Mobile Payments At Retail Point Of Sale - An Indian Perspective

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Abstract: With over 800 mobile subscribers and nearly 41% of the population having little or no banking access , mobile payments (M-Payments) have a huge potential in India. Availability of affordable handsets, low mobile tariffs and increasing voice & data network coverage across the country are emerging as key drivers for m-payments Lack of adequate banking infrastructure, low internet and PC penetration are expected to provide further impetus to growth of M-payments market. The market is estimated to grow from US$86 million in 2011 to US$1.15 billion in 2016 at a CAGR of 68%.Will this be a killer application for the industry? A mobile-payment services for online and offline retail and services was launched earlier this year by a leading company in India. The study explores and discusses the pain-points which the retailers perceive in using such a system. Data was collected through interviews and a structured questionnaire and results provide insights to the industry. The current market environment in the city in which the study was undertaken does not seem to be conducive to the success of any mobile wallet programs- a major reason being poor merchant involvement and unless larger numbers actively take this up, mobile-payments in this envisaged form will not reach the tipping point and retail mobile payments will fail.
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1. Introduction

Indian mobile phone industry has launched into e-commerce through mobile phones, where customers can pay for goods and services through their handsets. Examples could include buying tickets, paying for car park and internet purchases. Such payment transactions are categorized as mobile payments.

Mobile payments are broadly classifiable into four business models

1. The mobile service provider acts as the single window point- in effect, as in India, a non-banking finance corporation
2. Bank-based systems where the banks provide the service with the mobile service provider offering the communication process
3. A bank/credit card company-mobile service provider joint venture/collaboration
4. The third party solution providers like PayPal who are global players and a host of national players in India life

Mobile-commerce application during the dot-com era was perceived to be a killer application in the developed markets and early implementation were failures . However, due to spectacular advances in mobile telephony which include miniaturization, convergence, interface improvement and enhanced bandwidth availability coupled with a receding device cost has thrown up a new perspective on this

topic and the related industries globally are re-visiting this subject. The Indian scenario is highlighted by some key observations: The mobile device has become ubiquitous, cut across all geographic and social barriers, achieved a market penetration of over 864 million mobile connections and a national tele-density of 71% per cent (TRAI 2013) . Against this background, inclusive banking, credit card/debit card ownership, customer confidence and trust in relating their mobile phones as a potential wallet/purse throw up interesting challenges. The industry is also keen to strengthen its VAS (value added-services) to customers to ensure better bottom-line contributions since pure SMS & call billing rates(and subsequently the revenues) are over-competitive. Indian telecom industry currently has the lowest ARPU(average revenue per user) (PwC 2011). The situation seems to be getting worse post- 3G introduction. Eventually, mobile service providers , by the virtue of their business model, may become a non-banking finance company.

Technology is no longer a limiting factor. The wide use of Unstructured Supplementary Service Data (USSD), a technology unique to GSM facilitates cost-effective, quick mobile payment secure transactions and almost all Indian operators use this. It is a capability built into the GSM standard for support of transmitting information over the signaling channels of the GSM network. USSD provides session-based communication, enabling a variety of applications and is perceived as a secure platform for

m-commerce at the texting level vis-à-vis mobile web-based application.

In terms of market potential, mobile phones have permeated modern life and people are continuously connected and transacting. Mobile payments however don't feature as frequently used application in India. The reasons can be many ranging from adoption of appropriate technology by the payment vendor to security, awareness and ease of use among the target groups. A global mobile payments study by McKinsey (2012) revealed that of those surveyed in India, 11% said they were likely to make mobile payments once to several times a day, 30% said they use mobile payments once a week and 8% said they would not use mobile payments in 2012. The same study notes that over 29% of respondents felt that mobile payments was a more convenient way of purchase and 21% felt that it would replace their wallet which they could leave at home.

The mobile payments (m-payments) industry in India is estimated to grow from $86 million in 2011 to $1.15 billion in 2016, with a compound annual growth rate (CAGR) of 68% (Kanth 2013). He quotes a study by Knowledgefaber, a Bangalore-based consulting and research company which observes that availability of affordable handsets, low mobile tariffs and increasing voice and data network coverage across the country will emerge as the key drivers for m-payments in India, with lack of adequate banking infrastructure, low Internet and PC penetration providing further impetus to the market. "*However, trust coupled with security issues remain major hindrances to m-payments adoption. Lack of awareness has also emerged as a major roadblock, specifically in the rural and uneducated mass of the country,*" their research report noted that the market is estimated to grow from US$86 million in 2011 to US $1.15 billion in 2016 a CAGR of 68%.

India has one of the lowest ATM densities in the world; density in rural areas is much lesser compared to urban areas. Consumers are increasingly using the ubiquitous mobile for every activity. The usage of mobile for making payments is increasing slowly but steadily, although the right technology, infrastructure and regulations are either in place or can be deployed easily, what can be a major variable in the success of mobile payments is the "Readiness of the User" in adopting the process.

Whilst mobile payments have been successful in some countries including developing ones, other models are still in a process of evolution. For example, Nokia in India had launched Nokia Money in late December 2011 had axed it by March 2012 (Reuters 2012). Airtel, India's largest cellular services provider, launched their mobile payment scheme Airtel Money in 2012 which is now national

and in 2013 Vodafone is introducing M-Pesa to India with an initial launch into eastern India (www.mpesa.in)

2. Literature Overview

Several studies over the last decade have focused on mobile commerce and looked at the Technology Acceptance Model (Davis 1989) and its modified version proposed by Venkatesh et al. (2003). Briefly put, TAM proposes that for a person to adopt a new technology, he must perceive usefulness in adoption the technology, e.g. in terms of cost/time savings and he must find the technology easy to learn and consequently easy to use and a combination of this leads to an intent to use the technology. Earlier researches by various authors have shown that the success or failure of m-commerce is underpinned by how the customers will react to the payments or good/services using their mobile phone as a virtual wallet. TAM and related theories however do not account for many enablers/disablers of a new technology adoption. For instance, it does not give serious weight to the issue of trust and security in the specific area of m-commerce. To address many of these issues the model itself has been revised and elements added to make it more relevant to the current day requirements. (Venkatesh et al. 2012)

According to the extended TAM, Burton-Jones & Hubona (2005) clarify the drivers as:

- External Variables such as individual users' beliefs or differences with technology. Their evaluation is reflected in Perceived Usefulness (PU) and Perceived Ease of Use (PeU).
  - o Perceived Usefulness : using the new system will increase his/her performance
  - o Perceived Ease of Use is the extent to which using the new system will require minimal effort on user's behalf.
- Attitude: The consequence of the user's beliefs of using a technology drives the user's attitude towards accepting/rejecting the technology.
- Intention: The attitude predicts the desirability of the user using the system and the extent of them using it.
- Actual Use: Users' intentions determine how well they will actually use the system.

Several studies have also used TAM to study m-payment adoption and its critical success factors and impediments. Dahlberg et al. (2004) have reviewed extensively the literature and identified several constructs drawn from literature and attempts to expand the model. Dahlberg and Mallet (2002) earlier had also proposed the Technology Acceptance Contingency Model which addresses several issues including the changing environments, buyer power,

retailer power and the choice of alternate forms of payment.

The drivers for this model was substantially elaborated earlier by Dahlberg (2004) and refined by(Chen, 2008) to include parameters which included trust, security, social norms, compatibility and an assertion that buyer behavior would also be governed by socio-economic consideration and prior exposure to related technology in a larger measure. A few studies are being conducted to understand the market needs. The largest ongoing one is the "Mobinet" series conducted by AT Kearney (2006). Respondents are asked a series of questions on mobile Internet through interviews on periodic cycles. The fifth series (July 2002) indicated that for Europe, 40% mobile phone users were aware of m-cash and intend to use it when made available. This was down from a figure of 46% in the fourth series (February 2002). In earlier series, a steep decline was note from 29% to 1% of European users intending to use the mobile phone for Internet purchasing. The study also noted that the increased penetration of Internet enabled phones in Europe was due to the highest uptake by the youth market. The outcome seems to suggest that mobile commerce can find a niche in this segment. In the near future it is expected that transactions will be location or time related purchases and may be most suited where time is of the essence and also for impulse buys.

Mallat(2007) suggests that the relative advantage of mobile payments is different from that specified in adoption theories and include independence of time and place, availability, possibilities for remote payments, and queue avoidance.

A review of literature did not provide any substantive studies vis-à-vis Indian retailers/vendors perspectives and experiences of the mobile payment ecosystem and establishing a relationship of the UTAUT model to them which would be equally important and relevant to the success/failure of any mobile payment system. This study examines the perspective from the retailer's point of view and findings indicate issues which need to be considered beyond the stated elements of the UTAUT model, given the cultural and business context of India. Currently mobile banking and payment services are operational in India

Indian regulations require cellular operators to seek prior permission from the central bank, the Reserve Bank of India to provide mobile payment and thus can be viewed as non-banking finance corporation. Current regulations mean that mobile payments services must be a separate entity for the airtime service provider. WAP interface payments through credit/debit card payments, bank transfers are in operation but primarily for online shopping. Payments through NFC(near field communications) devices was tried by Citibank in Bangalore in 2009 and whilst the trail was termed successful, the requirement for an NFC- enabled phone could itself prevent adoption of this technology especially across various socio-economic segments(Swedberg 2013)

Table 1: Facets of USSD-based mobile payments

FACET	NOTES
Required technology	Minimal. SMS based hence both device and operating technology are universal.
Ease of use	Only prior experience of SMS required
Time taken to transact payment	Short- few seconds
Security of data	USSD based, rated as medium to good
Access to points of usage	Easy and multiple choices, needs to be high (currently very low) and is national.
Avenues for payment	Off and online- retailers, service providers, peer to peer b2c , b2b and c2b possibilities
Transaction settlement process	Immediate debit to customer and credit to vendor.
Mobile currency/wallet-top up options	Prior to usage. Voucher based. Debit cards/credit cards now possible
Responsibility of Payment to supplier	Mobile network provider
Transaction costs	Low to medium, primary costs can be the SMS costs which may have to be borne by both parties,
Transaction records/history	Possible. Via SMS confirmation, online access to mobile service provider's website
Possible Transaction range	Micro to large payments possible(e.g Rs.5 to 10,000)- but subject to regulations from the Reserve Bank of India

3. Materials and Methods

In February 2012, a leading telecom company announced the launch of its mobile payment services in India and by early 2013 had completed the national roll-out of the scheme to over 300+ cities. A study was conduct in Coimbatore during the first quarter of 2013. Coimbatore is a large industrial town in south India and a center for excellence in manufacturing, education and medical care and the population has good diversity in terms of the mix. A survey was conducted amongst all the dealers who had registered with the telecom company to accept mobile payments for purchase of goods and services from customers. The spread of retailers were across the city and

several well-know regional and local retail brands had enlisted for the payment service. Thirty three retailers were identified for Coimbatore from the data given at the telecom company's website. These were then classified into categories for better analysis.

Table 2: Retailer analysis

CLASSIFICATION	FREQUENCY	%AGE
Books and magazines stores	4	12
Gift shops/fancy stores	2	6
Grocery and food	2	6
Hardware stores	1	3
Mobile phone stores	14	42
Pharmacies	5	15
Photocopying and stationery	2	6
Supermarkets	3	9
TOTAL	33	100

4. Discussions

Whilst all the dealers surveyed were aware of the mobile-payment scheme, only 23 had ever used it and that too only for mobile phone airtime top-up or for buying /topping-up DTH television subscription of the telecom company . Only 18 of these had used the payment scheme for both these services and none had reported any retail point of sale. Of these, 8 retailers felt that this form of payment was cost effective vis- à-vis credit card payments and 16 of them perceived the user experience easy-to use.

As to the reason to the non-use of the mobile payments at retail point of sale, the top six reasons given by respondents included:

1. No training or exposure to the system for retail transactions to the staff.

Whilst all respondents were aware of the mobile payment scheme, over 24 respondents stated that they had not been trained to use it or that the mobile device was with the owner-retailer who was not available at the point of sale. Whilst they had some experience in mobile talk-time top-up, none had any experience of completing a retail purchase transaction through mobile phones. None had any knowledge of the charges incurred either by the retailer or by the customer.

2. No requests from customers for using the mobile payments for retail purchases

All the respondents confirmed that very few(less than 5 reported) had approached them for a retail POS transaction. Primary mode of payment was cash followed by credit card where the retailer offered such facilities. In the majority of the shops, (around 25) the range of transactions was between Rs. 10 to 500 at the point-of sale and a minimum buy was required before they would accept credit cards. Cash was the preferred mode for payment.

3. Lack of clarity as to refund/credit process

Respondents did not have any idea about how the refund or a credit transaction would work and whether there would be a surcharge. The perception was that it was not possible with the scheme and in the event it was, surcharges would have to be incurred by the retailer. There was no clear information or mechanism available to either the retailer or the customer as to the process.

4. Risk of wrong billing or overcharging.

Retailers perceived that customers would not risk payment via their mobile phone as there was insufficient documentary evidence in case of wrong billing/overcharging. Many retailers' perception of transaction being as expensive as credit cards thus the erosion of margins and their own prior experiences of overbilling by the telecom companies made them perceive as the risks to be moderate to high.

5. Perception about creating records of sales which would be available to tax authorities

Around 50% (17) respondents stated that they were encouraged to requested cash payments whenever possible as this would avoid creating tax records. Retail points which did not accept credit card also perceived that sales records would be available to third party.

6. Involved effort for smaller transaction

Retailers who offered credit card payments required customers to spend a minimum amount before they would accept credit cards as they had to pay charges and the process took time. The same perspective was offered for mobile payments by the retailers

The study confirms that the merchant readiness is very poor for successful implementation. There is still a trust deficit as regards to the usage of mobile payments by retailers and whilst other studies may indicate a high intend to use , additional studies have to be undertaken to understand the social and cultural context which is specific to India . There may be substantive variation in perceived use, usefulness within the market and adoption cannot be taken for granted by extrapolating the data as regards to mobile telephone penetration, device availability and usage and data like downloads mobile internet payments.

The merchants have a lot to gain in terms of customer insights, higher store security by less cash in their tills, automated transactions, eliminating small-change issues, creating an effective mobile-CRM for their stores and also participating in a business-network promotions or getting local services/schemes benefits through customer aggregation which the mobile service providers can offer current market environment, at least in the city in which the study was undertaken does not seem to be conducive to the success of any mobile wallet

programs- a major reason being poor merchant involvement and unless larger numbers actively take this up, mobile-payments in this envisaged form will not reach the tipping point and retail mobile payments will fail. This is in spite of using a device independent, relatively low-technology process which does not need much by way of user training as SMS-usage in India is of very high order.

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References
[1] A.T.Kearney, & Management, J. I. of. (2006). A Study on Trends in Mobile Phone Usage and Their Effect on the Industry (p. 24). Cambridge, UK.

[2] Burton-Jones, Andrew and Hubona, Geoffrey S. (2005) Individual differences and usage behavior: Revisiting a technology acceptance model assumption. Data Base for Advances in Information Systems, 36 2: 58-77.

[3] Chen, L. Da. (2008). A model of consumer acceptance of mobile payment. International Journal of Mobile Communications, 6(1), 32.

[4] Dahlberg, T., & Mallat, N. (2002). Mobile Payment Service Development - Managerial Implications Of Consumer Value Perceptions. In S. Wrycza (Ed.), Proceedings of the Tenth European Conference on Information Systems (pp. 649–657). Retrieved from http://is2.lse.ac.uk/asp/aspecis/20020144.pdf .

[5] Dahlberg, T., Mallat, N., & Ondrus, J. (2004). Mobile Payment Market and Research – Past, Present and Future. Electronic Commerce Research and Applications, 2002, 1–16.

[6] Dahlberg, T., Mallat, N., Ondrus, J., & Zmijewska, A. (2008). Past, present and future of mobile payments research: A literature review. Electronic Commerce Research and Applications, 7(2), 165–181.

[7] Davis, F. (1989). Perceived Usefulness, Perceived Ease of Use, and End User Acceptance of Information Technology. MIS Quarterly 13(3), 318 - 339.

[8] Ewing, D., & Milner, J. (2012). Understanding consumer adoption drivers : Insights from The McKinsey Global Mobile Payments Consumer Survey (pp. 1–9). Sam Francisco. Retrieved from http://csi.mckinsey.com .

[9] Kanth, R. K. (2013). M-payment industry in India to touch $ 1.15 billion by 2016. Business Standard, 17 December2012. Retrieved from www.business-standard.com .

[10] Mallat, N. (2007). Exploring consumer adoption of mobile payments – A qualitative study. The Journal of Strategic Information Systems, 16(4), 413–432.

[11] Ondrus, J., & Pigneur, Y. (2006). Towards a holistic analysis of mobile payments: A multiple perspectives approach. Electronic Commerce Research and Applications, 5(3), 246–257.

[12] PwC. (2011). Indian Mobile Services Sector - Struggling to maintain sustainable growth (p. 28). New Delhi. Downloaded from http://www.pwc.in/en_IN/in/assets/pdfs/publications-2011/PwC-COAI-White-Paper-Indian-Mobile-Services-Sector.pdf .

[13] Reuters. (2012, March 12). Nokia to shut Indian mobile money service. Reuters, downloaded from www.in.reuters.com .

[14] Swedberg, C. (2013). Citibank Says RFID Pilot Proves Strong Consumer Interest in Mobile-Phone Payments. RFID Journal, 6–8. Retrieved from http://www.rfidjournal.com/articles/view?7444/2 .

[15] Telecom Regulatory Authority of India. (2013). The Indian Telecom Services Performance Indicators Oct-Dec 2012. New Delhi. Downloaded from http://www.trai.gov.in .

[16] Venkatesh, V., Morris, M.G., Davis, G.B. & Davis, F.D., 2003. User Acceptance of Information Technology: Toward a Unified View. MIS Quarterly, (27:3), 425-478.

[17] Venkatesh, V., Thong, J., & Xu, X. (2012). Consumer Acceptance and Use of IT: Extending the Unified Theory of Acceptance and Use of Technology. MIS Quarterly, 36(1), 157–178.

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