

# Factors influencing the adoption of mobile financial services in the unbanked population

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## Abstract

To deliver financial services to the poor has remained a challenge for many decades. However, the growth of technology has emerged as a key solution of financial service delivery to the poor. Financial services delivery through mobile phone platforms can be provided where formal financial institution like banks cannot reach. Despite these developments, the use of these services by the poor in the unbanked areas is very low. This study investigated the factors influencing the adoption of mobile financial services in the unbanked population. We employed a cross-sectional design by collecting data at a single point in time. We used six variables in the study based on the Technology Acceptance Model, TAM. The variables were Perceived usefulness, Perceived ease of use, Perceived trust, Perceived cost, Perceived risk and Social influence. The construct validity of the measurement items was established by using confirmatory factor analysis conducted using Structural Equation Modelling (SEM) and the reliability was established by using Cronbach's Alpha coefficient. The hypothesis was tested by using multiple regression analysis. The sample size used was 250 respondents selected from the study area. The study revealed that perceived usefulness, perceived cost and social influence had a significant influence on the adoption of mobile financial services. Perceived ease of use, perceived risk and perceived trust were found to have an insignificant influence on the adoption of mobile financial services. The implication of the findings forms the basis for product or service development, pricing, marketing and policy formulation. In this study we recommend a longitudinal research to be conducted in order to understand the influences of the adoption behaviour at different level of market maturity and points of time.

**Key words:** *Mobile financial services, Adoption, Tanzania*

## 1.0 Introduction

Mobile financial services in Africa have emerged as an important driver of financial inclusion and an innovative channel of financial services delivery especially to the unbanked population. It presents an enormous opportunity to overcome the dominance of banks in the provision of formal financial services because of its transformative power and ability to reach a large population (Cull, Demirgüç-Kunt and Lyman 2012). According to the World Bank (2012), 2.5 billion people do not have an account at a formal financial institution and most of them come from the developing world. Moreover, the World Bank, (2014) in the Global Findex database shows that three quarters of the world's poor do not have an account at the formal financial institutions, not only because they are poor but also due to costs of travel and paperwork involved, which are given by many as barriers to access (Hannig and Jensen 2010). Africa faces an even greater challenge of financial exclusion when compared with other continents like Asia. It is estimated that Asia has 25 percent of poor households who have access to financial services, while Africa has less than a quarter of adults who have accounts with formal financial institutions, and many use informal means to borrow and save (Demirguc-Kunt and Klapper, 2012).

Mobile financial services in Tanzania started in 2008 when Vodacom Tanzania launched Vodafone M-Pesa with the marketing campaign which targeted the rural, the poor and the unbanked population (Intermedia 2013). In the same year, Zantel launched its service called Z-Pesa which was later changed to EzyPesa in 2012 (Intermedia 2013). Tigo and Airtel followed later with their services called TigoPesa and Airtel money respectively. The banking sector has also adopted the mobile payment systems by commercial banks, like NMB Bank which has PesaFasta, CRDB Bank which has SIM Banking services.

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The number of registered mobile money subscribers in Tanzania has reached 30.3 million; however, active users of mobile money services are 9.9 million people. This is far greater than the 12.4 percent of the population served by the financial institutions access points and branches (Komba 2013). According to Komba, (2013) there is a large gap in financial services access and usage whereby formal financial institutions access points and branches serve only 12.4 percent of the total population of Tanzania while the mobile agent network penetration serves 40 percent of the total population. Yet again, there is a large gap between registered and active mobile financial service users. Out of 30.0 million registered mobile financial service users only 9.9 million users are active users (Komba 2013). The situation is contrary to the expectation that high use of mobile phone and registration could result in high usage rate of mobile financial services. The reasons 20.1 million people have registered but failed to adopt such financial services are still not very clear. The recent financial sector developments such as the rapid diffusion of Information and Communication Technology (ICT) have resulted in more financial deepening but access to financial services has remained a challenge especially to the poor and those who live in rural areas (Ndulu 2012). Since literature in Tanzania is limited, this study seeks to explain the factors which influence the adoption of mobile financial services in the unbanked population.

## 2.0 Literature review

GMSA-mWomen (2013) identifies six stages of mobile money adoption by the unbanked, which provides a way of understanding the opportunities and barriers on the way to the adoption of mobile financial service by the unbanked. The stages include customers being unaware of the service, eventual awareness, understanding, knowledge, trial and regular use. Adoption or rejection of an innovation begins when the consumers become aware of the product or service (Chitungo & Munongo 2013). Differences in economic environment determine the patterns of adoption of money transfer systems, that is the adoption in developed countries is not the same as in developing countries and the adoption in urban areas is not the same with that in rural areas (Marumbwa and Mutsikiwa 2013).

The study conducted by Intermedia (2013) in Tanzania identified the fact that differences in the understanding of how to use mobile money, gender, income levels and residence (rural or urban) affected the adoption and use of mobile financial services.

Several models and theories have been used to study the adoption of technology. These theories and models have been extended to be used in studying the adoption of mobile financial services and mobile banking. They include Technology acceptance model (TAM) (Davis 1989), Unified Theory of use and acceptance of technology (UTAUT) (Venkatesh & Davis 2000) and Roger's (1992) diffusion of innovations.

### 2.1 The Technology Acceptance Model (TAM)

According to TAM, a user's adoption of new service or technology is determined by the user's intention to use the system, which is in turn determined by the user's beliefs about the system (Davis 1989). TAM further suggests that two beliefs, perceived ease of use and perceived usefulness, are important in explaining the variances in user's intentions. Technology Acceptance Models have been extensively tested and validated and are the widely accepted models used to explain a user's adoption of new technologies (Venkatesh and Davis 2000; Omwansa *et al.* 2012; Masinge 2010). These studies used the original TAM variables and other variables like perceived risk, perceived trust and perceived cost of mobile financial services. Omwansa, Waema, and Lules, (2012) in their study of the M-Shwari (mobile banking service) adoption in Kenya used the extended TAM. They argue that the original model with only two constructs were mainly used in the field of information system (IS) and applied in organizational context and not for everyday use like using to study mobile financial services. Because of this limitation, they argued that it is necessary to include other variables which influence the adoption of mobile financial services. In their study they added self-efficacy, perceived credibility, subjective norms and transaction cost. Alroaia, Hemati and Shahabi (2011) in their study on the application of TAM argue that the model is widely accepted because of its brevity and conciseness. Porter and Donthu (2006) identified that TAM explains

more variance in the attitude of customer adoption and a comparable percentage of variance in usage as compared with other models and that its constructs are more amenable to operationalization and empirical testing than are the concepts of Rogers (1995).

Munir and Idrus (2013) used the original TAM model with perceived ease of use and perceived usefulness to study the acceptance of mobile financial services in Makassar City. Their findings revealed that perceived ease of use and perceived usefulness have a significant influence on the adoption of mobile financial services. Perceived usefulness was found to have a greater influence on the adoption behaviour than perceived ease of use. Sayid, Echchabi and Aziz (2012) conducted a study in Somalia on mobile financial service adoption using the TAM. They included security, perceived risk and social influence and their study found that perceived usefulness and social influence are the only significant factors influencing the adoption of mobile financial services. But their finding on the perceived ease of use was inconsistent with many studies conducted on the basis of TAM which has shown a significant influence on adoption (Dass and Pal 2011). Masinge (2010) used the model which included trust, perceived risk and perceived cost in studying the adoption of mobile banking in the bottom of the pyramid in South Africa.

Dass and Pal (2011) also used TAM in exploring the factors affecting the adoption of mobile financial services by the rural under-banked in India. Their model has seven constructs which are: Demand for banking and financial services, Hardships faced in existing channels of banking, Perceived usefulness of Mobile Financial Services (MFS), Trust, Technology readiness, Ease of Use and Perceived financial cost. The study found that lack of trust, financial cost, and technology were significant barriers to mobile financial adoption in rural unbanked population.

Micheni, Lule, and Muke (2013) investigated the influence of transaction cost and facilitating conditions on the adoption of mobile financial services in Kenya. Their study revealed that transaction cost was not significant in influencing the adoption of mobile financial services. Facilitating condition was significant in influencing the adoption of mobile financial services. The findings are contrary to the findings of Omwansa, Waema, and Lules (2012) who found cost significant in influencing the adoption of mobile banking.

Aboelmaged and Gebba (2013) in the study on mobile financial service adoption integrated TAM and the variables of Theory of Planned Behaviour (TPB). The theory of planned behaviour assumes that individuals are rational decision makers (Li 2010). Their decisions are influenced by three constructs, which are perceived behaviour control, perceived subjective norms and attitude (Ajzen in Li 2010). Their combined model has five constructs, which are perceived ease of use, perceived usefulness, perceived behaviour control, perceived subjective norms and attitude. Aboelmaged and Gebba, (2013) found that attitude, subjective norms and perceived usefulness had a significant influence on the mobile banking adoption, while perceived ease of use and behavioural control indicated no significant impact on the adoption.

Chitungo and Munongo (2013) used the extended TAM in which they added other constructs in studying the mobile banking adoption among the unbanked rural population of Zimbabwe. They extended the original TAM by including relative advantages, personal innovativeness, social norms, perceived risk and costs. The findings reveal that perceived risk and perceived cost deterred the adoption of the service and have a negative relationship to the adoption of mobile financial services, but others have a positive relationship.

Lule (2008) in his study of mobile banking adoption in Kenya included perceived credibility, perceived self-efficacy, finance costs and perceived normative pressure in the original TAM model. The study also found that all variable except self-efficacy had a strong influence on mobile banking. Amin, Baba, and Mohammed (2007) using the same five constructs as used by Lule (2008) in Malaysia found perceived normative pressure to be a weak determinant of the customer's intention to use mobile financial services but the other variables were found to have a significant influence on the adoption of mobile financial services. Moreover, Amin, Baba, and Mohammed (2007) found perceived self-efficacy to be stronger than the original TAM construct which in many studies had been found to be stronger than other constructs.

The findings of Lule (2008) and Amin *et al.* (2008) are different in the result of perceived normative pressure and perceived self-efficacy.

Dahlberg, Mallat, and Öörni (2004) in their study of mobile payment solutions developed a trust enhanced technology enhanced model which included the original TAM model (Davis 1989) and the integrated TAM model (Venkatesh *et al.* 2002). The integrated model included intrinsic motivation and extrinsic motivation. The new trust enhanced model included disposition to trust and perceived trust. Yu (2012) in the study found that the intention to adopt mobile banking was significantly impacted by social influence, perceived financial cost, performance expectancy, and perceived credibility, except for perceived self-efficacy. Perceived self-efficacy did not have an impact on actual adoption behaviour, which is contrary to the findings of Amin *et al.* (2008); social influence was the most powerful factor in affecting the people's intention to use mobile banking.

Jeong and Yoon (2013) in their study conducted in Singapore using the Technology Acceptance Model (TAM), with five factors which influence consumers' behavioural intention to adopt mobile banking: perceived usefulness, perceived ease of use, perceived credibility, perceived self-efficacy, and perceived financial cost found all factors to have a significant influence except perceived financial cost, which is contrary to other studies like Masinge (2010) and Chitungo and Munongo (2013). Hamza and Shah (2014) in Nigeria introduced perceived compatibility and social norms; found social norms to be significant in predicting the adoption of mobile financial services, together with usefulness and ease of use. Trust, peer influence and perceived price levels were used together with the original TAM model to study factors influencing the adoption of mobile payments in Malaysia (Yan *et al.* 2009). The result revealed that trust and peer influence have a significant influence on the adoption of mobile financial services. Perceived price level, perceived usefulness and perceived ease of use were not a significant factor in predicting the adoption of mobile financial services, which is contrary to the empirical and theoretical expectations which identifies perceived usefulness and ease of use as the main factor influencing adoption. Li, Liu, and Ji (2014) in their study found perceived ease of use and perceived usefulness insignificant in influencing the adoption of mobile financial services in China. Moreover, their study found a significant influence of subjective norms, compatibility, individual innovation, system security and perceived behavioural control. Tobbin and Kuwornu (2011) investigated the adoption of mobile financial services in Ghana and found a significant influence of relative advantage, ease of use, usefulness, trialability, risk and trust on the adoption of mobile financial services except for risk.

Most studies have found that TAM methodology works but has to be modified to fit in the particular environment of study and the nature of the service adopted. The literature review also shows that most mobile payment deployments are country specific in terms of the service type provided, regulation, pricing, customer services and geographical coverage. Variation in these aspects causes differences in the adoption of mobile financial services from one country to the next and this creates the necessity for conducting studies in different countries or regions.

## **2.2 Research hypothesis**

From the literature review and for purposes of this study, the study framework consists of the factors influencing the adoption of mobile financial services based on TAM methodologies which are Perceived usefulness, Perceived ease of use, Perceived cost, Perceived trust, Perceived risk and social influence as independent variable and adoption of mobile financial service as a dependent variable. The original TAM construct of perceived usefulness and perceived ease of use were adopted from Davis (1989) and its extension by Venkatesh and Davis (2000). Perceived risk, perceived cost and trust were adopted from Masinge (2010) and Lee (2009). Social influence was adopted from Jayasingh and Eze (2009).

### **2.2.1 Perceived usefulness**

This is associated with productivity which comes from the use of technology (Amin *et al.* 2007). According to Davis (1989), perceived usefulness is the degree to which a person believes that using a particular

system would enhance his or her job performance. Several studies have found that perceived usefulness had a significant influence on mobile financial service adoption (Aboelmaged and Gebba 2013; Chitungo and Munongo 2013; Davis 1989; Li 2010; Sayid et al. 2012). Based on these studies the following hypothesis is proposed:

***H<sub>1</sub> Perceived usefulness has a positive effect on the adoption of mobile financial services***

### **2.2.2 Perceived ease of use**

Davis (1989) defined perceived ease of use as the degree to which a person believes that using a particular system would be free of effort. Many studies have shown that the impact of perceived ease of use on a user's intention to adopt an innovation is either directly or indirectly through perceived usefulness. Chitungo and Munongo (2013) in their study on the adoption of mobile financial services in Zimbabwe found that perceived ease of use has a positively significant influence on the adoption of mobile financial service. Perceived ease of use has been extensively studied with perceived usefulness, and both have been found to have a positive influence on the adoption of mobile banking and mobile financial services (Yu 2012; Cheney 2008; Dahlberg et al. 2004; Dass and Pal 2011). Based on these empirical studies we propose following hypothesis:

***H<sub>2</sub> Perceived ease of use have a positive effect on the adoption of mobile financial services***

### **2.2.3 Perceived cost**

Cost is defined as the extent to which a person believes that using mobile banking would cost money (Chitungo and Munongo 2013). The cost may include the transactional cost in the form of service charges, mobile network charges for sending communication traffic (including SMS or data) and mobile device cost (Chitungo and Munongo 2013). According to Lule (2008), the cost-benefit pattern is significant to both perceived usefulness and ease of use. Masinge (2010) posits that low income people have a low purchasing power and are price sensitive. Moreover, Micheni, Lule, and Muke (2013) posit that if consumers perceive that the cost of mobile money is acceptable they will adopt it more easily and then use it. Dass and Pal, (2011) found financial cost to have a negative influence on the adoption of mobile financial services. Furthermore, cost considerations may prevent people from adopting mobile financial services if it is high, but if it is affordable it can be a motivation to faster adoption (Tobbin and Kuwornu 2011). Based on the literature review, the following hypothesis is proposed:

***H<sub>3</sub> Perceived cost on mobile financial services will have a negative significant effect on the adoption of mobile financial service***

### **2.2.4 Perceived trust**

Dass and Pal (2011) define trust as a psychological expectation that a trusted part will not behave opportunistically. The higher levels of trust in a service provider will therefore lead to a greater intention on the part of the user to engage in mobile banking transactions (Masinge, 2010). Bångens and Söderberg, (2008) maintain that a financial system and its actors must be trusted and must act on the principles which promote trust to customers. Dass and Pal (2011) in their study on the adoption of mobile financial services among the rural unbanked found that villagers preferred channels which can be trusted to conduct monetary transaction. Studies conducted have found perceived ease of use to have a positive influence on the adoption of mobile financial services (Masinge 2010; Amin, Baba, and Mohammed, 2007; Horne and Nickerson 2013; Chitungo and Munongo 2013; Lule 2008).

***H<sub>4</sub> Perceived trust on mobile financial services have a positive influence on the adoption of mobile financial services***

### 2.2.5 Perceived risk

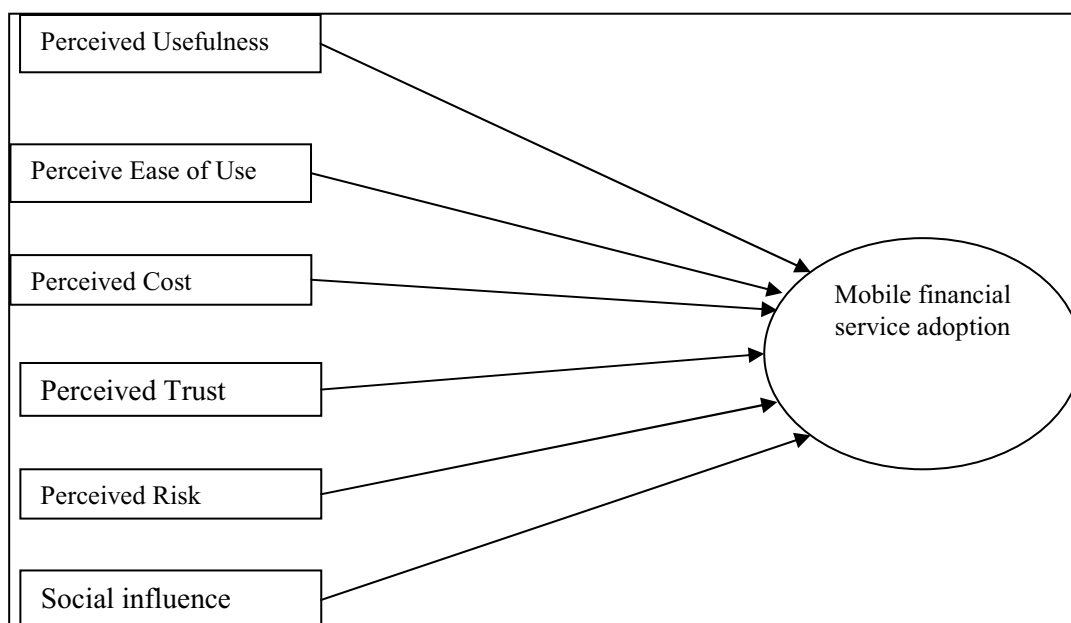
Perceived risk presents uncertainty, a potential loss or security compromise which may result in a financial loss (Chitungo and Munongo 2013; Lee 2009). Perceived risk may be in the form of financial risk, security or privacy risk, social risk, time risk and performance risk (Lee 2009). It is suggested that the adoption of mobile financial services creates concern that there may be financial losses, password security, network errors, hacking and loss of personal information. It is therefore stated that perceived risk has a negative influence on mobile banking adoption.

***H<sub>5</sub> Perceived risk has a significant negative influence on the adoption of mobile financial services***

### 2.2.6 Social influence

Venkatesh and Davis, (2000) claim that people adopt new technology because other people who are familiar use that technology. According to Venkatesh and Davis (2000) in TAM and UTAUT social influence includes subjective norms, normative pressure and image. In their model (TAM2) they theorised that social influence affects the adoption because people need to connect to one another by using similar technologies. They maintained that individuals often respond to social normative influences to establish or maintain a favourable image within a reference group. Social influence has been found to be the prime factor influencing the adoption of mobile financial services in the model that used four constructs (Sayid *et al.* 2012; Dass and Pal 2011). Hamza and Shah (2014) in Nigeria found social norms to be significant in influencing the adoption of mobile financial services. Social influence has been found to be one of the factors with a positive influence on the adoption of mobile financial services (Yan *et al.* 2009; Mbele-Sibotshiwe 2013; Bhatti, 2007). The construct has been used in other studies with the same meaning as subjective norms, normative pressure and image (Venkatesh and Davis 2000). Based on findings of these studies the hypothesis for this variable will be:

***H<sub>6</sub> Social influence has a positive influence on the adoption of mobile financial services***



**Figure 1:** Conceptual framework indicating the relationship between the dependent variable and the independent variables. Source: Masinge (2010) and Mbele-Sibotshiwe (2013).

### 3. Research methodology and data

We employed a cross-sectional design by collecting data at a single point in time. In cross-sectional studies data collection is once-off and relies on existing variation between variables rather than intervention. The important thing for cross-sectional studies is to obtain a structured set of data to enable a systematic comparison of cases or group cases to account for the variation between cases.

The target population of this study includes users of mobile financial services in the Chamwino district. Access to formal financial services in the district is limited due to the absence or very scarce formal financial services providers like banks, savings and credit schemes, but there are active mobile financial providers that are used by the people (URT 2012).

We used a purposive sampling technique to select respondents for the study. We used this method to obtain respondents who have mobile phones and have subscribed to use a mobile financial service. Not all people in the targeted area of the study used mobile financial services. We used a sample size of 250 based on the rule of thumb that the number of variables and the sample size must be 1.5 or greater than 200 (Brown, 2006). We also referred sample sizes of other similar studies (Lee 2009; Amin, Baba, and Mohammed 2007; Chitungo and Munongo 2013; Aboelmaged and Gebba 2013; Marumbwa and Mutsikiwa 2013).

The study used primary data collected from the field. Data used was collected by using self-administered questionnaires which were distributed to respondents in different wards of Chamwino district. Respondents were asked to give their opinion on the statements measuring the constructs by using a five-point Likert scale measured from 1 = strongly disagree, 2 = Disagree 3 = Neither disagree nor agree 4 = Agree and 5 = Strongly Agree. A total of 250 questionnaires were distributed to users of mobile financial services and 212 were collected. Of the questionnaires 6 were not included in the analysis because of incomplete data entry.

The study used six independent constructs, which are: Perceived ease of use, Perceived usefulness, Perceived risk, Perceived trust, Perceived cost and Social influence to measure factors which influence the adoption of mobile financial services. Each construct has been measured by using more than three indicators or items. According to Zikmund and Babin (2010) using more than one item to measure the studied constructs captures the complete meaning of the complex concept. The five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used to measure the constructs.

The reliability of this study was established through the coefficient alpha. Alpha coefficient demonstrates whether or not the different items converge on the same point (Zikmund *et al.* 2010). The reliability of the construct for this study ranged from 0.703 to 0.793. This shows that our item used in the study has a good reliability.

Construct	Cronbach's Alpha	Construct	Cronbach's Alpha
Perceived usefulness	0.703	Perceived risk	0.719
Perceived ease of use	0.782	Social influence	0.793
Perceived cost	0.721	Adoption behaviour	0.735
Perceived trust	0.745		

Confirmatory Factor Analysis was used to establish if all the items were indeed measuring the same underlying construct or factor used in the study. Bernard (2006) posits that if all items measure the same thing they must have the same variable in common. Factor loading indicates a correlation between the measured and the underlying factor (Bordens and Abbott 2011). Factor analysis was conducted by Structural Equation Modelling (SEM) by using SPSS Analysis of Moment Structure 22 (AMOS 22). SEM shows how an observed measure correlates to a hypothetical unobserved factor (Mitchell and Jolley 2010). Given the nature of the construct used in the study SEM was chosen because it has the feature

required in the analysis of our data and it can be used to evaluate the measurement model by the fit indices.

The result of the confirmatory factor analysis in Table 3.3 revealed that the items used in the study have a factor loading above 0.5, which is regarded by many as a cut-off point, except four items have a factor loading of 0.31 to 0.493 (Mitchell and Jolley 2010; Bernard 2006).

**Table 2: Summary of the CFA Factor loading for each item used to measure the constructs**

Construct	Item	Factor loadings	Construct	Item	Factor loadings
Perceived usefulness	PU1	0.715	Social influence	SI1	0.604
	PU2	0.715		SI2	0.841
	PU3	0.493		SI3	0.770
	PU4	0.476		SI4	0.625
Perceived ease of use	PEU1	0.384	Perceived risk	PFR	0.521
	PEU2	0.757		PPR	0.581
	PEU3	0.592		PSR	0.668
Perceived cost	PC1	0.585		PTR	0.632
	PC2	0.693		PSEeR	0.554
	PC3	0.528		BI1	0.678
Perceived trust	PT1	0.319	BI2	0.625	
	PT2	0.697	BI3	0.736	
	PT3	0.788	BI4	0.530	
	PT4	0.725			
	PT5	0.542			
	PT6	0.323	Adoption		

#### 4. Results and discussion

Pearson correlation analysis was conducted between the variables to establish the relationship between the variables. In this study, coefficient correlation ( $r$ ) was used to determine if there were positive or negative relationships between the variables under study. A correlation analysis is used to examine if there is an association between two variables or whether there is an observed covariance between two variables of interest (Howell, 2013). The correlation coefficient ranges between  $-1$  and  $1$ . The coefficient which is close to  $+1$  or  $-1$  indicates that there is a strong linear relationship between the two variables. The results of the correlation coefficient for this study are indicated in Table 3.



		PU	PEU	PC	PT	SI	PR	Adoption
PU	Pearson Correlation	1						
	Sig. (2-tailed)							
	N	206						
PEU	Pearson Correlation	.048	1					
	Sig. (2-tailed)	.503						
	N	206	206					
PC	Pearson Correlation	-.106	.228**	1				
	Sig. (2-tailed)	.134	.001					
	N	206	206	206				
PT	Pearson Correlation	.215**	-.200**	-.211**	1			
	Sig. (2-tailed)	.002	.004	.003				
	N	206	206	206	206			
SI	Pearson Correlation	.268**	-.084	-.095	.267**	1		
	Sig. (2-tailed)	.000	.239	.182	.000			
	N	206	206	206	206	206		
PR	Pearson Correlation	-.021	.256**	.547**	-.263**	-.135	1	
	Sig. (2-tailed)	.773	.000	.000	.000	.056		
	N	206	206	206	206	206	206	
Adoption	Pearson Correlation	.454**	-.011	-.294**	.253**	.464**	-.148*	1
	Sig. (2-tailed)	.000	.877	.000	.000	.000	.036	
	N	206	206	206	206	206	206	206
**. Correlation is significant at the 0.01 level (2-tailed).								
*. Correlation is significant at the 0.05 level (2-tailed).								

Correlation between independent variables ranged between  $r$  -0.021 to  $r$  0.547. The highest correlation between the independent variable was observed between perceived risks (PR) and perceived cost, indicating a strong association between the variables. The result revealed that perceived usefulness has a significant positive correlation with perceived trust and social influence at the  $p < 0.01$ . Perceived ease of use has a significant correlation with perceived cost, perceived trust and perceived risk at the  $p < 0.01$ . Also, perceived cost has a significant relationship with perceived trust and perceived risk. The observed critical values (2-tailed) of the correlation between the dependent variable and the independent variable ranged from  $r = -0.011$  to  $r = 0.464$ . The result shown in Table 4.5 revealed that perceived usefulness and social influence has strong and significant positive relationship with the dependent variable with  $r$  0.454 and 0.464 at  $p < 0.01$  significance level respectively than the other independent variables. Perceived trust also showed a significant positive relationship to the adoption of mobile financial services at the  $p < 0.01$ . Perceived cost showed a significant negative relationship with adoption at the  $p < 0.01$  significance level. Perceived risk showed a significant negative relationship with the dependent variable at the  $p < 0.05$

significance level. It was also revealed that the correlation between perceived ease of use and the adoption of mobile financial services was not significant.

Multiple regression analysis was done to examine the predictability of the dependent variable with the independent variable. The dependent variable was the adoption of mobile financial services which was measured by four Likert scale items. Independent variables were perceived ease of use (PEU), perceived usefulness (PU), perceived cost (PC), perceived trust (PT), perceived risk (PI) and social influence (SI). The result of regression analysis are provided in Table 4.

<b>Table 4: Regression analysis result (test for hypothesis)</b>								
Model		Unstandardized coefficients		Standardized coefficients	t	Sig.	Collinearity statistics	
		B	Std. Error	Beta			Tolerance	VIF
	(Constant)	1.128	0.430		2.625	0.009		
	PU	0.392	0.074	0.318	5.322	0.000	0.884	1.131
	PEU	0.048	0.046	0.062	1.040	0.300	0.896	1.116
	PC	-0.185	0.050	-0.253	-3.710	0.000	0.681	1.468
	PT	0.062	0.062	0.061	0.996	0.320	0.832	1.202
	SI	0.309	0.053	0.350	5.812	0.000	0.875	1.143
	PR	0.038	0.060	0.044	0.639	0.524	0.659	1.518
a. Dependent variable: Mobile financial service adoption								
Model summary								
R		R Square		Adjusted R Square				
.624 <sup>a</sup>		0.389		0.371				
a. Predictors: (Constant), PR, PU, PEU, SI, PT, PC								

R Square in the multiple regression analysis provides an index of the amount of variability in the dependent variable accounted for by the predictor variables (Bordens and Abbott, 2011). To know if the R-squared is significant Mitchell and Jolley, (2010, p. 735) recommend looking at the significance of an F test of ANOVA. The correlation analysis and VIF indicates no evidence of multicollinearity between the variable of the study.

#### 4.1 Perceived usefulness

The result from the regression analysis (Table 4.6) revealed that perceived usefulness has a significant influence on the adoption of mobile financial service at  $p < 0.01$  significance level with  $\hat{\alpha} = 0.318$ . These findings support the hypothesis proposed for this construct: that perceived usefulness have a significant positive influence on the adoption of mobile financial services. The p-value is less than 0.05 which means that a null hypothesis, that perceived usefulness has no significant influence, can be rejected.

The results are consistent with the theoretical perspective of the technology acceptance model (TAM) proposed by Davis (1989), that perceived usefulness and ease of use are the prime factors which influence the adoption of new technology. This result supports the findings of other researchers like Chitungo and Munongo (2013) in Zimbabwe, Lule (2008) in Kenya, Marumbwa and Mutsikiwa (2013) in Zimbabwe and Dahlberg, Mallat, and Öörni (2004). These studies found that perceived usefulness is significant in predicting user adoption behaviour and it was tested with additional variables to the original technology acceptance model of Davis (1989). Therefore, people do test the service and when they realise it is useful they will start using the service.

#### 4.2 Perceived ease of use

The result for this hypothesis revealed that perceived ease of use has no significant influence on the adoption of mobile financial services with  $\hat{\beta}=0.062$ ,  $p=0.30$ . Its correlation squared ( $r^2$ ) also shows that only 0.086 of the variability in the adoption of mobile financial services is attributable to perceived ease of use of mobile financial services. The findings are consistent with the findings of Yan *et al.* (2009) in Malaysia and Sayid *et al.* (2012) in Somalia where they found that perceived ease of use has no significant influence on the adoption of mobile payment.

The result is not consistent or contradicts the theoretical perspective of the technology acceptance model which identifies usefulness and ease of use as instrumental factors which influence the adoption of a new technology. The results for this hypothesis are also inconsistent or contrary to the empirical findings of other studies that have been reviewed. Many studies indicate that perceived ease of use has a significant positive influence on the adoption of mobile financial services (Marumbwa and Mutsikiwa 2013; Masinge 2010; Tobbin and Kuwornu 2011; Chitungo and Munongo 2013).

#### 4.3 Perceived cost and mobile financial service adoption

For this construct the research findings revealed that perceived risk was found to have a significant negative influence on the adoption of mobile financial services at  $P<0.01$  significance level with  $\hat{\beta} = -0.253$ . This finding implies that people's intention to adopt and use mobile financial service is negatively affected by the cost of access. This finding suggests that high costs of mobile financial services is a barrier to mobile financial service adoption among the unbanked population. The result supports the findings of other studies which found perceived cost to have a significant negative influence on the adoption of mobile financial services (Tobbin and Kuwornu 2011; Marumbwa and Mutsikiwa 2013; Dahlberg, Mallat, and Öörni 2004; Dass and Pal 2011). The study conducted by Cheong, Park, and Hwang (2004) in Korea on mobile payment adoption, cost was classified into three categories as sunk cost, continuous cost and move in cost they found that move in cost was significant but continuous cost and sunk cost were not significant. Furthermore, Li, Liu, and Ji (2014) taking use cost as a facet of perceived behavioural control found use cost to have a significant influence on the adoption of mobile payment system with a  $\hat{\beta} = -0.465$ ,  $p<0.01$  which is consistent with the findings of this study. However, this finding is contrary to the findings of the study conducted by Micheni, Lule, and Muke, (2013) in Kenya on transaction cost and facilitating condition as indicators of mobile financial service adoption. The study found transaction cost to be insignificant in explaining the adoption of mobile financial service. Also the study result on perceived cost does not support the conclusion reached by Jeong and Yoon (2013), who found that perceived financial cost to have no significant influence on the adoption of mobile financial service. Jeong and Yoon (2013) conclusion may have been caused by the fact that his sample included those users and non-users of the service. This is because when the influence of perceived financial cost was investigated separately it was found that perceived cost for the group of users was significant but for non-users it was not significant. This may have caused the overall perceived financial cost to be insignificant. The finding of this study suggests that increasing the cost of mobile financial services can be a barrier to mobile financial service adoption.

#### 4.4 Perceived trust

The hypothesis for this construct suggested that perceived trust can have a significant influence on mobile financial service adoption, but the result of the analysis revealed that perceived trust has no significant influence on the adoption of mobile financial services ( $\hat{\beta}=0.061$ ,  $p=0.320$ ). However, the correlation between perceived trust and adoption was significant at  $p=0.01$  with  $r=0.253$ . According to Howell, (2013) the correlation coefficient may be significant but the beta coefficient of the multiple regression equation may be insignificant because multiple regression equation captures the partial effects caused by the correlation between the independent variables in the model. But perceived trust showed a significant negative correlation with perceived risk ( $r= -0.236$ ,  $p=0.01$ ) and a positive correlation with perceived with social influence ( $r=0.276$ ,  $p=0.01$ ) which suggest that perceived risk is an impediment to users' trust.

The result of perceived trust is consistent with the findings of Dass and Pal (2011), who found trust not significant with a very low coefficient ( $\hat{\alpha}=0.04$ ) in India and the findings of Tobbin and Kuwornu (2011) in Ghana ( $\hat{\alpha}=0.19$ ). Tobbin and Kuwornu (2011) expected trust to have a high coefficient for perceived trust because most of the respondents in their study used some form of money transfer regularly with most of it being through banks or friends and family. Moreover, Wiedemann (2009) in German testing the hypothesis by using multiple regression analysis found that perceived trust has no significant influence on the adoption mobile payment system. Wiedemann's (2009) findings were supported by the study conducted in Germany and the USA by Wiegard, Guhr, Loi, and Breitner (2012) who argued that trust's weakness in predicting mobile payments adoption was because of the fact that m-payment is not very well known in Germany. Moreover, studies by Chitungo and Munongo (2013) and Marumbwa and Mutsikiwa (2013) found perceived trust to have a significant influence on the adoption of mobile financial services. Marumbwa and Mutsikiwa (2013) found perceived trust to have a significant negative influence which is not consistent with the theoretical expectation and other empirical evidence that trust have a positive influence.

#### 4.5 Perceived risk

The findings revealed that perceived risk has no significant influence on the adoption of mobile financial services ( $\hat{\alpha}=0.044$ ,  $p=0.524$ ) but the correlation coefficient of perceived risk with adoption was significant at the  $p=0.035$  with  $r= -0.148$  which suggests a negative relationship between perceived risk and adoption of mobile financial services

This result is consistent with or supports the findings of Tobbin and Kuwornu (2011) who conducted their study in Ghana where they found that perceived risk has no significant influence on the adoption of mobile financial services ( $\hat{\alpha}=-0.02$ ,  $p=0.69$ ). The findings of this study are not consistent with the findings of other studies which found a significant influence on the adoption of mobile financial services (Marumbwa and Mutsikiwa 2013; Dass and Pal 2011; Dass and Pal 2011b; Dahlberg, Mallat, and Öörni 2004).

#### 4.6 Social influence and mobile financial service adoption

The result of this study revealed that social influence has a significant influence on the adoption of mobile financial services with  $\hat{\alpha}=0.35$ ,  $p<0.01$ . In this study, social influence was found to be the most significant factor influencing mobile financial services. Its correlation coefficient also shows that it is strongly correlated with mobile financial service adoption with the  $r= 0.464$ ,  $p<0.01$ . The findings of this study corroborates the findings of Dass and Pal (2011) who in their analysis of factors which were either a strong determinant, potential determinant, weak determinant or insignificant determinant found that social influence was in the category of the strong determinant of mobile payment adoption. Sayid *et al.* (2012) in their study in Somalia using five constructs to study mobile money adoption found that social influence has a significant positive influence on the adoption of mobile money services. Moreover, Yan *et al.* (2009) found peer influence to be the most significant factor influencing the adoption of mobile payment. In their study, Yan *et al.* (2009) found that peer pressure was more significant than perceived usefulness and perceived ease of use where both in many studies were found to be significant. The result of this study also supports the findings of Mbele-Sibotshiwe (2013). Social influence findings also support the results of Bhatti (2007), Li, Liu, and Ji (2014) and Hamza and Shah (2014) who used the construct as subjective norms.

### 5. Conclusion

The study revealed that the adoption of mobile financial services by the unbanked is influenced by social influence, perceived usefulness and perceived cost. Social influence was a prime predictor of mobile financial services with  $\hat{\alpha}=0.35$ ,  $p<0.01$  followed by perceived usefulness with  $\hat{\alpha}=0.318$ ,  $p<0.01$ . The findings on social influence from the study suggest that social pressure plays a significant role in promoting mobile financial services adoption. Perceived cost was found to have a negative influence on financial

service adoption with  $\hat{\alpha} = -0.253$ ,  $p < 0.01$ . This suggests that high costs of mobile financial services can discourage the adoption and use of these services. The study reveals that customers will accept mobile financial services which are useful, affordable in terms and products which are compatible with their social norms. The study also revealed that perceived ease of use, perceived trust and perceived risk have no significant influence on the adoption of mobile financial services.

Mobile financial services are still in the initial stages of their development and customer understanding of these services is changing. Using a cross-sectional type of study may give results which will not be applicable in the future because customers' perception changes as they progress in the adoption journey. Therefore we recommend longitudinal research to be conducted in order to understand the influences of the adoption behaviour at different level of market maturity and points of time.

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