

# mPay Insights 2014

## Translating to Transactions



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# Preface

If technology led financial inclusion is likely to be the answer for cost effective, rapid deployment and quality services for the bottom of the pyramid, mobile enabled technology is expected to act as a disruptive catalyst for this growth which the economy needs and wants to witness.

The new bank licenses on universal banks and payments banks will lead to emergence of new business models driving innovation on channels to reach the last mile. Role of mobile based technology solutions being a game-changer cannot be overemphasized.

The key question is that how soon mutually beneficial business models can emerge; converging the divergent interests of customers, merchants, telcos, banks and device makers.

This report, mPay Insights 2014: "Translating to Transactions" focuses on the potential of the mobile payments solutions in the Indian market. A closer look at how to translate the investments and efforts of each member of the payment ecosystem into transaction volumes warrants a discussion on three broad areas on: Retail mobile payments - Current scenario, challenges and future roadmap, Mobile led financial inclusion: Need for a collaborative model; and Ecosystem support to make mobile payments a success: From policy interventions to technology inventions.

These topics are discussed in greater detail, and some new ideas are presented in this report, which I hope you find useful.

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# Introduction

## Introduction

The Indian economy is poised to overcome the sub-5 per cent growth of gross domestic product (GDP) witnessed over the last two years backed by the strong growth in services sector. The share of services has been consistently rising; more so since 2004-05. The biggest drivers of the service sector expansion since 2004-05 were banking and communications sectors, the two growth engines of India. Robust growth in these sectors drove the expansion of the services sector even during the global financial crisis as Indian economy witnessed a sharp economic turnaround. Both these sectors are expected to play a pivot role in India's growth as banking provides the required capital and communication forms the infrastructure.

Along with ensuring sustained growth momentum, it is equally important to ensure that the growth base be broadened to include all constituents. Financial inclusion broadens the resource base of the financial system by developing a culture of savings among large segment of rural population and plays its own role in the process of overall economic development.

Among the many socio-economic factors, which are obstructing the inclusive growth, 'financial exclusion' is often cited as the key impediment. Indian financial services industry has been trying to address this issue for quite a while now and has developed innovative models, over the years, to extend the reach of financial services.

Figure 1 Growth of various sectors in Indian Economy

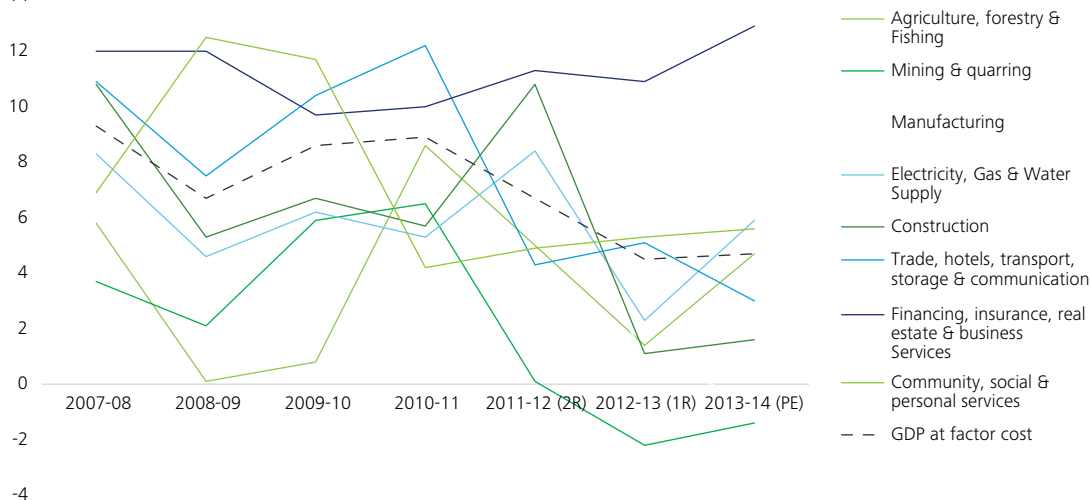


Exhibit 1: Source Economic Survey 2014-15

The recent policy push of the government, Pradhan Mantri Jan Dhan Yojana provides the required impetus with its ambitious targets to include the hitherto financially excluded populace. The scheme aims to offer banking facilities to 75 million households, which is equal to population of entire United States, by 26 January 2015.

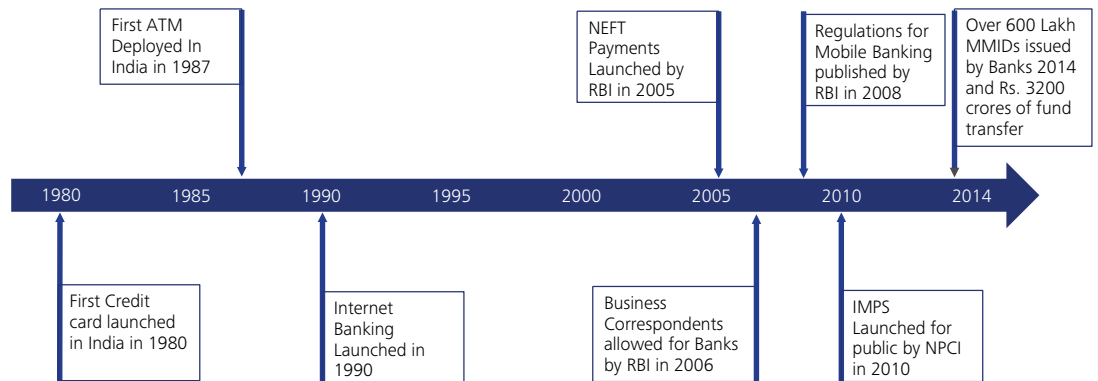
Such an unprecedented task, which is unique in the economic history of the world, can only be achieved by a non-linear adoption of technology by banks, delivery agents and the customers themselves. In the recent past, 'Technology', has been a key enabler for financial services industry to further the penetration in unbanked and under-banked regions. Key benefits of technology led models for financial inclusion are mentioned below:

- Enhanced reach: New technologies including mobile,

Internet and NFC (Near Field Communication) help expand the reach of financial services, which is restricted in case of traditional brick and mortar models as their set-up and maintenance in rural hinterlands is expensive and cumbersome.

- On-demand availability: Unlike branches, which operate during fixed hours, new technologies provide 24X7 availability of services through ATMs, Internet and mobile channels.
- Lower cost of delivery: Financial transactions conducted on channels such as mobile cost much lower than those conducted through bank branches.
- Higher efficiency: Replacing cash with plastic/electronic/mobile money increases efficiency of the banking system by reducing cost and time involved in cash management.

Figure 2 Technological developments in financial services in India



- Higher security: Cash management often has higher security concerns, which are reduced to a great extent through the use of cashless modes.

payments. Every new technology has ensured a more convenient, user friendly, low cost access to financial services, which has resulted in furthering their reach and penetration. While some of these technology initiatives such as ATMs are expected to reach a maturity in the next 5-6 years, mobile payments are still at a nascent stage and are yet to experience growth and mass market acceptance.

Technology has evolved radically over past years resulting in newer ways to access and deliver financial services. In terms of sophistication in the domain, financial services industry has come a long way from card and Point of Sale (PoS) payments, ATMs to mobile

Figure 2: sources

I Central Bank of India Website, [https://www.centralbankofindia.co.in/site/MainSite.aspx?status=2&menu\\_id=128](https://www.centralbankofindia.co.in/site/MainSite.aspx?status=2&menu_id=128)

II HSBC Website, <http://www.hsbc.co.in/1/2/miscellaneous/about-hsbc/150-years-in-india>

III ICMR India, The Indian Internet Banking Journey, <http://www.icmrindia.org/free%20resources/casestudies/The%20Indian%20Internet%20Banking%20Journey-Case%20Study.htm>

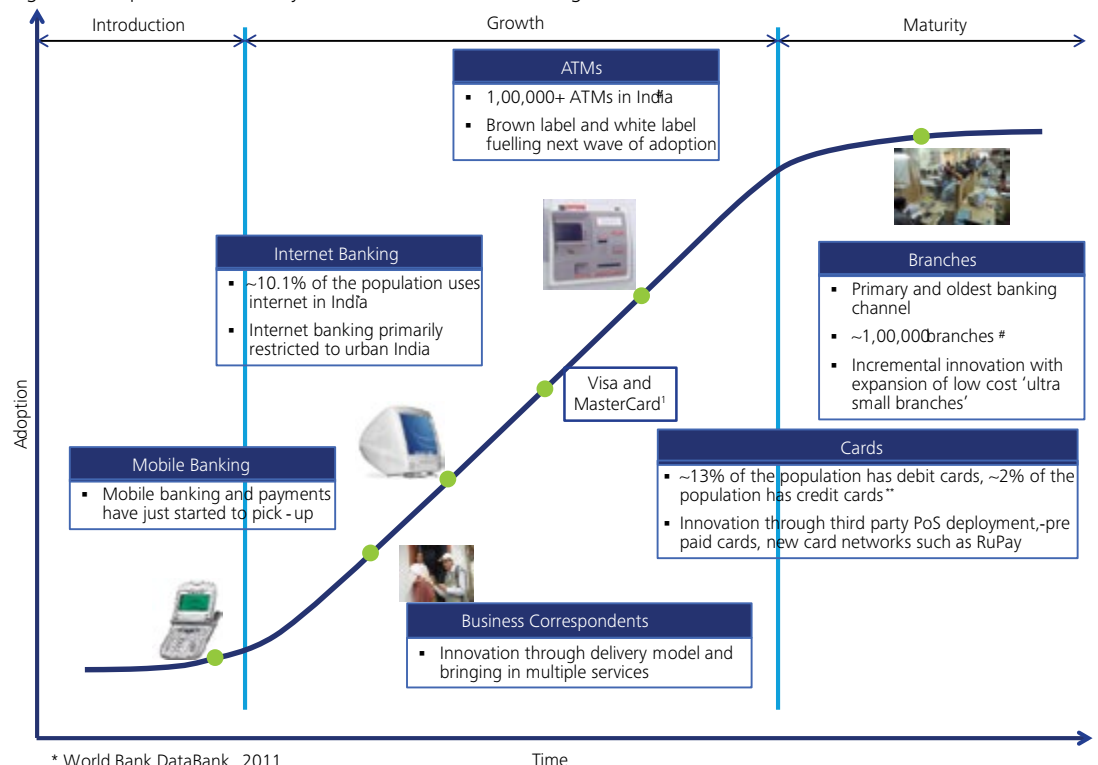
IV RBI notifications, February 5th, 2010, <http://www.rbi.org.in/scripts/NotificationUser.aspx?Mode=0&Id=5489>

V RBI Circulars, January 25th, 2006, [http://www.rbi.org.in/scripts/BS\\_CircularIndexDisplay.aspx?id=2718](http://www.rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?id=2718)

VI RBI notifications, October 8th, 2008, <http://rbi.org.in/scripts/NotificationUser.aspx?id=4524&Mode=0>

VII NPCI Website, <http://www.npci.org.in/aboutimps.aspx>

Figure 3 Adoption and maturity of financial services technologies



\* World Bank DataBank, 2011

# RBI Monthly Data Figures, March 2013

\*\* Dun and Bradstreet Report on Indian Banking Industry, 2011

Note : Visa and MasterCard are Copyright of respective companies

The above technology initiatives have helped achieve financial inclusion only to a certain extent, which is to advance from a traditional self-help group/Joint liability group based model to an assisted model driven by low cost branches and business correspondents. However, despite these efforts for financial inclusion, ~40% of the Indian population does not have access to formal financial services.

### **'Mobile' as an inclusive channel for banking and payments**

Mobile phones have become synonymous with India's digital growth. The growth is evident with the Indian mobile network operators enrolling over 886 million wireless subscribers, reaching not just urban, but almost 42% of rural population and more than 71% of the total population. Besides telecom, mobile connectivity has offered new market opportunities in other sectors to mitigate challenges around reach, transparency and provision of good quality services at lower costs. Banking on mobile, compared to other banking channels, has an advantage in terms of enhanced reach and cost effectiveness, though it may not core high on familiarity and ease of use yet. Mobile phones are already being used by ~17 million Indians for mobile banking; however, mobile payments are still an early phenomenon though its adoption and usage is on the rise.

The terms "mobile banking" and "mobile payments" are often used interchangeably but they are quite distinct. Mobile banking refers to any online banking transaction, excluding third-party payments or peer-to-peer fund transfers, which may be conducted via a mobile phone. These transactions may include checking an account balance, receiving alerts or transferring funds between two personal accounts.

Globally, mobile payments refer to the purchase of goods or services using a mobile device. A mobile payment transaction can employ one of three technologies:

1. Mobile commerce used for Consumer-to-Business (C2B) or Business-to-Business (B2B) transactions.
2. Mobile fund transfer used for Person-to-Person (P2P) transfers.
3. Mobile Near Field Communication (NFC) used for Consumer-to-Business (C2B) payments.

1. Mobile commerce (C2B, B2B): Mobile commerce allows users to make online purchases using their

mobile device. Payments can be made via a web browser, web based application or SMS, and charged to a debit card, credit card or virtual prepaid account. At present, mobile commerce has positioned itself in niche markets to deliver e-commerce services and downloadable content such as ringtones and mobile apps.

2. Mobile Person-to-Person (P2P): Mobile P2P allows users to send and receive money using a mobile device with payments linked either to a bank account, a prepaid virtual account including a mobile money account. Payments are typically made using SMS or via a downloadable Apps. Transaction values for Mobile P2P tend to be relatively low ticket and driven by the low number of payment options and the speed at which funds can be exchanged
3. Mobile NFC (Contactless payments - C2B): Mobile NFC leverages near field communication (NFC) or RFID technology to pay merchants via debit, credit, or prepaid account. Phones are embedded with a chip, SIM card, SD card or sticker containing the user's payment information. A transaction takes place when an NFC-enabled mobile handset is placed near a point-of-sale terminal. Mobile NFC is best suited for high-volume, low-value transactions that are typically paid for with cash. The quick service market, including fast food and parking, is a prime example

### **Journey of mobile payments so far in India - Key players and their initiatives**

Although mobile payments in India are in an early stage of usage, the services have made significant strides over the past few years. Prominent milestones along the journey of mobile payments so far are:

- Introduction of mobile banking: The RBI in October 2008 permitted banks to facilitate funds transfer from one bank account to another bank account for both for personal remittances and purchase of goods and services. Banks started offering mobile banking services to their customers through various channels such as SMS, USSD channel, mobile banking application, etc.
- Real time inter-bank gateway for facilitating Mobile Payments: Immediate Payment Service (IMPS) Initiative: In August 2010, the National Payments Corporation of India (NPCI) initiated a mobile payment pilot program with four member banks – viz. State Bank of India, Bank of India, Union Bank of India and ICICI Bank. The vision implied the end objective to 'bring all retail transactions on mobile phone.

IMPS has, currently enrolled more than 65 banks and offers real time, and 24 x 7 payment services. It has enhanced the efficiency of mobile banking by enabling real time transfer of funds between bank accounts and providing a centralised interbank settlement service for mobile banking transactions. The IMPS has also been enhanced to support merchant payments using mobile phones.

- Introduction of prepaid mobile wallet initiatives by banks in partnerships with telecoms: In November 2011, HDFC Bank and Vodafone India launched a partnership and technology solution that enabled customers to perform basic banking transactions on mobile phones, including the ability to deposit and withdraw cash at specific Vodafone branches. In a similar way, Airtel partnered with Axis Bank in May 2012 to deliver a no-frills savings bank account of Axis Bank on Airtel's mobile platform.
- Introduction of third-party non-banking prepaid

mobile wallet initiatives: In May 2013, Oxicaash introduced 'Instant Money Transfer Service' to target and allow the financially excluded to transfer money to any bank account and receive money through a prepaid wallet using IMPS. Two person-to-person mobile payment transfer capabilities were also launched; the first with the partnership of Nokia, Yes Bank and Obopay in February 2010; the second with Paymate and IFMR in April 2011.

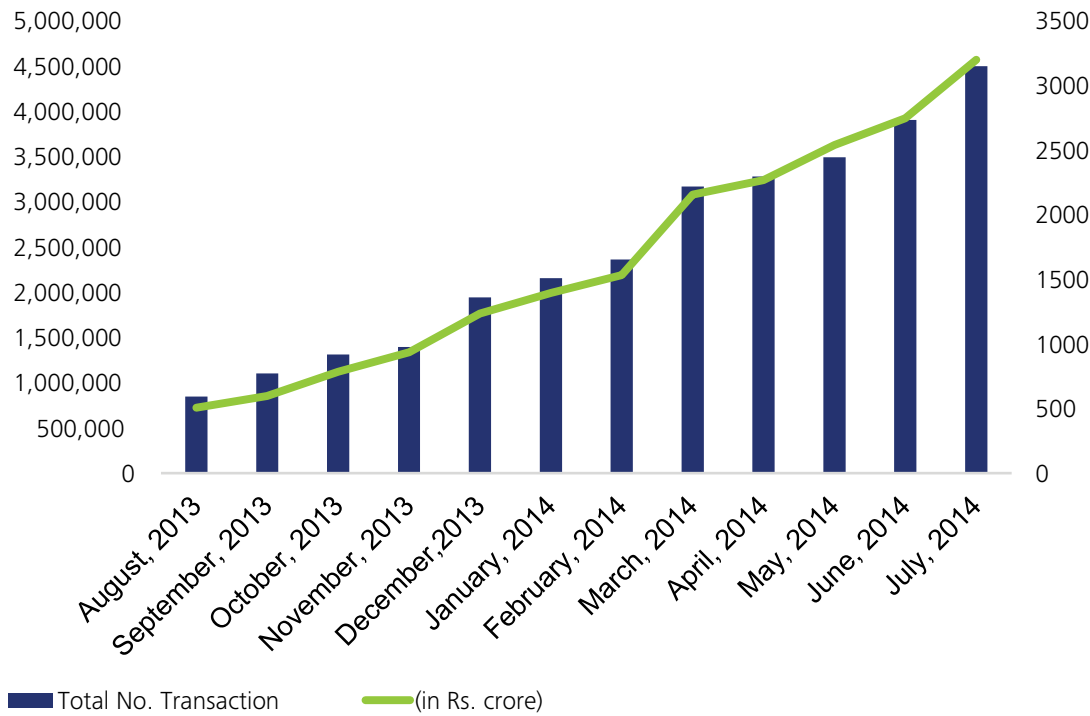
### Different models of 'Mobile' payments in India

Over the years, NPCI as well other players (banks, non-bank financial services players and telecom companies) have developed a different channel for facilitating mobile payments. These include wallet based payments, SMS based payments, USSD based payments and application based payments. While each of these models offer a certain advantage, they also have certain limitations as shown in Exhibit below.

### Forms of mobile payments in India

	1. Wallet -based	2. SMS	3. USSD	3. Application
Description	Mobilewallet acts as a storage device to electronically load all physical payment forms (credit card, bank account information, gift card, etc.)	SMS allows transactions through the mobile data network and mobile devise	Unstructured Supplementary Service Data (USSD) uses a communication between the telecom provider and bank for mobile payment transactions.	Mobile applications allow consumers to access and purchase goods and services through mobile web- based applications.
Advantages	<ul style="list-style-type: none"> <li>• Users can consolidate all payment mechanisms and remotely lock wallet</li> <li>• Easy to load with multiple top-up options</li> <li>• Conveniently tap to pay purchases with certain merchants</li> </ul>	<ul style="list-style-type: none"> <li>• Users only need basic mobile device with SMS capability</li> <li>• Easy to use for basic non - financial transactions</li> </ul>	<ul style="list-style-type: none"> <li>• Connection remains open (often more responsive and faster for services than SMS)</li> <li>• Relatively more secure than SMS</li> <li>• Works on all GSM handsets</li> <li>• More interactive than SMS based services</li> </ul>	<ul style="list-style-type: none"> <li>• Mobile banking accounts can be linked through payment solutions to expedite the online payment process</li> <li>• Very interactive and user friendly</li> </ul>
Disadvantages	<ul style="list-style-type: none"> <li>• Limited merchants have tap to pay purchase capability</li> <li>• Only work on smartphones</li> <li>• Risk of theft of phone</li> <li>• Transaction Security</li> </ul>	<ul style="list-style-type: none"> <li>• Dependent on cell service, and connectivity that can create delays</li> <li>• Syntax to transact is complex</li> <li>• Notend-to-end encrypted hence transaction limits are lower</li> <li>• Risk of theft of phone</li> </ul>	<ul style="list-style-type: none"> <li>• Takes slightly longer than SMS to complete the transaction</li> <li>• SMS is more capable to accommodate additional security features</li> <li>• Till now limited enrollment from telecom operators</li> </ul>	<ul style="list-style-type: none"> <li>• Need data services to operate</li> <li>• Limited to the merchants that build and maintain application</li> <li>• Applications vary from merchant to merchant</li> </ul>
Examples	<ul style="list-style-type: none"> <li>• Vodafone M- pesa</li> <li>• Airtel Money</li> <li>• Oxicaash</li> </ul>	<ul style="list-style-type: none"> <li>• Mobile Banking series by Banks</li> <li>• IMPS</li> </ul>	<ul style="list-style-type: none"> <li>• IMPS</li> <li>• ICICI Bank USSD Services</li> </ul>	<ul style="list-style-type: none"> <li>• iMobile App from ICICI bank</li> </ul>

Figure 4 Transaction growth



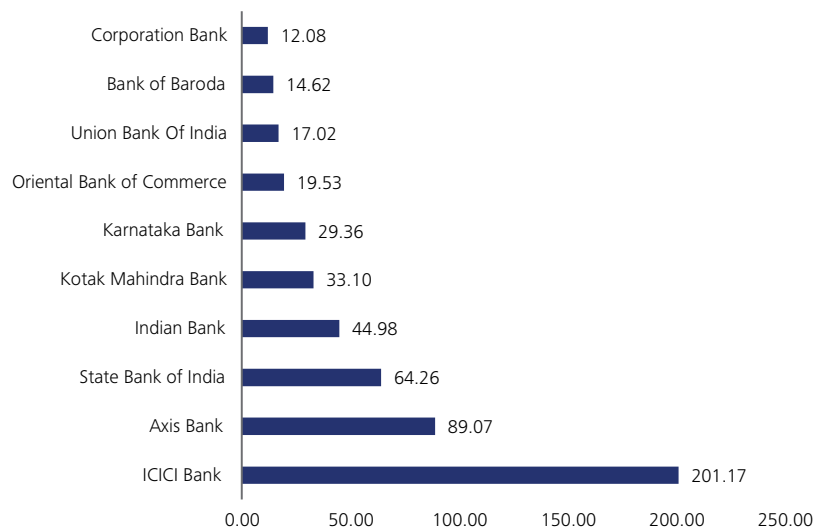
IMPS Statistics, <http://www.npci.org.in>

### Successes of the initiatives in terms of adoption and usage

The launch of the various initiatives demonstrates continued support for a future for mobile payments. Even within a relatively short amount of time, mobile payments have seen successful adoption of users and transactions. According to IMPS statistics published in July 2014, the number of Mobile Money Identification Number (MMID) is over 600 lacs with a total transaction volume growing more than five times to 4.2 Million in July 2014. This represents 16% user transactions growth on month-on-month basis since August 2013. ICICI Bank tops the lists with more than 2 crore MMID issued as of now.

The top 3 banks - ICICI, Axis Bank, and State Bank of India contribute to ~85% of the total MMIDs issued as of July 2014.

Figure 5 MMIDS issued in lacs



IMPS Statistics, <http://www.npci.org.in>



While these statistics are encouraging and show a sustained growth, there are several key challenges that inhibit mobile payments' ability to scale-up and improve adoption and usage in India. While most of these challenges are from supply side as service providers calibrate their offerings and grapple with multiple payments modes, customer awareness and knowledge on mobile payments remains extremely low.

- Lack of awareness among consumers for potential use of mobile for making payments: Mobile phones have traditionally been looked at as a voice and SMS devices. Though the use of data services amongst the banked and more sophisticated mobile population is increasing as consumer rapidly adopt smartphones, lack of awareness and absence of easy-to-use applications restrict usage of for making payments through mobile.
- Lack of compelling service proposition to customers: Even with money loaded on mobile, there are limited avenues to transact and withdraw cash. Lack of compelling use cases and transaction ecosystem further limits the usage of mobile payments. Further, mobile payments have only ability to replace pre-paid cards, debit cards and cash (since services are linked to bank accounts, pre-paid cards) but not credit cards since credit-based mobile payment solution are still not available.
- Perceptions of usage complexity: The current mobile payments ecosystem and processes for enrollment and mobile transaction are cumbersome. This complexity creates a resistance in user adoption and limits usage as customers prefer to use other easy to use electronic modes such as debit and credit cards along with cash.
- Security concerns or issues: Mobile phones are not perceived yet as a 'secure' mechanism for financial transaction. While Internet banking and cards have established as secure payment mechanism among urban and sophisticated consumer segment, others continue to rely on cash.
- Portability and standardization issues: Multiple service providers using various channels, interfaces and means of authentication creates confusion and hinders standardization. Certain services pre-requirements are not possible to undertake for unbanked or under-banked user (M-pin generation for every transaction) making it difficult for users to adopt and transact.

### The topics covered in this paper

Based on the journey so far and the outlook ahead, mobile payments can help create a payment system that is more efficient and inclusive for India. Notwithstanding the progress that has been made over the past decade, the level of financial exclusion remains very big challenge in India and thus, mobile payments solutions have vast potential in Indian market.

In support of this positive outlook, the theme for this year, "Translating to Transactions" seeks to understand how to translate the investments and efforts of each member of the ecosystem into transaction volumes. Furthermore, four key topics covering the future for mobile payments have been identified and dwelled upon. These topics present the key elements for ensuring continued growth of mobile payment adoption and usage, in pursuit of increasing transactions across all urban and rural areas. The four themes identified are as under:

#### 1. Retail mobile payments - Current scenario, challenges and future roadmap

Mobile payments present a quick, secure, on-the-go solution for making payments. However, the success of its uptake with retail customers remains a challenge. A closer look reveals that barriers to usage of mobile payments are different for different customer segments. While urban and sophisticated segment is showing resistance to shift from net banking and card based payments due to security and complexity of services, rural segment is either not familiar or averse due to lack of convincing proposition and supporting infrastructure for mobile payments.

A differentiated value proposition is required to drive usage of mobile payments in retail payments across all the transaction categories viz. – Person to Person (P2P) payments, Person to Merchant (P2M) payments and Person to Government (P2G) payments..

#### 2. Mobile led financial inclusion: Need for a collaborative model

A quick comparison of financial services industry in India with the telecommunications industry raises a natural question as to who is best suited to lead the mobile payments initiative and drive adoption.

Banks, as required by RBI, have traditionally been the epicenter of financial inclusion initiatives, yet the low number in branches, especially in rural areas of India, limits their ability to connect with the unbanked population without the last mile connectivity. On the other hand, telecom companies, with their customer connectivity pipelines and large number of distribution points, provide a certain level of accessibility, which may be the secret ingredient towards achieving mobile payment but lacks operational and regulatory sophistication and maturity to offer payment services to large section of population. With the new RBI guidelines on setting up specialized payments bank, both these businesses will start converging. This paper compares and contrasts the bank led model vis. a vis. telco/NBFI led model and describes how a collaborative model is the way forward to drive financial inclusion through mobile solutions.

### 3. Ecosystem support to make mobile payments a success: From policy interventions to technology inventions

At the heart of a successful mobile payments initiative, lies the need for a robust supporting ecosystem comprised of host of diverse players that can team together and support the overall initiative. Such constituents include the government, regulator, technology providers, third party service providers, microfinance organizations, along with banks and telecom companies. Each stakeholder has a fundamental role to play, whether that is setting specific guidelines to regulate the industry, creating cost effective technological devices or protocols, or investing or creating awareness across all geographic regions. The paper discusses key elements of support that are required from other players in the ecosystem to make mobile financial services a success story.



# 1. Retail Payments - Current scenario, challenges and future roadmap

## India: A growing but cash rich economy has a significant opportunity for mobile payments

As the Indian economy gradually recovers from a brief growth hiatus, it is poised to overcome the sub-5 per cent growth of gross domestic product (GDP) and expected to reach USD 2 Trillion mark in FY15. The rapid expansion of the middle class is expected to continue as India regains its position as one of the world's fastest growing markets. By 2020, India is expected to serve as the world's third largest middle class consumer market behind China and the United States, and by 2030, India is projected to surpass both as the world leader with an aggregated middle class consumer spend of nearly USD 13 Trillion. While the growing economy would significantly increase the revenue pool of payment industry in India, as of now, India remains predominantly a cash economy. Overall, 63% of transactions are carried out in cash, while only 37% are done through electronic means (including internet, cards and mobile).

Within retail payments, Person to Person (p2P) payments are increasingly being done by NEFT especially in case of urban/sophisticate customer segment. NEFT transactions account for lion's share in terms of value with more than INR 29 Billion in FY13. Consumers are also increasingly using credit/debit cards and POS payment mechanism

for making Person to Merchant (P2M) payments. Additionally, growing e-commerce market has also ensured increasing usage of online payments (Internet based payments) for purchasing goods and purchasing tickets online. Despite these developments, a large section of population remains isolated from electronic payments space.

Figure 6: Percentage of transactions in India by volume (2013)

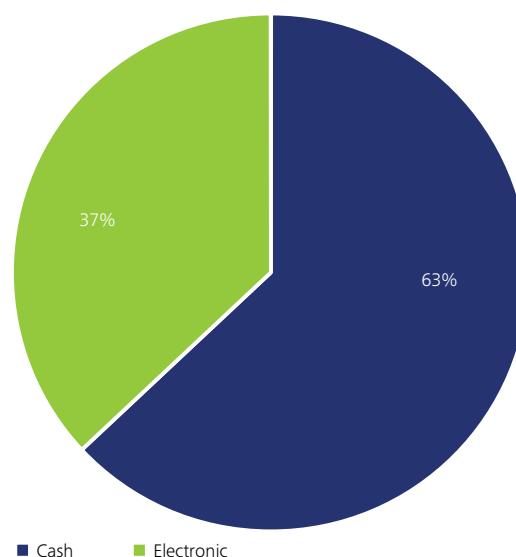
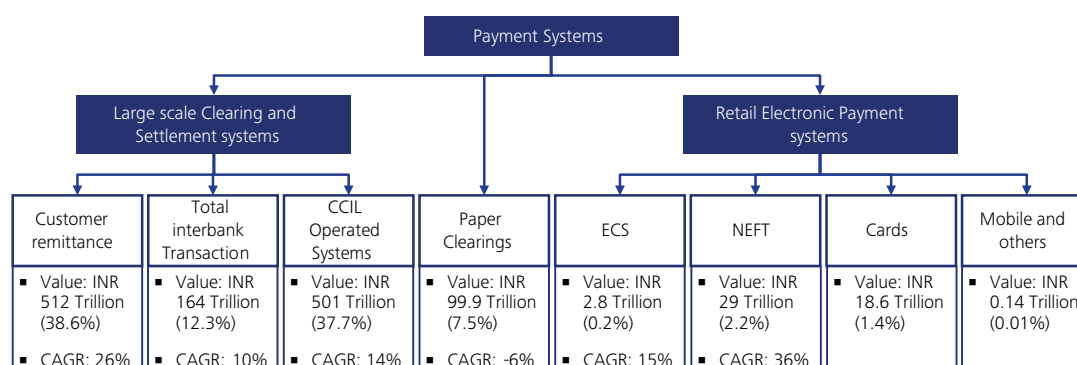


Figure 7: Percentage of transactions in India by value (2013)



Use of cash presents significant problems, such as:

1. Fraud – The number of counterfeit notes found in India are around 3 to 6 million per annum. The actual number of fake notes could be much higher in the country. Such counterfeit currency is used to fund illegal activities and adds to the 'black' money circulating in the economy.
2. Cost to the economy – The number of notes

circulating in the Indian economy is about 49 billion, increasing at a rate of about 10% per year. Printing notes, distributing notes, destruction of old notes and replacing them with new notes, carries a huge cost to the economy.

3. Inconvenience of carrying cash – Carrying large amounts of cash is inconvenient and carries the risk of loss and theft.

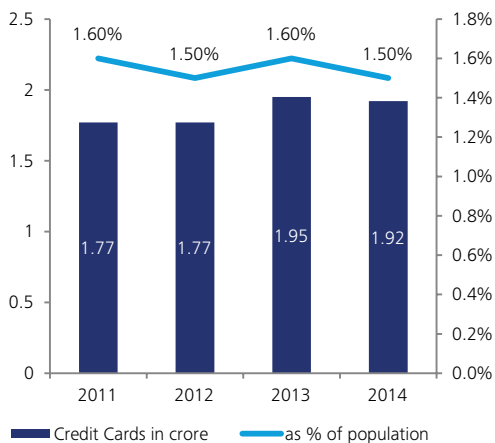
Figure 7 sources  
Note: Source: RBI Annual Report for the year FY13  
CAGR is calculated from FY08-13 except for ECS which is from FY09-13

### Despite efforts and rapid growth, electronic payments are still underpenetrated

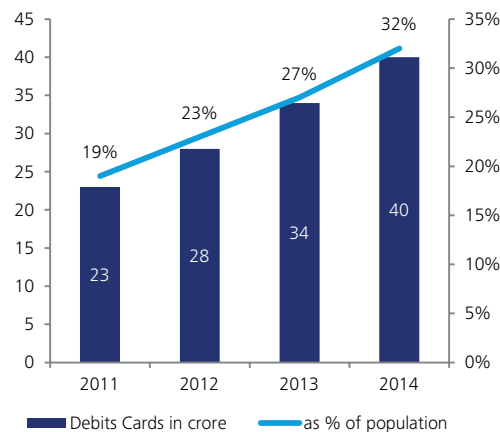
Credit cards, debit cards, are among the prominent modes of non-cash retail payment system that exists today for P2M payments. Number of credit cards in circulation in India has remained stagnant since 2008, while the number of debit cards continues to rise. Though the usage of credit as well as debit cards have increased in the past decade, card penetration remains low, with debit cards at 33% (about 400 million) and credit cards at 2% (about 23 million). On the acquiring

side of merchants, the number of POS machine installed in India remains at around 11 lakh indicating only 5% penetration of merchants (total number of merchant shops in India are estimated to be 2 crore). It is evident that despite the significant push from banks as well as card networks, card and POS adoption remains under penetrated due to various factors including availability of card accepting infrastructure, propensity to use cash, dropped transactions, frauds and security risks, etc.

Credit and Debit cards (number and penetration) in India



Source: RBI Annual Report: Trend and Progress of Banking in India

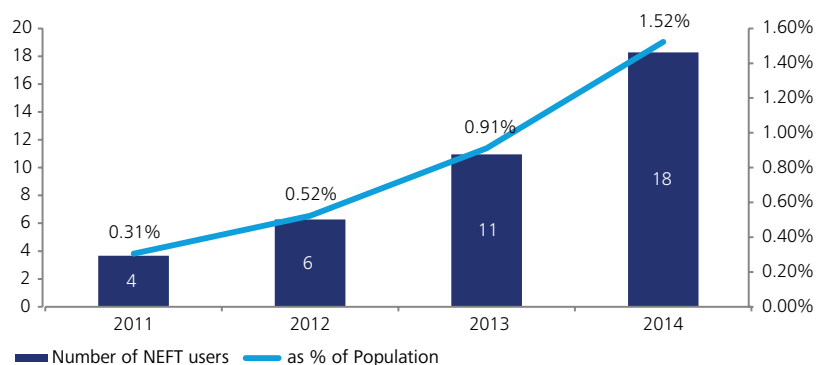


NEFT is the most popular mode of electronic payments, handling approximately 69 million transactions in a month. Even with an average of 3-4 transactions in a month, NEFT has approximately 20-30 million users, less than 2% of Indian population. Though, NEFT transactions have grown by 67% in the last two years, its penetration stands abysmally low. This can be mainly attributed to low Internet penetration in India with only 13.6% of India population as Internet users.

million (~9% of the total population). Currently, the number of mobile phones subscribers stands at 900 million+, growing at a CAGR of 4%. The mobile phone penetration stands to touch close to 100% by the end of the year 2015 as per TRAI estimates.

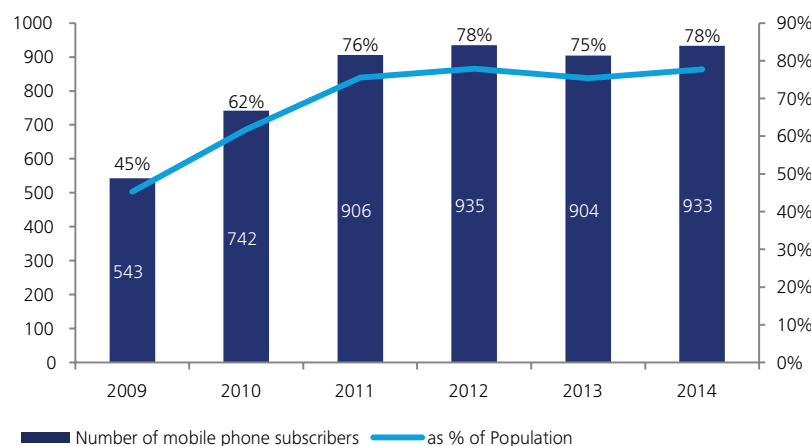
### Mobile: The right vehicle for retail payments

In a country of over one billion people, there is no doubt that the mobile phones have touched the highest number of lives in India till date. Within a few years, mobile phones have grown from a very small base to overtake even TV viewership in India. Even the penetration of PCs has been mainly restricted to urban India, making the installed base very miniscule at 95



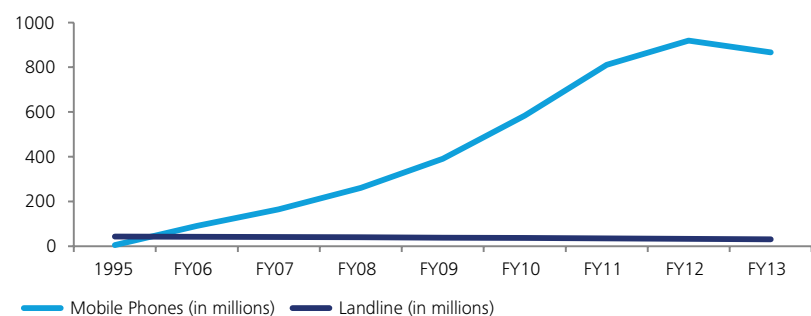
Source: RBI Annual Report: Trend and Progress of Banking in India

Figure 11: Mobile phone penetration in India



Source: TRAI publications

Figure 12: Mobile phone penetration in India



Source: TRAI publications

### India's mobile and landline penetration

A historical analysis demonstrates that mobile telephones exponentially grew bypassing the shortage of fixed line or landline phones in India. Besides anytime connectivity, it offered benefits of lower operating cost due to availability low value recharge packs. Adoption of credit and debit cards, much like the fixed line phones, is limited by structural deficiencies in India financial systems - Low penetration of banking services and electronic cards, low PoS penetration and limited credit information to offer credit card services. Mobile based financial services can leapfrog the POS, credit, and debit card payment modes and serve as the primary means of payment in India in the long term due to its ubiquity and lower servicing costs.

### Retail mobile payments: A tale of two customers

Mobile payments present a quick, secure, on-the-go solution for making payments. However, the success of its uptake with retail customers remains a challenge. A closer look reveals that barriers to usage of mobile payments are different for different customer segments. While urban and sophisticated segment is showing resistance to shift from net banking and card based payments due to security and complexity of services, rural segment is either not familiar or averse due to lack of convincing proposition and supporting infrastructure for Mobile payments.

A differentiated value proposition is required to drive usage of mobile payments in retail payments across all the transaction categories viz. – Person to Person (P2P) payments, Person to Merchant (P2M) payments and Person to Government (P2G) payments. This paper focusses on specific challenges and identifies promising use cases in P2P, P2M and P2G segments for mobile payments.

	Banked and technology savvy segment with access to electronic payments	Banked/unbanked/under banked segment with no exposure to electronic payments
Customer demographics	<ul style="list-style-type: none"> <li>Educated and technology savvy</li> <li>Higher income</li> <li>Mostly reside in metro, urban and semi urban areas</li> <li>Access to internet banking, credit and debit cards, ATMs</li> </ul>	<ul style="list-style-type: none"> <li>Less educated with limited knowledge of technology</li> <li>Lower income</li> <li>Mostly reside in rural areas</li> <li>Limited access to internet, ATMs and card &amp; PoS infrastructure</li> </ul>
Customer adoption challenges	<ul style="list-style-type: none"> <li>Lack of standardized and easy to use services</li> <li>Lack of trust in mobile payments due to dropped transactions</li> <li>Comfort with internet banking, ATMs and card transactions</li> <li>Mobile payment solution should also enable withdrawal of cash</li> </ul>	<ul style="list-style-type: none"> <li>Lack of awareness about mobile payments</li> <li>Technology in-experience and literacy constraints</li> <li>Cash is the only medium that continues to be accepted everywhere especially at merchant locations in rural areas</li> </ul>

Key drivers to increase usage	<ul style="list-style-type: none"> <li>• Increase use cases to provide compelling reason to use M-payments</li> <li>• Standardized services enabled by mobile technology and enriched with data layer (White label Apps to facilitate M-transactions)</li> <li>• Secure and well encrypted platform</li> <li>• Additional products features such as cash withdrawal and over-draft facilities in addition to mobile payments</li> </ul>	<ul style="list-style-type: none"> <li>• Customer education and handholding initially to drive mobile payments usage</li> <li>• Simple and intuitive payment platforms and interfaces</li> <li>• On-boarding of small retail merchants on the mobile payment ecosystem</li> </ul>
Offerings and opportunities to drive usage	<ul style="list-style-type: none"> <li>• Customized mobile banking solutions for making money transfers, merchant payments etc.</li> <li>• Incentives (loyalty programs, discounts, cash backs) to drive mobile payment usage (ex. Oxycash offers on Travel)</li> </ul>	<ul style="list-style-type: none"> <li>• Route the direct benefit transfer through mobile ecosystem to improve familiarity and adoption</li> <li>• Payment to/from government on mobile payment ecosystem (NREGA Payments, Small Savings)</li> <li>• Acquisition of small retail merchants in rural areas on mobile payment ecosystem</li> </ul>

### P2P, P2M and P2G payments – Prominent use cases and the road ahead

Mobile payments can create new and convenient financial transactional channels for mobile users which are accessible from anywhere, anytime.

Notwithstanding market dynamics, global case studies such as M-PESA highlight that mobile remittances have the potential to act as a gateway to the banking system for the unbanked and the under-banked segments, which make up a huge segment of the Indian population. Remittance services via mobiles, banks, and other financial institutions can attract new customers to related financial products, as well as transform the financial transaction environment in India into a more secure and efficient system.

There are varying types of mobile payments, including Person-to-Person (P2P), Person-to-Merchant (P2M), and Person-to-Government (P2G), each of which holds its unique value proposition in both urban and rural communities of India. Although IMPS has been introduced as a real time interbank gateway to facilitate mobile driven payments, the number of transactions occurring today has significant room to grow. A focused assessment of each mobile payment type suggests several promising use cases to further the mobile payments; but only cases that drive radical improvements, make processes simpler, seamlessly involve all stakeholders and offer security will ultimately drive up transactions.

### Conclusion

Mobile payments can help in the creation of a mobile-based digital economy that is more efficient, transparent and inclusive. In order to bring this technology to fruition, stakeholders must work together to address the current usage and adoption barriers through new use cases along with customer education, improving easy to use payment platforms, and increased security in electronic money.

Entire gamut of retail payments such as P2P, P2M and P2G have tremendous growth potential and also offer a host of compelling use cases to target consumers. However, stakeholders need to develop customized yet scalable solutions to deliver these use cases. While developing and deploying such solutions might be relatively easier in case of P2G payments where government itself can take initiatives, in other cases such as person-to-merchants payments, all the stakeholders must ensure merchant education, on-boarding and servicing. Considering the strong value proposition that mobile retail payments can offer, a financially inclusive mobile-enabled payment ecosystem is not implausible in India.

## 2. Mobile led financial inclusion: Need for a collaborative model

### Bank-led model for financial inclusion

Historically, Indian financial system has adopted a bank led model for facilitating financial inclusion. Banks played an instrumental role - relying primarily on expanding branch network (rural branch mandates), setting up special purpose government sponsored institutions (such as regional rural banks (RRBs) and cooperative credit institutions), targeted lending through priority sector loans, promoting Self-Help group (SHG)

linkages, etc. However, such steps have yielded results till a point in achieving this herculean task with still over 50% of the total population in the country remains unbanked. Common issues such as lack of scalability, cost efficiency and last mile delivery challenges have hindered the effectiveness of most of these bank led interventions. Some of the key bank-led financial inclusion initiatives are summarized the table below.

RBI initiative	Key features	Observations
Priority sector lending	<ul style="list-style-type: none"> <li>40% of the bank's total lending should be for priority sector (SMEs, Agriculture, Housing, Education, Export Credit, etc.)</li> <li>Recently recommended to be increased to 50%</li> </ul>	<ul style="list-style-type: none"> <li>More than 58% of the NPAs for public sector banks are from the priority sector portfolio</li> <li>Underachievement of priority sector targets such as direct agriculture (by 25%) and weaker sections (by 10%)</li> <li>Significant regional disparity in disbursement of PSL credit</li> </ul>
Rural branch mandate	<ul style="list-style-type: none"> <li>At least 25% of all proposed branches by Scheduled commercial banks to be opened in rural areas</li> </ul>	<ul style="list-style-type: none"> <li>For more than 600,000 villages in India there only about 40,000 rural branches indicating &lt;7% penetration</li> </ul>
Kisan credit cards	<ul style="list-style-type: none"> <li>Aims at providing need based and timely credit support to the farmers for their cultivation needs</li> <li>To bring about flexibility and operational freedom in credit utilization</li> </ul>	<ul style="list-style-type: none"> <li>More than 100 million KCCs issued since 1998, for only about 22 million account holders, indicating duplication and regulatory malpractices</li> <li>Lack of consumer awareness leading to under-usage of credit limits and withdrawal facilities/Infrastructural constraints</li> </ul>
SHG Bank Linkage Programme (SBLP)	<ul style="list-style-type: none"> <li>Executed by National Bank for Agricultural and Rural Development (NABARD), SBLP is a scheme of extending bank credit to SHGs which are managed or promoted by NGOs/Government agencies</li> <li>Idea is to combine access to low cost financial services with a process of self-management</li> </ul>	<ul style="list-style-type: none"> <li>Lack of penetration and high level of apprehension within banks in extending loans, sub-optimal loan amounts, dysfunctional offices</li> </ul>
Co-operative credit societies	<ul style="list-style-type: none"> <li>Cooperative societies with primary objective of providing credit facilities to their members (farmers), including a cooperative land mortgage bank</li> <li>More than 120,000 cooperative credit societies with a membership of more than 145 million</li> </ul>	<ul style="list-style-type: none"> <li>Operational inefficiencies leading to decline in number of societies and membership</li> <li>Lack of cost competitiveness and inability to effectively market policies and programs leading to negative growth and stagnation</li> </ul>
Business Correspondent (BC) model	<ul style="list-style-type: none"> <li>RBI enabled model, wherein intermediaries like NGOs/SHGs/Farmer Clubs/cooperatives/agents can help banks in providing financial and banking services in rural and isolated areas</li> </ul>	<ul style="list-style-type: none"> <li>Operational capacity of BCs is limited as they can service within a radius of 30Kms of a branch</li> <li>For more than 600,000 villages, there are ~ 85000 odd BCs connected to only 38,000 branches, severely affecting serviceability</li> </ul>

<http://www.dqindia.com/dataquest/feature/211509/taking-banking-unbanked>

<http://www.rbi.org.in/scripts/FAQView.aspx?Id=87>

<http://indianexpress.com/article/opinion/columns/same-old-banking/>

<http://www.mse.ac.in/pub/Monograph%20for%20web-27.pdf>

<http://www.ifmr.co.in/blog/2014/01/27/>

[the-adjusted-psl-mechanism-for-priority-sector-lending-by-banks/](http://www.ifmr.co.in/blog/2014/01/27/the-adjusted-psl-mechanism-for-priority-sector-lending-by-banks/)

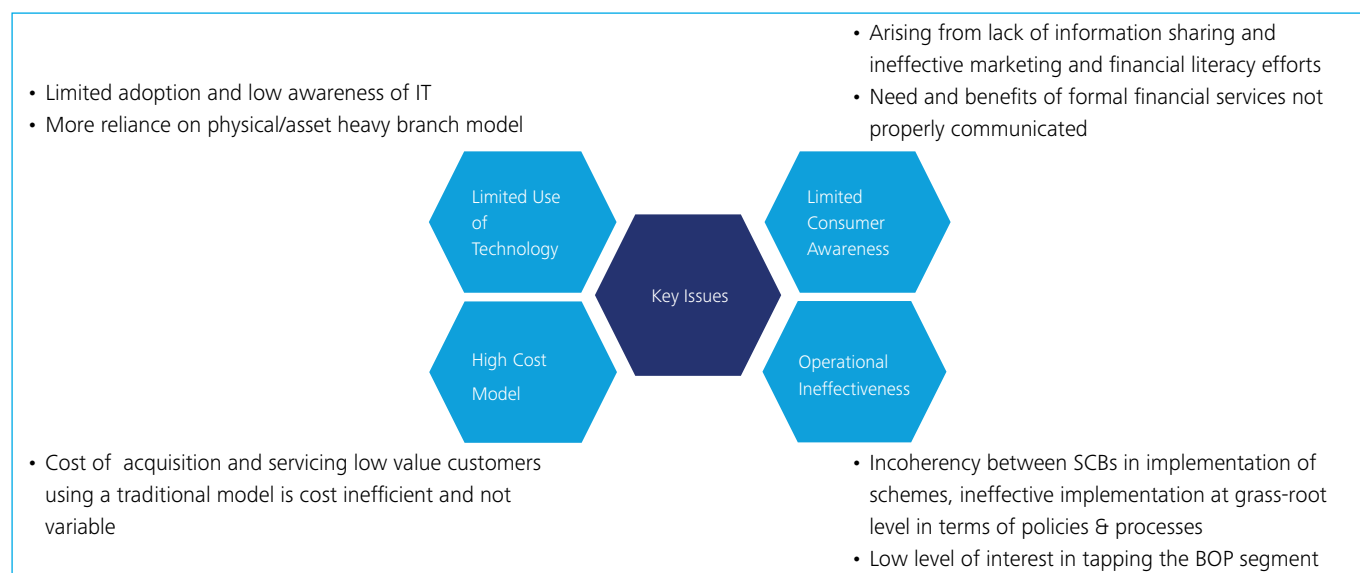
<http://indianexpress.com/article/opinion/columns/same-old-banking/>



While the sustained efforts from banks did achieve success, the coverage achieved by these initiatives has been less than what is desired for. One of the primary reasons for this has been the limitation of having a few players trying to address a much complex and larger issue. Banks were expected to play most or the entire role in identifying, fulfilling and serving the needs of financial excluded with limited participation from

other players in the ecosystem. Though specialized intermediaries such as banking correspondents were introduced in banking system in the last decade, banks have continued to have this inward looking approach. Key drawbacks that have proved to be an impediment in furthering financial inclusion for the RBI initiatives so far are described in the exhibit below:

Figure 13: Drawbacks of financial inclusion initiatives- Bank Model



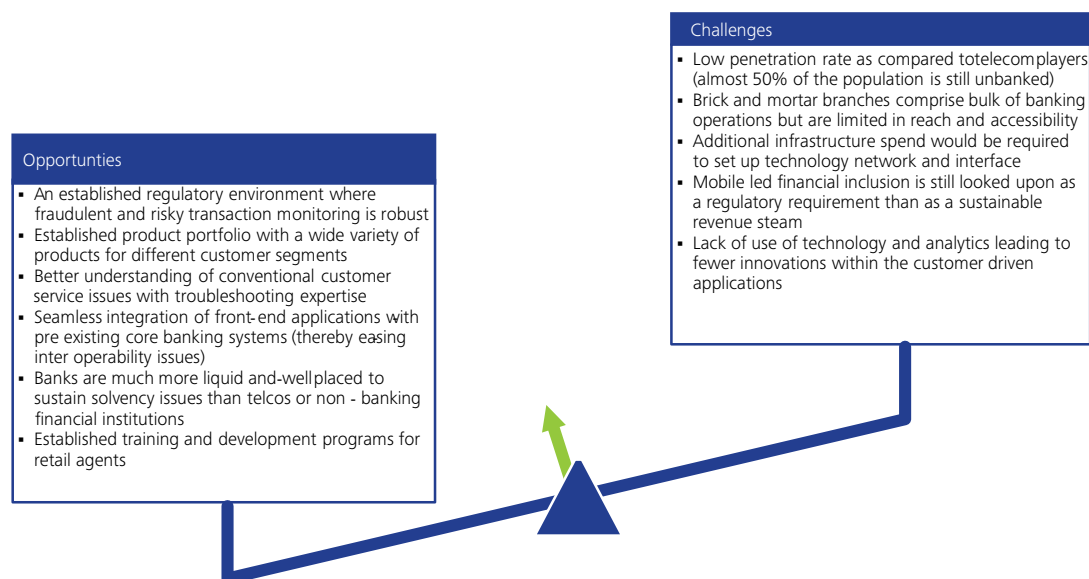
The challenges in bank-led model are not as much due to the lack of customer adoption but due to the dearth of an ecosystem support to plug the key gaps. In the light of the above, we have identified critical gaps that are required be plugged to improve the likelihood of success of the bank led model.

#### Critical success factors for bank led model

1. Risk-based regulation that provides the room for innovation, competition and protection of customer's interests: Innovations must be regulated in proportion to risk posed to prevent any incidence of systemic risk for the banking system and for individual consumers.
2. Effective and optimal deployment of technology across all domains to re-engineer business processes, linking front-end transactions seamlessly with back offices to offer real time banking services.
3. Developing an innovative mobile payments system customized to regional requirements and with equal focus on increasing awareness and marketing of the services.
4. Extensive use of analytics, which can enable optimized performance, informed decisions, actionable insights and trusted information.



Figure 14: Opportunities and challenges of bank-led mobile financial inclusion



### Role of telecom and non-bank players

While banks traditionally have been the providing retail payment services, new technologies and new types of financial and nonfinancial intermediaries are emerging to provide alternative and efficient payment solutions. These intermediaries primarily include telecom companies and Non-Banking Financial Institutions (NBFIs) including Airtel (Airtel Money), Vodafone (mPesa), Obopay, Oxicaash etc. Telcos and NBFIs have started playing critical role in furthering financial inclusion through innovations such as prepaid wallets, mobile money accounts and mobile payments.

As per the estimates of International Telecommunication Union, the United Nations agency for information and

communication technologies, there were 6.9 billion mobile-cellular subscriptions in the world in the mid of 2014. With a global reach of 95.5 percent — and with an adoption rate for developing-world of 90 percent — mobile phones are in use almost everywhere and by virtually every consumer segment. With such widespread access, businesses have started to harness the potential mobile phones provides, and have translated it into financial services enabling people to pay bills, get cash from local merchants, and send money back home to their families — without having to step into a bank. Many global examples of models where telecom players/ NBFIs have taken a leading role in furthering financial inclusion have emerged in many developing countries in Africa and Asia.



Figure 15: Case study of m-Pesa and Globe G Cash

#### M-Pesa<sup>1</sup>

**Objective:** Enabling users to perform basic financial transactions without the need to visit a bank branch, using a mobile-based branchless banking service.

**Key Player(s):** Safaricom/Vodafone (Kenya), a leading telecom player in Kenya

**Business Model:** Telco led mobile payment model, where customers (Telco-owned) can transfer/deposit/withdraw money, make payments and other transactions through their mobile phones (where cash-in/out points are banking agents)

**Success:** The system now covers about 14 million people in Kenya and has disrupted the core banking model there. 160,000 P2P and 118,000 m-banking transactions per day. Over a three-year period, M-PESA has become among the most popular mechanism of providing financial services in Kenya and has grown at the expense of nonbank organizations providing no-frills basic banking services — savings and credit cooperative societies (SACCOs) and microfinance institutions (MFIs). Launched in 2007, M-PESA had more market share (26 percent) than commercial banks (20 percent), SACCOs (6 percent), or MFIs (3 percent)

#### Globe<sup>2</sup>

**Objective:** Providing Globe's mobile phone subscribers access to a cashless and card-less method of facilitating money transfer, transforming their mobile phone into a wallet

**Key Player(s):** Globe, a leading telecommunication company in the Philippines

**Business Model:** Allows users to maintain cash reserves in an electronic format accessible via their mobile phones. Again a telco led payment model, where the bank acts as the deposit taking and cash point intermediary. Features such as money remittance, donations, loan settlement, disbursement of salaries or commissions, and payment of bills, products and services, are accessible to customers with just a text message.

**Success:** The G cash service is attuned to the micro- finance market in the Philippines. People can easily pay their loan amortizations; also the large network of conveniently located G-Cash merchants/Outlets also makes it easier for people to access the services

M-Pesa<sup>1</sup> and Globe<sup>2</sup> are copyright of respective companies

As observed in the United Nations study, the telco/ non-bank led models for mobile payments has witnessed major success in developing economies including Kenya, South Africa, Tanzania, Philippines, etc. Its success has been aided by many vital factors – large unbanked population, high penetration rate of mobile communication and the increasing tendency of traditional banks to steer unprofitable customers to other institutions, thereby creating a large pool of untapped customers with no access to formal banking services.

The telcos and NBFIs can establish a new paradigm in financial inclusion as their role in financial inclusion may progressively become more critical considering their ability to reach wider customer base, experience

in providing value added services to its customers and better customer connect.

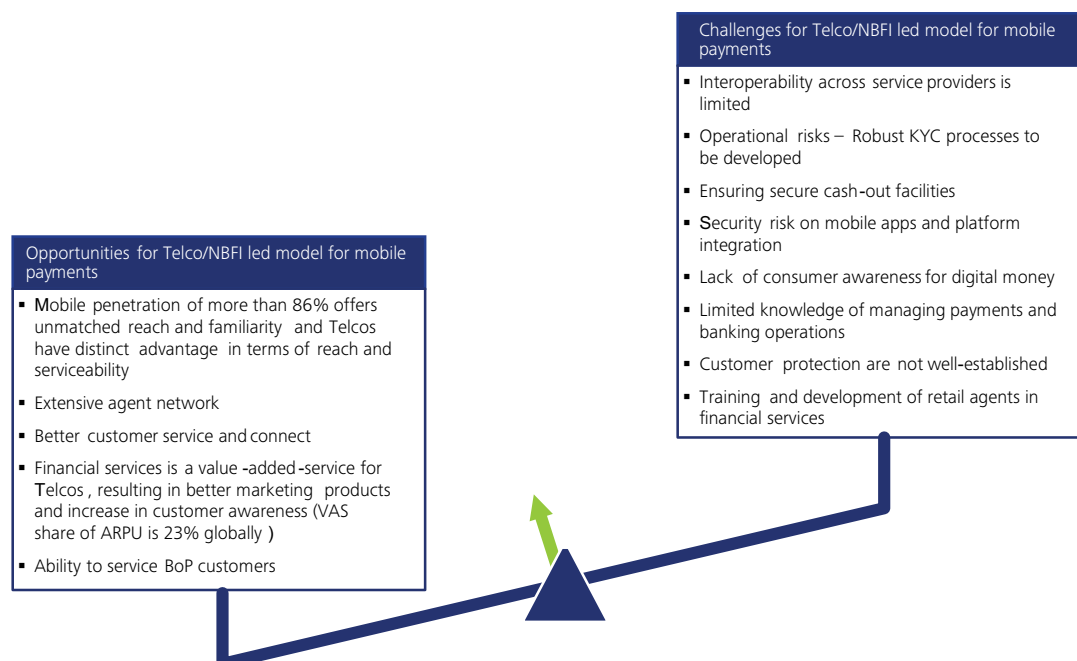
From mobile banking to mobile payment to mobile money, there has been a gamut of services introduced within a very short span of time supported by business model of telecom companies as provided below. The existing business model followed by telcos/NBFIs in India in which they tie-ups with banks (in the capacity of BC) for opening the accounts and provide cash-out services. However, in the pure-play model telcos/NBFIs can have complete ownership of the customer (including deposit and cash-outs), which will be more value accretive for telcos/NBFIs provided they comply with the RBI requirements and have stringent operational and control processes.

Figure 16: Opportunities and challenges of Telco/NBFI led financial inclusion

RBI initiative	Bank led	Telco/NBFI led (Currently existing in India)	Telco/NBFI led (Pure play model)
Who holds the deposit?	Bank	Bank	Telco/NBFI
Whose brand engages with customer?	Bank	Telco/NBFI	Telco/NBFI
Who offers cash-in/out points?	Bank Retail Agents	Bank Retail Agents	Telco/NBFI touch points
Who carries the payment instruction?	Bank/Telco	Telco/NBFI	Telco/NBFI
Who owns the customer (relationship)?	Bank	Telco/NBFI	Telco/NBFI

Considering the opportunities and challenges for furthering financial inclusion, we take a look at a comparative table below, summarizing the impact of certain key factors across both the models:

Figure 17: Opportunities and challenges of Telco/NBFI led financial inclusion



The benefits and challenges of Telco/NBFI led 'pure-play' model for mobile financial inclusion is depicted in the exhibit above. Considering some of these limitations, telcos/PPIs would benefit if allowed to operate under 'pure-play' model where they will be allowed to hold deposits and offer cash out services. Though there are numerous concerns on the telco/NBFI led model for mobile financial inclusion but with appropriate measures,

this model can be developed into powerful channel for inclusive financial services, reaching out to masses and expanding the scope of financial services to the unbanked and under-banked. Measures in the area of regulatory compliance, risk management and effective operational control can improve the robustness of telco/NBFI led models:

Key considerations	Potential measures
Regulatory supervision	<ul style="list-style-type: none"> <li>• Licensing, regulation and supervision by RBI; Payments Bank is will aim to achieve this.</li> <li>• Establishment of a common forum involving both RBI and TRAI along with Telcos/ NBFIs for greater coordination (on similar line of Indian banks Association).</li> </ul>
Risk Management	<ul style="list-style-type: none"> <li>• Effective risk management practices to ensure that depositor's money is safe specially while handling cash.</li> <li>• Restrictions on the activities that can be undertaken by telcos/NBFIs to reduce risk exposure- Inter group lending and exposure.</li> <li>• Transaction / Holding limits to reduce risk.</li> </ul>
Operations	<ul style="list-style-type: none"> <li>• Technical and operational standards to be at par with banking industry; Payments Bank will aim to achieve this.</li> <li>• Consumer protection rights establishment and insolvency protection for customers.</li> <li>• Certification and accreditation of Authorized retail agents/BCs.</li> </ul>

It is evident that there are challenges and benefits for both bank led and telco-led models. Either model on a standalone basis may not provide an optimal solution to further mobile led financial inclusion. Differences in culture, risk-appetite, regulatory affiliations, etc. across these two businesses could further challenge collaborative partnerships. Furthermore, issues including customer ownership and revenue pool sharing, commercial terms on sharing common infrastructure can further create divergence.

Despite inherent challenges and constraints to foster collaboration and partnerships, both banks and telcos can draw on their unique expertise and experiences. Banks with robust regulatory frameworks (for Anti Money Laundering, KYC, etc.) and back office operations

are more suited to provide the transaction processing, risk management and control capabilities whereas telcos with their customer base, distribution network, technology reach and marketing efforts can focus on customer origination, customer service and relationship management.

The need for a collaborative model with the association of both is absolutely imperative. Payments banks setup by telcos could be one of the collaborative models for achieving the desired results optimally and efficiently. Inherent in any such collaboration, there will be challenges, which need to be mitigated. Payments Banks can plug some of the gaps across business model and operations

Key Factors	Cost to Acquire and Serve	Breadth of Product Offering	Convenience and Accessibility	Last Mile Connectivity	Technology Deployment
Bank Led	Moderate	High	Low	Low	Low
Telco Led	Low	Low	High	High	High
Payments Bank	Low	Medium	High	High	High

#### Payment Banks –A combination of strengths of bank and telecom operator

The Reserve Bank of India, recently released the draft guidelines for payment banks, which will provide transactional services including account opening, payments and remittances. These banks will not extend loans/credit to the account-holders and will be only allowed to invest in government securities on the asset

side. The objective of such a bank would be to extend primary banking services to the hitherto unbanked and offer basic transaction/payment facility.

While taking cue of certain operational risks that payment firms are faced with, the RBI has outlined some draft guidelines for the payment banks.

#### Scope of services proposed for payments bank

##### Deposits products

- Acceptance of demand deposits, i.e., current deposits, and savings bank deposits. The eligible deposits will be covered under the deposit insurance scheme of DICGC (Depositors Insurance Credit Guarantee Corporation).
- Payments Banks will initially be restricted to holding a maximum balance of INR 100,000 per customer.
- For the "small accounts" transactions defined in Rule 2 clause (fb) of the Prevention of Money-laundering Act 2002, simplified KYC/AML/CFT norms will be applicable.

##### Payments and remittance services

- Payments and remittance services through multiple channels including branches, BCs and mobile banking.
  - Payments/remittance would include acceptance of funds through branches and BCs and payments of cash through branches, BCs and ATMs.
  - Cash-out can also be permitted at Point-of-Sale terminal locations.
- Issuance of prepaid instruments
- Internet banking – Facilitate transactions primarily using the Internet. Such a bank should ensure that it has all enabling systems in place including business partners, third party service providers and risk managements systems and controls to enable offering transactional services on the internet.
- Functioning as Business Correspondent (BC) of other banks.

#### Other regulatory outlines by RBI

Initial capital requirement of INR 100 crore- The minimum paid up voting equity capital has been fixed at INR 100 crore, with the promoter holding not less than 40% of capital, along with a 5 year lock-in period.

Payments bank is required to maintain a minimum capital adequacy ratio of 15 %of its risk weighted assets as per BASEL 1 standard and should have a leverage ratio of not less than 5% (outside liabilities should not exceed 20 times net-worth / paid-up capital and reserves).

Cannot undertake any lending activities. Apart from CRR, minimum cash and balances with a other banks/RBI required for operational activities and liquidity management.

Payments bank will be required to invest all its monies in government securities/treasury bills with maturity up to 1 year that are recognized by RBI as eligible securities for maintenance of SLR.

Maximum deposit a payment bank can take from one individual will be capped (Anti-Money Laundering stipulations).

payments bank and are also well positioned to meet regulatory requirements. The business alignment of

existing non-bank (Telco/NBFI) players with the proposed requirements is provided in the table below:

Likely 'fit and proper' criteria for payments bank license	Telcos /NBFIs alignment
Retail payment and remittance focus	<ul style="list-style-type: none"> <li>• Most major telecom players and NBFIs have experience in operating retail payment systems through prepaid operations (Vodafone mPesa, Airtel Money, Obopay, etc.).</li> <li>• With the inclusion of major Telcos and NBFIs, in both card-issuing and merchant acquiring businesses, non-banks are set to play a bigger role in financial inclusion.</li> </ul>
Rural and semi urban presence	<ul style="list-style-type: none"> <li>• With more than 1.5 million touch points for major Telcos/NBFIs and urban and rural penetration is highest.</li> </ul>
Commercially viable business model	<ul style="list-style-type: none"> <li>• Technical and operational standards to be at par with banking industry; Payments Bank will aim to achieve this.</li> <li>• Consumer protection rights establishment and insolvency protection for customers.</li> <li>• Certification and accreditation of Authorized retail agents/BCs.</li> </ul>
Capital position	<ul style="list-style-type: none"> <li>• Indian telecom companies and NBFIs can meet capital requirement of INR 100 crore to setup payments banks.</li> </ul>
Management expertise	<ul style="list-style-type: none"> <li>• Most major NBFIs and telcos have had extensive experience across financial services, inclusive business models, payments and technology.</li> </ul>

## Conclusion

It is evident that to achieve a full scale financial inclusion, participation from players beyond banks is absolutely necessary. Historically, bank-led model has had advantages in term of breadth of products and services, established risk management practices and people and system capabilities to serve customers. However, on the

other hand, their business and operating model is not viable to offer service the needs of unbanked and under banked segment to achieve the herculean task of 100% financial inclusion. telcos/non-banks can fill in these gaps and collaborate with banks to achieve financial inclusion in a more effective and efficient manner.



# 3.Ecosystem support (from government, regulator, SHGs/NGOs and others) to make mobile payments a success

The broad objective of financial inclusion is to extend financial services to the poor as well as to create a sustainable ecosystem, which will be conducive and efficient to further the reach of financial services. However, a large population of India remains deprived of basic financial services such as credit, savings, insurance, payments and remittances and all the stakeholders need to direct their resources towards financial inclusion of this segment.

In building a mobile payment ecosystem, a diverse set of stakeholders comes into play. The exhibit below compares roles that these stakeholders have played historically as a part of a traditional financial services ecosystem with the roles that these stakeholders are expected to play as a part of this evolving ecosystem for mobile payments.

	Bank led Traditional financial ecosystem	Evolving ecosystem for mobile payments
Government	<ul style="list-style-type: none"> <li>• Role restricted to policy making for financial services.</li> <li>• Limited initiatives to support the financial institutions.</li> </ul>	<ul style="list-style-type: none"> <li>• Role of a facilitator to coordinate efforts of multiple stakeholders to promote mobile payments.</li> <li>• Role of enabler to address issues such as financial literacy, risk management through multiple initiatives such as UIDAI, NeGP, etc.</li> </ul>
Regulators	<ul style="list-style-type: none"> <li>• RBI playing the key role in developing strategy and approach for financial services.</li> </ul>	<ul style="list-style-type: none"> <li>• RBI will continue to play a key role with active participation from TRAI, NPCI and other government bodies.</li> </ul>
Financial Institutions	<ul style="list-style-type: none"> <li>• Banks-led model to achieve financial inclusion with limited participation from other financial services provider.</li> <li>• Focus on providing basic account and credit facility to the financially excluded.</li> </ul>	<ul style="list-style-type: none"> <li>• Participation from Telcos, NBFIs in addition to banks to achieve financial inclusion.</li> <li>• Focus on providing entire gamut of services through mobile.</li> </ul>
Technology/ Third party software	<ul style="list-style-type: none"> <li>• Participation from bank-allied institutions such as cooperative credit institutions.</li> <li>• Limited participation from other service providers and intermediaries.</li> </ul>	<ul style="list-style-type: none"> <li>• Broader participation from multiple stakeholders such as local institutions (business correspondents), technology services providers (IT services and telecommunication services) and third party players.</li> </ul>
Customers	<ul style="list-style-type: none"> <li>• Customers play the role of end user whose needs are of paramount importance while developing the ecosystem.</li> </ul>	<ul style="list-style-type: none"> <li>• Active participation in usage of services, SMS literacy and awareness about financial services are important while considering the ecosystem.</li> <li>• Customer also plays the role of improving the services by reporting their grievances to other stakeholders.</li> </ul>
Merchants	<ul style="list-style-type: none"> <li>• Merchants play the role of both payer and receiver and thus understand both sides.</li> </ul>	<ul style="list-style-type: none"> <li>• Apart from role of customers, merchants can also act as service agent or service promoter by engaging their customers in mobile payments.</li> </ul>



Evolving ecosystem for mobile payments must work towards broader goal of furthering financial inclusion and shall not restrict themselves to only growth of mobile payments in banked regions.

In light of the above, the initiatives that each of the stakeholder can undertake to boost mobile payments adoption and usage are described below:

Government's role in promoting mobile payments  
In the traditional ecosystem, the government's role is restricted to policy making for financial services and it

takes limited measures to support financial institutions. Whereas, the ecosystem promoting mobile payment requires the government to act as a facilitator to coordinate efforts of multiple stakeholders and an enabler to address issues such as financial literacy, risk management through multiple initiatives such as UIDAI, NeGP, etc.

Government can leverage the already in-place schemes and systems to promote mobile payments in the country. Some of these initiatives can be:

#### **National e-Governance Plan (NeGP)**

National e-governance plan (NeGP) has been introduced to make all public services accessible to the common man in his locality, through common service centres and ensure transparency and reliability at affordable costs. Mobile payments can bring the costs down as follows:

- Utility payments (electricity, telephone and mobile bills) can be made through mobile payment platforms; Interlinkage with Bharat Bill Payment System.
- Payments of school fee, commercial taxes can be made through mobile payment platforms.

#### **Rashtriya Swasthya Bima Yojna (RSBY)**

Under the RSBY scheme, below poverty line (BPL) families are provided free medical care (costing up to INR 30,000) in any government and private hospitals. The majority of the financing, about 75 percent, is provided by the Government of India (GOI), while the remainder is paid by the respective state government. Mobile payments can be introduced in this scheme to ensure efficient, transparency and reliability of the service in the following ways:

- Beneficiaries hold biometric enabled smart card, which can be replaced by NFC enabled mobile phones which can be used along with NFC readers installed in the hospitals. This will remove the need to carry the smart card.
- Government-to-insurance and insurance companies-to-hospitals payments can be done over the mobile payment platforms.

#### **Unique Identification Authority of India (UIDAI)**

Where one out of four Indians is expected to possess a Unique Identification Number (UID) number by 2014, it can be integrated with mobile payments and promote mobile payments in the following ways:

- Payment portals which uses UID and Aadhaar enabled bank account for authenticating transactions can replace cumbersome process of entering the account number, IFSC code and other details required on a SMS based mobile payment platform.



**Public Distribution System**

The Public Distribution System (PDS) in the country facilitates the supply of food grains to the poor at a subsidized price and is one of the biggest schemes of government which benefits 19 lac households (42 % of total families) in India. The system has been frequently criticized for its inefficiency, rural-urban bias, corruption, and black-marketing. Some of these issues can be tackled by involvement of mobile payments as follows:

- Cashless payments at daily basis will encourage adoption and usage of mobile payments by the under-banked and unbanked population, which will increase their involvement in other banking services provided through mobile phones.
- Reduced handling of cash by shopkeepers will increase efficiency and electronic transactions will ensure corruption free and unbiased functioning.

**Railways Ticketing System**

Indian Railway sells around 120 million e-tickets and bears around 10 billion passengers in a year which poses a huge opportunity to Indian government for introduction of mobile payments. Mobile payments can be incorporated and promoted as follows:

- Online booking: Internet penetration in India stands at 12.6%, whereas mobile penetration has crossed 75%, thus by developing a mobile based platform which enabled mobile payments will increase the IRCTC's outreach by 5 times.
- Offline booking: Over the window booking of railway tickets usually take 3-4 minutes for each booking, primarily because of lack of the exact amount to be paid or availability of change. This can be reduced by introducing mobile payments through NFCs, which will remove the trouble of cash-handling. An NFC enabled mobile phone can be waved in front of an NFC reader, which will deduct the required amount from the user's bank account and the payment will be made.

**Postal Services**

Indian Postal services, with 155,333 post offices is the most widely used government service in the country. They offer services ranging from mailing to insurance services. Mobile payments can be introduced in a similar manner as proposed in the railway ticket purchasing system, which is as follows:

- Fee charged for mailing services like mails, speed post, money order, money remittance services, etc. can be paid through mobile phones by use of NFC technology.
- Disbursal of pension money and NREGA salary are also done through post offices, which can be used to make rural population comfortable and increase their confidence in mobile payments.

Government can also incorporate mobile payments in services toll fare payment and tax payments to make mobile payments more useful and handy for people.

Other than introducing mobile payments in their direct services to the people, government can leverage their machinery for promotion and education about mobile payments. India has around 250,000 panchayats and 3 million functionaries, which could be integrated through mobile phones. Their capacity to be oral and carry diverse content would not only lead to information empowerment at the lowest strata of governance but also bring transparency.

### NGOs/SHGs involvement in promoting mobile payments

NGOs have been promoting self-help groups and joint liability groups for collective inclusion while there has been no active participation from industry associations and consumer organizations. The evolving mobile payments require involvement of NGOs and SHGs to work in tandem with the government to bring banking services the financially excluded segment in their particular areas.

Educating and creating awareness	Governments and NGOs have the potential to combine efforts so that system rollouts include education on: <ul style="list-style-type: none"> <li>• Functioning of mobile wallets.</li> <li>• Value proposition of mobile money over cash/cards from economic, financial, social and lifestyle perspectives.</li> </ul>
Pilot project support	<ul style="list-style-type: none"> <li>• Governments, NGOs, and donors can help fund pilot projects that integrate the use of mobile money across sector programs. And once programs demonstrate impact, donors and governments can provide funding to scale the program.</li> <li>• NGOs should support pilot programs to test innovative approaches, create impact analysis and develop replicable opportunities for scale.</li> </ul>

### Role of industry players

The current lack of standardization has created a number of technical paths for mobile payments and has also highlighted the lack of interoperability. Organizations planning to provide customers with mobile payment capabilities need to select one of the available technologies in the hope that it will become the dominant standard. Industry players are an important link in accelerating the mobile payments led financial inclusion and can help in the following ways:

Promoting mobile payments: As mentioned earlier, different stakeholders need to collaborate in the process of providing mobile money access in India. Technology providers, telecommunication companies and financial institutions need to come together and work on the following:

- Mobile payments have been initiated via SMS, browser, mobile app, NFC chip, QR code or cloud technology, which needs to reach users in an efficient manner.
- Mobile phones need to be linked to credit cards, debit cards, bank accounts so that banking services are easy to understand for rural customers.

- Mobile phones will require an e-wallet storing several cards and should allow customers to select the correct card easily and accurately.

Creating NFC and Biometric infrastructure: Proximity mobile payments leverage the financial industry's payment infrastructure. An NFC-enabled phone uses the built-in NFC technology to communicate with the merchant's contactless payment-capable POS system, similar to the contactless payment cards and devices in use today. NFC can promote the mobile payments in the following manner:

- Proximity mobile payments need mobile operators to collaborate with banks or other financial institutions for which a standard business model need to be followed by all the operators and Banks/FIs.
- Using NFCs at small retail stores: Low cost NFC enabled devices and readers need to be manufactured to promote their usage at small retail stores in semi-urban and rural areas. POS machines were introduced to promote cashless transactions with a strong value proposition but because of the cost of the machine, it has not been able to penetrate through more than 5% of merchant shops.

- Integrating NFC and biometric: If NFC and biometric identification are integrated, one card can be as identity card, employment card and bank card, which will pose a very strong value proposition.

Promotion-marketing and branding of mobile payments: Telcos have a strong reach to the customers and potential to market and brand mobile payments in India. Mobile payments need to be marketed as a branded product to project its value proposition over other payment modes. Telcos with the support of government can utilize the following promotion modes for mobile payments' marketing and branding:

- Using Telcos' websites, payment portals and customer-correspondence material for advertisement of mobile payments.
- Using SMS channels, radios, televisions and other media channels for rigorous marketing.

#### Role of regulators

Regulators act as a very important link between the telecommunication companies and financial institutions working in tandem to provide mobile payments services in India. A key challenge for RBI in India is that telecommunication companies have a more extensive customer reach than banks, but RBI prefers working with banks. This is because banks are used to managing funds and are familiar with the regulatory constraints linked to payment services. Regulators need to take focused initiatives to integrate the two industry players to make way for mobile payments. Some of the initiatives can be:

- Promote inter-connectivity and cooperation:

Interconnectivity between telco's (traditionally close-loop systems) will increase the odds of success for mobile payment services. If funds can only be transferred between subscribers using the same service, it reduces the potential number of transactions. The regulator is actually in a position to promote or impose standards and interconnectivity between different network operators.

- Find a compromise between simplicity and security: Simplicity in the registration process for mobile payments will facilitate mass-adoption. At the same time, imposing heavy rules on MPOs to protect against abuses like money laundering will increase their costs and might discourage them from offering such services. A balance equation needs to be identified.
- Promote fair collaboration: In mobile payments ecosystem, telcos need the banks to store the electronic money and the banks need them to provide mobile access. In such a scenario, they can be partners and/or competitors and require RBI to act as the key escalation, when one does not want to collaborate with the other.
- Facilitate innovation: Mobile payments in India need a lot of innovation to provide affordable banking services and not much encouragement has been provided to the telcos coming up with solutions for the same. RBI needs to remain ahead of the new potential services and technologies to facilitate their development and act as a link between the banks and the telcos to integrate these developments with banking services.

# Conclusion

It is a well-established fact that mobile payments can help in creation of a mobile-based digital cash economy that is more efficient, transparent and inclusive. For this, the regulators, as well as banking, telecom and non-banking financial players will need to make a coordinated attempt to deploy effective services, educate potential customers and speed up adoption. Innovative solutions, which provide robust security, speed, convenience, ease of use and interoperability should help players gain high acceptance and hence

scale. More importantly, players need to work out a revenue model, which offers commercial returns to all the stakeholders along the value chain.

## Impact of alternate channels on mobile payments

Financial services industry is also working on a number of initiatives in alternate channel space. A quick analysis of the impact of these initiatives on mobile payments is described below:

Product/ Platform	Description	Impact on mobile payments
White Label ATMs (WLAs)	<ul style="list-style-type: none"> <li>ATMs owned and operated by non-banking entities with primary objective to enhance the spread of ATMs in semi-urban and rural areas.</li> <li>At present the RBI has permitted only 4 non-bank players to set up WLAs.</li> <li>As per the scheme, a certain minimum number of WLAs need to be installed (15,000 ATMs to be established by each player in the first 3 years).</li> </ul>	<ul style="list-style-type: none"> <li>The purpose of WLAs is to provide better access to cash, whereas the objective of mobile payments is to push towards a less-cash driven economy.</li> <li>A sustainable collaboration between the two payment platforms could be a sound and well-rounded approach to target financial inclusion of the unbanked.</li> <li>WLAs can further be improvised to kiosks to offer banking services eliminating need of bank branches completely.</li> </ul>
Cards/3rd Party PoS	<ul style="list-style-type: none"> <li>As of April 2014, there are more than 418 million cards outstanding, and more than 1.1 million PoS terminals in the country.</li> <li>NPCI launched RuPay card scheme as a domestic payment system with the objective of extending card payment services to urban and rural masses with no-frills accounts. Till now more than 20 million cards have been issued and PSU banks have been directed to issue RuPay debit cards to their account holders.</li> </ul>	<ul style="list-style-type: none"> <li>Cards and PoS payment systems may compete directly with mobile payments, with consistent growth in issuance of cards and transaction value (35% growth in cards YoY).</li> <li>Major use of cards and PoS is restricted to urban areas, and with a penetration of less than 6% (1.1 million PoS terminals for more than 20 million merchants) it will take a long time for PoS to achieve inclusivity.</li> <li>Direct access and low cost of establishment may propel the use of mobile payment platforms over cards and PoS, if there is an optimal solution provided to the customers.</li> </ul>
NEFT/RTGS/ Next Gen NEFT (Internet Banking)	<ul style="list-style-type: none"> <li>NEFT and RTGS are payment and fund transfer platforms based on internet banking, enabling both retail and corporate payments.</li> <li>RBI mandated the up-gradation of RTGS to next generation RTGS with more transaction holding capacity (7 lakh per day presently, to 25 lakh per day in 5 years and 50 lakh transactions per day).</li> </ul>	<ul style="list-style-type: none"> <li>NEFT and RTGS are internet driven and hence have a limited penetration.</li> <li>The transactions are also time-restricted, and remain inaccessible during banking holidays.</li> <li>NEFT and IMPS may converge in future to bring about retail payments on a mobile platform for small and medium ticket-size transactions.</li> <li>Whereas RTGS may continue to serve as platform for high value corporate payments.</li> </ul>

### Emerging technologies and mobile payments

'Technology' is at the heart of mobile payments. As the newer technologies emerge, it is expected to transform the mobile payments landscape transforming them into a more user friendly, cost effective and quick payment solutions. Recent developments in proximity payment systems including Near Field Communication (NFC)

are expected to provide significant impetus to mobile payments. Biometric technologies can offer unique identification techniques that may converge with mobile payments to offer more simplistic and user friendly solutions. A brief on some of these emerging technology trends and the impact on mobile payments are described below

Technology	Description	Impact on mobile payments
Near Field Communication (NFC)	<ul style="list-style-type: none"><li>• Two-way contactless communication over short distance (few centimetres), between NFC enabled phone and reader (e.g. POS terminal or smart poster).</li><li>• Acts as a medium for immediate payment.</li><li>• Needs NFC enabled phones for payment and NFC enabled acceptance infrastructure for merchants.</li></ul>	<ul style="list-style-type: none"><li>• Existing usage formats of mobile payments in India are cumbersome wherein customer needs to type 35-40 characters (own MMID, beneficiary's MMID, MPIN, type of transaction etc.) to complete the transaction.</li><li>• NFC technology will make mobile payments quick and hassle free.</li><li>• Face-to-face payments (payments at small shops, railway ticket payments, payments to taxis etc.) can be easily conducted through mobile.</li><li>• Primary concerns: Channel security and data leakage (loss/theft of phone).</li></ul>
Biometrics	<ul style="list-style-type: none"><li>• Uses a person's fingerprint, retina scan, face heat map or any other biological factor as identification parameter.</li><li>• Needs elaborate infrastructure investment in terms of creating database of biometric data and creating accepting infrastructure.</li></ul>	<ul style="list-style-type: none"><li>• Considering multiple payment mediums (credit cards, debit cards, NEFT, mobile payments, ATMs), a customer needs to remember multiple passwords and IDs to use alternate payment channels.</li><li>• Biometric can act as single authentication for the user across all channels.</li><li>• Combined with NFC enabled mobile payments, it will present a very secure medium as each transaction will be authenticated using biometric identification.</li></ul>

The recent developments along with emerging technology solutions will continue to have an incremental effect in shaping the future of mobile payments in India. A more accessible, secure, reliable and user-friendly is the need of the hour. Globally, mobile financial services are fueling a fast paced innovation drive, where the underlying objectives supplement other businesses. The case of Google's m-Wallet is an apt example, where Google's primary objective, through its trademark payment product, is to access a vast amount of transaction data of customers

and then analyze it to spot behavioral patterns, which would be used to predict the purchasing tendencies of customers. This is truly the pinnacle of data analytics, and just one of the many ancillary innovations that mobile financial services are driving. It is, therefore, evident that mobile payments not only would further financial inclusion but also translate to transactions through better services, cheaper accessibility and optimal technology.

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