P2M PUSH:

1. Mobile / DTH recharge
2. Credit card bill payment
3. Insurance Premium
4. Landline Bill Payment
5. Mutual Funds
6. DTH Operators
7. NBFC
8. Retail

Sender enter details of merchant's (Customer initiated - Push)

- Merchant Mobile Number & MMID
- Amount to be transferred
- Payment reference (optional)
- Sender's M-PIN

Merchant Initiated - P2M (Pull)

IMPS Merchant Payments (P2M - Person-to-Merchant) service allows customers to make instant, 24*7, interbank payments to merchants or enterprises via Mobile & Internet. IMPS enables mobile banking users a facility to make payment to merchants and

enterprises, through various access channels, such as Internet, mobile Internet, IVR, SMS, USSD.

The Customer enters his own details (Merchant Initiated - Pull) like:

- Customer own Mobile Number
- Customer own MMID
- OTP (generated from the Issuer Bank)

The following services are available on P2M PULL:

1. Mobile Recharge, DTH Recharge
2. Online shopping
3. Railway Ticket Booking through IRCTC
4. Mobile Operators
5. DTH Operators
6. Donations
7. Electricity Bill
8. Travel & Ticketing
9. Gas Bill Payment
10. Airlines
11. Broadband
12. Education
13. Mutual Funds
14. Government Payments
15. Insurance

Query service on aadhaar mapper(QSAM)

To facilitate the effective implementation of ABRS, a new feature is being added to the existing NUUP (USSD based platform on *99#) service. Under this new service, known as "Query Service on Aadhaar Mapper" the customer will be able to know :-

Whether his/her AADHAAR number is seeded/linked to any bank account number or not? If yes, then with which bank and when was it last updated?

Authentication during transactions

For transactions initiated using Mobile, transactions will be authenticated using **Mobile number + MPIN**

IMPS transactions can also be initiated from ATMs and Internet banking channels. Authentication is done for remitting customers while using the ATM channel by **:Card + ATM PIN**

Authentication is done for remitting customers

while using the Internet banking channel by: **User ID + Internet Banking Password/Transaction Password**

Appropriate existing two-factor authentication method would be used for all the channels. The limit as prescribed by the bank for these channels would apply while transferring money using either of these channels.

While initiating an IMPS transaction, using either ATM or Internet channel, mobile banking registration for a remitting customer is not mandatory. Similarly, for customers receiving money using account number/IFSC, or using AADHAAR number, mobile banking registration is not mandatory.

MODES OF FUND TRANSFER IN IMPS

A. IMPS Funds Transfer - Person to Person (P2P)

B. IMPS Funds Transfer through Account Number /IFSC(P2A)

C. IMPS Funds Transfer through Internet Banking channel : In addition to Mobile phones, IMPS Funds Transfer can be done through Internet Banking channels. The authentication will be done for the Remitting customers as (User Id + Internet Banking Password / Transaction password) with appropriate existing two-factor authentication method. Since the transaction would be initiated on Internet platform, the transaction limits of individual Banks for Internet channel shall apply. IMPS system is used for beneficiary identification and real-time settlement of transactions.

D. IMPS Funds Transfer through ATM-IMPS Funds Transfer can be done through ATM, in addition to Mobile phones. The authentication will be done for the Remitting customers as (Card + ATM Pin) with appropriate existing two-factor authentication method. Since the transaction would be initiated on ATM, the transaction limits of individual Banks for ATM shall apply. IMPS system is used for beneficiary identification and real-time settlement of transactions.

E. IMPS Merchant Payments : In the customer

initiated transaction (P2M PUSH), customer initiates transaction through the Bank's mobile banking application or SMS facility provided by the Bank. The Bank offers 'IMPS merchant payments' form in the mobile banking application (this form is available in 'IMPS' menu on the main menu of mobile application) or SMS syntax for performing P2M PUSH transaction. The customer needs to enter the following parameters:

1. Merchant mobile number
2. Merchant MMID
3. Amount
4. M-PIN
5. Payment Reference

Payment Reference is an optional 50 characters field provided. This field will be used to enter the unique reference for the payment, and identifies the transaction to the merchant. The merchant decides what customer will enter in this field. For e.g. for insurance premium payment, the customer may need to enter policy number in the payment reference field; for electricity bill payment, it may be the consumer number. The syntax and information to be put in the payment reference field will be decided by the merchant, and communication of the same will be merchant ownership.

The SMS syntax for making P2M PUSH transaction through SMS is as follows:

MIMPS <Merchant mobile number> <Merchant MMID><Amount><M-PIN><Payment Reference> to Bank's long code or short code number.

On initiating transaction as above, the customer receives the confirmation SMS with status of transaction shortly afterwards.

For IMPS P2M PUSH transaction initiated through SMS, the transaction limit is Rs 5,000/- per day (for most banks), and for transactions initiated through mobile banking application, the transaction limit is as decided by the Bank (Rs 50,000/- for most banks)

In **Merchant Initiated transaction (P2M PULL)**, the transaction is initiated through Merchant application (such as Merchant website, WAP site, IVR, mobile application). The typical steps to follow for making transaction through P2M PULL are as follows:

1. Visit merchant application, such as, web site, mobile application, or WAP site
2. Select product / service for which payment is to be made
3. In the payment options available, choose IMPS
4. Enter credentials as follows:
 - a) Customer mobile number
 - b) Customer MMID
 - c) OTP (One-Time Password)
 - d) The transaction status is displayed on the screen

The customer needs to enter the credentials - Customer mobile number (as registered with the Bank), customer MMID (as generated by the Bank) and OTP (One-Time Password, as generated by the customer).

OTP needs to be generated by the customer for each transaction. OTP can be generated by the customer by using the mobile banking application or SMS facility as provided by the Bank. The Bank offers the 'Generate OTP' form in the mobile banking application (this form is available in 'IMPS' menu within the main menu of mobile banking application) or SMS syntax for 'Generate OTP' transaction. Customer needs to enter the following parameters:

M-PIN

The SMS syntax for 'Generate OTP' through SMS is as follows:

OTP <M-PIN> to Bank's long code or short code number.

On initiating transaction as above, customer receives the confirmation SMS with status of transaction shortly.

The OTP generated as above has the following characteristics:

- (a) OTP is valid for 1 hour from the time of generation
- (b) If OTP is generated through SMS, the transaction limit is Rs 5,000/- and if OTP is generated through mobile banking application, the transaction limit is as decided

by the Bank (Rs 50,000/- for most banks)

- (c) OTP is valid only for one transaction – Successful or Failure
- (d) Only one OTP (latest generated OTP) is valid at a time.

F. Aadhaar Based Remittance Service (ABRS)-

In ABRS, a remitter can initiate IMPS transaction using the beneficiary's AADHAAR number, which acts as a financial address & which will be linked to the beneficiary's account number. ABRS facilitates in simplifying the IMPS payment initiation process, as in this service the customer will have to in only AADHAAR number of the beneficiary for initiating an IMPS transaction. Another important utility of this service will be in disbursement of subsidy payment i.e. Electronic Benefit Transfer (EBT)/ Direct Benefit transfer (DBT) by the Government. ABRS will act as a catalyst in expanding financial Inclusion reach.

List of participating banks

The eligibility criteria for the banks which can participate in IMPS are as follows:

- The Bank should be a member of National Financial Switch (NFS) driven by NPCI
- The Bank should have approval from RBI for Mobile Banking Service

Participating banks are as follows:

- Allahabad bank
- Andhra bank
- Axis Bank
- Bank of Baroda
- Bank of India
- Bassein Catholic Co-op Bank
- BNP Paribas
- Canara Bank
- Catholic Syrian Bank
- Central Bank of India
- Citibank
- City Union Bank
- Corporation Bank
- Cosmos Co-operative Bank
- Dena Bank
- Development Bank of Singapore
- Development Credit Bank

- Dhanalakshmi Bank
- DombivliNagarikSahakari Bank
- Federal Bank
- HDFC Bank
- HSBC
- ICICI Bank
- IDBI Bank
- Indian Bank
- Indian Overseas Bank
- IndusInd Bank
- ING Vysya Bank
- Jammu & Kashmir Bank
- JanataSahakari Bank, Pune
- Karnataka Bank
- KarurVysya Bank
- Kerala Gramin Bank
- Kotak Mahindra Bank
- Lakshmi Vilas Bank
- Mehsana Urban Co-operative Bank
- Nainital Bank
- NKGSB Co-operative Bank
- Oriental Bank of Commerce
- Pragathi Krishna Gramin Bank
- Punjab and Maharashtra Co-op Bank
- Punjab and Sind Bank
- Punjab National Bank
- RBL Bank
- Saraswat Bank
- South Indian Bank
- Standard Chartered Bank
- State Bank of Bikaner and Jaipur
- State Bank of Hyderabad
- State Bank of India
- State Bank of Mysore
- State Bank of Patiala
- State Bank of Travancore
- Syndicate Bank
- Tamilnad Mercantile Bank
- Thane Janata Sahakari Bank
- The A.P Mahesh Urban Co-op Bank
- UCO Bank
- Union Bank of India
- United Bank of India
- Vijaya Bank
- Yes Bank

We tried to assess the popularity of the IMPS by doing a survey. The main focus of this survey was to observe how IMPS has penetrated amongst the general mass of the society for their day to day hassle free financial transactions.

The focus was to evaluate the awareness of this technology, its usage, its benefits and problems and also the security issues if any. At the end of our survey we recommended that the person keep himself updated with other new technologies like UPI.

Through this research study, the following observations were made by us:

Gender factor

According to our observation, the awareness of IMPS in both the genders was more or less the same.

Age factor

Younger generations were using IMPS services more conveniently and frequently as compared to the older age group people. There was a lack in the proper utilization of IMPS by older age group.

- 1) Are you aware about IMPS?
a) Aware b) Not much c) Not aware

We can say that a good percentage of people were aware of IMPS facility.

- 2) Do you use IMPS ?

- a) Yes b) No

If yes, how often?

- a) Rarely b) Many a time

Almost 50% people were actually using IMPS but only approximately 40% of them were using it frequently.

- 3) When did you first use IMPS ?
a) 2011-2012 b) 2012-2013
c) 2013-2014 d) 2014-2015
e) 2015-2016

Number of people using IMPS had increased over the years but of late there has been a significant increase in the number of people using this facility.

- 4) Do you suggest that others use IMPS?
a) Yes b) No

A good percentage of people using this service were satisfied with this service and hence suggested that others use this facility.

- 5) Are you satisfied with the facility provided by IMPS?

- a) Very much b) Not much c) Not at all

Approx. 50% people were quite satisfied with the facility of IMPS.

- 6) Do you feel that it is more useful than other e-banking services?

- a) Very much b) Not much c) Satisfactory

A majority of respondents felt that this facility was more useful and secure than other e-banking services.

- 7) Do you feel that using IMPS is safe?

- a) Safe b) Unsafe c) No idea

More than 50% people assumed IMPS was safe, whereas 40% had no idea about it. A very small percentage of people were unsatisfied with this service.

- 8) Do you feel IMPS requires more security enhancement?

- a) Yes b) No c) Almost secure d) No idea

Approximately 40% people felt that IMPS requires security enhancement. And 30% had no idea about security factor. 25% people felt that IMPS is not secure and the rest felt unsafe.

- 9) Did you ever face any problem in terms of transaction while using IMPS?

- a) No b) Rarely c) Very often

Approx. 65% had never faced any problem and 30% rarely faced any problem during IMPS transactions.

- 10) In case of any transaction lapses, does the bank provide you with the required help?

- a) Yes b) No c) Never faced any issue

Approx. 50% people agreed that the bank provided the required help in case of any transaction lapses and 40% had never faced such an issue.

- 11) Have you heard about any new technology or used an alternative of IMPS i.e. UPI (Universal Public Interface)

- a) Heard b) Used c) No

Approx. 40% had heard about the new technology i.e. UPI and moreover 20% had already used it. The rest had never heard about UPI.

Conclusions:

The project we undertook on IMPS, and its benefits vs. security, proved its utility and concern by the users. Even though IMPS is the most customer friendly, safe, and easy way of doing money transactions in the present tech-savvy society, we found less individuals taking interest in IMPS and using its benefits to the maximum, whereas many of them were unaware of the IMPS and others raised questions about its security. This was probably due to the lack of orientation and the hesitation to adopt a new technology.

Though IMPS has revolutionized the area of money transaction using mobiles, and offers total security and anytime, anywhere availability, it is not understood well enough by the community. So, we concluded that to offer the maximum service, IMPS needed to be introduced along with its many benefits and, if people are given proper information about its services, a larger section in our country will benefit from it.

LIST OF TABLES

Table 1.

TOTAL	MALE	FEMALE
100	52	48

Table 2.

TOTAL	20-35 YRS	36-50 YRS	51-60 YRS	ABOVE 60 YRS
100	48	32	13	7

Table 3.

TOTAL	AWARE	NOT MUCH	NOT AWARE
100	48	30	22

Table 4.

TOTAL	YES	NO
48	22	26

Table 5.

TOTAL	RARELY	FREQUENTLY
22	13	9

Table 6.

TOTAL	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
22	2	3	4	6	7

Table 7.

TOTAL	YES	NO
48	37	11

Table 8.

TOTAL	VERY MUCH	NOT MUCH	NOT AT ALL
48	22	20	6

Table 9.

TOTAL	VERY MUCH	NOT MUCH	SATISFACTORY
48	14	12	22

Table 10.

TOTAL	SAFE	UNSAFE	NO IDEA
48	25	4	19

Table 11.

TOTAL	YES	NO	ALMOST SECURE	NO IDEA
48	18	4	11	15

Table 12.

TOTAL	NO	RARE	VERY OFTEN
48	31	14	3

Table 13.

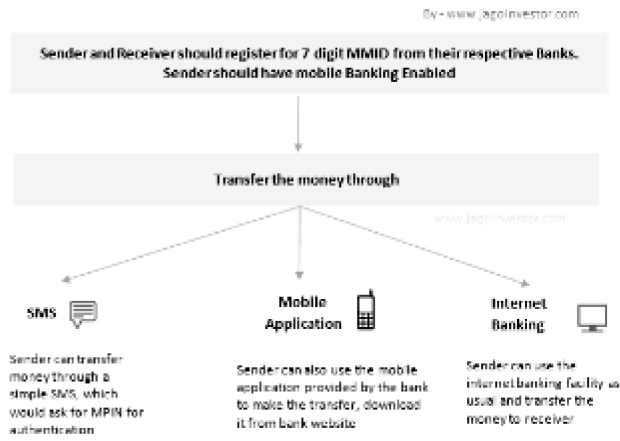
TOTAL	YES	NO	NEVER FACED ANY ISSUE
100	46	10	44

Table 14.

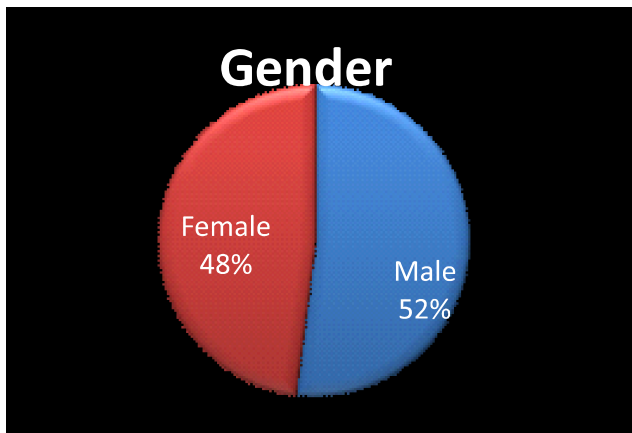
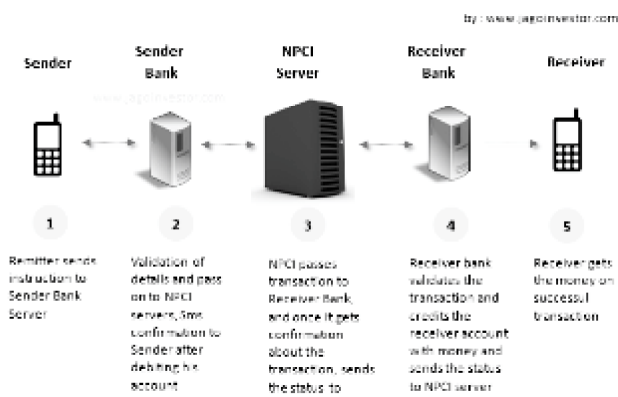
TOTAL	HEARD	USED	NO
100	38	17	45

LIST OF GRAPHS

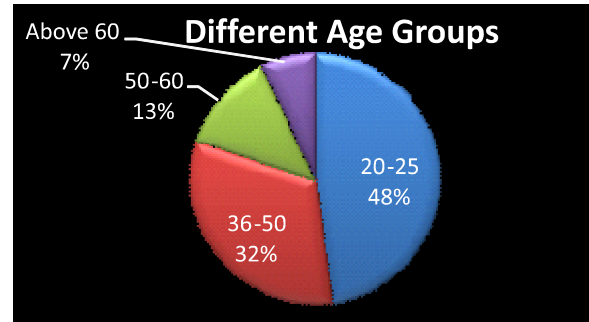
How to transfer money using IMPS ?



How does IMPS money transfer work ?



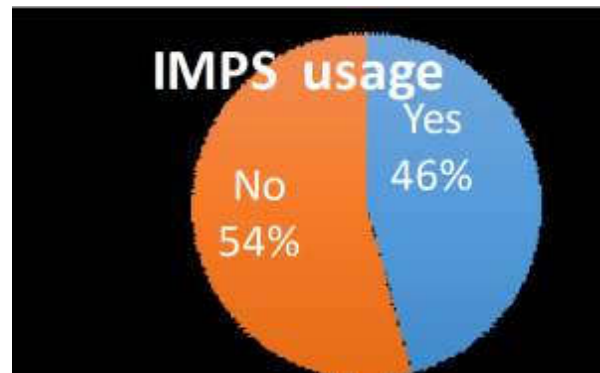
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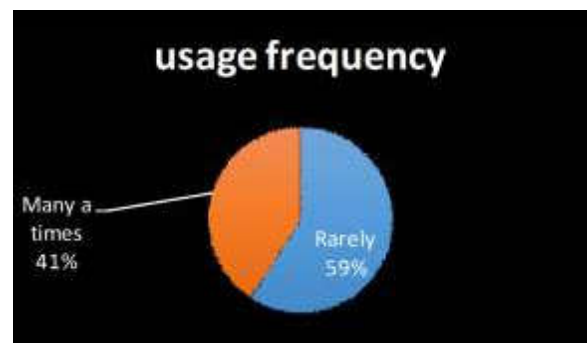
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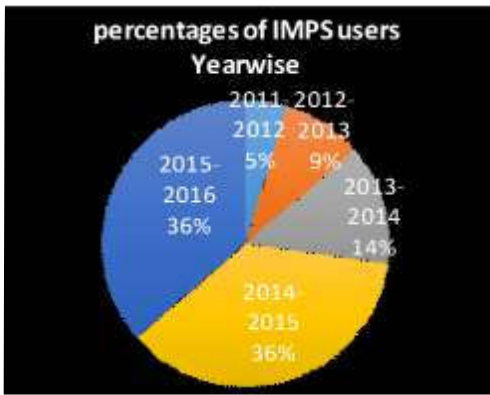
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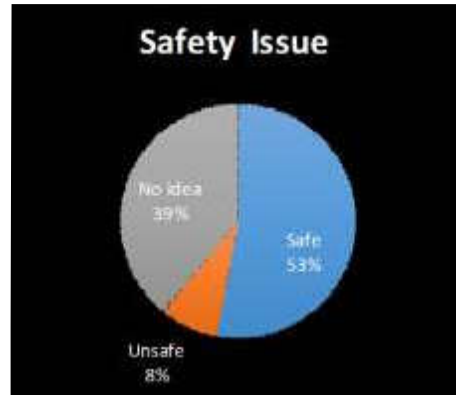
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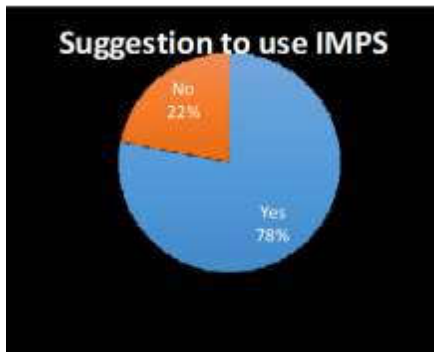
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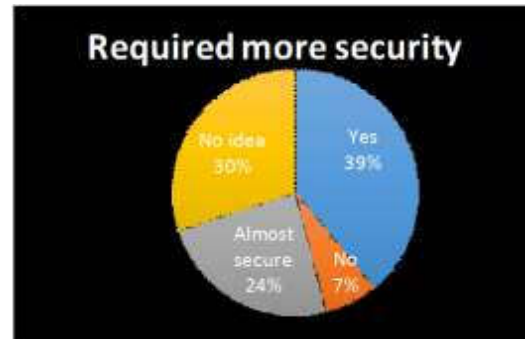
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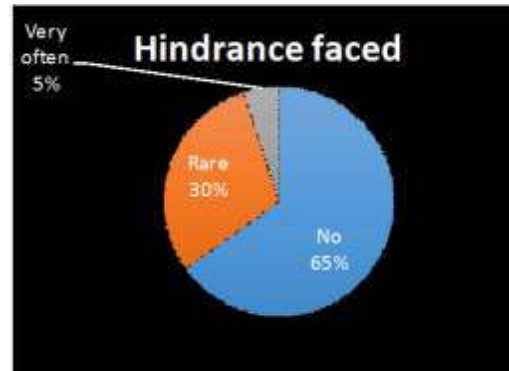
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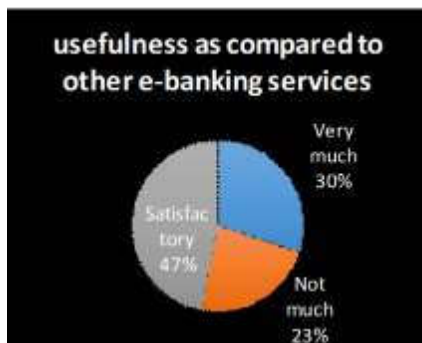
Graph 11.



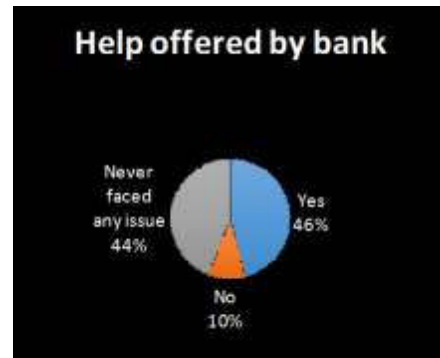
Graph 8.



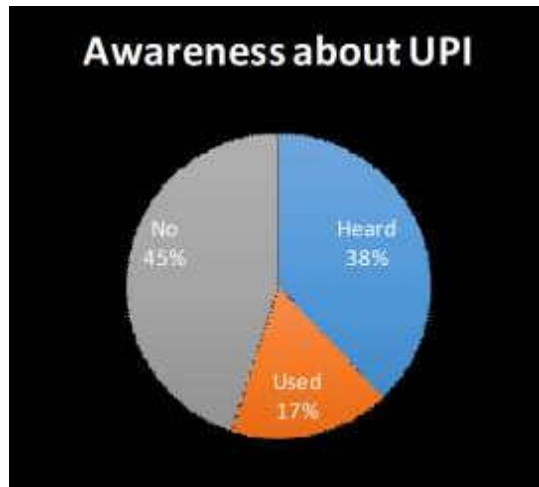
Graph 12.



Graph 9.



Graph 13.



Graph 14.

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