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MOBILE FINANCIAL SERVICES IN INDIA

- AN OVERVIEW -

IN CONTEXT ASIA-PACIFIC - A FRAGMENTED MARKET

Looking at the developments and future potential of mobile payment services in Asia-Pacific, it is clearly a fragmented market.

The main sources of this fragmentation are not hard to deduce. On the one hand, Asia-Pacific is the most populous geographical region in the world, and also a region with very high rates of mobile penetration, coupled with fast mobile growth. According to research carried out by The International Telecommunication Union (ITU), China and India alone added 300 million new mobile subscribers in 2010, spearheading mobile growth in the developing world. China and India also boast the highest number of mobile subscriptions worldwide (also a direct result of being the most populous nations on the globe): at the end of 2009, China had around 750 million mobile subscribers while India had 525 million mobile subscribers.

On the other hand, Asia-Pacific consists of rather diverse set of markets with different payment ecosystems. This diversity manifests itself on a number of levels: Asia-Pacific includes both developed and developing markets; territories both large and small, some with an established and modern telecommunications, retail and transport infrastructure, other with high numbers of unbanked and underbanked consumers; some with a high urban population, other with a sprawling rural ecosystem marked by



informal economic activities and lacking basic consumer access to financial services; finally, industry standards and levels of regulatory compliance differ wildly from one market to the next.

Mapping the mobile payments value chain in the region is a complex undertaking, one that ought to depart not from what sets the countries in Asia-Pacific apart, but from what brings them together. What constitutes the main argument pro mobile payments all over Asia-Pacific is the fact that m-payments are versatile enough to be feasible both in developed and in developing markets, to bridge the urban – rural divide, to bring access to financial services to millions of unbanked consumers, and to allow MNOs, banks and third party m-payments service providers to tap a fabulously diverse, rich and still largely unexplored consumer market.

Conversely, we cannot ignore the fact that the deep-rooted fragmentation of the mobile payments ecosystem across Asia-Pacific has the potential to be a barrier, making m-payments a challenging environment when it comes to the roll-out and consumer adoption of new mobile-based financial services.

As mobile networks (MNOs) in the region developed and grew in size and coverage, rapid advances in mobile technologies also took place. However, the ever-present premise of market fragmentation has led to a certain degree of specialization among m-payment services providers. Put simply, different market players (be they banks, MNOs or else third-party service providers) have started targeting their offerings at specific payment areas and types, such as mobile wallets, mobile banking, contactless retail payments or the provision of mobile P2P (including mobile remittance) services. Furthermore, when developing their specialized offerings, these players adapt to the specificity and make-up of each market in the Asia-Pacific space.

A very good example of this is India, the world's second most populous country, the 12th largest economy on a global scale and also one of the world's top 20 fastest growing economies. The fast-pace penetration of mobile phones in India has become the main growth driver for the development of specific types of mobile financial services in the region, mobile banking prominent among them. This has happened while in India, existing financial infrastructures, particularly the ones available to the country's largely unbanked rural population, are poor-quality and not geared at reaching this large consumer segment. Mobile financial services come with the added advantage that they can largely function independently from the existence of a brick-and-mortar support network.

Excerpt from the recently-released report "**Mobile payments 2012—My mobile, my wallet?**" by Dutch independent payment & related transactions consulting company Innopay in collaboration with The Paypers.

Download your free copy [HERE](#).

The Paypers exclusive interview with Dr. Gaurav Raina, I.I.T. Madras - India

Any discussion regarding India's mobile financial services ecosystem should first be placed in the context of the growth of mobile phones in India.



Dr. Gaurav Raina did his PhD and his postdoctoral research at the University of Cambridge, UK and is currently a tenured academic in IIT Madras. He works closely with the Mobile Payment Forum of India on standards related to technology, interoperability and security.

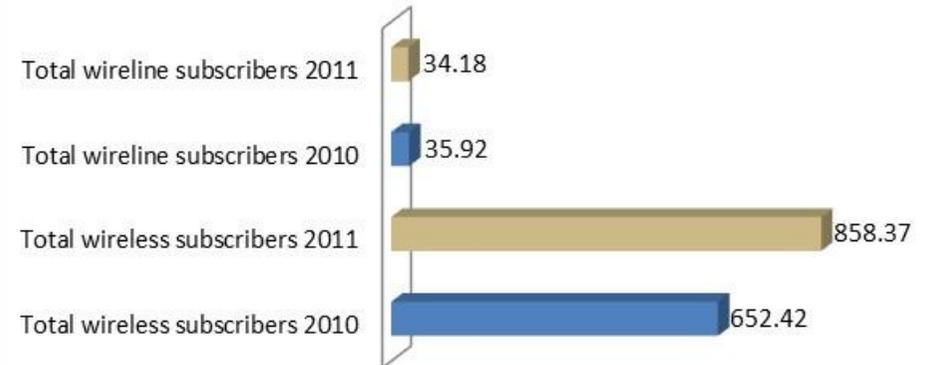
The growth of mobile phones in India

The low cost of the mobile device, the low cost of the service, and the good quality of service have led to an explosion in the number of mobile subscribers in India. A very large number of Indians have never owned a landline telephone connection and have directly adopted a mobile telephony service.

According to the Telecom Regulatory Authority of India (TRAI), as of May 31st, 2011, the total wireless (GSM, CDMA, FWP) subscription base was 840 million, whereas the wire line subscription is a mere 34 million. Presently, the wireless segment alone represents a

Evolution of wireless & wireline telephone subscriptions in India (millions)

Source: Telecom Regulatory Authority of India (TRAI)

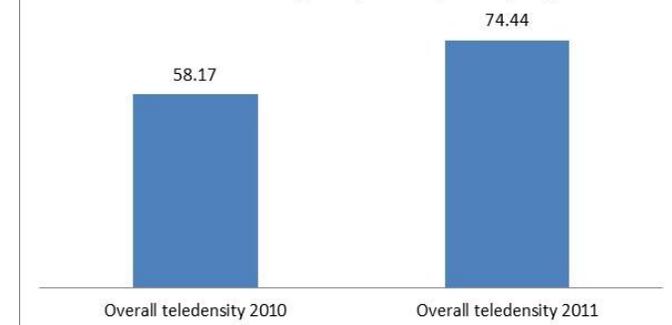


teledensity of just over 70%. Within the wireless segment, the share of the urban subscribers is 66% and the share of the rural subscribers was 34%. In the month of May 2011, the net monthly addition in terms of the number of subscriptions was 13.35 million. Of these 13.35 million new subscriptions, 7.33 million were from the urban segment and 6.02 million from the rural segment.

While the overall urban-rural division in terms of wireless subscribers is currently 66% versus 34%, if you look at the subscription growth rate on a monthly basis, it is just 55% versus 45%. This demonstrates a robust growth rate of India's mobile telephony ecosystem, and the numbers from rural India are particularly encouraging.

Evolution of overall teledensity in India 2010 - 2011

Source: Telecom Regulatory Authority of India (TRAI)



Will the growth rates for mobile subscriptions be sustainable?

Based on the past it is difficult to extrapolate to the future, but with the aforementioned monthly growth rates, India could reach 1 billion mobile subscriptions by 2012. Some of these subscriptions will also include customers with more than one mobile connection.

Are there any documented studies on the impact mobile phones have had on welfare?

Economists have recognized that information is critical for the efficient functioning of markets. Let us highlight two well known results in economics: the First Fundamental Theorem of Welfare Economics (which says that competitive equilibria are Pareto efficient) and the Law of One Price (which says that the price of goods should not differ between any two markets by more than the transport costs between them).

Both of these results rely on the assumption that agents have the requisite price information to engage in an optimal trade. So clearly when information is limited or costly, agents are not able to engage in an optimal arbitrage. As a consequence of this, excess price dispersion across markets can arise and goods may not be allocated in an efficient manner. In such a scenario, information and communication technologies can improve market performance and increase welfare.

Let me give a concrete example. Between 1997 and 2001, mobile telephony services were introduced throughout Kerala, a southern state in India, which has a large fishing industry. Using micro-level survey data, the work of Jensen (Quarterly Journal of Economics, pp. 879-924, 2007) shows how the adoption of mobile phones by fishermen and wholesalers resulted in a dramatic reduction in price dispersion, the complete elimination of waste, and a near-perfect adherence to the Law of One Price. Both consumer and producer welfare increased. In the case of the Kerala fishermen, information was synonymous with the ability to communicate.

What does the mobile phone represent for Indians?

Communications infrastructure is a fundamental and integral part of modern society. Given the lack of landline infrastructure and telephony services, the mobile phone is the device that enables communication for most Indians, for both personal reasons and for

work. This has had a significant and tangible impact on welfare, direct in some cases and indirect in others.

While the mobile telephony service has helped enormously in information efficiency and price discovery, the payments for goods and services are done largely via cash. We are then faced with the operational aspects, and associated costs, related to cash handling, storage and transfer. This example highlights how mobile financial services can play an important role.

How is India proceeding to usher in mobile financial services?

Over the last few years the regulators have been making a series of policy changes to enable mobile payments in India. For sustained and widespread growth of financial services, it is extremely important to have a forum where all the stakeholders can discuss and debate all aspects related to mobile financial services. The issues which need to be discussed and debated could be regulatory, business or technology-related aspects. In India, we have such a forum known as the Mobile Payment Forum of India (MPFI).

The MPFI has more than a 100 members which includes representatives from all the stakeholders; namely, the Reserve Bank of India (RBI) which is India's central bank, all the banks, telecommunication operators, technology providers, National Payments Corporation of India (NPCI), Institute for Development and Research in Banking Technology (IDRBT) and IIT Madras. The entire ecosystem is part of the MPFI. Importantly all the issues which are related to regulatory, business and technology aspects are discussed, debated and standardized by the MPFI. This has been done in order to prevent the development of solutions "in silos". Isolated solutions and implementations could restrict universal adoption, reduce efficiency and possibly not be as effective in terms of cost benefits.

In India, the model for the delivery of mobile financial services will be bank-linked; a prerequisite being that the user must have a bank account. In contrast, in economies such as Kenya the mobile network operators lead the development of mobile financial services. There are numerous reasons why India has chosen the bank-linked model. We are not

looking at offering only one financial service; for example, a simple domestic remittance product whereby a migrant worker can transfer money home. The vision is to develop an ecosystem for the delivery of a whole range of financial services. Ideally, we would want the idea of mobile financial solutions to permeate all levels of society: customers, merchants, business houses and the government.

At the citizen level, a key focus is to work towards financial inclusion. Today, the banks have the products but not the distribution network. The mobile phone helps to close that gap. To that end, the process is slightly longer and harder, because you have to bring everybody in the value chain on the table, have a regulatory structure in place and then offer a range of solutions efficiently, securely and at minimal cost. Although the process may be slightly longer, hopefully it would result in the services being substantially more widespread, inclusive and sustainable.

How are standards being developed in India?

For widespread adoption it is imperative to have standards, especially for aspects like interoperability, security and performance. These standards are set by MPFI after a consultative process with the various stakeholders. In this recommended and desirable process, IIT Madras, as a technology institute, enjoys the confidence of all the stakeholders, as it is a neutral party and has played a role in the development of the various standards.

About the Mobile Payment Forum of India (MPFI)

The existence of the MPFI is something very unique to India – a forum where all the stakeholders agree on solutions that should be beneficial for the ecosystem, and not merely favour a limited few.

The Mobile Payment Forum of India (<http://www.mpf.org.in/>) was initially formed jointly by the Institute for Development and Research in Banking Technology (<http://www.idrbt.ac.in/>) and the Rural Technology Business Incubator (<http://www.rtbi.in/>) of IIT Madras. RTBI is an incubation center at IIT Madras with a mission to design, pilot and create successful businesses in the rural space, leveraging information and communication technologies.



If banks lead the way to offer mobile financial services...

...how will consumers access their money in areas where there are no branches / ATMs?

Banks, on the one hand, have the financial products, but not the distribution network. On the other hand, mobile network operators and outlets for fast moving consumer goods have the reach but not the financial products.

Let us consider a potential use-case. If you live in a village, then it may not have a bank branch or an ATM, but there will most probably be an agent for a mobile network operator where customers go to top-up their mobile phones. Top-up for a prepaid mobile subscription is, perhaps, one of the most common types of financial transactions today, and these agents are extremely widespread in India. So what will happen is that the same agent outlet can be licensed to act like cash-in or cash-out places. So a regulatory structure that enables such agents to be appointed by the banks allows for this issue to be effectively addressed. This example highlights the importance of a common forum to discuss all issues related to the end-to-end delivery of financial services.



How does the interoperability architecture for mobile money transfer work?

In essence, the interoperability architecture says that any solution developed for mobile money movement should be independent of any mobile device, network operator or bank.

Let's assume that we are talking about a peer-to-peer transaction, and I want to transfer INR 50 (approx 1 USD) to someone else. I do not need to know anything about the beneficiary's mobile handset (the capability or the manufacturer). I also do not need to know the mobile service provider, or the bank account or the bank of the beneficiary. When a customer registers with a bank for the service, he/she will be given a 7-digit Mobile Money Identifier (MMID). A mobile number and a MMID will uniquely identify a customer's account with the respective bank. The MMID allows customers to operate multiple bank accounts linked to a single mobile number; each bank account having its own MMID.



When a sender requests the transfer of a specific sum to a receiver, the MMID will help to switch the transaction through a switching agency. Today, the National Payments Corporation of India is playing the role of the switching agency. It should be noted that the MMID is not a number that is meant to be kept secret – it is simply an identifier and it does not give away any sensitive information about the customer. You can imagine a

merchant advertising his mobile number and MMID publicly in his shop.

To conduct a transaction, one needs to enter the recipient's MMID and recipient's mobile number and the amount to be transferred. To complete the transaction and offer security, the sender has to enter an MPIN (Mobile PIN), just like an ATM PIN. After the MPIN is entered the transaction is initiated. Given today's implementation and standards, the recipient will get an SMS notification/receipt in approximately 5 to 10 seconds. On intimation of the SMS receipt, the recipient can use the money immediately. There is no additional delay involved, unlike other modes of money transfer like a cheque.

The recipient can access the money instantly, use it to pay for goods and services, transfer it to someone else or visit an agent location and withdraw it. The requirement of initiating transactions with an MPIN also safeguards against the loss or theft of the mobile device. This money transfer option is available 24 / 7

What technology solutions are available that would work on handsets with different capabilities and still adhere to the interoperability architecture?

The implementation of the standards will vary depending on the capabilities of the mobile phone. If you own a Java-enabled phone, your bank can make available a Java-enabled application, which will guide you through the money transfer process.

In the event that you want to do a transaction via a lower-end mobile handset, there are a number of ways to do it. One option is via an SMS-IVR combination. You send an SMS, you then get an IVR call back and you carry out a voice-based transaction. Eventually you will be prompted to enter your MPIN. Another option is to initiate the transaction over USSD. The interoperable architecture means that whether the transaction takes place over SMS-IVR, USSD or is application-enabled, all the sender needs is the recipient's mobile number

and MMID and his/her own MPIN.

Could you give another example of a mobile money product in India?

In addition to the inter-bank transfer option just described, customers can also use a mobile wallet solution. For this service, there will be a bank partner, but you do not get an MMID number associated with the mobile wallet so inter-bank transfers are not an option. So if two customers have mobile wallets, then the sender only needs to know the recipient's mobile number to transfer money. Today, a mobile wallet can be used through an SMS-IVR platform or via an application. In terms of services, one can pay another person, pay for goods, services, utility bills, or recharge a prepaid SIM card (SIM top-up). This is like a soft version of an interbank transfer where customers first have to transfer money to their mobile wallets through an agent outlet.

Some use cases for mobile money in India?

- Pre-paid mobile top-up. Mobile top-up for pre-paid mobile subscribers is perhaps the most common financial transaction today. Most of the top-ups are generally small value transactions.
- Domestic peer-to-peer remittances. There are approximately 100 million migrant workers in India and a large fraction of them need to transfer money to their families in their villages. Thus, domestic peer-to-peer remittances have enormous potential to act as a driver for the adoption of m-payments.
- Bill and merchant payments. Bill payments provide convenience for the user and for utility companies. For payment to merchants, they offer another medium for the customer which vastly reduces cash management.
- Governance. As an example, payments in government-initiated social schemes like the National Rural Employment Guarantee Scheme (NREGA) can be transmitted to the citizen electronically, making for an efficient system.
- New business opportunities. Naturally, m-payments could also open the possibility for new business models, as now one would have the ability to pay and receive even small sums of money almost instantaneously.

Can mobile financial services help financial inclusion?

Financial inclusion is an involved process, and so I can only offer a very simplistic view. Let us first classify the un-banked into two broad categories: those who do not open accounts due to lack of banking infrastructure, and those who currently see no requirement to open an account.

Let us break the process into three aspects: opening a bank account, managing the account, and having access to a set of financial services and products. To open an account you have to satisfy the bank's KYC (Know Your Customer) norms. For the un-banked, providing a valid identity is itself a challenge. To that end, the Unique Identification Authority of India (UIDAI) has embarked on a mission to offer a single source of identity verification which can also be used to open bank accounts. Managing the account is something that mobile money solutions will make much easier, faster and cheaper, both for the customers and the banks.

A key question is whether it is possible to devise demand-driven financial products and services which make for a compelling reason to open an account. For example, a common need is a low-value, low-cost loan, for which the un-banked can typically offer no collateral. If this need can be addressed, via an appropriate business model, then managing that loan in terms of repayments is much easier over a mobile device.

So, mobile payment solutions can certainly help by providing an effective channel for money transfer for both categories of the un-banked.

Do you foresee a role for Near Field Communication (NFC) in India?

NFC is not in the main stream today. However, with the development and growth of mobile financial services, NFC-based solutions can play a role in India in the future. But, yet again, the solutions will have to be delivered at low price points.

The challenges for mobile financial services in India are...

- Poor levels of literacy are a problem, and voice-based services offer a potential solution. Voice-based solutions, especially in local languages, have two major benefits: they can work on all handsets, and can be used by all irrespective of one's comfort level with

technology or level of literacy.

- The mobile financial services have to be effective in terms of usability, cost, efficiency, interoperability and security for transactions of all ticket sizes.
- M-payments options should be available even on low-end mobile handsets.

The Mobile Payment Forum of India's role is precisely to address the challenges that may inhibit the widespread use of mobile financial services.

The key drivers for mobile financial services in India are...

- High penetration of mobile subscribers.
- Mobile top-up services, domestic remittances and bill payments can be made very conveniently over a mobile phone.
- Growing demand, and an existing thriving ecosystem, for mobile services like ring tone downloads, Bollywood music, update for cricket matches, etcetera. Thus the uptake for another service, especially financial services, should be positive.
- Drive to be a part of the financial system for those people who currently do not have a bank account. The cost of cash handling, storage and transfer is very high in the informal sector. The ability to perform basic financial transactions over a mobile could act as a driver.
- There is a strong demographic dividend in India, where a large proportion of the population is very young. The young are often enthusiastic to take up new technologies and services.

How do you see mobile payment solutions unfolding and evolving in India?

There is a strong moral, and economic, imperative to address and serve the needs of the rural segment, where a sizeable majority of Indians live. This will possibly require a judicious combination of business models, technology enabled solutions and a regulatory framework to work together.

Generally, new technology solutions tend to have their own evolutionary paths, so I would rather not make any predictions. Nevertheless there is a tremendous sense of optimism with the prospect of having the ubiquitous mobile phone with the ability to transfer money.

INDIA RECENT MOBILE INITIATIVES & DEVELOPMENTS

India: mobile phones to emerge as a popular payment method by 2015 - report

With the mobile phone penetration expected to reach 100 percent by 2015, mobile devices are likely to emerge as a popular medium of payment in India, a recent survey has predicted.

According to the report conducted by The Associated Chambers of Commerce and Industry of India (ASSOCHAM), India counts nearly 720 million mobile subscribers, which are expected to start using more their devices to carry out mobile payments in the future. In addition, the report indicates that this prediction is based on the fact that although the majority of Indian residents are unbanked they do have a mobile phone.

Moreover, the study has pointed out that the retail market in India has annual transactions worth USD 410 billion (approximately Rs 1,850,000 crore). According to the source, the middle class with over 300 million people and their increasing disposable income has led the retail market to grow exponentially. [Read more](#)



NPCI receives approval from the RBI to extend mobile payments to merchant transactions

The National Payment Corporation of India (NPCI) has received approval from Indian financial institution the Reserve Bank of India (RBI) to extend mobile payments to merchant transactions, media outlet thehindubusinessline.com reports.

According to the source, NPCI is currently working on a pilot project with six Indian financial institutions, including ICICI Bank, Union Bank of India, State Bank of India and Kotak Mahindra Bank.

As a result, the RBI has given NPCI permission for channel integration of the Interbank Mobile Payment Service (IMPS) to allow customers to send money from ATM or the web to another person's mobile via a MMID. The IMPS is an application designed to enable users to perform account-to-account money in India using their mobile devices.

Indian banks issue 8.5 million MMIDs, m-payment system on the rise

Indian banks have issued nearly 8.5 million Mobile Money Identifier (MMID) numbers to customers, as part of the Inter Bank Mobile Payment Service (IMPS) application, media outlet timesofindia.com reports citing sources from the National Payment Corporation of India (NPCI).

The IMPS is an application designed to enable users to perform account-to-account money transfers via their mobile devices. [Read more](#)

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Mobile Payments 2012

My mobile, my wallet ?



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