NFC: EMERGING TRENDS AND CHALLENGES IN INDIA

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Abstract

As mobile technology is growing, so is the payment technology, which now enables end-to-end payment processing in context of associated business (sales) transactions, making it possible to conduct an entire business transaction along with associated end-to-end payment processing, over the mobile channels, offering enormous flexibility to customers, as to how, where, and when they can initiate their business transactions in real time.

Mobile money enables it to transfer cash from one entity to another, it acts as an alternate payment method to transfer cash/ credit/ check and make financial transactions with the mobile phone.
NFC is the next big thing in terms of payment services – Mobile payment users are expected to reach 375 million wherein NFC chip shipments are expected to surpass 1.2 billion by 2015. Moreover NFC will have the global penetration of 30% by 2015.
Many business organizations in India have quickly identified the emergence of business grade mobile technology and have strategically adopted mobile channel as one of their key ecommerce business channel relating to their mobile commerce business models but in present scenario it has to cover many obstacles.

Keywords- NFC, Mobile money, mobile commerce

I. WHAT IS MOBILE PAYEMENT

Within five years, half of today's Smartphone users will be using their phones and mobile wallets as their preferred method for payments."

– Peter Olynick said in 2012. He is a Card & Payments Practice leader for management and tech consulting firm Carlisle & Gallagher.

Mobile payment, also referred to as mobile money, mobile banking, mobile money transfer, and mobile wallet generally refer to payment services operated under financial regulation and performed from or via a mobile device.

Financial institutions and credit card companies as well as Internet companies such as Google and a number of mobile communication companies, such as mobile network operators and major telecommunications infrastructure and handset multinationals such as Ericsson have implemented mobile payment solutions.
When a payment is made through mobile devices, such as mobile phones, smart phones or Personal Digital Assistants (PDAs), it falls under the category of mobile payments. With mobile phones now being such a widespread consumer device, mobile operators worldwide are looking for ways to establish themselves in the payments segment, which has to date been largely dominated by financial institutions.

Mobile payment is an alternative payment method. Instead of paying with cash, check, or credit cards, a consumer can use a mobile phone to pay for a wide range of services and digital or hard goods .

Mobile payment is defined as:

"Payment for products or services between two parties

for which a mobile device, such as a mobile phone, plays a
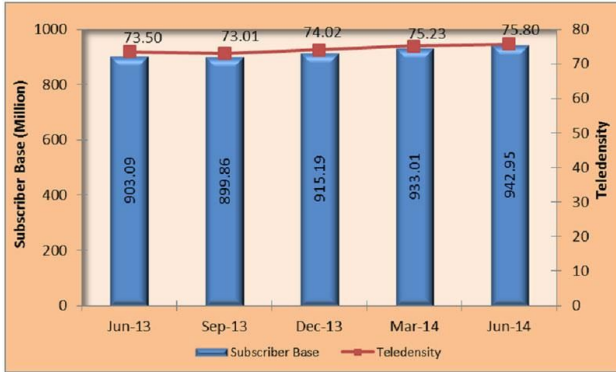
key role in the realization of the payment."

FIG 1:-Increasing Internet subscribers on mobile

With 90% of India's 250 million Internet subscribers accessing Internet through mobile (source: TRAI Data, June 2014), it is inevitable that the mobile payments landscape in the country is heating up.

There are more than 20 mobile wallet services in the market as per the RBI website. Typically, such services allow a registered customer to top up or recharge money, which can be used for a variety of transactions such as cell phone recharge, paying bills of various service providers, shopping online and offline and money transfer to other bank accounts or wallets.

MOBILE PAYMENT VALUE CHAIN

To understand the value chain for mobile payments, it is necessary to first understand the generic value chain for payments. A typical payment value chain is depicted in Figure2

FIG2:- Typical Payment Value Chain

The payment value chain as depicted in Figure 2, involves four major entities – the functionality of each is briefly described in Table 1.

Entity	Description
Customer	• Purchases goods/services from the merchant • Gives validation of his/her credentials to the issuer • Makes the final payment – direct cash, cheque, credit, debit or through m-payment
Merchant	• Merchant generates bill as per the goods/services purchased by the customer • Sends bill to the acquirer • Registered with the acquirer/issuer • Receives final payment – directly from customer as cash, or else from issuer
Acquirer/Service Provider	• This can be a financial institution, a card association or mobile network operator • Acts as an intermediary between the 'Issuer' and the merchant
Issuer	• The party that authorises the payment as per the generated bill against select customers • Has details of user's credentials in its database • Performs authentication and authorisation of the transaction parties – customer and merchant • Can be a financial institution (bank), bank cards or third party card issuer

Table 1: Payment value chain – description of entities
The value chain for a typical mobile payment-based system is shown in Figure-3

Step 1: Customer purchases goods; bill gets generated; shows handset to the installed M-payment reader or traditional POS device in order to make payment. Merchant accepts the payment through the reader, which is connected to the acquirer.

Step 2: Acquirer has 'merchant's account'. It handles merchant information and transaction details; the network used for switching transactions is either the operator's network or an existing traditional payment network.

Step 3: Issuer authorises the amount and manages mobile accounts; after validating the customer's credentials, the issuer approves the generated bill

Step 4: Acquirer notifies the merchant regarding the same and the merchant issues purchased goods/services to the customer. Customer pays bills and gets his account re-charged

FIG3:-Mobile Payment –value chain

II. EVOLUTION OF MOBILE PAYMENTS

The Global Mobile Commerce Forum, which came to include over 100 organizations, had its fully minuted launch in London on 10 November 1997. It was founded by Logica and Cellnet.. Over 100 companies joined the Forum within a year, many forming mobile commerce teams of their own, e.g. MasterCard and Motorola.

Mobile commerce was born in 1997 when the first two mobile-phones enabled Coca Cola vending machines were installed in the Helsinki area in Finland. The machines accepted payment via SMS text messages. The first mobile

phone-based banking service was launched in 1997 by Merita Bank of Finland, also using SMS.

III. CONTACTLESS PAYMENT

Any device capable of making payments using radio-frequency identification (RFID) technology is using contactless payment technology. The device does not have to be a smartphone though this is the most commonly used device for contactless payments. An antenna and chip embedded into the device lets the customer wave their smartphone over a card reader to make a payment.

IV. WHAT IS NFC

"Near Field Communication (NFC) will open the floodgates for profound changes in the way we use our mobile devices. While today there's a good deal of trial, error and confusion around mobile technology including apps, QR codes, image recognition, etc., NFC will soon dominate the way consumers secure coupons and deliver payments, our phones will become our wallets."
– Anthony Lacovone, Augme. Mr. Iacovone is a leading voice in the area of mobile integration for large traditional media organizations.

FIG 4:- In Japan, the NFC technology is a preferred mode of payment in hotels, shops and even some trains.

Near Field Communication (NFC) is mainly useful in mobile phones and tablets for close range transactions/data exchange. The phone becomes an RFID reader or tag. It can read tags on bottles and posters. Over 200 million NFC-enabled mobile phones have recently been deployed.
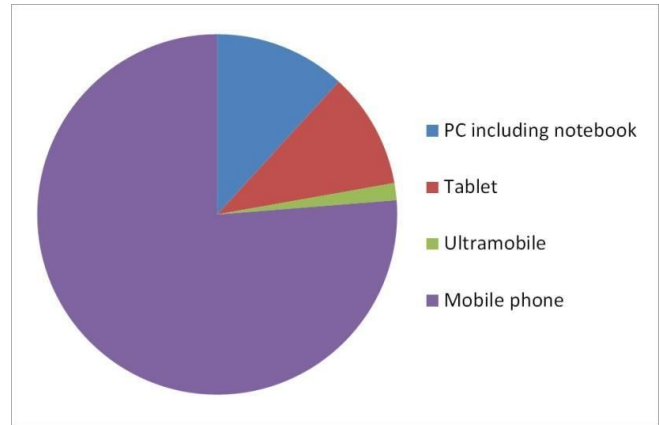

FIG 5:- Worldwide shipments of PCs, mobile phones, tablets and derivatives, millions 2014

NFC is a set of short-range wireless technologies, typically requiring a distance of 4cm or less to initiate a connection partly because people do not trust making secure transactions at the longer distances typical with Bluetooth, WiFi and other short range radio protocols. The most popular mobile phone and tablet operating system is heavily committed to NFC. Mobile phones continue to be by far the most important potential and actual focus of NFC; the technology is particularly suitable for them. The SIM card in our mobile phone is a smart card identifying our account to the network. On NFC phones, the SIM is being extended to act as the Secure Element that can hold other apps such as payment cards. For example, NFC allows us to share small packets of data between an NFC tag and an Android-powered device, or between two Android-powered devices. Most contactless point-of-sale payment systems use an NFC-compatible contactless interface and many of the world's transportation access systems are NFC compatible so considerable infrastructure is already in place for use by NFC-enabled devices.
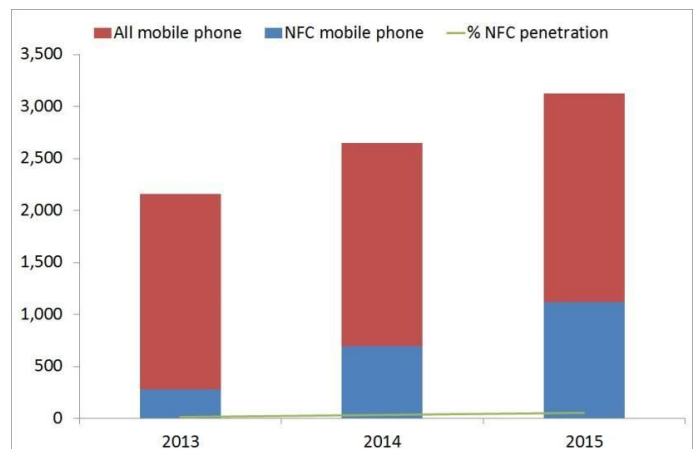
FIG 6:- Sales of NFC enabled phones vs all mobile phones millions 2013-2015* with % penetration

Near field communication technology has become a reality for many companies and users. With Apple planning to incorporate NFC into the iPhone and a handful of NFC compatible smartphones already on the market, this branch of technology is changing rapidly.
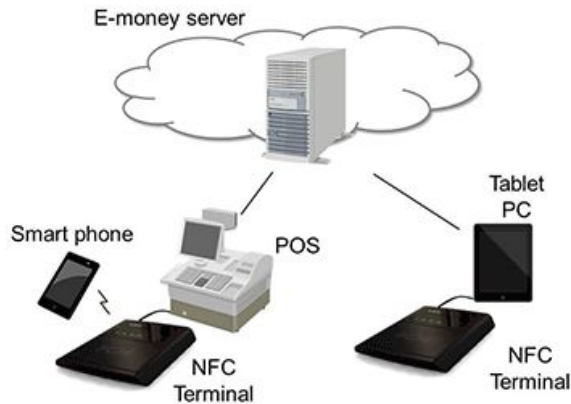

FIG 7:- Payment by NFC

FIG 8: NFC network system

V. TAPPING INTO INDIA

Even India has had its share of NFC trials. A couple of years ago, CitiBank introduced a field trial with the Nokia 6212 Classic phone in Bangalore. Called 'Citi Tap and Pay', Citibank MasterCard Credit cardholders were given the option of buying the Nokia device which would come preloaded with the application that allowed them to make payments while receiving promotional offers and discounts. In Hyderabad, Megasoft Ltd's subsidiary XIUS announced an agreement with Tata DOCOMO where the latter would test XIUS' Mobile Touch Transaction (MTT) solutions to enable subscribers to execute anytime, anywhere recharge, bill pay and download other VAS services.

In 2011, Nokia introduced NFC-enabled devices on the Symbian Belle platform and tied up with the movie Ra.One to create a unique and engaging experience. The 'Just Tap with NFC' campaign allowed users to visit the nearest Nokia Priority and tap their phones against the Ra.One NFC tags to access free movie content. Nokia has also introduced NFC enabled accessories to add value to its smartphones. And Nokia is not alone. BlackBerry too has brought to India a bunch of NFC-enabled phones.

PVR, one of India's premium and preferred retail entertainment company with leadership position in film exhibition, distribution and production is now streamlining its retail function with NEC's state-of-the-art integrated retail solutions. These solutions empower PVR to enhance customer experience through better payment mechanisms and streamline its retail functions at a radically low total cost of ownership (TCO) through its exceptional serviceability and reliability.

RIM is also working on an NFC-enabled application named BlackBerry Tag. "NFC is gaining popularity globally as it can be used widely in enterprise and consumer space. While NFC is already been used in e-commerce, social networking and sharing data between devices globally, it is still in a nascent stage of adoption in India. NFC as a technology is great for consumers as well as enterprises, but in a market like India the biggest challenge is infrastructure readiness for such technology to be adopted at a large scale. Especially, banks in India are yet to be equipped with technology facilities that would help augment e-commerce using NFC technologies," says Ranjan Moses, Carrier Product manager of Research In Motion. There are some other issues too. For instance, at the moment, one cannot pair a Nokia with a BlackBerry phone over NFC. However, NFC promises to soon because an abbreviation that will be in common usage along with USB and LED.

VI. CHALLENGES IN INDIA

Change in market

M-commerce is still in a nascent stage in India, but it is catching up like wildfire due to factors like affordable devices and mobile internet rates. Moreover, high-speed internet and Wi-Fi has also added impetus to shopping through mobile devices. With 4G coming, the trend is bound to pick up in the near future. But as NFC technology operates on a special chip and application on smartphones. Consumers who have NFC enabled smartphones can use, So large supportive infrastructure is needed.

Interoperability Issues

The primary challenge in implementing NFC in India is interoperability and getting the different industry players to work together. Mobile service providers, transport operators and banking systems need to converge their efforts

regardless of their different business objectives..

Transaction Level
NFC transactions are low-value payment transactions. So it is a security risk that the banks are willing to take for the sake of convenience. For example, today, we cannot make a 10,000-rupees NFC payment. We would only be able to pay for tokens, parking and similar small things. Security threats are still matter of concern.

Technical challenge in testing NFC technology
One challenge faced is handset reception. The antenna on an NFC-enabled handset can impact the NFC connection. This is a challenge for handset developers as the antenna on a conventional reader is different from that on a mobile device.

VII. SECURITY CONCERNS WITH NFC

NFC technology has to works on following to prevent such security breaches from occurring.

Eavesdropping
Eavesdropping is when a criminal "listens in" on an NFC transaction. The criminal does not need to pick up every single signal to gather private information. Two methods can prevent eavesdropping. First there is the range of NFC itself. Since the devices must be fairly close to send signals, the criminal has a limited range to work in for intercepting signals. Second there should be secure channels. When a secure channel is established, the information is encrypted and only an authorized device can decode it. NFC users should ensure the companies they do business with use secure channels.

Theft

No amount of encryption can protect a consumer from a stolen phone. If a smartphone is stolen, the thief could theoretically wave the phone over a card reader at a store to make a purchase. To avoid this, smartphone owners should be diligent about keeping tight security on their phones. By installing a password or other type of lock that appears when the smartphone screen is turned on, a thief may not be able to figure out the password and thus cannot access sensitive information on the phone.

VIII. CONCLUSION

While it may seem like NFC would open up a world of new security risks, it may actually be safer than a credit card. If a user loses her credit card, a criminal can read the card and find out the owner's information. If that same person loses her smartphone and has it password protected the criminal cannot access any private info. Through data encryption and secure channels, NFC technology can help consumers make purchases quickly while keeping their information safe at the same time.

One of the issues with mobile payment services in India today is that a lot of users sign up but then become inactive. It's important for companies to engage with users – through phone, agents, or even the application interface to keep pushing offers and discounts, and to make differentiated offerings that are tailored to specific user segments.

India has a poor record of financial inclusion which has led to a largely cash-driven economy, and the introduction of electronic money in the form of mobile wallet can truly benefit the masses. Ironically, the cart will lead the horse in this case – digital inclusion can lead to greater financial inclusion. NFC will not replace cards completely just yet. India consists of more cash-happy people and we are only just getting comfortable with cards. It is important to first establish NFC as a secure technology before it is adopted by consumers in India.

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