



**Bank of Tanzania**

## **Working Paper Series**

*William W. Mng'ong'ose*

***Influence of Consumer Trust on  
Mobile Payments Adoption: The  
Case of Urban Tanzania***

***WP No 12: December 2017***







# **Influence of Consumer Trust on Mobile Payments Adoption: The Case of Urban Tanzania**

William W. Mng'ong'ose

**Bank of Tanzania**

e-ISSN 2546-1990



### **Disclaimer**

The views expressed in this paper are solely those of the author(s) and do not necessarily represent the opinion of the Bank of Tanzania.

e-ISSN 2546-1990

## Table of Contents

Disclaimer .....	i
Table of Contents .....	ii
Abstract.....	iii
1. INTRODUCTION .....	1
2. LITERATURE REVIEW .....	2
3. METHODOLOGY .....	13
4. FINDINGS OF THE STUDY .....	14
5. CONCLUSION AND IMPLICATIONS .....	19
5.1 Conclusion .....	19
5.2 Practical Implications .....	19
5.3 Policy Implications .....	20
REFERENCES .....	21

## **Abstract**

The study aimed at finding how consumer trust is developed and its role in adoption of mobile payment systems. The research was conducted in Urban areas of Tanzania where massive adoption of mobile payments is expected, however the adoption is still slow and mostly focused on receiving and sending money and less on other uses despite being the leading areas for business activities. Specifically, the research aimed to i) determine to what extent consumer trust affects adoption of mobile payment, ii) determine the cause of consumer trust development in mobile payment systems and iii) determine the extent to which characteristics of mobile payment vendors influence the formation of consumers trust on mobile payment systems. Survey of 385 respondents in urban Tanzania was used to collect data for testing hypothesis. Random sampling technique was used to ensure representativeness of the sample from the geographical zones in Tanzania, thereafter systematic random sampling was used to draw a sample of 385 for survey. Results using structural equation modeling (SEM) suggest that consumer trust has strong influence on mobile payment adoption. It also found that consumers develop trust in mobile payment systems through characteristics of mobile payment vendors, characteristics of mobile technology, confidentiality and Integrity of Mobile payment systems. Characteristics of mobile service providers and Availability of system found to be insignificant however, their individual unique measurements found to be significant in development of consumer trust in mobile payment systems.

## 1. INTRODUCTION

Sending or receiving money for either payment of salaries, settlement of business transactions, payment of school fees or for family support is a common phenomenon for both businesses and individuals. It requires efficient, reliable and affordable money transfer services for money to be deposited in one location and withdrawn in the other (Kim *et al.*, 2009). A payment system is herein after referred to as any system used to settle financial transactions through the transfer of monetary value, and includes the institutions, instruments, people, rules, procedures, standards, and technologies that make such exchange possible (Bossone *et al.*, 2001).

There have been a number of technological advancement and innovations in relation to payment system one of them is mobile payments. Mobile payment allows consumer to make payments to others through use of mobile phones. Mobile payment system provides consumers with access to a relatively inexpensive and reliable way of performing financial transactions that can potentially increase money liquidity and deteriorate crime-related risk (Economides and Jeziorski, 2015). Mobile financial services include, money transfers, bill payments, tax payments, receipt of international remittances, intra and inter bank account transfers, loan disbursements, cash withdrawals, payment of insurance covers , bank account to e-wallet transfers and vice versa.

In Tanzania Mobile payment was introduced in early 2008 by Vodacom (M-PESA) and thereafter followed by Zantel (Ezy Pesa), Tigo (Tigo Pesa) and Airtel (airtel money). The pace of adopting this service has been generally low. Some of previous studies have indicated this phenomenon to be attributed by limited outreach of mobile money agents, low income and reciprocity nature of the mobile money transfers. The investigated factors are those related to technology and behavioral change (Andreev *et al.*, 2012; Chandra *et al.*, 2010; Keramati *et al.*, 2012;), however, there are other factors that influence consumers' acceptance of mobile payments that are worth investigating.

Mobile payment systems have become of interest to consumers as have many advantages compared to the previous modes of payment. Despite all advantages, the adoption rate of mobile payment systems for making payments in Tanzania is still low according to statistic reports by TCRA (2016) there is a total of 42, 878,607 registered mobile subscribers among which only 18,080,622 are mobile payments subscribers. Consumers prefer more the use of cash, and still do not trust mobile payments. According to Mobile Ecosystem Forum (MEF) global mobile money report 2015 consumers trust neither the security of mobile money nor the merchant. Thus, it is still not clear why consumer, big merchants trust more cash payments and cheque and not mobile payments systems; thus the influence of trust in relation to mobile payments is not well known.



Literature (Chandra *et al.*, 2010; Keramati *et al.*, 2012; Thair *et al.*, 2010). points out the importance of consumer trust when adopting mobile payments, without clarifying how this trust could be achieved, and what factors influence it. As a result, the factors that influence development of customer trust in mobile payment systems in Tanzanian context are not well understood. Therefore, to address some of these gaps in literature, this study aimed to analyze the role of consumer trust in adoption of mobile payment systems. Specifically, the research determined to find the effect of consumer trust on adoption of mobile payment, the cause of consumer trust development in mobile payment systems and the effect of characteristics of mobile payment vendors on formation of consumers trust on mobile payment systems.

## **2. LITERATURE REVIEW**

### **2.1 Review of Relevant Theories to the study**

This part sought to select appropriate theories, models and previous literatures that helped in development of the variables to be included in analyzing the role of consumer trust in adoption of mobile payment systems. The main theories reviewed include Zucker's trust production theory, CIA Triad Model of Information Security and Technology Acceptance model. These theories play important role in this study as they helped the researcher in understanding the variables from a theoretical perspective and coming up with a conceptual framework as well as to formulate hypotheses.

#### **2.1.1 Technology Acceptance Model**

Technology acceptance model is an extension of the Theory of Reasoned Action (TRA) model which was introduced by Davis in 1989. This theory is mainly based on the idea of technology adoption, TAM replaced TRA with two technological accepted features, perceived usefulness (PU) and perceived ease of use (PEOU) which have been proven to be of significance to the adoption of technologies such as mobile payment system. Many researchers have used this model to analyze key issue pertaining to the acceptance and usage of mobile payment and many have yield positive results that showed a correlation between the incorporated variables such as PEOU and PU.

Gefen *et al.* (2003) explained that besides ease of use and perceived usefulness, with new services such as mobile payment services, customers will definitely be concerned about the safety issues when they have intention to use the service; safe to use becomes an indispensable element for the success of mobile payment services. This was also supported by Tossy (2014) who established that TAM could be more useful Adoption Theory if it includes the construct of trust. Further research should reveal what consumers mean when they think of "trust" in the context of mobile payment services.

In this study, TAM helped to provide wide understanding of technology adoption, it provided the variable adoption that was among the latent variables of the study, at the same it provided variables ease of use and usefulness that were used as one of the indicators in the characteristics of mobile technology. The study further found that TAM is the best theory for mobile payments adoption when includes trust to have ease of use, usefulness and trust.

### **2.1.2 Zucker's Trust Production Theory**

Zucker (1986) American professor and researcher took a closer look in developing trust. She came up with a trust production theory that identified the central modes of trust production as: institutional-based, characteristic-based and process-based. Institutional-based trust is tied to formal societal structures depending on firm-specific or individual and intermediary attributes. Characteristic-based trust is tied to a person and based on ethnicity, culture and background. This mode of trust involves a consumer's belief in the integrity, ability, and benevolence of the mobile service providers and mobile payment vendors. Process-based trust is tied to expected or past experiences, e.g. reputation. It is also tied to legitimacy via compliance with standards, regulations, and procedures.

The number of Internet users has increased dramatically, but many are reluctant to provide sensitive personal information to Web sites because they do not trust e-commerce security. This paper investigates the impact of customer perceptions of security control on e-commerce acceptance. Trust is examined as the mediating factor of the relationship, using Internet banking as the research domain because bank customers are generally concerned about processing sensitive information like financial information. A Web survey of Internet banking users collected 502 cases. Statistical analyses, using structural equation modeling, indicated that perceptions of nonrepudiation, privacy protection, and data integrity have a significant impact on trust in e-commerce. Trust also has a significant impact on e-commerce acceptance. Implications and further research directions are presented. In summary, Zucker Theory suited well for this study, it offers an exhaustive structure of potential drivers of trust in mobile payments. The specific constructs that Zucker lists within each of the trust production mode sufficiently allowed actionable variables. Zucker's Theory three modes of trust production helped to establish three variables for this study these include Characteristics of Mobile service provider, Characteristics of Mobile payment vendors and Characteristics of Mobile Technology.

### **2.1.3 CIA Triad Model of Information Security**

The CIA (Confidentiality, Integrity, and Availability) triad of information security is an information security benchmark model used to evaluate the information security (Harris, 2002). The CIA triad of information security, implements security using three key areas related to information systems including Confidentiality, Integrity and Availability. CIA also provides a measurement tool for security implementations (Lehtinen *et al.*, 2006). CIA principles are applicable across the entire spectrum of security analysis; information security teams use the CIA triad to develop security measures in information systems.

According to Mallat *et al.*, (2004) and McKnight *et al.*, (2002) consumer trust is important in mobile payment factor for several reasons. First mobile transactions are often effected with spatial and temporal separation between buyer and seller (Mallat *et al.*, 2008). Second buyers are required to provide delicate and sensitive personal information such as credit card numbers, account numbers and telephone numbers to the seller, and make purchases. Third trust plays a central role in helping consumers overcome perceptions of risk and insecurity (McKnight and Chervany, 2001). Forth trust makes consumers comfortable with acting on mobile payment provider advice, the issue is essential to widespread adoption of e-commerce and m-commerce (McKnight *et al.*, 2002). Therefore, trust through CIA provides consumers with comfort, reliability and safety when thinking of conducting mobile payment transaction.

In this study, the combined model of CIA, Zucker trust production and TAM helped to provide the best model to describe consumer trust, its development and influence on mobile payments. The theories increased the exploratory and statistical power of the constructs; this gives the proper understanding of the relations among them in mobile payments. Table 2.1 give the summary of each theory, constructs and implications.

## **2.2 Empirical Literature Review**

### **2.2.1 Mobile Payment Adoption**

Adesinasi (2012) in the study Mobile Banking adoption and consumer behavior in Nigeria, using descriptive analysis frequency and percentage found that there is a high level of consumer knowledge about mobile payment systems but the current rate of mobile adoption in Nigeria is very low when compared to the number of customers that have mobile facilities. It was observed that awareness, perceived usefulness, perceived ease of use, perceived financial cost, self-efficacy and social influence; were found to be important factors which have positive influence on consumer decision to adopt mobile payments in Nigeria. Equally, the research shows that perceived credibility (security and privacy) and perceived financial cost have a negative influence on

consumer decision to adoption and use the service, which are the major hindrances to the low rate of consumer adoption of mobile banking.

In Zimbabwe, Chitungo and Munongo (2013), the study was about an analysis of the factors that influence mobile payments adoption in the rural Zimbabwe through extending the technology acceptance model. The researcher adopted use of stratified random sampling, correlation a linear regression analyses and the results of the study suggested that factors such as perceived usefulness, PEOU, relative advantage, personal innovativeness and social norms influenced the intention to accept and use mobile payments.

Tossy (2014) conducted a research about Modeling the Adoption of Mobile Payment System for Primary and Secondary School Student Examination fees in Developing Countries: Tanzanian Experience. The study examined the Use of Mobile Phones for Examination Fees Payment among Primary and Secondary School Students. Data collected using random sampling carried in Dar es salaam schools and further analyzed in Smart PLS, the results revealed that facilitating conditions, performance expectancy, effort expectancy, social influence, trust and perceived risk), two factors (facilitating conditions and effort expectancy) were found not significantly affecting the individual intention to use Mobile payment systems. This study was cross section. It is well understood that, the model of MPS adoption can well change over time. It is therefore recommended a longitudinal study to be carried out for an improved understanding of the factors affecting the individual's intention to use Mobile payment system.

Bangens and Soderberg (2011) conducted an empirical study that aimed at exploring the adoption of mobile money transfer (MMT) among micro- and small-sized enterprises (MSEs) in Tanzania. The study specifically focused on business usage such as paying suppliers or receiving payments from customers and paid less attention to person-to-person money transfer. The results were based on a non-randomized sample of 110 MSEs mainly located in Dar es Salaam but partly in Morogoro, Singida, and Mwanza. The key findings were adoption to business to business transfer is being limited by Poor network coverage, large amount charged for e-transactions, lack of security arrangement, low knowledge and capacity to use mobile transaction supporting devices and low or no enough cash from mobile agents. The study recommended that measures should be taken to overcome the barriers.

From the above literature review, it can be seen that there are number of researches done on mobile payments in Tanzania, however, few have discussed about trust as a factor that influence adoption. Apart from mentioning trust the empirical literature didn't go further to investigate all the dimension of trust in mobile payments thus research gap about the role of trust in adoption of mobile payments can be observed.

### **2.2.2 Influence of Consumer Trust on Mobile Payments Adoption**

Mobile payments have their own technological infrastructure, different characteristics, new business models and applications, and new values for consumers (Hillman *et al.* 2011). As a result, trust in mobile payments is difficult to understand, and no consensus about its influential factors has been achieved yet. Hence, it requires new thinking for its trust and adoption. In addition, although many studies indicated that consumer trust influence mobile payments adoption, some research indicated no relationship between consumer trust in mobile payments and its adoption. For instance, Susanto *et al.* (2012) found that consumer trust in smartphones to conduct a monetary banking payment does not influence continuance intention to use Korean mobile payment system. Similarly, Pousttchi and Wiedemann (2007) empirically found that perceived trustworthiness had no significant influence on users' intention to use mobile payments in Germany. Overall, we are not sure about the relation between consumer trust and mobile payment adoption and how this consumer trust is developed, which in turn makes the process of understanding consumer trust more complex and complicated. Therefore, it is argued that the only way to know the influence of consumer trust in mobile payments is to perform an in-depth investigation of the relation.

In a related perspective, Al-Fahim (2013) conducted a study to explore and understand the factors that influence internet banking adoption in Malaysia. The findings from interviews using thematic analysis revealed that adopters and non-adopters realized that internet banking has several benefits and conveniences. Even so, non-adopters were concerned about some factors like trust, ease of use, awareness and security. The results also showed that adopters had a positive influence on use of online banking and they did not have problems with these factors because they had sufficient knowledge and experience in using online banking.

On the other hand, Triandini, *et al.* (2013) conducted a study on factors influencing e-commerce adoption by SME in Indonesia. By using contents analysis, results from ten prior studies showed that consumer trust, perceived opportunities, perceived usefulness, perceived ease of use, relative advantage, perceived risk and compatibility have significantly influenced SMEs to adopt e-commerce.

In an African perspective, Karma and Ibrahim (2014) conducted a study to investigate the key factors influencing mobile banking adoption in Sudan. The results from multiple regression analysis revealed that the intention to use mobile banking in Sudan is influenced strongly by perceived trust, perceived ease of use and perceived risk. In this study perceived usefulness was found to have no influence on the intention to use M-banking services among customers of Sudanese banks.

In Tanzania, Masele and Taluka (2016) carried out a study on the Influence of perceived trust in rural consumer mobile payment service adoption: an understanding of moderation effects of gender and age. The number of Internet users has increased dramatically, but many are reluctant to provide sensitive personal information to Web sites because they do not trust e-commerce security. This paper investigates the impact of customer perceptions of security control on e-commerce acceptance. Trust is examined as the mediating factor of the relationship, using Internet banking as the research domain because bank customers are generally concerned about processing sensitive information like financial information. A Web survey of Internet banking users collected 502 cases. Statistical analyses, using structural equation modeling, indicated that perceptions of nonrepudiation, privacy protection, and data integrity have a significant impact on trust in e-commerce. Trust also has a significant impact on e-commerce acceptance. Implications and further research directions are presented.. Using Partial Least Square data analytical tools, the results established that trust positively influences the adoption of mobile payment services in rural areas. However, this study employed data collected using non-probabilistic sampling methods from Pwani (Coast) region. Therefore, it faces the limitation of the generalizability.

On the other hand, Anthony and Mutalemwa (2015) carried out a study on factors influencing the use of mobile payments in Tanzania. Qualitative data which was analyzed using thematic content analysis revealed that perceived ease of use, perceived usefulness, perceived cost, perceived mobility, perceived trust and perceived expressiveness strongly influence the adoption and usage of Z-pesa service.

### **2.2.3 Trust Development on Mobile Payments Adoption**

Other studies (Pousttch and Wiedemann, 2007; Zmijewska *et al.*, 2004) indicate that consumer trust is of high importance in accepting mobile payment. These studies have linked consumer trust and mobile payment adoption, and indicated that there is a strong relationship between consumer trust and mobile payment adoption, but without deep understanding of how to achieve this trust and what factors influence it. In fact, in studies by Alqatan *et al.* (2012), and Wong and Hsu (2008), consumer trust has been studied as one component of mobile payment adoption factors rather than being studied independently, this has caused to have a limited understanding on factors that cause consumer trust. To address this, there was a need for better understanding on recognition of what causes development of consumer trust in mobile payment systems.

### **2.2.4 Confidentiality, Integrity and Availability**

Gan *et al.* (2008) using quantitative analysis in Malaysia came up with the model in which elaborated that security has effect on trust however they considered only two aspects among the triad of CIA (Confidentiality, Integrity and Availability). On their trust model they found that both Confidentiality (authentication and authorization) Integrity and Non-repudiation affect consumer

trust on mobile payment adoption but they did not consider how Availability of mobile payment system influences consumer trust.

Vance *et al.* (2008) in the study of Examining Trust in Information Technology Artifacts: The Effects of System Quality and Culture. The study used individuals to use Internet-enabled mobile phone to perform a mobile commerce transaction on Amazon.com using Smart PLS, found all the principles of information security, such as confidentiality, integrity and availability can significantly affect both trusting beliefs and trusting intentions. This result lends further support to prior literature that came to similar conclusions.

Law (2007) in the study with the objective of identifying the relationship that exists between trust and security using random sampling of students from University found that security do not have influence on consumer trust. In analysis using Structural Equation Modeling of all the individual components of security in CIA theory, it was observed that the Confidentiality have a significant positive impact on development of trust while Integrity and Availability resulted to no significance.

Wang *et al.* (2016) in Korea using qualitative analysis found that mobile payment security has influence on consumers trust. Mobile payment solution must have a way to combat cyber threats. They found data confidentiality/secretcy Authentication, Data Integrity, Authorization, Availability, Access control, and Non-repudiation are important for mobile payment service providers in managing and developing security solutions for m-payment systems. The author recommended that future studies be done in other countries in order to compare and increase the generalization power.

In Tanzania, using content analysis Rumanyika (2015) explored obstacles towards adoption of mobile banking in Tanzania. The results indicated that Poor network coverage, lack of knowledge of mobile banking users, lack of enough floats, ATMs breakdown and theft, Poor security of mobile network and lack of trust, are the main obstacles facing adoption of mobile banking in Tanzania. Security falling on CIA triad found to be one among the main obstacles as it applies on developing trust and technology.

### **2.2.5 Characteristics of Mobile Service Provider and Characteristics of Mobile Technology**

Siau *et al.* (2003) using content analysis found that trust in mobile payments is developed through Characteristics of mobile technology and Mobile service providers. The research further established that consumer trust issue needs to be more fully understood and directly addressed by providers of mobile services so as to archive the potential of Mobile applications. They concluded that Customer trust is crucial for the growth and success of mobile payments. However, building customer trust is a complex process that involves technology and business practices as well as movement from initial trust formation to continuous trust development. The study considers

Characteristics of Technology and Service Provider; it did not study about vendors to see their contribution on formation of Trust.

Kumar *et al.* (2012) using regression analysis in studying relationship between types of trust and level of adoption of Internet banking in India found that structural assurance which is Mobile technology characteristic and benevolence which is characteristic of mobile service provider have strong influence in development of trust in Internet banking.

In Chandra *et al.* (2010) study investigated how consumers develop mobile payment trust with an emphasis on mobile service provider and mobile technology characteristics. The study models consumer trust as a mediating variable between characteristics of mobile service provider, mobile technology characteristics and mobile payment adoption.

In Indonesia, Wijoseno and Ariyanti (2017) tries to find the effects of e-commerce knowledge, perceived reputation, perceived risk and technology on trust on online transactions. The study opted calculation analysis using PLS-SEM method using SmartPLS v. 3.2.6. The results showed that all relationship between these variables are significant except between perceived reputation and online trust. This means technology measured using ease of use and usefulness, knowledge and risk was found to have influence on trust formation.

In Tanzania Mirzoyants (2013) in research about Mobile Money in Tanzania: Use, Barriers and Opportunities established that insufficient knowledge of customers on m-payments, unfaithful mobile Payment vendors, poor network and Mobile technology problems and unknown characteristics of mobile service provider are the major barrier to use of mobile payments. The study recommended that consumers should be given clear knowledge on mobile payments, and all these barriers on mobile technology and Characteristics of mobile service provider should be removed.

#### **2.2.6 Influence of Characteristics of Mobile Payment Vendors on Consumer Trust Formation**

In Malaysia, Goudarzi *et al.* (2013) tried to find the Impact of Trust on Internet Banking Adoption. The results found Good reputation, reliability, quality and privacy of payment vendor contributes in formation of trust in mobile payments. The good relationship between the Vendors and their customers can lead to success and strength in the vendor customer relationship. The study proven the positive relationship between good reputation and trust as an essential factor in forming the successful customer relationship with the technological environment in comparison with the face-to-face environment.



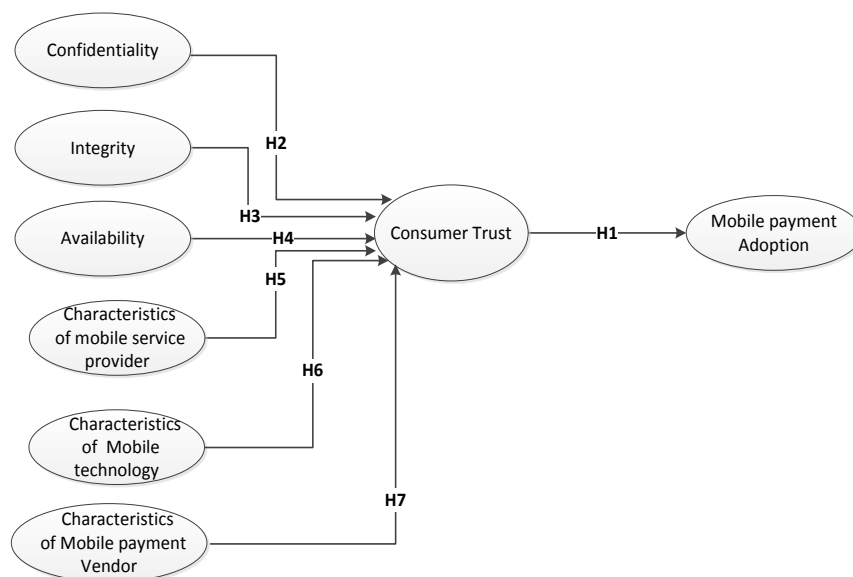
Liu *et al.* (2009) conducted Empirical Study on Mobile Banking Adoption: The Role of Trust in China. Results from a survey of 438 respondents using quantitative analysis indicated that the shape of individual's general trust is mainly affected by three dimensions which are characteristics technologies, characteristics in vendors and structural assurance. Structural assurance is the most important facets of individual's general trust. The second was Characteristics in vendors that found to have significant influence on trust formation.

Gefen (2002) conducted a study to examine trust in multi-dimensional in Philadelphia. The study adopted Confirmatory factor analysis using LISREL. It was found that one dimension of overall trust in intention to perform e-commerce is affected by vendor's competence, benevolence, ability and integrity. The results show that empirically characteristics of vendor namely competence, ability and benevolence have strong influence in formation of overall consumer trust. The study concluded that trust is multi-dimensional and each dimension should be studied separately.

### 2.3 Conceptual Framework

From the literature in addressing the gaps, this research provides the more robust model that gives more understanding of consumer trust in adoption of mobile payment systems in Tanzania. Using Zucker (1986) trust production theory, CIA triad, the researcher has come up with eight variables which were involved on this research. These are Confidentiality, Integrity, Availability, Characteristics of mobile services provider, Characteristics of Mobile Payment Vendor, Characteristics of mobile technology, consumer trust and adoption. The conceptual framework on figure 2.1 was formulated with these variables.

**Figure 2.1: Conceptual framework**



## **2.3.1 Hypotheses Developed**

### **2.3.1.1 Consumer Trust**

Mobile payment is an innovation which is associated with a number of uncertainties drawn from the technology and operational environment (Chandra *et al.*, 2010). Some consumers feel that they are in a vulnerable position because they have no control over transactions and that their financial asset and privacy might be put at risk. Previous studies on e-commerce and m-commerce consistently demonstrate that consumer trust has a positive relationship with adoption of technology (Chandra *et al.*, 2010; Liu *et al.*, 2009; Wang *et al.*, 2003). Extending this logic to the mobile payment context, it is believed that the higher level of trust the consumers place in mobile payment, the more likely the adoption of mobile payment. Given this operational definition of consumer trust, the study posits the following hypotheses:

H1: Consumer trust increases adoption of mobile payments.

### **2.3.1.2 Confidentiality**

The information must not be revealed to unauthorized persons, processes or devices. It is assumed that only the sender and receiver are able to understand the transmitted messages in clear text. This is usually accomplished using computer based cryptographic encryption. The major attacks on Confidentiality are traffic analysis, eavesdropping, and man-in-the middle attack. Customers care about how mobile payments are made and protected against unwanted monitoring of payment details. Confidentiality is the property of an information system that ensures that unauthorized persons cannot view transaction information. The past studies discovered significant impact of confidentiality on consumer trust in Mobile payments (Davood *et al.*, 2013; and Roca *et al.*, 2009). From the explanations, the study came up with the following hypothesis:

H2: Confidentiality of mobile payment data increases consumer's trust in mobile payments.

### **2.3.1.3 Integrity**

Integrity means that the information and systems are not altered or corrupted by external and unauthorized parties. Adding secure electronic signatures to messages provides transaction data Integrity. Attacks on Integrity include session hijacking, replay attacks and man-in-the middle attacks. An Integrity threat exists when an unauthorized party can modify message stream of information. Unprotected transactions are vulnerable to Integrity destructions. Those businesses that participate in the payment system absolutely must protect their customers' data. This is a promise, a responsibility and increasingly, a customer expectation Latin *et al.* (2007). From the literature, it has been found that most of the authors have used this variable to find its relation to consumer trust, these includes Gautrey (2012), Mukherjee and Nath (2003), and Law

(2007). Using these past literatures, the following hypothesis was derived from the given operational definition of Integrity.

H3: Integrity of mobile payment data affects consumer's trust in mobile payments.

#### **2.3.1.4 Availability**

Availability is the prevention of loss of access to resources and information to ensure that information is available for use when it is needed. It is imperative to make sure that information requested is always accessible to the authorized users. Denial of service (DoS) is one security attack that attempts to deny access to the appropriate user, often for the sake of disruption of service. Mobile providers are responsible to ensure Availability of mobile payment systems. Previous studies on electronic and mobile applications consistently used Availability to find its significance on consumer trust (Lee 2005 and Law 2007), from the studies majority found it is significant and some found it is not. Based on explanations this hypothesis was derived.

H4: Availability of mobile payment system increases consumer's trust in mobile payments.

#### **2.3.1.5 Characteristics of mobile service provider**

Chandra *et al.* (2010) identified that perceived characteristics of the mobile service provider is mobile service provider characteristic that affect mobile payment trust. Chandra *et al.* (2010) define characteristic of the mobile service provider as "the extent to which consumers believe in the mobile service provider's competency, honesty and benevolence". If consumers believe that the mobile service provider will act in good faith, they are likely to place more trust in mobile payment systems. Chandra *et al.* (2010) found that consumers' perceived characteristics of the mobile service provider is positively associated with mobile payment trust. Studies by (Siau and Shen, 2003; Mogenahalli *et al.*, 2008;) used Characteristics of Mobile service provider as a determinant of consumer trust on mobile related applications.

Similarly, Liu *et al.* (2009) found that trust in a mobile banking service provider positively affects consumer trust with mobile banking. Given this operational definition of characteristics of the mobile service provider, the study posits the following hypotheses:

H5: Characteristics of mobile service provider increases the level of consumer trust in mobile payments.

#### **2.3.1.6 Characteristics of mobile technology**

Mobile technology is underlying technological infrastructure including applications type such as Short Message service (SMS), Wireless Application Protocol (WAP), Near Field Communication (NFC), network speed and security that consumers use while using mobile payment services. Mao

and Yang (2011) found that trust in a mobile technology contributes positively to consumer trust in mobile payments. This relationship was confirmed in Chandra *et al.* (2010) study. It was further found that some characteristics of mobile technology contributes to trust development in mobile commerce (Zahedi and Song, 2008; Kim *et al.*, 2009;). Based on the literature, the study posits the following hypotheses:

H6: Mobile technology increases the level of consumer trust in mobile payments.

#### **2.3.1.7 Characteristics of mobile payment vendor**

Mobile payment vendors refer to merchants that conduct transactions using mobile devices. The vendor and consumer form a seller and buyer relationship. The influence of characteristics of the mobile payment vendor on the formation of consumer trust in mobile payment was examined. Gefen (2002) suggests that vendor trust in e-commerce consists of competence, integrity and benevolence. Applying this conceptualization in mobile commerce, characteristics of the mobile payment vendor can be defined as the extent to which consumers believe in the mobile payment vendor's competency, honesty and benevolence (Chandra *et al.*, 2010; Gefen, 2002). Previous researches have shown a positive association between a seller's reputation and the buyer's trust in e-commerce (Gefen *et al.*, 2003;). Andreev *et al.* (2012) in their study found a positive relationship between vendor trust and willingness to use mobile payment. Mao and Yang (2011) also demonstrate that vendor trust is related with consumer trust in mobile banking. Given this operational definition of characteristics of the mobile payment vendor, the study posits the following hypotheses:

H7: Characteristics of mobile payment vendor increases the level of consumer trust in mobile payment.

### **3. METHODOLOGY**

This study's population was all mobile phone users in urban areas of Tanzania. Urban area has been selected for this study as expected to have most of financial transaction using mobile phones. The research was based on research hypotheses and applied quantitative approach. Survey of 385 respondents in urban Tanzania was used to collect data for testing hypothesis. From Tanzania housing and population census (TPHC) with a list of households, random sampling technique was used to select individuals who responded questionnaires. This approach ensured representativeness of the sample from the geographical zones in Tanzania.

Information collected using questionnaires were coded and analysed using the Statistical Package for Social Scientists (SPSS). SPSS measure was used to identify and substantiate relationships between the dependent and independent variables using Structural equation modelling (SEM). The findings were summarized in tabular form for descriptive analysis, whereby graphs and tables were used in the discussion of the field findings.

## 4. FINDINGS OF THE STUDY

### 4.1 Validity and Reliability

Validity refers to the extent in which the data collected truly measures what it is meant to measure (Field, 2005). To address validity, the results in table 4.1 revealed that Average Variance Extracted(AVE) of each individual construct were greater than the shared variances with other constructs (Fornell and Larcker, 1981) and all the square roots of the AVEs on the diagonal was greater than correlations with other constructs. Reliability was accessed using Composite reliability of each factor which found to be greater than 0.6.

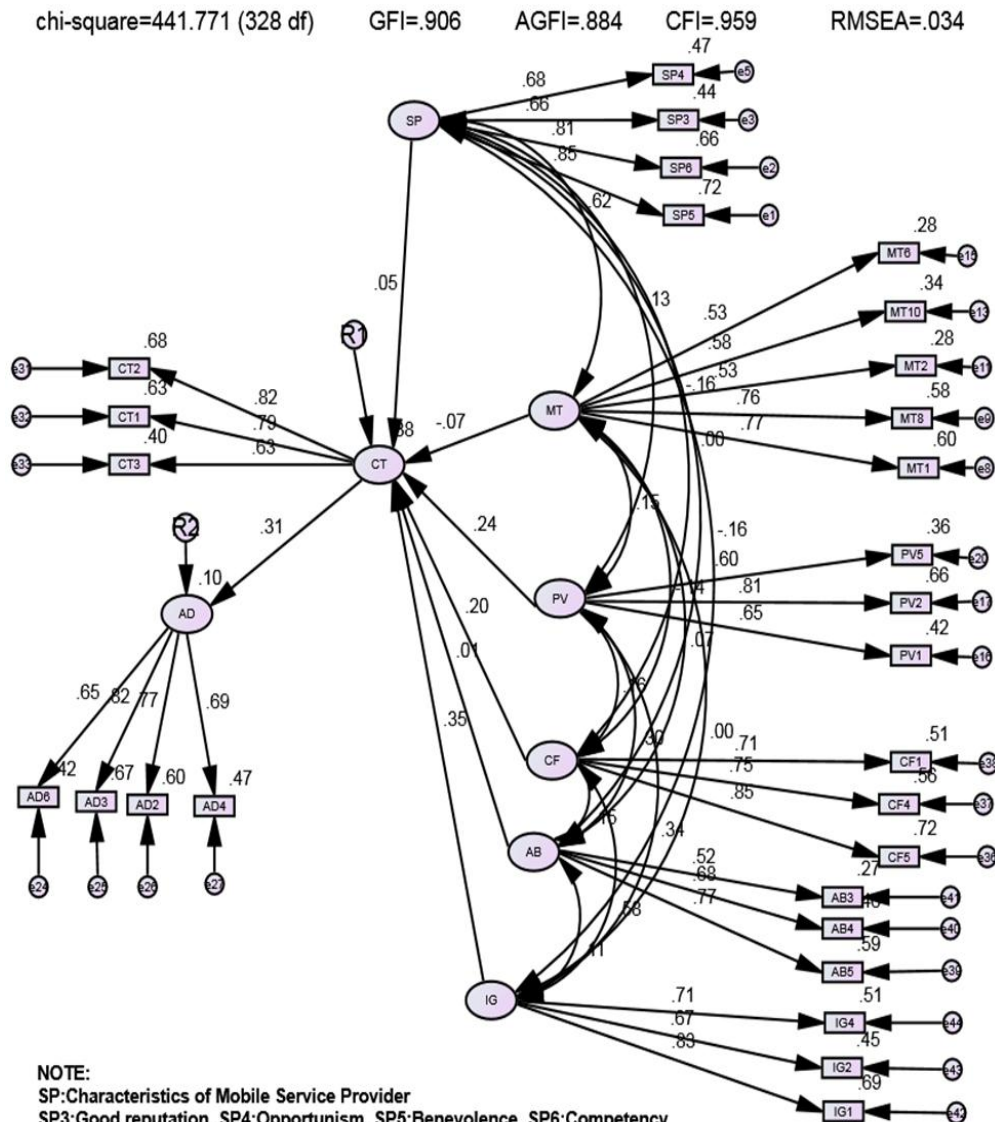
**Table 4.1: Composite Reliability, Convergent and Discriminant Validity of Construct**

	CR	AVE	MSV	MaxR(H)	AB	SP	MT	PV	AD	CT	CF	IG
AB	0.699	0.542	0.089	0.730	<b>0.665</b>							
SP	0.840	0.570	0.391	0.898	-0.002	<b>0.755</b>						
MT	0.775	0.515	0.391	0.928	0.074	0.625	<b>0.644</b>					
PV	0.730	0.580	0.172	0.942	0.298	0.127	0.153	<b>0.693</b>				
AD	0.823	0.540	0.172	0.955	0.217	0.118	0.316	0.415	<b>0.735</b>			
CT	0.798	0.572	0.295	0.963	0.134	-0.055	-0.046	0.374	0.289	<b>0.756</b>		
CF	0.815	0.597	0.339	0.969	0.152	-0.157	-0.141	0.161	0.098	0.453	<b>0.772</b>	
IG	0.782	0.546	0.339	0.972	0.114	-0.162	0.004	0.337	0.196	0.543	0.582	<b>0.739</b>

### 4.2 Analysis of the Structural Model

The basic structural model of the study, which hypothesized different relationships, was analyzed. The results of the analysis using AMOS version 22 are diagrammed in the figure 4.1 and the results for the goodness of fit indices base on four indices namely CMIN/DF,CFI, AGFI and RMSEA are presented in figure 4.1.

Figure 4.1: Structural Model



**NOTE:**  
 SP: Characteristics of Mobile Service Provider  
 SP3: Good reputation, SP4: Opportunism, SP5: Benevolence, SP6: Competency  
 MT: Characteristics of Mobile Technology, MT1: Easy to learn and operate, MT8: Mobility, MT2: Structural assurance, MT6: Environmental system risk, MT10: Quick transaction processing  
 PV: Characteristics of Mobile payment Vendor  
 PV1: Good reputation, PV2: Benevolence, PV5: Opportunism  
 AD: Mobile Payments Adoption  
 AD2: Recommend usage, AD3: Prompt payments, AD4: Bill payments, AD6: Fund transfers  
 CT: Consumer Trust  
 CT1: System reliability, CT2: System security, CT3: System correctness  
 CF: Confidentiality  
 CF1: Security confidence, CF4: Transaction safety, CF5: Clear responsibilities segregation  
 AB: Availability  
 AB3: Timely accessible, AB4: Vendors proximity, AB5: Timely support  
 IG: Integrity  
 IG1: No Loss possibilities, IG2: Low Data alteration risk, IG4: Transaction accuracy

The findings for model fit in figure 4.1 are elaborated as follows: The ratio of the  $\chi^2$  to the degree of freedom-CMIN/DF commonly referred to as normed chi-square value has yield a value of 1.347,

which has range to the suggested cut of point values < 2 or < 3 by (Schermelleh-Engel *et al.*, 2003). The CFI=0.959, GFI =0.906 and AGFI=0.884 obtained fall under the acceptable range whereas values close to 1 and generally values above 0.9 indicate a good fit as suggested by Schermelleh-Engel, *et al.* (2003). On the other hand, as suggested by Hoe (2008) that a RMSEA value of 0 indicate perfect fit, < 0.05 = indicate close fit, 0.05 to 0.08 indicate fair fit and 0.08 to 0.1 a mediocre fit, > 0.1 =poor fit. Comparing to the current study findings the RMSEA values of 0.034 that was produced in the analysis indicate that the model fits very well in the data. Having established a model fit that indicate a good fit using four indices, the path coefficient and hypothesis testing was evaluated as explained in the next section using this model.

**4.3 Model Path Coefficients and Hypothesis Testing**

The structural model was used to test the hypothesized relationships. In this research the hypotheses are tested based on the direction, strength and the level of significance of the path coefficients. A standardized paths coefficient, critical value (C.R) and significant level (p-value) was used in this study in the testing and evaluation of strength and the level of significance of the hypotheses. Hox and Bechger (2014) argued that a relationship that yield a critical ratio greater than 1.96 and p-value less than 0.05 is considered significant. Chin (1998) and Hoe (2008) who argued that a standardized path coefficient ( $\gamma$ ) should be at least 0.2 in order to be considered significant and meaningful for discussion. Table 4.2 give the results obtained from the structural model.

**Table 4.2: Hypotheses results**

	Estimate	S.E.	C.R.	P	Standardized Estimate
CT <--- PV	.386	.106	3.656	***	.253
CT <--- CF	.267	.070	3.803	***	.257
CT <--- AB	-.002	.068	-.031	.975	-.002
CT <--- IG	.304	.081	3.758	***	.276
CT <--- MT	.210	.066	3.181	.01	.213
CT <--- SP	.002	.058	.029	.977	-.002
AD <--- CT	.263	.052	5.021	***	.323

#### **4.3.1 The influence of Consumer Trust on Mobile Payments Adoption**

H1: Consumer trust increases adoption of mobile payments.

Further analysis was done using SEM in order to determine the significant influence of consumer trust on adoption of mobile payments as illustrated in table 4.2.

The path leading from CT to AD in table 4.2 was used to examine the relationship between Consumer trust and adoption of mobile payments. A positive path coefficient ( $\gamma = .323$ ) using standardized estimate results indicate that consumer trust is positively related to mobile payment adoption.

Apart from standardized coefficient, findings yielded a critical value (C.R = 5.021 which is  $>1.96$ ) and significance level of p-value. This means that the hypothesis H1 which states that Consumer trust increases adoption of mobile payments is confirmed.

#### **4.3.2 The Influence of Confidentiality on Consumer Trust of Mobile Payments**

H2: Confidentiality of mobile payment data increases consumer's trust in mobile payments.

This hypothesis is examined using the path leading from Confidentiality (CF) to Consumer trust (CT) which gave the above results in table 4.2. A positive path coefficient ( $\gamma = .257$ ) and critical value (C.R = 3.803 which is  $>1.96$ ) and significance level of p-value. This means that the hypothesis H2 which states that confidentiality of mobile payment data increases consumer's trust in mobile payments is confirmed.

#### **4.3.3 The Influence of Integrity on Consumer Trust of Mobile Payments**

H3: Integrity of mobile payment data affects consumer's trust in mobile payments.

This hypothesis was examined using the path leading from Integrity (IG) to Consumer trust (CT) which gave the above results in table 4.2. A positive path coefficient ( $\gamma = .276$ ) using standardized estimate results indicate that strength of Integrity is positively related to consumer trust in mobile payment adoption and yielded a critical value (C.R = 3.758 which is  $>1.96$ ) and significance level of p-value. This means that the hypothesis H3 which states that integrity of mobile payment data affects consumer's trust in mobile payments is confirmed.

#### **4.3.4 The Influence of Availability on Consumer Trust of Mobile Payments**

H4: Availability of mobile payment system increases consumer's trust in mobile payments.

Results of the standardized path coefficients ( $\gamma$ ) yielded a standardized regression weight of -0.002 which indicate a weak relationship between Availability of mobile payment systems and consumer



trust of mobile payment systems. Further analysis has yielded a critical ratio of -0.031 and  $p = 0.975$ . This means that hypothesis H4 that states that Availability of mobile payment system increases consumer's trust in mobile payments, has been rejected.

#### **4.3.5 The Influence of Characteristics of Mobile Service Provider on Consumer Trust**

H5: Characteristics of mobile service provider increase the level of consumer trust in mobile payments.

Results of the standardized path coefficient ( $\gamma$ ) yielded a standardized regression weight of -0.02 which indicates a weak negative relationship between Characteristics of Mobile Service Provider and consumer trust of mobile payment systems. This means that Characteristics of Mobile Service Provider does not increase the level of consumer trust on mobile payment system.

More analysis of the significant influence of characteristics of mobile service provider using critical ratio values indicated that the analysis has yielded a critical ratio of 0.029 and  $p = 0.977$ . Based on the findings in this study, the influence of characteristics of Mobile service provider on consumer trust in mobile payment system was found to be non-significant and the hypothesis H5 is rejected.

#### **4.3.6 The Influence of Characteristics of Mobile Technology on Consumer Trust**

H6: Mobile technology increases the level of consumer trust in mobile payments

Results of the standardized path coefficients ( $\gamma$ ) yielded a standardized regression weight of 0.213 which indicate a positive relationship between Characteristics of Mobile Technology and consumer trust of mobile payment systems. Furthermore, the findings yielded a critical ratio of 3.181 and  $p = 0.01$ . From the findings in this study the influence of characteristics of Mobile Technology on consumer trust in mobile payment was found to be significant and the hypothesis H6 is accepted.

#### **4.3.7 The Influence of Characteristics of Mobile Payment Vendor on Consumer Trust**

H7: Characteristics of the mobile payment vendor increases the level of consumer trust in mobile payment.

The path leading from PV to CT was used to examine the relationship between characteristics of Mobile Payment vendor and consumer trust on mobile payment systems. A positive standardized path coefficient ( $\gamma = .253$ ) from a path PV leading to CT indicates that characteristics of mobile payment vendor is positively related to consumer trust of mobile payment systems.

C.R of 3.656 and significant p-value indicates a significant influence of characteristics of Mobile payment vendor on increasing level of consumer trust on mobile payments. Hence the hypothesis

H7 which states that Characteristics of mobile payment vendor increases the level of consumer trust in mobile payment is accepted.

## **5. CONCLUSION AND IMPLICATIONS**

### **5.1 Conclusion**

Conclusively large adoption of mobile payment systems depends on consumer trust and for consumers to develop trust they are influenced by Confidentiality, Integrity, characteristics of mobile service providers, characteristics of mobile technology and characteristic of mobile payments vendors. This indicates that policies and strategies to enhance consumer trust are crucial and they will heavily influence the adoption of mobile payment systems.

The study based on consumers trust and its influence on adoption of mobile payment systems. Results strongly reveal that consumer trust is a crucial factor to influence consumers to adopt mobile payment. In general, it can be concluded that consumer trust is a key element on mobile payment systems adoption.

In aspect of consumer trust development, consumers tend to develop trust in mobile payment systems more if there is high level of Confidentiality and integrity that makes consumer feel safe to transact with mobile payment system. Consumers are very sensitive about their transaction data, not to be changed or to have any loss whenever they use mobile payment. Thus, this concludes the importance of Confidentiality and Integrity on development of trust in mobile payments. Characteristics of mobile Technology and characteristics of mobile payment Vendor were also concluded to strongly help in development of consumer trust in mobile payments.

### **5.2 Practical Implications**

The study has several important implications for mobile payment practitioners and system designers. In the study consumer trust as the key driver for adoption of mobile payment systems, pushes practitioners, mobile payment system designers and technologists to seriously consider consumer trust-building factors identified in this study.

These include Confidentiality, Integrity and mobile technology and characteristics of mobile payment vendors. This indicates that mobile payment designers and practitioners should incorporate relevant technology and services, including providing clear security mechanisms on systems, proper encryption, proper hashing techniques, providing timely support and to have full active systems all the time when system is available. A secure mobile transaction environment can

be provided by putting in place confidential user-controlled transactions. and secure channel to conduct financial transactions and hence increase trust and attain more adoption.

### **5.3 Policy Implications**

This calls for policies that guide mobile payment system designers to create mobile payment systems that have good structural assurance with minimum system environmental risk.

General and Security policies in mitigating risks should be considered. Risk mitigation may be by comprehensive proactive regulation by regulators. Issues of payment necessarily raise related issues of related risks. It is necessary for mobile service providers and regulators to provide awareness to consumers to understand environmental system risks associated with mobile payments and mitigation strategies.

The goals of regulation would be to ensure the safety and soundness of the entire payment system, consumer protection and other fundamental social policies. Under either view, the nature of regulation and supervision of issuers of mobile payment systems must be considered. Currently policy covers on mobile service providers and vendors are not being regulated. The finding of the study calls for payment to regulate mobile payment vendors. Policies should enforce all concerns including mobile payment vendors to have goodwill, good reputation and not to practice opportunism behaviors to consumers.

Mobile operators in relation with commercial banks offer mobile payment systems. Non-bank mobile providers are mostly not regulated comprehensively in their payment services. Bank of Tanzania in relation with TCRA have tried to put a leg in this to regulate the sector. Despite this initiative done by TCRA and BOT, issues including determining the location of virtual services, appropriate jurisdiction among stakeholders of mobile payment systems and transparency of financials is paramount. There should be policy to monitor mobile money creation process to be sure the amount created is the same as the amount deposited in trust accounts.

## REFERENCES

- Adesinasi, W. (2012). Mobile banking adoption and consumer behavior in Nigeria. *Journal of Business Administration and Education*. 20(2): 47 - 60.
- Al-Fahim, N. H. (2013). An Exploratory Study of Factors Affecting the Internet Banking Adoption: A Qualitative Study among Postgraduate Students. *Global Journal of Management and Business Research Finance*. 13(8): 22- 33.
- Alqatan, S., Singh, D., and Kamsuriah, A. (2012). Study on success factors to enhance customer trust for mobile commerce in small and medium-sized tourism enterprises (SMTEs) A conceptual model. *Journal of Theoretical and Applied Information Technology*. 46(2): 550.
- Andreev, P., Pliskin, N. and Rafaeli, S. (2012). Drivers and Inhibitors of Mobile-Payment Adoption by Smartphone Users. *International Journal of E-Business Research (IJEER)*. 8(3): 50-67.
- Anthony, D. and Mutalemwa, D. K. (2015). Factors influencing the Use of Mobile Payments in Tanzania: Insights from Zantel's Z-pesa services. *The Journal of Language, Technology and Entrepreneurship in Africa*. 5(2): 69- 90.
- Bångens, L. and Söderberg, B. (2011). Mobile Money Transfers and Usage among Micro- and Small Businesses in Tanzania: Implications for policy and practice. [[http://www.southcliff.se/docs/sme\\_and\\_mmt\\_final\\_draft.pdf](http://www.southcliff.se/docs/sme_and_mmt_final_draft.pdf).] Site visited 20/1/2016
- Boomsma, A. (1982). Robustness of LISREL against small sample sizes in factor analysis models. In K. G. Joreskog and H. Wold (Eds), *Systems under indirect observations, Causality, structure, prediction*. 1, pp.149-173, Amsterdam: North Holland.
- Chandra, S., Srivastava, S. C. and Theng, Y. L. (2010). Evaluating the role of trust in consumer Adoption of mobile payment systems: An empirical analysis. *Communications of the Association for Information Systems*. 27(1): 561-588.
- Chin, W.W. (1998). The Partial Least Squares Approach to Structural Equation Modeling. *Modern Methods for Business Research*. 2: 295-336.
- Chitungo, S. and Munongo, S. (2013). Extending the Technology Acceptance Model to Mobile Banking Adoption in Rural Zimbabwe. *Journal of Business Administration and Education*. 3(1): 51-79

- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3): 319–340.
- Davood A., Moradi H. and Haghghi-Kafash M. (2013). Factors Affecting Customer Confidence in Using E-Banking, *European Online Journal of Natural and Social Sciences, Special Issue on Accounting and Management*. 2(3): 4-7
- Fornell, C. and Larcker, D.F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*. 18 (1): 39-50.
- Gan, G. Eze, U., Ademu, J. and Tella, S. (2008). Modelling User Trust and Mobile Payment Adoption: A Conceptual Framework. *Communication of The IBIMA*. 3: 224-230.
- Gautrey, C. (2012). Trust and Integrity Made Simple. [<https://www.learntoinfluence.com/trust-and-integrity-made-simple/>] site visited on 10/8/2017
- Gefen, D., Karahanna, E. and Straub, D. W. (2003). Trust and TAM in online shopping: An integrated model. *MIS quarterly*. 27 (1): 51-90.
- Harris, S. (2002). *CISSP Certification Exam Guide*. McGraw-Hill/Osbourne
- Hillman, S., Neustaedter, C. and Bowes, J. (2011). Exploring "Soft" trust in mcommerce activities: An exploratory diary and interview study Technical Report. Surrey, BC, Canada: Connections Lab, Simon Fraser University.
- Hoe, S. L. (2008). Issues and Procedures in Adopting Structural Equation Modeling Technique. *Journal of Applied Quantitative Method*. 3 (8): 79-83.
- Hox, J .J and Bechger, T. M. (2014). An Introduction to Structural Equation Modeling. *Family Science Review*. 11(2): 354-373.
- Jeziorski, P. and Economides, N. (2016). Mobile Money in Tanzania. *NET Institute Working Paper*. 1.
- Karma, N. and Ibrahim, S. (2014). Key Factors Affecting Mobile Banking Adoption among Banks' Customers in Sudan. *International Journal of Liberal Arts and Social Science*. 2(6): 112-122.
- Keramati, A., Taeb, R., Larijani, A. M. and Mojir, N. (2012). A combinative model of Behavioral and technical factors affecting 'Mobile'-payment services adoption: An empirical study. *The Service Industries Journal*. 32(9): 1489-1504.

- Kim, G., Shin, B. and Lee, H.G. (2009). Understanding dynamics between initial trust and usage intentions of mobile banking. *Information System Journal*. 19(3): 283-311
- Law, K. (2007). *Impact of Perceived Security on Consumer Trust in Online Banking*, AUT University New Zealand
- Lee, T. (2005). The impact of perceptions of interactivity on customer trust and transaction intentions in mobile commerce. *Journal of Electronic Commerce Research*. 6(3): 165-180.
- Lehtinen, R., Russell, D. and Gangemi, Sr. (2006). *Some Security History in Computer Security Basics*, 2<sup>nd</sup> Edition, Sebastopol, O'Reilly.
- Liu, Z., Min, Q. and Ji, S. (2009). An empirical study on mobile banking adoption: The role of trust. *Second International Symposium on Electronic Commerce and Security*. 2: 7-13.
- Mallat, N., Rossi, M., Tuunainen, V. and Öörni, A. (2008). An empirical investigation of mobile ticketing service adoption in public transportation. *Personal and Ubiquitous Computing*. 12(1): 57-65.
- Mallat, N., Rossi, M. and Tuunainen, V. K. (2004). Mobile banking services. *Communications of the ACM*. 47(5): 42-46.
- Mao, Y. and Yang, G (2011). A research on the model of factors influencing consumer trust in mobile business. In; proceedings of International Conference on E-Business and E-Government (ICEE). Shanghai, China: pp. 1-5.
- Masele, J. and Taluka, E. (2016). Influence of perceived trust in rural consumer mobile payment service adoption: an understanding of moderation effects of gender and age. *Business Management Review*. 19 (2): 66-81
- McKnight, D. H., Choudhury, V. and Kacmar, C. (2002). Developing and validating trust measures for e-commerce: An integrative typology. *Information Systems Research*, 13(3), 334-359
- McKnight, D. and Chervany, N. L. (2001). What trust means in e-commerce customer relationships: An interdisciplinary conceptual typology. *International Journal of Electronic Commerce*. 6(2): 35-59.
- Mirzoyants, A. (2013). *Mobile Money in Tanzania: Use. Barriers and Opportunities*. InterMedia, Washington DC.

- Mogenahalli, S., Mahatanankoon, P. and Lim, B. (2008). Influence of trust predictors on different dimensions of trust in m-commerce. *Issues in Information Systems*. 9(2): 421-428
- Mukherjee, A. and Nath, P. (2003). A model of trust in online relationship banking. *International Journal of Bank Marketing*. 21(1): 5-15.
- Pousttchi, K. and Wiedemann, D. G. (2007). What Influences Consumers' Intention to Use Mobile Payments. LA Global Mobility Round table. [<https://scholar.google.com/citations?user=mdTMCM4AAAAJ&hl=de>] site visited on 11/7/2017.
- Roca, J. C., García, J. J. and Vega, J. J. (2009). The importance of perceived trust, security and privacy in online trading systems. *Information Management & Computer Security*. 17 (2): 96 – 113.
- Rumanyika, J. (2015). Obstacles towards adoption of mobile banking in Tanzania: a review. *International Journal of Information Technology and Business Management*. 35(1): 10 - 14.
- Schermelleh-Engel, K., Moosbrugger, H. and Müller, H. (2003). Evaluating the Fit of Structural Equation Models: Tests of Significance and Descriptive Goodness-of-Fit Measures. *Methods of Psychological Research Online*. 8. 23–74.
- Siau, K. and Shen, Z. (2003). Building customer trust in mobile commerce. *Communications of the ACM*. 46(4): 91-94.
- Susanto, A., Younghoon, C., Hangjung, Z. and Myeong-Cheol, P. (2012). *The role of trust and security in Smartphone banking continuance*. In; proceedings of the IEEE International Conference on Systems, Man, and Cybernetics (SMC). Seoul, South Korea: pp. 2133 – 2138.
- Thair, A., Suhuai, L. and Peter, S. (2010). Consumer acceptance of mobile Payments: An empirical study. In; proceedings of IEEE 2010 4th International Conference on Science: New Trends in Information Science and Service (NISS). New York: pp. 533-537.
- Tossy, T. (2014). Modelling the adoption of mobile payment system for primary and secondary school student examination fees in developing countries: Tanzanian experience. *International Journal of Information Technology and Business Management*. 27 (1): 6 – 10.
- Triandini, E., Djunaidy, A. and Siahaan, D. (2013). Factors Influencing E-Commerce Adoption by SMES Indonesia: A Conceptual Model. *Lontar computer*. 4 (3): 301- 311.

- Vance, A., Elie-Dit-Cosaque, C., and Straub, D (2008). Examining Trust in Information Technology Artifacts: The Effects of System Quality and Culture. *Journal of Management Information Systems*. 24(4): 73-100.
- Wang, Y., Hahn, C. and Suttrave, K. (2016). Mobile Payment Security, Threats, and Challenges. In; proceedings of IEEE Second International Conference on Mobile and Secure Services (MobiSecServ). Gainesville, Florida, USA: pp.1 -5.
- Wijoseno, J. and Ariyanti, M. (2017). Perceived Factors Influencing Consumer Trust and Its Impact on Online Purchase Intention in Indonesia. *International Journal of Science and Research (IJSR)*. 6 (8): 961 - 968
- Wong, Y. and Hsu, C. (2008). A confidence-based framework for business to consumer (B2C) mobile commerce adoption. *Personal and Ubiquitous Computing*. 12(1): 77-84.
- Zahedi, F.M. and Song, J. (2008). Dynamics of trust revision: using health infomediaries. *Journal of Management Information Systems*. 24(4): 225-248.
- Zmijewska, A., Lawrence, E. and Steele, R. (2004). Towards understanding of factors influencing user acceptance of mobile payment systems. In; the Proceedings of the International Conference on IADIS WWW/Internet, Madrid, Spain.
- Zucker, L. G. (1986). Production of trust: Institutional sources of economic structure. *Research in Organizational Behavior*. 8: 53-111.