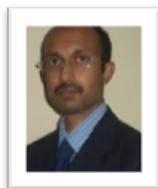# E-Wallet: A Perspective on Digital Revolution in India

Nilanjan Ray
Associate Professor,
School of Management,
Adamas University,
West Bengal

Debojyoti Roy
Data Analyst,
Institution Name
West Bengal

Krishnendu Sen
Lecturer,
Deptt.of Commerce and
Management,
Netaji Mahavidyalaya,
West Bengal

Abstract

Adoption of technology by the Indians is setting an example for the others. Considering the penetration of mobiles and its usage success stories all over the world, a good number of companies are exploring the new and more uses of mobile technology. Many companies have come up with a new use of mobile technology – mobile wallets! This research work has been undertaken to understand the research work on mobile technology adoption in the developing countries and the factors that are influential to understand the reasons for such adoption. This paper is an attempt to understand the adoption of mobile wallets by Indian consumers. The factors – trust in mobile wallets and trust in mobile wallet service providers – have been examined for their impact on its adoption.

Keywords: Mobile Payments, Mobile Wallets, Trust, TAM, UTAUT Model.

Introduction

Growth in the e-commerce industry is a big hit for a developing nation like India. e-Commerce has opened new gateway to provide more convenience to its customers. It provides better and convenient services. The entry of retailers on the virtual platform is transforming the Indian consumers and their buying pattern. Shopping behaviors are changing from being experiential shopping to convenient shopping. Consumer aspiration for further convenience is simply rising. Adoption of technology by Indian consumers is setting an example for others. The attraction toward online shopping is extremely high as retailers offer huge and exciting discounts if shopped online. But few drawbacks lessen the charm of shopping online. Drawback which ranks on top is making payments to virtual vendors. A study conducted by Priya (2014) revealed that debit cards and net banking lead the forms of payment. The forms of payment are listed as follows: online mode (61%) followed by credit cards (50%), COD (24%), and prepaid cash cards (10%), and the last in the list is payments through mobile which is merely 3%. Considering the penetration of mobiles and its associated success stories all over 33 the world, a good number of companies are exploring this new mode of making payments. A mobile payment system in Kenya, M-Pesa, had been successful in targeting socioeconomic groups and geographies. M-Pesa had drawn its attention to 36 mobile form of payment. It as a tool of payment system has fulfilled many of the immediate needs of people like safety and convenience associated with cashless payments, thereby easing money transfer. The smart phone growth curve is currently steep. A survey conducted by Gartner revealed that the growing number of smart phones users in India by 2018 will be as 41 high as 500 million. Additionally, many of these smart phone users will use the Internet for the first time. Hence, this segment of consumers represents a huge area of potential growth for the e-commerce companies. Considering the changing dynamics of consumers and markets, the need for undertaking research is urgent. This study explores the drivers of mobile wallet adoption by Indian consumers. This paper applies the unified theory of acceptance and use of technology (UTAUT model) to propose a research model that incorporates trust – both in mobile wallet services and the service providers as improving constructs to predict consumers' drivers for mobile wallet adoption.

Conceptual Framework and Model Development

Based on above discussion on mobile technology acceptance, online payments, mobile payment adoption and mobile wallet adoption, this paper proposes a research model that integrates the constructs of UTAUT constructs: includes performance expectancy (i.e. expectation that the technology will improve performance), effort expectancy (i.e. ease of using the technology), social influence (i.e. degree to which others' believed the technology should be adopted), and facilitating conditions (i.e. extent and type of support provided for adopting the technology) and Trust. This

research aims to fill a critical gap in knowledge of adoption of upcoming technology of payments through mobile by Indian consumers.

To examine the influence of various factors considered in the research model on the mobile wallets adoption, following hypothesis are proposed:

H1

Effort expectancy has a positive influence on consumers' adoption of mobile wallets.

H2

Social influence has a positive influence on consumers' adoption of mobile wallets.

H3

Trust has a positive influence on consumers' adoption of mobile wallets.

Research Strategy

The proposed research is a descriptive field study using a web-based and email-based questionnaire methodology for the purpose of testing, explaining, comparing and finding the strength of the relationship between the theoretical constructs of trust and technological adoption.As expressed by Snow and Thomas (1994) in their categorization of field methods research, the study is grounded in theory. The paper hypothesizes relationships between the variables, which will be tested empirically using a non-probability sampling methodology.

Setting and Sample

The target population consisted of consumers/ users who have been using these mobile wallet services in the National capital Region of India. Respondents were asked a primary filter question about their current or recent usage and those who responded by saying that they have been adopting this service for the last six months were the one allowed to participate in the study. The questionnaires

weresent to people over social media like Facebook, Linkedin, etc. While this frame represents a non-probability sampling methodology based on convenience, it provides a cross-section of the professional services workforce consisting of an array of industries, positions, and firm sizes, which add to the generalizability of the findings.

Structural equation modeling (SEM) was used to assess the fit of the data collected with the hypothesized model given its many advantages over multiple regressions. These advantages include a reduction in measurement error and ability to test the whole model for fit rather than each coefficient individually resulting in more parsimonious model testing (Cheng, 2001). The sample size for SEM research is typically determined by multiples of the number of variables under study. For example, Stevens (2012) suggests researchers should collect at least 15 cases for every variable or indicator, while Mitchel (1993) argues for 10 to 20 times as many cases as variables under study. Loehlin (1992) recommends at least 100 cases but expresses the preference for 200. Similarly, Hoyle (1995) recommends sample sizes in the range of 100-200. As there are four variables under study, the final sample of 312 exceeds the minimum recommended by the literature.

The collected data was cleaned for consistency and tested for normality using one-way ANOVA (R) before further analysis. Using R V.3.3.2, exploratory factor analysis was conducted to test for the intended relationships between indictors and constructs. The R Lavaanstructural equation modeling program was used to conduct the Confirmatory Factor Analysis to test the data for full model fit (Byrne, 2013).

Table 1
Scales used in the Study for Data Collection

Variable	Measure	Instrument	Reliability
Effort Expectancy	Psychometric	3-item, 5-point standardized scale	.828Chronbach's alpha
Social Influence	Psychometric	3-item, 5-point modified scale	.765 Chronbach's alpha
Trust in Mobile Wallet Services	Psychometric	3-item, 5-point modified scale	.767 Chronbach's alpha
Trust in Mobile Wallet Service Provider	Psychometric	3-item, 5-point modified scale	.822 Chronbach's alpha

Questionnaire

The questionnaire consisted of 13 items. The dependent variable, intent to engage in creativity is presented first in order to reduce the priming effect (Podsakoff, MacKenzie& Lee, 2003), followed by the mediator and independent variables. The questions contained within each of the scales are randomized to control for common method bias (Podsakoff, et al., 2003).

Statistical Results

We sent email surveys to 20,000 individuals all over the world and received responses of over 400. This is around 2% of the response. Among the received responses, those cases which are not currently using or have not been using mobile wallet services in last six months were filtered out. Cases

with missing data along with responses which failed comprehension checks were also filtered out. Items which were reverse coded were normalized. After cleansing the data, 312 cases were found clean enough for analyzing.

Factor analysis was ran on statistical tool SPSS. All the items were thrown together for exploratory factor analysis. Some items were dropped which shows high cross-loadings and only those items were kept for the final study which loaded distinctly on individual factors. Once the factors loaded distinctly on each construct we followed the rule of thumb that only variables with loadings greater than .40 to be considered significant in defining a factor (Kline, 2005).

Table 2
Factor Loadings

Survey Question	Loadings
Effort Expectancy	
It is easy to learn how to use mobile wallet services	.971
It is easy to do transaction through mobile wallet services	.716
Payments through mobile are user friendly and useful	.773
Social Influence	
I prefer to make payments through other modes than using mobile wallet services as it is in trend	.676
Family members suggest me to rely on mobile payments	.969
People close to me suggest that I should use mobile wallet services.	.773
Trust in Mobile Wallet	
Mobile Wallet Services are secure for making payments.	.781
There is no possibility that others will misuse my personal details while I am making payments.	.949
Mobile wallet services cannot be misused	.950
Trust in Mobile Wallet Service Provider	
Mobile wallet services are credible	.975
There is no possibility of leakage of my personal information, while I use mobile wallet services	.972
It is not possible that connection may be lost while making payments	.897

Table 3

Age		Frequency	Percent
	<24	84	26.8
	25-34	131	41.9
	35-44	47	15.0
	45-54	31	9.9
	>55	19	6.1
	Total	312	99.7

The data that is collected has a covers a wide spectrum of population to make the data random. The descriptive table shows the representation of the sample. Gender is categorized as 1 = female 2 = male. Age 1 = less than 24,2 = 25-34, 3 = 35-44, 4 = 45-54 and5 = above 54.We have the sample where the population which is of 312 cases has a representation of age between 18-64 years. Two-third of the population in the survey is male.

Table 4- Gender

	Frequency	Percent
Female	115	36.7
Male	197	62.9
Total	312	99.7

Note: Total number of cases N= 312

From the correlation matrix it can be concluded that all the constructs are significantly correlated to each other. Both age and gender have moderate effect on the constructs although the directions of effects are in opposite direction.

Table 5 Correlations among the Latent Constructs and Study variables

	1	2	3	4	5	6	7
EE							
SI	.343						
TMW	.085	-.011					
TSP	.069	-.047	.036				
AGE	-.054	-.065	-.046	-.135			
Gender	.076	.039	.085	.041	-.040		

EE = Effort Expectancy,
SI = Social Influence,
TMW = Trust in Mobile Wallet,
TSP = Trust in Service Provider

We did curve estimation for all the relationship in the model and found all relationship to be sufficiently linear to be tested using covariance-based structural equation modeling such as the one using R software package. We next evaluated the fit of the theoretical model implied by our reasoning with

structural equation model using R 3.3.2 and maximum likelihood estimation. The model fit is evaluated using following indices CMIN (or chi-squared), CMIN/df(chi-square divided by degrees of freedom), RMSEA (root mean square error of approximation), RFI (relative fit index), CFI (comparative fit index), NFI (normed fit index), and TLI (Tucker-Lewis index).

The fit determination is measured by accepting the thresholds (Kline, 2005). Reasonably fit models are characterized by CMIN/df as high as 5,

RMSEA values as high as 0.08, and RFI, CFI, NFI and TLI values of 0.90 or higher. CMIN/df index is highly sensitive to sample size and if there is large sample size it may lead to erroneous reading which may lead to rejection of good fitting model (Bagozzi, 2004). First, we built a measurement model and examined whether the observed variables provided a reliable reflection of the latent variables. Second, we estimated a structural model, using Effort Expectancy and Social Influence predictor variables and understanding Trust in Mobile Wallets and Trust in Service Provider as endogenous variables. In the structural model age and gender were included as covariates.

Measurement Model

The initial measurement model (Confirmatory factor analysis) provided a good fit to the data: $x2$ (48): 62.631, $p < .001$, comparative fit index (CFI) = .994, Trucker Lewis Index (TLI) =.991, Normed Fit Index (NFI) = .973, Relative Fit Index (RFI) = .963, Root mean square error of approximation (RMSEA) = .031 (confidence interval [CI]: .000 to .051). CFA measurement model specifics are as follows

Table 6 Confirmatory Factor Analyses (CFA's) For Measurement Model

CMIN	df	CMIN/df	RMSEA	CFI	TLI	NFI	RFI
62.631	48	1.30	0.031	.994	.991	.973	.963

Composite reliability and AVE (average variance explained) are above the recommended cut-off levels of 0.50 providing the initial evidence of valid measurement models. The AVE value for each variable was greater than the square of the correlation between each variable and all other variables in its respective measurement model, providing additional evidence of validity (Fornell&Larcker, 1981)

Table 7 Measurement Model: Composite Reliability and Average Variance Explained

| Construct	CR	AVE
Effort Expectancy	.750.684	
Social Influence	1.252.664	
Trust in Mobile Wallet	2.023.804	
Trust in Service Provider	2.485	.900

Structural Model

We modeled all the relationship of the studied hypotheses and plotted their relations in a linear fashion. Upon laying out the relations we found that the relationship between dependent and independent variables to be mediated by organizational trust. We, therefore, intended to run structural equation modeling on the model and test the strength of relation. To test our hypothesized structural model we followed Barron and Kenny's (1986) procedure of hypothesis testing.

Table 8 Fit indices of the Model

	CMIN	df	CMIN/df	RMSEA	RFI	CFI	NFI	TLI
Model	3.959	5	0.80	.000	1.00	1.000	1.000	1.010

N = 312
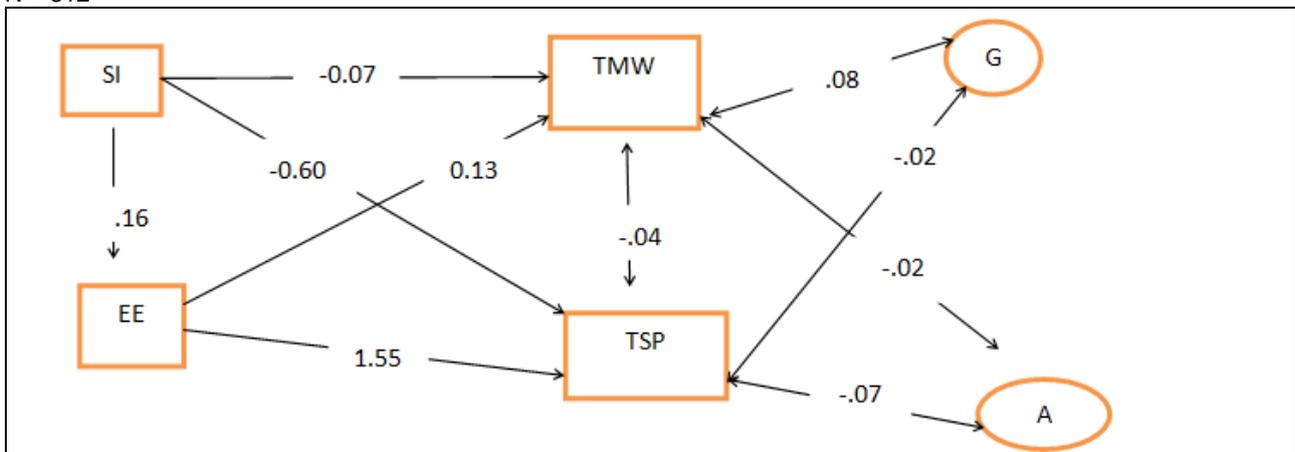
Upon analyzing the model with good fit standards, initial support for hypotheses were found to be significant in expected direction. The model fit is very good as evident from the table above, we will be using the model.Our analyses revealed all hypotheses to hold true.

Conclusion

The ease of using technology is the key factor in use of mobile wallet. Those who are tech savvy also consider how much a telecom provider is trustworthy (i.e. security of personal data or availability of network) before starting online transaction in that provider's network. Social influence cannot force an individual to start using mobile wallet. Rather too much social pressure for getting into a provider's network may force them away from the provider's network. One will use mobile payment or not solely depends on their ease with technology. Further it has been observed male adapts to mobile transaction more than female but are not loyal to any particular provider. This may be due to high rate of male computer literacy. It was also obvious from the

study that age has a negative effect on adoption to mobile technology. Dated individuals are also not loyal to any particular provider as their understanding of benefits or drawbacks of a particular provider is limited. This paper will help practitioners in designing their campaign strategy and advertising budget.

References

1. Alawadhi, S., & Morris, A. (2008). The use of the UTAUT model in the adoption of e-government services in Kuwait. Proceedings of the Annual Hawaii International Conference on System Sciences, Hawaii, USA. doi:10.1109/HICSS.2008.452
2. Anyaso, F.I.,&Otubo,P. A. (2009). Mobile Phone TechnologyinBankingSystem:Its EconomicEffect.Research Journal of Information Technology, 1(1), 1-5.
3. Au, Y. A. and Kauffman, R. (2008). The economics of mobile payments: Understanding stakeholder issues for an emerging financial technology application. Electronic Commerce Research and Applications, 7(2): 141-164.
4. Azevedo, M. A. (2014,May12).Indian MobilePayment Market Poised for MassiveGrowth.Retrieved from CISCO: http://newsroom.cisco.com/feature/1416791/India n-Mobile-Payment-Market-Poised-for-Massive-Growth?utm_medium=rss
5. Bauernfeind, U. and Zins, A.H. (2006). "The Perception of Exploratory browsing and Trust with Recommender websites". Journal of Information Technology & Tourism. 8(2): 121-136.
6. Brown, M. R., Muchira, R. and Gottlieb, U. (2007). "Privacy Concerns and the Purchasing of Travel Services Online". Journal of Information Technology & Tourism. 9(1): 15-25.
7. Chen, L.D. (2008). A model of consumer acceptance of mobile payment. International Journal of Mobile Communications, 6(1): 32-52.
8. Chen, Y. and Barnes, S. (2007). "Initial trust and online buyer behavior". Industrial Management & Data Systems. 1079(1): 21-36.
9. Dahlberg, T., Mallat, N. Ondrus, J. and Zmijewska, A. (2008). Past, present and future of mobile payments research: A literature review. Electronic Commerce Research and Applications, 7(2), 165-181.
10. Davis, F. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319-340.
11. Flavian, C., Guinaliu, M. and Gurrea, R. (2006). "The role played by perceived usability, satisfaction and consumer trust on website loyalty". Information & Management. 43(1): 1-14.
12. He, F. and Mykytyn, P. (2007). Decision factors for the adoption of an online payment system by customers. International Journal of e-business Research, 3(4): 1-32.
13. Hsieh, C. T. (2001). E-commerce payment systems: critical issues and management strategies. Human Systems Management, 20(2), 131-138.
14. Lai, D. C.-F., Lai, I. K.-W., & Jordan, E. (2009). An extended UTAUT model for the study of negative user adoption behaviours of mobile commerce. Paper presented at the Proceedings of the Ninth International Conference on Electronic Business
15. Lauer, T. W. and Deng, X. (2007). "Building online trust through privacy practices". International Journal of Information Security. 6(5): 323-331.
16. Lee, T. (2005). The impact of perceptions of interactivity on consumer trust and transaction intentions in mobile commerce. Journal of Electronic Commerce research, 6(3): 165-180.
17. Lin, H. and Wang, Y. (2006). An examination of the determinants of customer loyalty in mobile commerce contexts. Information and Management 43(3): 271-282.
18. Mallya, H., (2015).With 3rd largest smartphone market in the world, India to reach 314 million mobile internet users by 2017. Retrieved January 29, 2016, from http://yourstory.com/2015/07/mobile-internet-report-2015/
19. Nayak, N., Nath, V. and Goel, N. (2014). A study of adoption behaviour of mobile banking services by Indian consumers. International Journal of Research in engineering and Technology, 2(3): 209-222.
20. Prabhu, A. A. B. (2014). A study on usage of Credit Card System. IOSR Journal of Business and Management. 16(1): 136-140.
21. Ray N, Ghosh D (2014): Internet Service Quality (I-SQ) Dimensions and their Impact on Consumer Satisfaction: Case from Banking Industry, Asian Journal of Research In Banking and Finance, 4(8), 212-221
22. Ray N, Bhattacharya A (2016). Examination of Service Quality Gaps: Evidence From State Bank of India, In Carolina Machando & J Paulo Davim, Green and Lean Management, Springer International Publishing, Switzerland
23. Ray N (2016). Expectation and Perception of Internet Banking Service Quality of Select Indian Private and Public Banks: A Comparative Case Study, In Aljawarneh S A Online Banking Security Measures and Data Protection, IGI-Global, USA
24. Shin, D.H. (2009). Towards an understanding of the consumer acceptance of mobile wallet. Computers in human Behaviour, 25, 1343-1354.
25. Singh, S. (1999). Electronic Money: Understanding its use to increase the effectiveness of policy. Telecommunications Policy, 23(10-11): 753-773.
26. TRAI.(2014). Highlights of Telecom Subscription as on 30th September, 2014. Retrieved April28, 2015, from Telecom Regulatory Authority of India: www.trai.gov.in/WriteReadData/WhatsNew/.../PR-TSD-Sep-14.pdf
27. Unruh, J. A. (1996). Customers mean business: Six steps to building relationships that last.Reading, Mass: Addison-Wesley.

28. *Venkatesh, V., Morris, M., Davis, g. B. and Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS Quarterly, 3, 425-478.*

29. *Viehland, D. and Leong, R. (2007). Acceptance and use of mobile payments. In 18th Australasian conference on information systems acceptance and use of M-payments. Dec 5-7, Toowoomba, Australia.*

30. *Zhou, T., Lu, Y., & Wang, B. (2010). Integrating TTF and UTAUT to explain mobile banking user adoption. Computers in Human Behavior, 26(4), 760–767. doi:10.1016/j.chb.2010.01.013*