

Digital Payments: Challenges and Solutions

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Abstract: *In modern times, commercial banking occupies an important place in the financial frame-work of every economy. Banking system is a dynamic sector of economy. They keep changing and this continuing process of change constantly challenges those who are responsible for management of the banks and those who observe and study their performance. The nature of banking system has shifted after financial “big bang” of mid 1970s and mid 1980s in the U.S.A and the U.K financial markets respectively. With the explosive growth of the Internet, electronic-commerce (e-commerce) is an increasingly important segment of commercial activities on the web. In Digital payments world million dollar question comes in at every stage what is more important security or speed. Digital payments are to finance what invention of wheel was to transport. It offers an unprecedented opportunity to our people, most of who live in rural India or are migrants in big cities. It promises access to formal financial services and benefits from e-commerce, especially for those who continue to be excluded. In addition to accelerating financial inclusion, opening new business models and markets -digital payments can improve the State's ability to curb tax leakages, funding of criminal activities and reduce cash related costs. 2015 year can be written down as year of awareness & noticing payment methods other than cash. Year 2016 was the year of financial services with greater technology with too much of Innovations there after trials and adoptions. The phenomenal global growth in digital payments may be attributed to four factors –*

(i) Digital and technology revolution

(ii) Entry of several non-banking PSPs(Payment Service Providers) into payments space

(iii) Customers becoming more demanding and expecting instantaneous and one-touch payment solutions

(iv) Progressive changes in the regulatory framework.

The focus of this paper is to identify and explain the different methods of digital payment, we analyze the challenges of digital payments from different perspective and provide preliminary security countermeasures for each of the issues. Finally, a number of solutions have been proposed based on the problem and discussed on the prospect of digital payment system.

Keywords: *Challenges, Different Methods, Digital Payments, Security, Solutions.*

I. Introduction

Cash may not be a king anymore, the adoption of digital payments is picking up at an extreme pace, everyone from vegetable vendor to chai-wala is adopting the digital payment system to move away from the cash crunch.

New technologies, players and consumer expectations are changing the payments marketplace more than ever. The opportunity of the new digital payment ecosystem comes with risks. From cyber security and privacy to the impact of legacy technology and new competitors, it is far from clear sailing for organizations wanting to be a player in the future payments marketplace.

In wake of the government initiatives towards transformation towards digital economy, and many private companies, payment bank licenses issued by RBI, witness the transformation. “Faceless, Paperless, Cashless” is one of professed role of Digital India. The emphasis is on the different methods of digital payments by considering the challenges and providing solutions according to the existing scenario.

II. Methods of payments

 Banking Cards	 USSD	 AEPS	 UPI	 Mobile Wallets
 Banks Pre-paid Cards	 Point of Sale	 Internet Banking	 Mobile Banking	 Micro ATMs

2.1 Banking Cards

Banking cards offer consumers more security, convenience, and control than any other payment method. The wide variety of cards available – including credit, debit and prepaid. These cards provide 2 factor authentications for secure payments e.g. secure PIN and OTP. RuPay, Visa, MasterCard are some of the example of card payment systems.

2.2 Internet banking

Internet banking or e-banking is the latest series of technological wonders in the recent past which involves use of internet for delivery of banking products and services. It is the service being utilized intensively by most of the consumers of the digital world. It enables customers of a bank or other financial institution to conduct different financial transactions through the financial institution's website.

Different financial transactions are:

2.2.1 National Electronic Fund Transfer (NEFT)

National Electronic Funds Transfer (NEFT) is a nation-wide payment system facilitating one-to-one funds transfer. Under this System, individuals, firms and corporates can electronically transfer funds from any bank branch to any individual, firm or corporate having an account with any other bank branch in the country participating in the System. However, cash remittances will be restricted to a maximum of Rs. 50,000/- per transaction.

2.2.2 Real Time Gross Settlement (RTGS)

RTGS is the continuous settlement of funds transfers individually on an order by order basis. 'Real Time' means the processing of instructions at the time they are received rather than processing some time later; 'Gross Settlement' means the settlement of funds transfer instructions occurs individually. This system is primarily meant for large value transactions. The minimum amount to be remitted through RTGS is 2 lakhs and there is no upper ceiling for these transactions.

2.2.3 Electronic Clearing System (ECS)

ECS is an alternative method for effecting payment transactions in respect of the utility-bill payments such as telephone bills, electricity bills, insurance premium, card payments and loan repayments, etc., which would eliminate the need for issuing and handling paper instruments and thereby facilitate improved customer service by banks / companies / corporations / government departments, etc., in collecting / receiving the payments. This works as per the standing instructions of the customer given to his/her bank.

2.2.4 Immediate Payment Service (IMPS)

IMPS offer 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 in financial and non-financial perspectives. It sub-serves the goal of Reserve Bank of India (RBI) in electronification of retail payments and builds the foundation for a full range of mobile based Banking services.

2.3 Mobile banking

Mobile banking is a service provided by a bank or other financial institution which allows its customers to conduct different types of financial transactions using a mobile device through software called an app. It fulfills the ability and the increasing demand of consumers, to perform more and more sophisticated financial

transactions on a smartphone or tablet with one or two taps of a finger. Examples: Axis mobile, icici mobile, state bank anywhere, state bank buddy, kotak bank and many more.

2.4 USSD-Unstructured Supplementary Service Data (USSD)

It is a service which allows mobile banking transactions using basic feature mobile phone, without having mobile internet data facility. This innovative payment service *99# works on National Unified USSD Platform (NUUP) channel. The key services offered under this service include, interbank account to account fund transfer, balance enquiry, mini statement besides other services. Account in a bank and any mobile phone on gsm network are required for activation. There is a transaction limit of Rs 5000 per day per customer. Registered mobile number with any phone, Mobile Money Identifier (MMID) and Mobile PIN (MPIN) will pave way for transactions.

2.5 AEPS- Aadhaar enabled payment system

AEPS is a bank led model which allows online interoperable financial transaction at Point of Sale / Micro ATM through the Business Correspondent /Bank Mitra of any bank using the Aadhaar authentication without any pin or password. There is no limit on transactions. Only linkage of Aadhaar with bank account is needed for transactions. It enables Services like Balance Enquiry, Cash Withdrawal, Cash Deposit, Aadhaar to Aadhaar Funds Transfer.

2.6 UPI-unified payments interface

UPI is a system that combines multiple bank accounts into a single mobile application (of any participating bank), merging several banking features, seamless fund routing & merchant payments into one hood. A Smartphone with internet facility and Bank Account details, are required for registration. Virtual payment address and UPI pin enables transactions. Example: Phone pay, Google Tez, and BHIM etc.

2.7 Mobile Wallets

Mobile wallet is a path to carry digital cash. This can be done by linking credit card or debit card information in mobile device to mobile wallet application or you can transfer money online to mobile wallet. The Basic Requirements to Start Using a Wallet are Bank Account, Smartphone, internet Connection and A Free Wallet App. For Consumer the Wallet Limits are: Rs.20,000/month for all. Rs.1 lakh/month with KYC (know your customer) and for Merchants the Wallet Limits are Rs.50,000/month with Self Declaration and Rs.1 lakh/month with KYC. e.g. Paytm, Freecharge, Mobikwik, Oxigen, mRuppee, Airtel Money, Jio Money.

2.8 POS (Point Of Sale)

It is the place where sales are made. It may be markets, malls, retailer or checkout counter etc. Physical POS -Physical Card Swiping through a handheld configured device. Mobile POS- It enables transactions through smart Phone connected with external POS device through jack / Bluetooth. Virtual POS – it is a Virtual E-payment Gateway. Payments to bank account of merchant are enabled through QR code. It provides complete privacy of merchant bank account.

2.9 Micro ATMs

A device used by a million Business Correspondents (who could be a local kirana shop owner and will act as 'micro ATM') to deliver basic banking services. It is based on a mobile phone connection and is available at every BC. Customers would just have to get their identity authenticated and withdraw or put money into their bank accounts. This platform will enable function through low cost devices (micro ATMs) that will be connected to banks across the country.

III. Challenges

On a macro level, consumer level and the business perspective, the challenges being faced are-

3.1 Unbanked population

The government along with Reserve Bank of India (RBI) implemented and initiated numerous schemes like Pradhan Mantri Jan Dhan Yojana, digital India payments limited etc., to promote financial inclusion, especially in rural India. Despite all the efforts, about 19 percent of the Indian population still doesn't have access to banks, according to a study jointly conducted by ASSOCHAM and the consultancy firm, Ernest & Young. Recent data from the government and other sources refute a claim that declared 99% of households to be in possession of bank accounts but the facts are stated above. All the popular methods of payment like E-wallets United Payment Interface and BHIM etc., are dependent on bank accounts, if not also smartphones and internet access.

3.2 Cybersecurity

Globally, numerous events of hacking occur, of email accounts, databases, bank details etc. The increasing digital transactions pose cyber security as the main challenge for public, institutions and government. Mobile Banking Malware is sophisticated virus infecting banks mobile apps user to steal password details and even Hinders the twofactor authentication, by presenting victims with a fake version of the login screen when they access their legitimate banking application. Jailbreak or Rooted Devices, this is a practice to gain unrestricted or administrative access to the device's entire file system, by breaking its inherent security model and limitations, allowing mobile malware and rogue apps to infect the device and control critical functions.

Outdated OSs and NoSecure Network Connections Factors such as outdated operating system versions, use of no secure or public WIFI network in mobile devices allow cybercriminals to exploit an existing online banking session to steal funds and credentials.

3.3 Cash dependent economy

92% of the Indian economy is made up of informal workers, who contribute around 50% of the GDP; 80-90% of these workers are paid in cash which are often undeclared assets. These figures spell out the importance of cash in the Indian economy. Mediums like smartphones and internet connectivity are still unaffordable to a sizeable population thus denying them access to digital forms of transaction. As per the reports, till December 2016 out of 1.324 billion population the smartphone users are 350 million. Awareness about using the digital solutions like smartphone based transactions, feature phone based transactions, use of credit/debit cards at PoS solutions etc is still a persistent issue. A survey conducted by Bill and Melinda Gates Foundation shows that till January 2017 only 8 percent of the users are aware of the mobile money. The other key issue is lack of bandwidth and reach of technology to various locations. Though, it is being sounded that every corner of India shall have ICT (information and communication) services in place, still in many of the locations services are not available for the customers. Gaining the trust of consumers is one of the key challenges facing the mobile wallets, digital transaction service providers like banks, fin-tech companies etc.

After the above discussion we are left with different questions about the usage, security, problems faced and preparedness of the public to make a switch to cashless society.

To know this, we conducted an online survey to find out the level of adoption of digital payments, challenges, solutions and user habits.

The survey was conducted in the month of October 2017. We took a sample of 500 users of digital payments of age group 20years-45years out of which 326 responded. The below table denotes the questions and the percentage of respondents.

Why do you adopt digital payment system?
<ul style="list-style-type: none"> • Convenience 59.3% • Shortage of Currency notes 8.1% • Discounts and cash backs 23.7% • Easy tracking of expenditure 8.9%
How often you use digital payments?
<ul style="list-style-type: none"> • Daily (26.7%) • Weekly 40.7% • Fortnightly 5.9% • Monthly 26.7%
What has been your preferred mode of payment since you are using digital payments?
<ul style="list-style-type: none"> • Net banking 18.5% • Credit/Debit cards 55.6% • Mobile/ E-wallet 25.9%
What is your biggest concern around digital payments?
<ul style="list-style-type: none"> • Security 60% • Merchant acceptance 25.2% • Costs 7.4% • Lack of tech knowhow 7.4%
For high value transactions, what is your preferred mode of payment?
<ul style="list-style-type: none"> • Net banking 40.7% • Credit/Debit cards 25.2% • Mobile/ E-wallet 1.5% • Cheques 32.6%
How often do you change device passwords, PIN of debit/credit cards?
<ul style="list-style-type: none"> • Once in 6 months 22.2% • Once in a year 16.3% • Monthly 14.1% • Never changed 47.4%

What can be safely shared when you do digital payments?
<ul style="list-style-type: none"> •PAN 14.8% • Bank account number 21.5% •Debit/credit card number 18.5% • None of these 42.5%
Have you installed malware or antivirus protection on your phone or laptop?
<ul style="list-style-type: none"> • Yes 42.2% • No 45.2% •May be 12.6%
Do you store card details in phone or laptop?
<ul style="list-style-type: none"> • Yes 34.8% • No 65.2%
Would you use digital payments if notes come back into circulation?
<ul style="list-style-type: none"> •For most transactions 39.3% •For some transactions 49.6% •For rare transactions 8.1% •Never 3%

After observing the responses received we hereby conclude that, most of the people are using the digital payment system because of the convenience they are attaining, the need to go to banks for every purpose decreased. And most of the respondents use digital payments weekly, debit and credit cards are the most preferred methods of digital payments followed by e-wallets and net-banking, the biggest concern about digital payments is security 60% of the respondents believe this as the major concern, net banking is the favored method for high value transactions, greater number of people never changed their passwords while some people change it once in six months and yearly, coming to the cyber hygiene, like installation of antivirus in their laptops and computers the results stood closely that some people are using the antivirus whereas some people are not using it, and storing details of their cards or bank credentials most of the people don't store their details in phones and laptops. Last but not the least majority of the respondents voted for usage of digital payments for some transactions even though the notes come back into circulation.

IV. Solutions

Considering security as the major issue, the solutions are discussed below

As A Responsible Cyber Citizen, Practice Basic Preventative Measures. The Above Challenges Can Be Prevented By Following The Simple Steps Below.

4.1 Maintaining cyber hygiene, regularly update anti-virus / anti-malware software and applications, Avoid the use of public Wi-Fi networks, which are target-rich for cyber thieves.Regularly change passwords, choose strong password and separate passwords for different site. Install dual-factor authentication/tokens, biometric solutions (e.g., fingerprint, facial recognition and iris scanning software) and other data encryption software onto electronic devices. Backing up files onto external drive (to safely restore, in case of eventuality), Only engage with verified social media pages and use official mobile apps linked from an official web site. Prevent account data from being intercepted when entered into a mobile device. Prevent account data from compromise while processed or stored within the mobile device. Protect against known vulnerabilities. Protect the mobile device from unauthorized applications, Protect the mobile device from malware. Support secure merchant receipts. It is recommended to set the maximum number of incorrect password submissions no more than three.Choose a strong password to keep the account and data safe.Review the account statements frequently to check for any unauthorized transactions.Report a lost or stolen phone / device immediately to the service provider and law enforcement authorities.Never give the PIN or confidential information over the phone or internet. Never share these details with anyone.Don't click on links embedded in emails/social networking sites claiming to be from the bank or financial institutions.Don't transfer funds without due validation of the recipient, as funds once transferred cannot be reversed.Be cautious while using Bluetooth or WIFI in public places as someone may access the confidential data/information.

4.2 The other macro, consumer and business-related solutions are presented below:

Considerable need for more effective laws, guidelines, and compliance trends that can support in improving the process.Supply of PoS solutions in the market, leverage of technology, ease of compliance terms is also essential in encouraging more retailers, merchants and professionals to embrace the solution more effectively.Reduce the transaction charges over the digital payments and discourage cash transactions.Creating awareness about the ease of usage is one of the essentials.Intrinsic need to improve and offer requisite infrastructure for digital payments. successful adaptation of digital payments

V. Conclusion

India is among the fast emerging as one of the largest and strong economies. For sustained development and growth with robust economic development, certain integral factors like improved transparency, corporate governance etc, play a major role. All developments could be feasible only when the population embraces the digital payments and digital transactions. Hence, if the challenges that are discussed are addressed and improved solutions in terms of digital transactions with more secured features, ease of transactions and reduced cost of managing the digital payments could lead to more potential developments and supporting in improved conditions of digital payments processing.

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