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Abstract

Purpose – This study makes an integrated approach in identifying the factors affecting usage intention of mobile-based payment services. Such services are being marketed aggressively by cellular service providers and are different from usual mobile-based banking. The study incorporates prominent factors like the technical characteristics, technology-specific characteristics, user-specific characteristics, and task-specific characteristics and others from published literature. The purpose of this paper is to highlight those factors which have significant impact on the adoption of such service so that the adoption rate can be increased.

Design/methodology/approach – A nationwide primary survey was conducted using validated questionnaire requesting response for the factors obtained from published literature. In total, 196 respondents participated in the survey. Totally, 11 hypotheses were formulated and statistically tested for their significance in context to the study. Confirmatory study was on the significant factors and a model has been proposed.

Findings – The study finds that factors like perceived usefulness, perceived ease of use, system quality, connectivity, discomfort, task-technology fit and structural assurance have significant impact on the usage intention of mobile money services whereas factors such as perceived monetary value, absorptive capacity and personal innovativeness have been found to be insignificant.

Originality/value – There have been no studies conducted which reported mobile-based transfer payment adoption issues where-in the transfer mechanism is independent of formal banking. The findings would be beneficial for service providers of mobile-based payment services to understand their subscribers and roll out value added services.

Keywords Perceived usefulness, Mobile transfer payment, Mobile money, Use intention of mobile money

Paper type Research paper

1. Introduction

We are living in an era dependent on technology, which is integrated with everyday human life. The technical infrastructure components with different layers are interoperating with social components that drive its usage and development. The success of a technology is not measured by how sophisticated it is, but how simply it merges with social life and derives its value by usage on human life. Thus, the techno-social acceptability of any new "technology" proves the real value and its reason

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for existence. Millions of people in developing countries are outside the ambit of some form of formal financial services (Boston Consulting Group (BCG), 2011) and thus such services present a good opportunity for ensuring greater financial inclusion (Aggarwal *et al.*, 2010). "Mobile money" is basically a mobile-based money transfer service that uses information and communication technologies (ICTs) tools and non-banking channels (mainly retail) to offer and extend the financial services to subscribers who are not profitable to be reached by formal and traditional financial services providers like banks.

The penetration of cellular services has been pervasive in general, the adoption of such value added services like that of mobile money is surprisingly low. This is particularly true for a country like India which has the second largest mobile phone subscriber base with mobile phone subscribers (903 million) comprised nearly 96 percent of the total telephone subscribers (1,048 million) till the end of January 2012 (Yadav *et al.*, 2014), however, subscribers using mobile-based banking or money transfer services is less than 4 percent of the overall subscriber base. Thus effective collaboration between cellular operators and micro-finance companies can address the issue of financial inclusion (Aggarwal *et al.*, 2010; Martha and Neha, 2013). But the figures imply the reluctance in acceptance of mobile-based transfer payment service adoption. Such services has been well accepted in similar emerging economies like Philippine and Kenya and hence the motivation behind this study to analyze factors affecting its adoption in India.

Traditional banks provide their own mobile banking facility. There are different applications provided by banks which can be installed on a wide range of mobile platforms and can be used with ease. However, one has to understand the difference between mobile banking and mobile money. In case of mobile banking, the transactions are done between the customer and the bank, or may be customer to another third party, but still bank intermediates between the two. The medium of communication can be different, i.e., customer and the third party may be subscribers to different internet/mobile service providers. But, in case of mobile money, the process is different. Monetary transactions happen between two parties (users and merchants) where both of them are subscribers of the same mobile money service in the same telecom service provider's domain. The authorized agent handles the monetary transactions between the parties.

Sujeet and Srikrishna (2014) while studying the adoption issues of internet banking in urban India reported awareness, self-efficacy and quality of internet connections as primary determinants toward adoption of internet banking among urban people in India. Wedy *et al.* (2013) in their study reported the significance of self-efficacy and ease of use while capturing the user experience of e-payment from consumers in Malaysia. Lee *et al.* (2011) developed an extensive analysis of measurement quality by investigating factors influencing the intention to use mobile financial services (MFS) include general technology perceptions, technology-specific perceptions, user characteristics and task-user characteristics using the confirmatory factor analysis (CFA) techniques. A study by Rakhi and Mala (2013) on customer usage intention of mobile commerce in India found social influence as significant determinant in addition to highly reported factors like perceived usefulness and perceived ease of use. Another recent study (Thakur and Mala, 2014) done in the Indian context reported factors like perceived risk and security concerns to significantly impact usage intention of mobile payment service. However, this study focussed on the usage intention by analyzing responses from subscribers who are well educated and having operational bank

accounts. In both the studies, subscribers have good experience of using internet and transact though internet-based banking. But this study analyses usage intention from the perspective of end users availing mobile-based payment services which is independent of formal banking network and have no prior experience of transacting through internet.

In the present study we take a unified approach to identify the various factors which have been found in published literature in the context to mobile technology adoption as a whole and then try to focus on reduced factors influencing the adoption of mobile money services. The paper is organized as follows: a theoretical background of this study through literature review is presented in the next section. Section 3 elaborates on the research design as used in this study. Section 4 discusses the research methodology outlining the development of the survey instrument and the data collection methodology. The process of data analysis is presented in Section 5 and a discussion of the results obtained has been presented in Section 6 along with managerial implications of the results. Finally we conclude our paper in Section 7 by highlighting areas for future research and possible limitations of this study.

2. Background of the study

The techno-social acceptability issues of any new technology and technology-based offering has been subjected to extant research for a long period of time. Extensive research has been done by using technology adoption theories to examine mobile and internet banking behavior. Studies by Sujeet and Srikrishna (2014), Ulun and Nuray (2012), Ko *et al.* (2010) have attempted to extend the technology acceptance model (TAM) to study technology adoption issues in internet banking adoption. Mallat (2007) attempted to extend the theory of innovation diffusion and Lee *et al.* (2011) the unified theory of acceptance and use of technology (UTAUT). It needs to be pointed that almost the above mentioned studied which have been extensively cited focussed on examining internet banking user behavior. Those few publications which focussed on usage intention of financial services also basically concentrated on mobile banking (Lee *et al.*, 2011) and mobile commerce (Martha and Neha, 2013; Rakhi and Mala (2013); Oliver *et al.*, 2012) while analyzing the impact of mobile phone-based money transfer services in agriculture: sector in Kenya used cross-sectional data collected from three provinces of Kenya. They reported the significant benefits that users of such services in agricultural sector derived and advocated the use of such services in other developing countries. William and Tavneet (2014) in their paper on risk sharing and transaction costs in context to Kenya's mobile money services provided convincing evidence that mobile money has a significant impact on the ability of households to share risk and focusses on the importance of transaction costs associated with such service and reports that mobile money services increases the number of active participants in risk sharing networks.

This paper does not capture mobile banking user intention but concentrates on transfer payment using mobile phones where-in the transactions does not involve bank accounts. This study attempts to identify the factors affecting the acceptance of such types of transfer payment mechanism which are being projected as simple and trustworthy by the service providers.

Published literature reports models that have tried to explain or predict a user's technology acceptance like the theory of planned behavior (TPB) (Ajzen and Fishbein, 1985), the TAM (Davis, 1989), and the UTAUT (Venkatesh *et al.*, 2003). The approach of TPB and the TAM are quite generic in nature. As per the TPB, a user's

acceptance of a technology can be explained by their intention, which is determined by a combination of attitude, subjective norms and user's perceived behavioral control. The TPB has been tested to explain a user's behavior in social settings such as health care and in acceptance and adoption of technology theory (e.g. Chau and Hu, 2001). The existing empirical evidence divulges the power and ability to predict user intention.

Several leading telecom companies saw immense business opportunity in this area of mobile-based money transfer which can operate independent of any formal bank account and launched product and services to tap this growing segment. Such services can be availed using smart phones (with internet connectivity) or using basic mobile phones (without internet connectivity). Mobile-based money transfer is considered as a transformational service that uses ICT tools and non-bank retail channels to extend the delivery of financial services to clients who cannot be reached profitably with traditional branch-based financial services. Such services offer immense benefits to the subscribers as they can get mobile money into and out of the service through a network of agents who facilitates the transactions that operate outside bank branches.

However, though the penetration of cellular services has been pervasive in general, the adoption of such value added services like that of mobile money is surprisingly low. This is particularly true for a country like India which has the second largest mobile phone subscriber base (998 million wireless subscribers as per Cellular Operators Association of India at the end of financial year 2013) but subscribers using mobile-based banking or money transfer services is less than 4 percent of the overall subscriber base.

Most of this study examines customers (mobile money service subscriber) usage intention and attempts to find answers to questions like as to why is the adoption of mobile money has been slower than that of mobile internet in general? Such services can be availed without internet connectivity using basic mobile phones and are considered safe and convenient. In spite of the inherent advantages of such services, the adoption has been very slow. This study is an attempt to examine this issue by focussing on the key factors affecting the usage intention of a service like mobile money in a growing economy.

3. Research model and hypotheses

Mobile money as a service offering is still emerging. Though such services has been in offer by several telecom service providers for the last one year but adoption has not been satisfactory. Extant research has used information technology adoption theories and models (the notable ones has been discussed in the previous section). While most of them (TAM, IDT and UTAUT) have tried to focus on specific characteristic in the context of information system adoption. Even in context to MFS, researchers have focussed on usage intention in context to mobile banking (Kim *et al.*, 2004; Lee *et al.*, 2011; Martha and Neha, 2013) but this study takes an unified approach to study usage intention of mobile-based money transfer system which is independent of bank accounts. Figure 1 presents the research model.

3.1 Usage intention

Fishbein and Ajzen (1975) in their theory of reasoned action reported that perceived usefulness significantly affect usage intention. Davis (1989) adapted this model to

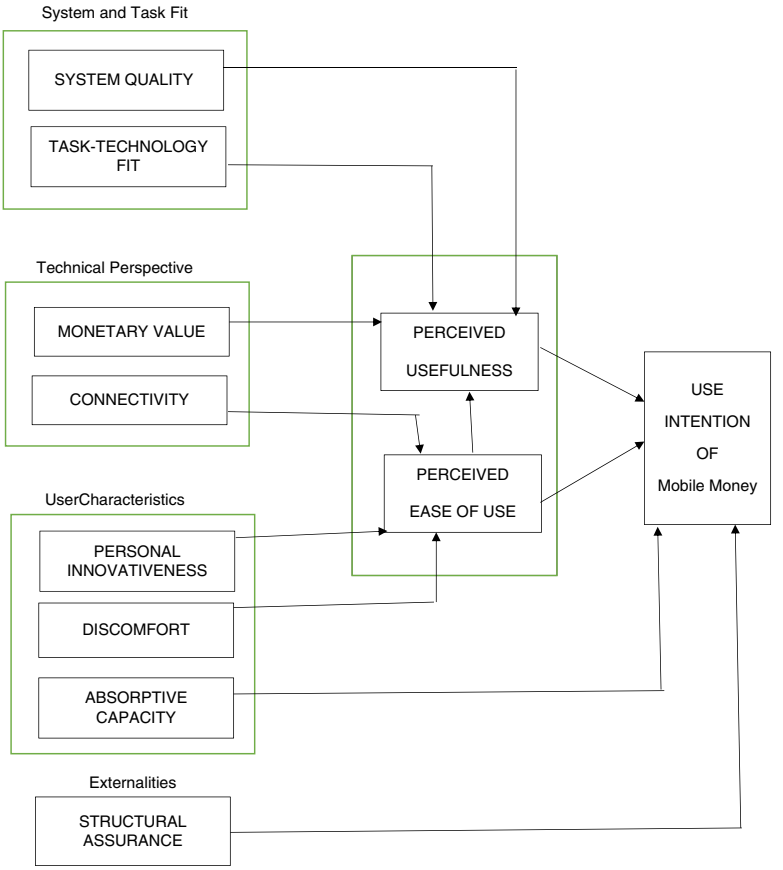

Figure 1.
Proposed research model

explain user acceptance of an information system to develop technology adoption model (TAM). He defined perceived usefulness has been defined by them as the degree to which an individual believes that using a particular system would enhance their performance. Perceived ease of use is defined as the degree to which using a particular system would be free of physical and mental effort.

Perceived usefulness has been reported to affect continuance usage. Several other studies (Chen *et al.*, 2002; Lu *et al.*, 2010; Shin *et al.*, 2010; Sujeet and Srikrishna, 2014) have also reported significance of perceived usefulness on usage intention. Hence:

H1. Perceived usefulness affects the usage intention of mobile money services.

H2. Perceived ease of use positively impacts usage intention of mobile-based money transfer services.

3.2 System quality

This refers to the access speed, ease of use, navigational and appearance of interface (Kim *et al.*, 2004; Vance *et al.*, 2008). Poor system quality will lower the user's perception toward adoption of services like mobile money. If users encounter frequent service

interruption and/or service unavailability then payment services would get affected and hence will decrease user expectation. Thus:

H3. System quality affects perceived usefulness.

Issues like ubiquity of services and localization affect connectivity (Kannan *et al.*, 2001; Hong and Tam, 2006). Therefore we derive the next hypothesis as:

H4. Connectivity impacts the perceived ease of using mobile money services.

3.3 Discomfort

Diffusion of innovation theory (DIT) by Rogers (2003) is frequently used in explaining information system adoption issues. Compared with TAM, the DIT is deemed more suitable as subjects like consumers and not organizational users as in TAM. Multi aspectual general norms of users understanding of a system such as emancipation, satisfaction and achieving goals are considered as important factor (Jahanyan *et al.*, 2012). Complexity in using a system results in discomfort for the end user and affects its usage (Shin *et al.*, 2010). Consumers ability to integrate the service without much discomfort in their daily life impacts such adoption. Therefore:

H5. Discomfort in usage affects perceived ease of use.

3.4 Personal innovativeness

It implies the user's willingness to adopt a new system or service (Rogers, 2003). Consumers who are innovative by nature actively seek new ideas and feel less perceived danger (Joseph and Vyas, 1984; Ko *et al.*, 2010). Previous studies reported personal innovativeness to affect acceptance of technology and technology-based service (Venkatesh and Davis, 2004; Lin, 2006). Pagani (2004) in his study showed that perceived innovativeness influences acceptance attitude toward mobile services. Based on the previous studies, we can develop the next hypothesis, i.e.:

H6. Personal innovativeness impacts perceived ease of using mobile-based services like mobile money.

3.5 Absorptive capacity

The concept of absorptive capacity was proposed by Cohen and Levinthal (1990). It has found its application in various fields of studies including that of information system adoption. It implies that if users have prior working knowledge of internet and of mobile application then they are more likely to understand and adopt mobile-based services. Thus we derive our next hypothesis:

H7. Absorptive capacity affects usage intention of mobile money service.

3.6 Task-technology fit

Goodhue (1998) defines fit as the degree to which users believe a certain technology meets their needs. Previous research (Cooper and Zmud, 1990; Chen *at al.*, 2002) reported that task-technology fit has a significant impact on customer's perceptions of using technology. So on the basis of the above studies, technology is likely to be adopted if it is appropriate for users' tasks (Goodhue and Thompson, 1995) and this leads to the hypothesis:

H8. Task-technology fit has a positive impact on perceived usefulness leading to usage intention of mobile money services.

3.7 Monetary value

Value has been conceptualized as the monetary or non-monetary benefit of purchasing a product or service (Kotler, 1994; Naumann, 1995). In context to this study, perceived monetary value emphasizes the financial perspective. Do subscribers feel that the fees (or service charge) are offset by the benefits they experience (Hong and Tam, 2006) by using mobile money? Customers perceived monetary value is positive when the perceived quality is greater than the personal sacrifice (Dodds *et al.*, 1991). This leads us to the next hypothesis:

H9. Perceived monetary value has a positive impact on perceived usefulness toward mobile money services.

3.8 Structural assurance

It refers to the existence of technological and legal institutions to ensure payment security. William and Tavneet (2014) in their paper focussed on risk sharing and transaction costs in context to Kenya's mobile money services. McKnight *et al.* (2002) in their study reported structural assurance in the form of institution-based trust mechanism affect user's usage intention. Yu-Qiam and Houn Gee (2012) reported that trust is the key mediator in ensuring service fairness and customer satisfaction in online banking. Zhou (2011) provided empirical evidence of the significance to initial trust in mobile-based banking which can be ensured through structural assurance. Thus we can hypothesize:

H10. Structural assurance positively impacts usage intention of mobile money services.

And finally we can hypothesize:

H11. Perceived ease of use positively impact perceived usefulness.

4. Research methodology

The research model development involved literature review and was empirically tested by conducting the research instrument developed for the study using survey method. The items used in this survey were adapted from previous studies published in peer reviewed journals. The items of the research instrument are provided in the Appendix.

4.1 Data collection

The data for this study has been obtained from cell phone users in the age group of 18-40 through a primary survey conducted in across all the regions in the country. The respondents have been using cell phone (smart phones as well as basic mobile phones) for not less than two years. Since mobile money is a service which does not require internet connectivity for performing transactions basic phone users were targeted for data. Data used in this study has been collected from tier 2 to tier 3 cities in addition to tier 1 cities since service providers of mobile money have primarily focussed on tier 2 and tier 3 for obtaining greater subscriber base. A large percentage of the respondents come to cities for occupational reasons and for studies. A total of 180 respondents participated in the survey between January 2014 and March 2014, Table I displays the respondent's characteristics.

As can be seen in Table I, 98 percent of respondents are at age less than 30 and also 60 percent have an income less than Rs 1,000.

Category	Value	Valid %
Gender	Male	23
	Female	77
Age	< 30	98
	30-40	2
Education level	School	6
	College	42
	Master	52
Monthly income (Indian currency's Rs)	< 1,000	60
	2k-5k	11
	5k-10k	13
	> 10k	16
Mobile money usage frequency	Everyday	13
	2-4 times/week	18
	1-2 times/month	22
	Less than 1 time/month	47
Mobile money usage place	Office	11
	School	6
	Vehicle	3
	Anywhere/anytime	80
Mobile company	BSNL	4
	Idea	12
	Airtel	45
	Aircel	35
	Others	4
Current location	East	17
	West	9
	North	34
	Central	17
	South	23

Table I. Demographic characteristics of respondents

4.2 Survey instrument development

This study have used instrument adapted from extant review of literature to improve the content validity in the context of adoption of mobile banking. However, some of the items were modified to suit the purpose of this study which captures user intention for financial services which are different from typical mobile banking applications. The scale items are measured on a five points Likert scale (1 = "strongly disagree" and 5 = "strongly agree"). When the instrument was developed, it was tested among ten users with mobile money transfer usage experience. Then according to their suggestions, few items were revised to improve the clarity and understandability. The final items are listed in Appendix.

Perceived usefulness is measured by items adopted from Lee *et al.*, Venkatesh and Davis, items of perceived ease of use are adopted from Venkatesh (2000) and Venkatesh and Davis. Items of system availability is measured by items adopted from Kim *et al.* (2004) which includes items like access speed. Items of structural assurance are adopted from McKnight *et al.* to reflect the legal and technological structure. Monetary value is measured by items capturing cost and time savings adapted from Monroe and Krishnan and Hong and Tam (2006). Items of connectivity were adapted from Kannan *et al.* (2001), Kalakota and Robinson (2001) and Hong and Tam (2006). Personal innovativeness is measured using items based on the study by

Goldsmith and Flynn. Absorptive capacity is measured using items adapted from Cohen and Levinthal (1990) and Xu and Ma (2008). Items of discomfort include complexity in usage and has been adopted from the study by Zhou and Wang (2010). Finally items of usage intention are adopted from Venkatesh (2000) and Venkatesh and Davis (2004).

5. Data analysis

The methodology for data analysis adopts two steps. The first confirms the factor structure of measurement items of antecedents of mobile payment services. The second investigates the effect of each independent construct on intervening and dependent constructs. Data analysis is using statistical software packages including SPSS 20 and LISREL.

5.1 Measurement model

To assess measurement reliability and validity of the proposed measurement model, CFA was carried out. Based on the analysis, 42 out of 55 indicator items were retained for further process. The fit indices (χ^2 (224) = 349.87, RMSEA = 0.03, CFI = 0.92, GFI = 0.90, NFI = 0.95) suggest that the model with the 11 latent variables represents a good fit to the data. The instrument demonstrates evidence of both convergent (significant critical ratios, average variance extracted (AVE) > 0.50 in all occasions) and discriminant (AVE estimate of each construct is larger than the squared correlations of this construct to any other constructs) validity.

During data analysis, tests for reliability and validity was conducted along with test for common method variance. Harman's single factor test to confirm presence of common method bias was done. In the study all 11 factors had eigenvalue greater than 1 with the largest factor accounting for 12.43 percent of the variance thereby indicating the absence of common method bias in the data set. Tests for validity includes convergent validity and discriminant validity. Table II displays the values for factors loading and the values of Cronbach's α. Most items show loading more than or equal to 0.5 (with t-values significant at 0.001) and the α-values were also found to be larger than 0.70 thereby showing good reliability (Nunnally, 1978).

5.2 Structural model

The next step in analysis involved testing of the structural model and corresponding theoretical relationships. Table III shows the results of linear regression and extracted coefficients according to which all hypotheses are evaluated.

In Figure 2 the final research model according to data analysis results and supported hypotheses is presented.

6. Theoretical and managerial implications

From a theoretical perspective, this study takes a unified approach to analyze the factors that influence the intention of using mobile money services in an integrated manner. System and task-fit perspective which considers issues like system quality and appropriateness of technology impacts the perceived usefulness of such services. Issues pertaining to quality of connectivity influences perceived usefulness. User characteristics considers issues like discomfort in operating the services influences perceived ease of using mobile-based transfer payments. Externalities in the form of presence or absence of structural institutions in the country have a direct influence on the usage intention of

Construct	Indicator	Factor loading[a]	Chronbach's α
System quality	Xd1	0.74	0.72
	Xd2	0.64	
	Xd3	0.51	
	Xd4	0.58	
	Xd5	0.66	
	Xd6	0.56	
	Xd7	0.50	
Task-technology fit	Xg1	0.53	0.89
	Xg2	0.67	
	Xg3	0.72	
Monetary value	Xh1	0.68	0.75
	Xh2	0.75	
	Xh3	0.58	
Connectivity	Xi1	0.53	0.79
	Xi2	0.65	
	Xi3	0.73	
Personal innovativeness	Xb1	0.67	0.71
	Xb2	0.72	
	Xb3	0.69	
	Xb4	0.56	
	Xb5	0.61	
Discomfort	Xc1	0.73	0.70
	Xc2	0.55	
	Xc3	0.78	
	Xc4	0.54	
	Xc5	0.65	
	Xc6	0.71	
Absorptive capacity	Xj1	0.70	0.77
	Xj2	0.64	
	Xj3	0.50	
	Xj4	0.55	
Structural assurance	Xk1	0.77	0.72
	Xk2	0.55	
	Xk3	0.65	
	Xk4	0.71	
	Xk5	0.63	
Perceived use fullness	Xe1	0.651	0.91
	Xe2	0.857	
	Xe3	0.734	
	Xe4	0.721	
	Xe5	0.708	
	Xe6	0.666	
	Xe7	0.777	
	Xe8	0.706	
	Xe9	0.724	
Perceived ease of use	Xf1	0.67	0.73
	Xf2	0.70	
	Xf3	0.55	

(*continued*)

Table II.
Factor loading and reliability

Construct	Indicator	Factor loading[a]	Chronbach's α
	Xf4	0.78	
	Xf5	0.54	
	Xf6	0.57	
	Xf7	0.66	
	Xf8	0.53	
	Xf9	0.71	
	Xf10	0.72	
Use intention of mobile money	Y1	0.85	0.75
	Y2	0.83	
	Y3	0.96	

Notes: [a]Confirmatory Factor Analysis (CFA) – extraction method: principal component analysis; rotation method: varimax with Kaiser normalization

Table II.

Hypothesis	Definition	β^a	Sig.	Result
H1	Perceived usefulness positively affects usage intention of mobile money services	0.364	0.000	Supported
H2	Perceived ease of use positively impacts usage intention of mobile-based money transfer services	0.270	0.000	Supported
H3	System quality affects perceived usefulness	0.275	0.001	Supported
H4	Connectivity has a positive impact on perceived ease of use toward mobile money services	0.253	0.001	Supported
H5	Discomfort in usage affects perceived ease of use	0.251	0.001	Supported
H6	Personal innovativeness has a positive impact on perceived ease of use toward mobile-based services like mobile money	0.039	0.584	Not supported
H7	Absorptive capacity has a positive impact on usage intention of mobile money services	0.04	0.441	Not supported
H8	Task-technology fit has a positive impact on perceived usefulness leading to usage intention of mobile money services	0.555	0.000	Supported
H9	Perceived monetary value has a positive impact on perceived usefulness toward mobile money services	0.132	0.162	Not supported
H10	Structural assurance positively impacts usage intention of mobile money services	0.423	0.000	Supported
H11	Perceived ease of use positively impact perceived usefulness toward mobile money services	0.313	0.000	Supported

Note: [a]Linear regression – method: enter

Table III.
Hypotheses and model validation

mobile money services. Factors like perceived usefulness and perceived ease of use has been found significant in this study that corroborates several other studies.

A significant outcome worth highlighting has been the significance of the factor named externality. Very few published studies (Venkataraman, 2010) has reported this factor. Existence of technological and legal institutions to ensure payment security has been reported by McKnight *et al.* (2002) and Aggarwal *et al.* (2010) but in a different context. Zhou (2011) and Yu-Qiam Zhu *et al.* provided empirical evidence of the significance to initial trust in mobile-based banking which can be ensured through structural assurance. William and Tavneet (2014) stressed on risk sharing and transaction costs in context to Kenya and its enabling role. Rakhi and Mala (2013) in their

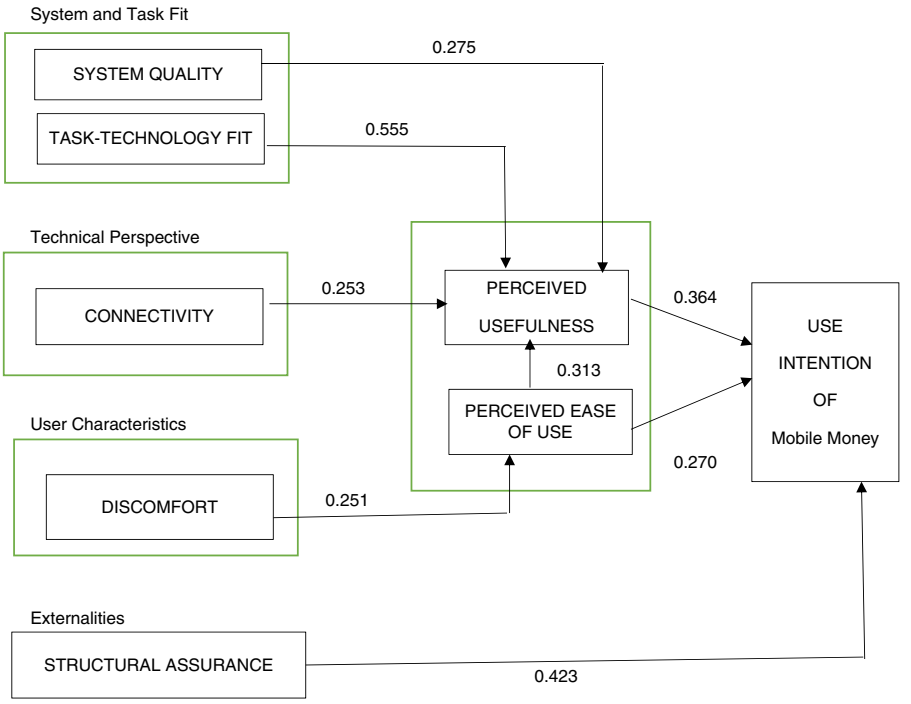

Figure 2.
Standardized coefficients for the final model

study in Indian context reported security and privacy issues as significant deterrent in adoption of mobile commerce. Thus from a theoretical standpoint, this study has provided new insights which seem to address the understanding of mobile-based transfer payment service independent of banking system which has not been attempted and reported by any other researchers previously. To some extent, the findings seem to corroborate with the findings of the studies (Lee *et al.*, 2011; Thakur and Mala, 2014) done in emerging economies but again in context to mobile banking usage.

The findings of this study has immense practical and managerial implications.

First, the government of several emerging economies have been making efforts to achieve greater financial inclusion by using technology (Aggarwal *et al.*, 2010). BCG (2011) report has stated that MFS can reduce financial exclusion in countries like India by 5-20 percent by the year 2020. Oliver *et al.* (2012) reported the significant benefits that users of mobile money transfer in agricultural sector in Kenya and advocated the use of such services in other developing countries like India. William and Tavneet (2014) has also reported the significant impact of such services on the ability of households to share risk and focusses on the importance of transaction costs associated with such service and reports that mobile money services increases the number of active participants in risk sharing networks. In this context mobile-based money transfer services can go a long way to address the issues of non-existent banking network. Banks have been hesitant to open branches in far flung areas due to viability concerns. Thus services like mobile-based money transfer can effectively fill that gap and can be an effective instrument in achieving greater financial inclusion (Martha and Neha, 2013).

Second, given the factors identified in this study, the service providers of mobile money need to re-strategize their product and service offering. Jack Kendall *et al.* (2014)

highlighted some of the challenges faced by the service providers of mobile money. They suggested that high-touch engagement at point of sales is necessary for low-income clients. They also suggested that in order to scale up, service providers should clearly communicate the value proposition to its subscribers. Thus service providers in India should focus on highlighting to the potential subscribers as to how such technology-based service can address their task of making transfer payment with ease (Rakhi and Mala, 2013). Few published research (Cooper and Zmud, 1990; Chen *et al.*, 2002) reported the significance of this factor which is further corroborated by the findings of this study that technology is likely to be adopted if it is appropriate for users' tasks (Goodhue and Thompson, 1995). The speed of accessing such services and connectivity along with ease of navigation and through interface was reported significant by few previous researchers (Kim *et al.*, 2004; Vance *et al.*, 2008). Technical perspective as an important factor has been mentioned in different fields such as ERP adoption (Upadhyay *et al.*, 2011). Thus service providers need to offer user friendly interfaces with satisfactory speed of accessibility in tier 2 and tier 3 cities to increase the adoption rate of such services. Poor system quality will tend to lower the user's perception toward adoption of services like mobile money. Rogers in his theory of DIT stresses on the discomfort factor in explaining information system adoption issues. Complexity in comprehending the system result would result in discomfort for the end user and affects its usage (Shin *et al.*, 2010). Mobile money transfer services has significantly impacted and benefitted those subscribers who are outside the ambit of formal banking network and can usher in the same change in other developing countries where such services are yet to find more adoption (William and Tavneet, 2014).

Third, it is significant to point out that personal innovativeness of users which has been reported to have a significant impact on usage intention of mobile banking adoption does not find support in this study. This implies that for usage of such services, users are not seeking innovations but basic functionality so, to increase the adoption service providers should increase its visibility through and awareness (Sujeet and Srikrishna, 2014) and advertisement campaigns to focus on the basic functionality and add more channels where such services are accepted without increasing the complexity and discomfort.

7. Conclusions, limitations and future research

This study focusses on factors influencing the usage intention of mobile money through a unified approach by using items and factors which have been reported significant by previous researchers. One significant contribution of this study has been the focus on mobile money services which is offered to subscribers as transfer payment mechanism to operate without any intervention of formal bank channels. The study found that perceptions regarding system quality, task-fit, connectivity, discomfort and presence of external agencies to instill confidence among the users are prominent. This implies that in order that such service receives greater acceptability and adoption, service providers should work with the government agencies to provide more institutional legality and support. Service providers can only ensure better service quality and innovative service but absence of external institutional agency may prove to be a deterrent for greater acceptability. User friendly interfaces with convincing value proposition impacts the adoption of services like mobile money.

There is no denying the fact that the adoption rate of such value added service is going to exhibit more steady upward trend in near future but the service providers alone cannot influence the rate. This can deduced from the results

of this study. However, the researchers feel that this study still suffers from the following limitations:

(1) The survey was mainly carried out in the metro cities in the four regions of the country and hence opinions of subscribers from other parts of the country which are far away from the metro cities could not be obtained. The mobile money service providers has of late started targeting these far flung cities and rural subscribers to drive their business.

(2) Increasing trend of online and mobile-based payment has been observed and reported by several studies in India where the transactions by women have shown a steady increase over a short period of time. This is particularly true for urban India. But the survey did not study specifically as to what extend the usage for mobile money is done to settle internet-based transactions. Thus future researchers could focus on this aspect to study the influence of this rising trend on online shopping and usage of mobile money.

(3) Trust and existence of physical institutions seem to affect the perception and usage intention. Future researchers may explore the influence of these two issues in situations where there has been some reported cases of breach of trust.

The mobile money service is now available across 300 key cities in India. Though this service promises to be a fast, simple and secure service that allows its users to load cash on their mobile devices and make payment, it is yet to register a satisfactory subscriber base in India since it was launched a year ago. This paper has tried to offer supportive and cost-effective management for market participants, including mobile service providers and application developers, users, and similar organization and future service providers to improve the adoption rate of services like mobile money.

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Appendix. Questionnaire

A. Usage intention

(1) I intend to use/reuse mobile financial services shortly.

(2) Assuming that I have access to mobile financial services, I intend to use it.

(3) Given that I have access mobile financial services, I predict that I would use it.

B. Ease of use

(1) Mobile financial services gives people more control over their daily financial transactions.

(2) Mobile financial services that use the newest mobile technologies are much more convenient to use.

(3) You prefer to use the most advanced mobile financial services available.

(4) Mobile Financial Services gives you more freedom of mobility.

(5) You feel confident that mobile phones would carry out financial transactions as instructed them to do.

C. Personal innovativeness

(1) Other people come to you for advice on new mobile technologies and services.

(2) In general, you are among the first in your circle of friends to acquire new mobile technology and services when it appears.

(3) You can usually figure out new high tech products and services without help from others.

(4) You have fewer problems than other people in making technology based services work for you.

(5) You enjoy the challenge of figuring out high tech gadgets and their usage.

D. Discomfort

(1) Sometimes, you think that technology systems and services are not designed for use by ordinary people.

(2) User manual for high tech product or services should be written in plain language.

(3) When you get technical support from a provider of a high tech product or service, you sometimes feel as if you are being taken advantage of by someone who knows more than you do.

(4) Many new technologies have health or safety risks that are not discovered until after people have used them.

(5) New mobile technology makes it too easy for governments and companies to spy on people.

(6) Mobile Technology always seems to fail at the worst possible time.

E. System quality

(1) You do not consider it safe giving out a credit card number over a mobile.

(2) You do not consider it safe to do any kind of financial business through mobile phone.

(3) You worry that information you send over the mobile will be used by other people.

(4) Any business transaction you do using mobile should be confirmed later something in writing.

(5) Whenever something gets automated, you need to check carefully that the machine is not making mistakes.

(6) When you call a business, you prefer to talk to a person rather than a machine.

(7) If you provide information to a machine or over the internet, you can never be sure it really gets to the right place.

F. Perceived usefulness

(1) My job would be difficult to perform without mobile financial services.

(2) Using mobile financial services gives me greater control over my work.

(3) Mobile financial services enables me to accomplish tasks more quickly.

(4) Mobile financial services supports critical aspects of my job.

(5) Using mobile financial services improves my job performance.

(6) Using mobile financial services allows me to accomplish more work than would otherwise be possible.

(7) Using mobile financial services enhances my effectiveness on the job.

(8) Using mobile financial services makes it easier to do my job.

(9) Overall, I find mobile financial services system useful in my job.

G. Perceived ease of use

(1) I find it cumbersome to use the mobile financial services system.

(2) Learning to operate the mobile financial services system is easy for me.

(3) Interacting with the mobile financial services system is often frustrating.

(4) I find it easy to get the mobile financial services system to do what I want it to do.

(5) The mobile financial services system is rigid and inflexible to interact with.

(6) It is easy for me to remember how to perform tasks using the mobile financial services system.

(7) Interacting with the mobile financial services system requires a lot of my mental effort.

(8) My interaction with the mobile financial services system is clear and understandable.

(9) I find it takes a lot of effort to become skillful at using mobile financial services.

(10) Overall, I find the mobile financial services system easy to use.

H. Task-technology fit

(1) Use of the mobile financial service is relevant to my work.

(2) Use of the mobile financial services is helpful for my work.

(3) Use of the mobile financial services is desirable for my work.

I. Monetary value

(1) I expect that mobile financial services to be reasonably priced.

(2) Mobile financial services would offer good value for money.

(3) I believe that at the current price and fee, mobile financial services would provide a good value.

J. Connectivity

(1) I expect that the mobile financial services would be available anywhere, anytime.

(2) The services should be easily accessible and portable.

(3) I expect the services to be available whenever I need it.

K. Absorptive capacity

(1) I have the technical competence to absorb mobile financial services.

(2) I have the necessary knowledge to understand mobile financial services.

(3) I have a clear understanding about the goals, tasks and responsibilities of mobile financial services.

(4) I have information on state of the art mobile financial services.

L. Structural assurance

(1) I find that not many outlets/merchants accept mobile financial services.

(2) There are inadequate outlets offering facility of loading and disbursing mobile money.

(3) Increase in number of outlets offering such services would popularize such services.

(4) The government has a major role in ensuring the success of such services.

(5) The mobile framework is adequate in our India to ensure success of such services.

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