THE PRO-POOR FACTORS, DEMOGRAPHIC FACTORS, ADOPTION AND USAGE OF MOBILE FINANCIAL SERVICES IN KENYA.

BY

ABDUBA IBRAHIM HALKANO

A DOCTORAL THESIS PRESENTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF DOCTOR OF PHILOSOPHY IN BUSINESS ADMINISTRATION, SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI.

2017.

DECLARATION

This thesis is my own original work and has not been presented for an award of any degree in any university.

Signature: ---------- Date: ----------

Abduba Ibrahim Halkano

D80/72703/2012

PhD Candidate.

This thesis has been submitted for examination with our approval as the university supervisor.

Signature: ---------- Date: ----------

Dr. James Njihia

Supervisor

School of Business

University of Nairobi.

Signature: ---------- Date: ----------

Dr. Litondo Kate

Supervisor

School of Business

University of Nairobi.

DEDICATION

This is dedicated to my dear wife Halima Saadia, Daughters Tume and Chule, Sons Halkano and Kusu, little brother Guyo and the entire Dullos family.

ACKNOWLEDGEMENTS

I acknowledge the multiple inputs, guidance, support and direction from Dr. Muranga Njihia and Dr. Kate Litondo for their encouragement, great insights and motivation in this journey. My colleagues in this journey have significantly contributed to this endeavor who include Dr. Oredo, Dr. Borura, Dr. Muendo , Mr Kamau Mwangi and Mr Gabriel Kamau.

Thank You All.

TABLE OF CONTENTS

Page

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS AND ACRONYMS

ICT	Information Communication Technology
IS	Information Systems
IT	Information Technology
MFS	Mobile Financial Services
PLS	Partial Least Square Method
TAM	Technology Adoption Model
TRA	Theory of Reasoned Action
UN	United Nations
UTAUT	Unified Theory of Acceptance and Use of Technology
SEM	Structural Equation Modelling
PLS	Partial List Squares

ABSTRACT

The unconventional growth and penetration of mobile financial services across the world have led researchers to unearth the factors that influence or inhibit this growth. This study focused on the effects of pro-poor factors, and demographic factors on adoption and usage of mobile financial services among the poor in Kenya. The dominant paradigm has been the conventional top-down approach where models such as, Technology Adoption Model (TAM), and Unified Theory of Acceptance and Use of Technology (UTAUT). These models are based on the evaluation of individual-specific factors which in itself was insufficient to generalize for a particular context, culture or community. This study adopted a bottom-up approach by looking at the communal, cultural and contextual pro-poor factors to examine its effects on adoption and usage of mobile financial services among the poor in Kenya. By seeking to explain the community, cultural and contextual factors that are specific to the poor people the study aims to fill research gaps and contribute knowledge in this area of mobile financial services. The study utilized Theories of Poverty, the Social Capital Theory, and the Unified Theory of Acceptance and Usage of Technology to provide sound theoretical background to this study. The quantitative approach was adopted based on a cross-sectional study of the poor in Kenya. Data collection was done through the use of a semi-structured questionnaire that was administered to people living in the slums of Nairobi. Structural equation modeling was utilized for data analysis using the partial least square analysis and hypothesis was tested using data collected. The study results showed that the structural model showed a good fit possessing good reliability, convergent and discriminant validity were also found to be good. The results revealed that there exist relationships between contextual factors, community factors, cultural factors, and adoption. The relationship between the contextual factors, community factors, and usage were found to be significant. Surprisingly the relationship between cultural factors and usage as well as adoption and usage were found to be insignificant which is explained by the pressing need to adopt and use mobile financial services. The demographic factors of age and gender did not moderate the relationships between community factors and adoption as well as the cultural factors and adoption. The study brings forth a fresh approach to adoption studies in information system beyond the traditional theories such as TAM and UTAUT, it uses bottom-up pro-poor perspective and proposes a new model suitable for a segment of the society (the poor) largely ignored by existing theories. The findings contribute to the existing body of knowledge by making contributions in enhancing the literature on understanding the local context, effects of pro-poor factors on adoption and usage of mobile financial services. It also fills the methodological gap by using a quantitative study and suggest directions for future research while offering implications for academia and policy makers. The results of the research provide information to the regulatory agencies and government and the mobile telecommunication operators.

CHAPTER ONE: INTRODUCTION

1.1 Background

Half of the world's population lives below the poverty line of $2.50 a day while 80% of humanity lives on less than $10 a day (Asli & Klapper, 2012). The increasing population of the poor and widespread poverty is a global concern as poor people are deprived of the means to participate in gainful activities due to lack of access to financial services. The global concern also has a significant effect in Africa as well as in the Kenyan context. Hughes and Lonie (2007) claim that the structural weakness in the formal financial industry limits the access to Mobile Financial Services (MFS) especially to the poor. It has been stated that most commercial banks are not serving the poor due to high costs of establishing financial networks, lack of disposable income to save by the poor and their inability to take up credit due to lack of collateral (Potnis, 2014) which has led to financial exclusion.

The introduction of mobile financial services in Kenya has led to the provision of financial services to all who can access a mobile phone both poor and rich. Wamuyu (2014) observed that the usage of the mobile telephone in Kenya has greatly increased due to the development of its capacity to offer additional advanced value added services such as money transfers, internet access and managing bank accounts. Significant growth in transaction volumes is being witnessed in Kenya as people no longer need to physically visit the banks to perform financial transactions because they use mobile financial services. There is growing evidence that mobile financial services are being widely adopted and its usage in day to day business activities is rapidly increasing in

Kenya (Kirui, Okello, Njiraini & Nyikal, 2013).

There are many studies such as Yang (2004), Chung and Kwon (2009), Riquelme and Rios (2010) and Yu (2012) that have been undertaken to understand the adoption of mobile financial services. The various theories used in these studies are the unified theory of acceptance and use of technology (Venkatesh et al., 2003). The dominant paradigm has been the top-down approach which is explained as mainly investigates the individual factors influencing adoption and usage of mobile financial services on a product made at the top and pushed down to the mass market.

The top down approach basically follows the product into the market to investigate its adoption and usage by individuals rather than by a specific group of community or culture in a particular context. Potnis (2014) states that bottom-up approach does not borrow or impose any predefined theoretical constructs to examine the phenomenon. This study focused on bottom-up approach that seeks to investigate various factors in the specific context, their effects on adoption and usage of mobile financial services rather than just pushing products into the market and assessing its adoption and usage as it is the case in top-down approach. The bottom-up approach after investigating the adoption and usage of mobile financial services by a group of people such as the poor, it will provide information about a group of people rather than the individuals thus providing insight on factors that influence adoption and usage of mobile financial services by a group of people such as the poor. This will resolve the issues with prior studies by bringing in the pro-poor perspective that focuses on a broader bottom up approach.

1.1.1 Mobile Financial Services

Mobile financial services include a broad range of financial activities that users engage in or access using a mobile device. Gencer (2011) described mobile financial services as the ability to access and utilize electronic financial services using a mobile device. Mobile financial services can be divided into three distinct categories of mobile banking, mobile payments and mobile money (Boyd & Jacob, 2007). Mobile banking is defined as a channel used by customers through a mobile device such as mobile phone to have interactions with a bank (Barnes and Corbitt, 2003). It is an innovation which has been perpetuated by widespread of mobile communication technology, it is financial services delivered through mobile networks and performed on a mobile phone (Bangens and Soderberg, 2008).

Kreyer, Pousttchi and Turowski (2003) define mobile payment as the processing of a payment transaction using a mobile communication technique through a mobile device such as mobile phone from initiation, authorization to payment realization. Wamuyu (2014) defines mobile money services including mobile money transfer as using a mobile phone to exchange monetary value from one mobile money transfer registered subscriber to another.

The coming of mobile operators in the African market has led to the rapid deployment of telecommunication infrastructure throughout the countries. The mobile operators and their distribution channels were reaching the remote parts of the countries. This meant that more and more places where it was not profitable to open a retail bank branch, now have access to mobile phone and the operators' distribution networks; thus, making it

possible to extend financial services to large segments of the unbanked poor people. This has led to financial inclusion, bringing on board poor people who had no access to commercial bank accounts.

Extant research has shown that mobile communication technology has a potential of leapfrogging the traditional infrastructure of financial institutions such as a bank, it has a great potential to provide financial services to the poor unbanked people through familiar and widespread technology (Isiah, Omwansa, Waema, 2012). The concept of mobile financial services has been introduced to simplify and delocalize financial services such that users can perform financial transactions without the need to visit a formal financial institution. The pioneer mobile financial services were basic, easy and simple, it allowed the use of mobile phones as a bank account and a debit card for essential services of sending and receiving money. This leads to expanding of financial services to all those who could not be able to access formal financial services. The mobile financial services have become a necessity as it was addressing a fundamental societal problem, it was also the only alternative solution thus its adoption and usage was a matter of societal need rather than pushing of a particular product to the market.

The strategies employed by the innovators of these mobile financial services also tapped into the existing entrepreneurial spirit of the Kenyan population as commission-based agency network was put in place, where the amounts earned by the agents are based on the number of transactions conducted through the agent. (Kirui, Okello, Njiraini & Nyikal, 2013) observed the growth in the uptake of mobile financial services. Lower-income earners registered to be an agent in a rural town or village as the early movers

were sure of cashing in on the first mover advantage. The journey from being a product by the innovators to being a business opportunity by agents and to being a much needed financial service by the rural communities gave mobile financial services the impetus to diffuse into the Kenyan market both the rural and urban areas.

1.1.2 The Pro-Poor Perspective

The term pro-poor has been used by development partners since early 1990s, it was initially introduced as pro-poor growth, which is defined by UN (2000) as growth that benefits the poor thus pro-poor man's, "for the poor or towards the poor". The pro-poor concept has been around issues of the poor, influencing donor funding, government policies and UN goals towards addressing the needs of the poor with the view of improving their livelihood and economic well-being. Pro-poor perspective was coined in a mobile banking study by Potnis (2014) borrowing from the theories of unified theory of acceptance and usage of technology. Potnis operationalized UTAUT variables and refocuses them on to a more bottom up perspective by gearing it towards the effects on the poor coming up with pro-poor factors of context, culture, and community.

The adoption and usage of mobile financial services are dependent on the poor, the circumstance they are in and their ability to comfortably use mobile devices. Potnis (2014) states that a pro-poor perspective is a bottom-up approach which does not impose or borrow any external predefined theoretical constructs. The pro-poor perspective adopted in the study to investigate its effect on adoption and usage as they are not influenced by mobile operators, government agencies or other stakeholders rather by pro-poor factors such as contextual, community and cultural factors are discussed briefly below.

1.1.3 Pro-Poor Factors and Mobile Financial Services

The first pro-poor factor is the contextual factors that concern study environment of the poor. The contextual factors greatly contribute to the provision of access which in this study is access factors that affect the provision of mobile financial services access in this study. The concept of access has gained so much importance that the UN has set a goal of 50% access worldwide by 2015. For example, some commentators (Economist, 2005) suggest that the digital divide exists between those without mobile network and those with access. Access is a preliminary prerequisite for adoption, a mobile phone is an essential tool in providing access among the poor who can only adopt mobile financial services if they have access.

James and Versteeg (2007) defined access as a percentage of people who are within the range of a mobile network who potentially could use mobile phones. Access challenges are significantly prevalent in poor areas where mobile network coverage has not reached due to lack facilitating conditions such as lack of electricity supply, limited investment in last mile connectivity, unavailability of mobile network coverage (Potnis, 2014). Regulatory and government policies also play a key role in the provision of access (Bhavnani et al., 2008). The ability of the poor to overcome access challenges is crucial for adoption, which is impossible without access given the facilitating conditions and regulatory policies.

The second is cultural factors. Culture is a complex and multifaceted construct, it is defined as the collective programming of the mind which uniquely identify one group and differentiate it from another (Hofstede, 1980). Hofstede (1980) found there are

regional or national cultural groupings that affect the behavior of societies and the difference is persistent across time.

Potnis (2014) asserts cultural differences and cultural practices leads to multiple interpretations, usage, and appropriations of ICT. It has been pointed out by Bertolotti (1984) that culture greatly affects the acceptance of technology through its belief and values leading to social influence where members who share the same culture can influence other members within that culture.

The final pro-poor factor is the community factors. The community is described as a group of people with similar needs and values that foster believe that joining together they are better able to satisfy their goals, needs, and priorities. (McMillan & Chavis, 1986). Community characteristics influence adoption of ICT (World Bank, 2012), which presents community challenges that affect adoption of mobile financial services. Community factors are represented by perceived ease of use, the level of literacy, and the perceived financial cost (Potnis, 2014). These factors provides a fresh attempt to bring in the social and demographic factors into the theories of information systems.

1.1.4 Adoption and Mobile Financial Services

Adoption as a concept has been significant in information system research. Rodgers (1995) defined adoption as the decision to use innovation fully and regard it as the only available course of action. It is also defined as a process of user accepting and utilizing technology, making it part of their daily life (Renaud & Biljon, 2008). There is an agreement with Rogers on technology acceptance as the only way to perform an action.

Adoption is dependent on the ability of the poor to use a mobile phone to access mobile financial services which are dependent on their levels of literacy and their ability to sustain the cost of using financial services. The perception of the poor that mobile financial services are expensive or complex could lower the levels of adoption and usage. Adoption is also dependent on the social-cultural influence of the poor, if there exist a positive social influence and favorable cultural practices, adoption could be higher as opposed to negative social-cultural influence on adoption.

Karahanna (1999) states that acceptance of technology innovation, according to their psychological and demographic characters of the adopter group is adoption, a technology that has not been accepted by the intended users, will not result in any sought after benefits. The adoption of the mobile financial services has been relatively easy due to the existence of the need to utilize this service to solve an existing problem in the Kenyan community. There are numerous studies that have made the argument that MFS are adapted because they fit into an existing need and interest of the poor people (Donner, 2005; 2006; Horst & Miller, 2006).

1.1.5 Demographic Factors and Mobile Financial Service

Venkatesh et al (2003) identified age and gender as part of UTUAT is significantly moderating usage and acceptance of technology. The factors such as age and gender commonly known as the demographic factors are known to influence technology adoption. Rogers (2003) found that early adopters are young, have high social status, better educated and have high incomes. Demographic factors could play a key role in moderating the relationships between community factors and adoption as well as the

relationship between cultural factors and adoption thus it is important to understand the influence of age and gender on these relationships. The demographic factors of age and gender has been seen to moderate the relationships in prior studies, it is crucial to test the moderating effects of age and gender in determining the effects of pro-poor factors on adoption and usage of mobile financial services among the poor in Kenya.

1.1.6 Usage and Mobile Financial Services

Bhattacherjee (2001) defined the continued usage of technology as the long-term usage of an innovation. He stated that the eventual success of new innovation is more dependent on the continued usage than the initial adoption as infrequent or ineffective usage after the initial adoption could lead to undesirable cost or investment in IT (Bhattacherjee, 2001). To the service provider's usage leads to retaining of existing subscribers which impact the profitability of the firm (Parthasarathy & Bhattacherjee, 1998).

The usage of mobile financial services provides an opportunity for inclusion and enjoyment of financial services benefits by poor, examples usage benefits are access to financial services, ability to save and ability to move money securely from one person to another Wamuyu (2014). All these lead to increase in their participation in economic activities, thus improving their livelihood and reduction in poverty. Adoption serves as the prerequisite for usage of mobile financial services, the ability of the poor to overcome the adoption challenges will significantly influence how they use mobile financial services.

1.1.7 Poverty in Kenya

Poverty has been an important goal for development effort since the 1900s by the development partners such as the World Bank and the United Nations. The percentage of poverty in Kenya is 45.9 percent (World Bank, 2014). Poverty is categorized into absolute poverty and relative poverty; the Copenhagen Declaration defined absolute poverty as the condition of severe lack of basic needs.

Todaro (2000) defined relative poverty as the minimum social, political, cultural and economic goods needed to maintain an acceptable way of life in a particular society. Poverty is economically referred to as a circumstance of lack of wealth, material goods, and resources, socially described as a state of social exclusion, dependency, and inability to live a normal life in a society (Adongo, 2006). The poor are those who lack the ability to accumulate assets and create wealth thus the lack of money is an indication of poverty and not the cause.

Kristjanson et al (2010) stated that since Kenyan independence the development efforts have focused on poverty reduction through basic service provision, the creation of employment and economic growth, but poverty has remained strong with more than half of the population remaining mired in poverty. The World Bank statistics (2014) put the poor at 45.9% of the Kenyan Population. The poor are not a homogeneous group consisting of indigenous people, herders, farmers, fishermen, pastoralist, and artisan, but their common element is a lack of access to relevant information and knowledge services which lead to poverty (Bhavnani, Chiu, Janakiram & Silarszky, 2008).

Poverty can be reduced by financial inclusion, which plays an important role in enabling the poor to borrow, save, smooth consumption and insure against vulnerabilities (Asli & Klapper, 2012). As stated by Adongo (2006) poverty alleviation is a strategy used to increase the ability of the poor to accumulate assets, which can be achieved by educating the masses and increasing financial services. Asli and Klapper (2012) observed that a large fraction of the poor population lack access to basic financial services. This restricts the ability of the poor to engage in economic activities aimed at curbing poverty (Dupas & Robinson, 2009).

The mobile phone's capacity to include semi-illiterate mass who are not connected to traditional networks such as landline phone or computer has a major impact on the poor people in the developing countries (Townsend, 2000). The poorest people in developing countries are predicted to be more likely than rich to use mobile financial services as they have less option to access formal financial services (Ivantuary & Mas, 2008).

Mobile financial services products are not pro-poor for example Safaricom charges a higher percentage for Mpesa withdrawals for smaller amounts at 10% for 100 shillings compared to 0.47% for 70,000 shillings (Safaricom, 2015). Similarly, higher interests are charged on loans of smaller amount compared to higher amounts by the lenders despite the majority of the poor being excluded due to inability to provide collateral for loans. Mobile financial services have an opportunity for resolving the problem of financial exclusion and poverty reduction as adoption and usage of MFS can lead to higher profitability for the providers, when the cost of using MFS is reduced poorer will be able to use the services.

1.1.8 Mobile Financial Services in Kenya

In Kenya, mobile financial services are offered by many telecommunication companies and banks, for example, MPESA service by Safaricom, Airtel money service by Airtel, Equitel by Equity and Orange money service by Orange. Most of the Banks in Kenya have introduced mobile financial services and now offer services such as mobile banking services, mobile payment services like a credit card, debit card, and prepaid cards. The mobile financial services are categorized into mobile money transfer services and mobile banking services.

Mobile Money services were the pioneer service introduced into the Kenyan market, it was basic, simple and included only the essential services of sending and receiving money. One could deposit money into their mobile money account and send the money to another mobile account; by use of the agent it was also possible to withdraw cash from the mobile account.

The agent's network and other micro businesses are spread throughout the country with huge clusters in the market areas and near shopping centers. This enables the common people to easily access the mobile money agents for registration and perform various transactions from their mobile phone. The mobile payment providers' agents are well distributed and easily accessible to the micro business owners for support Otiso et al, (2013).The mobile money transfer services also allow people to pay for goods and services using the electronic monetary value by sending money owed to another across this facilitating the payment for goods and services.

Mobile money was first introduced by Safaricom in 2004 in partnership with Commercial Bank of Africa and Faulu Kenya a microfinance company in Kenya. The service, dubbed M-PESA is a micro-payment platform that uses the mobile phone and is facilitated through the airtime retail agents. At first, it was developed for microloans issuance at reduced interest rates as a result of the reduction of overhead cost of managing the microloans. It's quick adoption by skilled workers to send money to their relatives who live in rural areas lead to the launching of M-Pesa services in 2007 (Hughes & Lonie, 2007). This was followed by Celtel's Zap (now Airtel) service in February 2009 and Orange money in November 2010.

Safaricom introduced a mobile financial service application called M-PESA where M stands for Mobile and PESA is a Swahili word for Money. It is a mobile phone application that provides the service for sending, receiving and storing money, this application is developed and being offered by Safaricom, which is the largest Mobile Telecommunication Operator in Kenya. Morawczynski (2008) observed that by use of M-PESA application the customers can register for M-PESA by visiting agents for opening the account, depositing and withdrawing cash. The transaction is done by a way of short text message that always acknowledges receipt and transfer of money whenever there is a deposit, transfer of money to another mobile phone number or agent number or receipt of cash for bills paid for goods and services.

Taking the world by surprise, the mobile financial services innovation continuously sustains unprecedented growth and is now expanding to the rest Africa, it has taken strong roots in many other countries around the world and most of the mobile

telecommunication companies are now banking on mobile financial services and mobile related value-added services to increase their revenues.

Omwansa (2009), argues that the benefits associated with mobile money are so enormous that those who try to place regulatory pressure on it might feel guilty if they appear to frustrate it. “The extent to which the mobile payment usage would impact on performance depends largely on whether there is an enabling environment” (Porteous, 2006).

Mobile banking provides opportunity for the banks to extend its services to new customers (Lee, Lee, and Kim, 2007), the banks have invested in mobile applications which enables the user to access their banks, make all the banking transactions such as deposit, withdrawals and transfer through the use of the mobile banking applications. Customers can use the mobile banking features to conduct their banking transactions leading to branchless banking where one can get access to most of the banking services from their mobile phones through the use of mobile banking applications. Significant growth in transaction volumes is being witnessed as a result of the introduction of mobile banking (Kirui, Okello, Njiraini & Nyikal, 2013).

Mobile financial services have grown from the initial money transfer services to now a mature financial service. The Kenya Commercial Bank example, the general population is now able to open a bank account by dialing *522# on their phone which will interactively guide the user on how to open a bank account, make deposits and withdrawals and even immediately take loans. Introductions of mobile financial services have changed the lives of the people living in Kenya, especially among the poor who have only mobile financial services as their way to financial inclusion.

1.2 Research Problem

Mobile commerce emergence is as a result of the opportunity offered by the convergence of telecommunication and banking services (Lee, Lee & Kim, 2007). Applications that aim to alleviate poverty are being developed in the developing countries due to the rapid spread of the mobile phones (Morawczynski & Miscione, 2008). This has led to the introduction of mobile financial services which are fast spreading across the world. Omwansa (2009) states that besides innovation products, the local bank and mobile telephony sectors greatly contributed to successful adoption and diffusion of mobile financial services. Litondo (2013) observed that mobile phone is the most preferred technology innovation by the informal sectors through there is limited quantitative information on the factors that enables operators in the informal sector to adopt and use mobile financial services.

Kenya is leading the world and proving to be the successful model for mobile financial services adoption and usage. GSMA (2012) found that 90 percent of Kenya's population is covered by mobile networks. Current statistics show that as at December 2014 the number of mobile phone subscribers has grown to 33.6 million of which 26 million have subscribed to mobile money transfer services, making mobile penetration in Kenya at 82.6 percent (Communication Authority, 2015). World Bank (2014) estimates that about 45.9% of the population live below the poverty line. Kenya has for many years had the problem of financial exclusion. The lack of access to financial services restricts the ability of the poor to engage in economic activities aimed at curbing poverty (Dupas & Robinson, 2009). According to FSD (2015), 96% of all transactions in Kenya are done in cash, of which only 2.2% are done through mobile financial services meaning that there

is a huge opportunity for mobile financial services to grow with the Kenyan cash economy.

Extant literature is rich with top-down theoretical perspective studies. Puschel, Mazzon & Hernandez (2010), in their study of mobile banking found that the intention to use mobile banking was significantly impacted by subjective norm, attitude and perceived behavioral control. Similarly, Yu (2012) in the study of factors affecting mobile banking found that individual intention to adopt was influenced by perceived financial cost, performance expectancy, social influence and perceived credibility while behavior is affected by intention and facilitating conditions.

Most of these studies based on the dominant paradigm such as Technology Adoption Model (Davis, 1989) and Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003). These uses a top-down approach (Potnis, 2014) which is based on technology products innovated by the manufactures and pushed to the users in the market. While they are all significant in their ability to explain the individual user behavior or intentions to the adoption of technology innovations, they focus on the individual behaviors with no consideration of their context, culture or community. It may thus be incomplete in its generalization as each of these dimensions affect how mobile financial services are adopted and used by the poor.

Bhavnani, et al. (2008) identified institutional environment, ICT infrastructure constraints as cause's exclusion of poor from technology innovations. Wamuyu (2014) found that contextual factors and cultural practices influence usage of mobile money in Kenya. Since most of the studies focus on individual factors, this study uses an alternative to top-

down theoretical perspective by adopting a bottom-up approach using Potnis (2014) pro-poor perspective.

The bottom-up approach incorporates the community, cultural and contextual factors as the interaction between context and individual influences their behavior to adoption and usage which is further affected by cultural and community factors. The pro-poor perspective dimensions may provide us with constructs to understand the effects of pro-poor factors such as cultural factors, community factors and contextual factors in the adoption of mobile financial services, thus the question is the relationship between pro-poor factors and the adoption and usage of mobile financial services by the poor in Kenya?.

1.3 Research Objectives

This study's general objective was to establish the relationship between pro-poor factors and the adoption and usage of mobile financial services by the poor in Kenya. This study was guided by the following specific objectives.

i. To examine the relationship between pro-poor factors and adoption of mobile financial services by the poor in Kenya.
ii. To investigate the relationship between adoption and usage of mobile financial services by the poor in Kenya.
iii. To determine the influence of demographic factors on the relationship between community factors and adoption of mobile financial services by poor in Kenya
iv. To investigate the influence of demographic factors on the relationship between cultural factors and adoption of mobile financial services by the poor in Kenya.
v. To establish the relationship between pro-poor factors, demographic factors and usage of mobile financial services by the poor in Kenya.

1.4 Value of the Study

The main purpose of this study was to contribute to the understanding of the effects of pro-poor factors, demographic factors on adoption and usage of mobile financial services among the poor in Kenya. The research finding was aimed at contributing to filling the knowledge gap by exploring the relationships and influence of the pro-poor perspective on the adoption and usage of mobile financial services in Kenya. In a further contribution to filling the knowledge gap, this study modeled an alternative conceptual model that can better address the pro-poor perspective of adoption and usage of mobile financial services by the poor thus theorizing the pro-poor perspective and the bottom up approach. The result further contributes to filling the contextual gap by unearthing the influence of pro-poor perspective on adoption and usage of mobile financial services among the poor in Kenya. This study also contributes to filling the methodological gap by conducting a quantitative study on pro-poor factors and mobile financial services among the poor in Kenya.

The outcome of this study has value for mobile financial service providers such as telecom operators, innovators, and banks by providing them with information on how pro-poor perspective influence adoption and usage of mobile financial services by the poor. This will guide them in designing innovative pro-poor products, come up pro-poor go to market strategies to rope in the poor.

The study informs government departments, agencies, regulators and lawmakers in addressing the financial inclusion gaps by taking affirmative investment actions such as the last mile connectivity to resolve the contextual factors, formulation of pro-poor policies and laws that will address access, community and cultural factors.

1.5 Chapter Summary

This chapter comprised of introduction of the studies main concepts, the study background, the research problem, the research objectives and the value of the study. Further this study is organized as follows chapter two comprise of literature review and research gap leading to conceptual model and hypothesis, chapter three is research methodology, chapter is data analysis and findings, chapter five is discussion of findings and chapter six is conclusions and recommendations.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The theoretical foundation, empirical studies, and conceptual framework are presented in this chapter. The theoretical foundation was geared to illuminate the theoretical backup of the research; meanwhile the empirical study is reviewed in order to ascertain the study gaps which this study aims to address by crafting a conceptual model.

2.2 Theoretical Foundation

This study was anchored on multiple theoretical perspectives to enhance the theoretical base and cover the multi-dimensional and multi-disciplinary nature of this study. The theories of significance to the study are Theory of Reasoned Action, Theory of Planned Behavior, Technology Adoption Model, Unified Theory of Acceptance and Use of Technology (UTAUT), Theories of Poverty and Social Capital Theory which are discussed in the following subsections.

2.2.1 Social Capital Theory

The social capital theory was first introduced by Hanifan (1916), stating that it matters who you know not what you know (Woolcock & Narayan, 2000). They stated that one's family, friends, and associates constitute an important asset that can be leveraged for material gain, called upon in a crisis or enjoyed for its own sake. Communities that have a diverse stock of social networks and civic associations will be in a stronger position to overcome poverty and their vulnerabilities by addressing disputes by taking advantage of new opportunities (Narayan 1996).

Trust and reciprocity are salient constructs in all conceptualization of social capital (Hawe & Shiell, 2000) as they arise from the relationships or association among the members of the community or groups. Wilson (1996) observed that poor is not being a member of or actively excluded from certain social networks and institutions that could be used to secure good jobs and decent housing. Thus, poverty has implications on the ability of the poor to adopt and continue using mobile financial services. Through the use of their social capital, the poor have been able to overcome access challenges by borrowing mobile phones from members of their communities. This theory is relevant as it explains how the communities relate to each other and it can be deduced from this that if the community adopts and use mobile financial services, members of the community will also be significantly influenced to adopt and use mobile financial services.

2.2.2 Theories of Poverty

Poverty as the concept relates closely to inequality (Sen, 1973), a higher level of inequality will tend to be associated with high level of poverty. The theories of poverty are categorized into cultural and structural theories (Elish, 1973). Cultural theories explain that it is the traits of the poor such as behavioral, attitudinal and valuation patterns that prevent them from being socially mobile. In contrast, the structural theories explain poverty in terms of the condition they live in such poor health, poor education, and unemployment. Both cultural and structural theorists believe that the cyclic nature of poverty forms the poverty syndrome leading to successive generations of the same family remain poor. The cultural theorists argue that the poverty cycle can be interrupted by directly attacking the behaviors and values that support the poverty syndrome.

On the other hand, structural theorists assume that change of employment, education, health and the housing market is required to eliminate the poverty syndrome. The need to identify, locate, extract, convert and consume resources for survival is the main challenge for human being, they can be overcome by the use of technology to do these better, faster and more economically (Lotter, 2007). The poor lack financial, material resources as well as the opportunities to convert the resources they possess into a value-creating activity (McNamara, 2003). Therefore change can occur through innovations that address the needs of the poor to enable the poor to convert their resources and opportunities to create value and reduce poverty (McNamara, 2003).

Mobile financial services will border on the structural theories of poverty as lack of access limits the participation of the poor in the financial service this provision of infrastructure and introduction of mobile financial services could help the poor convert resources they possess to value creating activity, although the structure is criticized for over-emphasis on the individualistic aspect of poverty and focus mainly on material means to eradicate it (Sanchez-Martinez & Davis, 2014). This theory is relevant as it puts forth the definition and characteristic of the poor, identify important issues affecting the poor people. This understanding will help in identifying the study population and understanding the findings of the study based on their traits and characteristics.

2.2.3 Technology Adoption Theories

The first theory of technology adoption discussed is Theory of Reasoned Action (TRA) by Fishbein and Ajzen developed in 1975. The "intention" to adopt is the best predictor for the adoption of technology (Lam & Hsu, 2004). The "behavioral intention" concept is central to TRA with two basic determinants of intention which are the subjective norm and attitude towards act or behavior. Lam & Hsu (2004) defined attitude as the individual's behavior positive or negative feelings about performing an act, while the subjective norm is defined to be the perception of the individual on how people important to them consider whether to perform a certain behavior

From a mobile financial services adoption perspective, subjective norm and attitude may be possible important factors in helping to study the behavior of an individual in a society. TRA is only concerned with behaviors and not the outcomes as a result of these behaviors. It is, therefore, According to Sheppard, Hartwick, & Warshaw (1989) TRA model is only helpful in studying factors affecting behavior that may lead to mobile financial services adoption and diffusion, but it does not provide variables to study the consequence of these behaviors that is whether they encourage or inhibit the adoption and diffusion of mobile financial services.

Another limitation of TRA it assumes that when an individual has got intention to act, they will act without considering other limitations such as demographics, time, alternate choices, ability and technological environment and the organizational environment Nysveen, Pedersen, & Thorbjørnsen (2005). However, these factors explicitly or implicitly might play a significant role in the adoption and diffusion of mobile financial

services. This theory is relevant as it is the base from which many information systems theories have been formulated.

The Second theory of technology adoption is derived from extending the Theory of Reasoned Action by Ajzen (1991) proposing the Theory of Planned Behavior (TPB) to take into consideration conditions under which people lack control over their behavior (Nysveen, Pedersen, & Thorbjørnsen, 2005). Two new variables which are control beliefs and perceived behavioral control has been introduced by Azjen which influence behavioral intention and ultimately the possibility of performing the act, which could be performing the act to adopt mobile financial services.

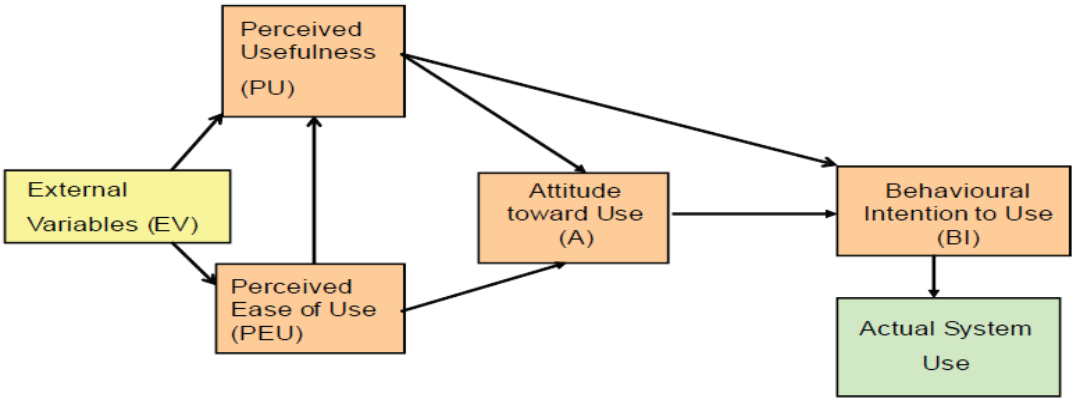
The perceived control beliefs and behavioral control may be used as additional measures of determining the user adoption of mobile financial services. According to Nysveen, Pedersen, and Thorbjørnsen (2005), TPB can be used to investigate whether or not consumer use of mobile financial services depending on their resources. It is relevant to this study as it was significantly extended by the technology adoption model that significantly contributes constructs to this study.

2.2.4 Technology Acceptance Model (TAM)

Technology adoption model by Davis (1989) was adopted from the Theory of Reasoned Action (TRA). TAM has the ability to predict the new technology acceptance by an individual, and has two constructs, the perceived usefulness and perceived ease of use. Perceived usefulness refers to the degree of persons believes that the use of a certain system enhances their performance, while the perceived ease of use is the degree of believing that a person has that they will be free mental and physical effort if by using a

certain system (Davis, 1989).

Figure 2.1 Technology Acceptance Model- Davis (1989)



Studies by Chung and Kwon (2009) shows that behavioral intentions are related positively to perceived usefulness and perceived ease of use. However, although extensively validated, Mathieson (1991) argues that to rely only on these two constructs in investigating user's technology acceptance is insufficient. Riquelme and Rios (2010) suggest that there are other possible factors that might affect mobile financial services adoption such as perceived risk or uncertainty (Chung and Kwon, 2009), social norms (Riquelme and Rios, 2010), financial cost (Yang, 2004), demographic factors (Laforet & Li, 2005).

Technology Adoption Model (Davis, 1989) with additional constructs had been adapted to study mobile payments such as security, cost, trust, mobility, attractiveness of alternative expressiveness, speed of transaction, facilitating condition, convenience, privacy, system quality, and technology anxiety (Dahlberg, Mallat, & Öörni, 2003a). The technology acceptance and rejection can be predicted by using the Technology Acceptance Model, which shows the relationship connecting the belief, action purpose, and attitude. There is a common agreement amongst information systems researchers on the validity of TAM in predicting individual's acceptance of the new technology.

TAM has some limitations as a model to study the adoption of mobile financial services as it does not consider the social economic factors that promote or inhibit the adoption as well as it focuses only on the organizational technology acceptance as argued by Baron, Patterson, and Harris (2006). Based on the strengths and weakness of the models described earlier, there have been several attempts to extend the models or combine some variable to come up with a new model which is more relevant and useful.

Venkatesh and Davis (2000) proposed TAM2 which added social influence process and the cognitive instrumental process to TAM. The social influence process was comprising subjective norm, image, and voluntarism while the cognitive instrumental process included job relevance, perceived ease of use, output quality and result demonstrability. Wu and Wang (2005) also proposed an extension of TAM2 to integrate it with the diffusion of innovation and addition of cost and perceived risk variables.

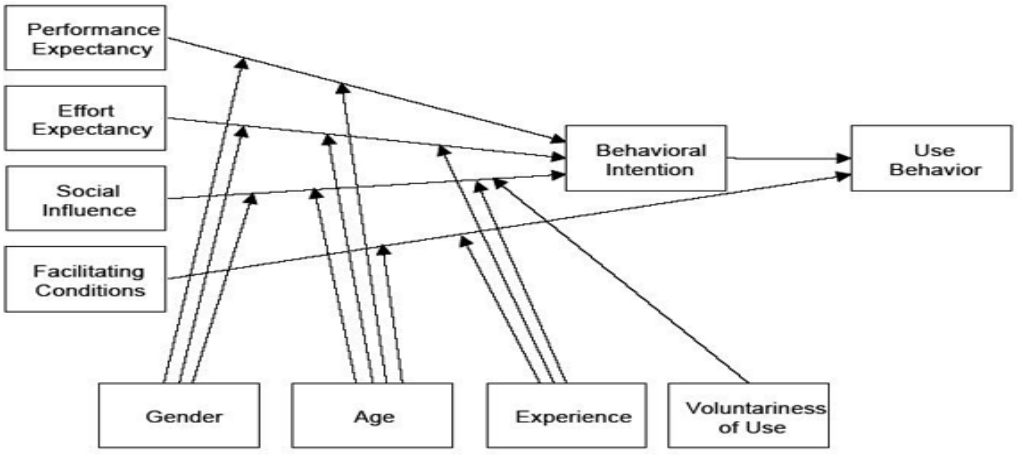
Renaud and Biljon (2008) introduced the mobile phone technology acceptance model which was an extension of TAM by the addition of mediating factors and determining factors. This theory is relevant to the study as it shows the various factors that affect adoption of mobile financial services. TAM limitation is that it does not put into consideration a group of people such as the poor.

2.2.5 Unified Theory of Acceptance and Use of Technology

Unified Theory of Acceptance and Use of Technology (UTAUT) was next evolution of TAM and is the most comprehensive information system adoption theory, it was proposed by Venkatesh et al. (2003). They did so after reviewing eight IT adoption theories by incorporating factors included in Reasoned Action Theory, Planned Behavior

Theory and Technology Adoption Model. They came up with the following factors affecting behavioral intentions namely effort expectancy, social influence, performance expectancy and facilitating conditions.

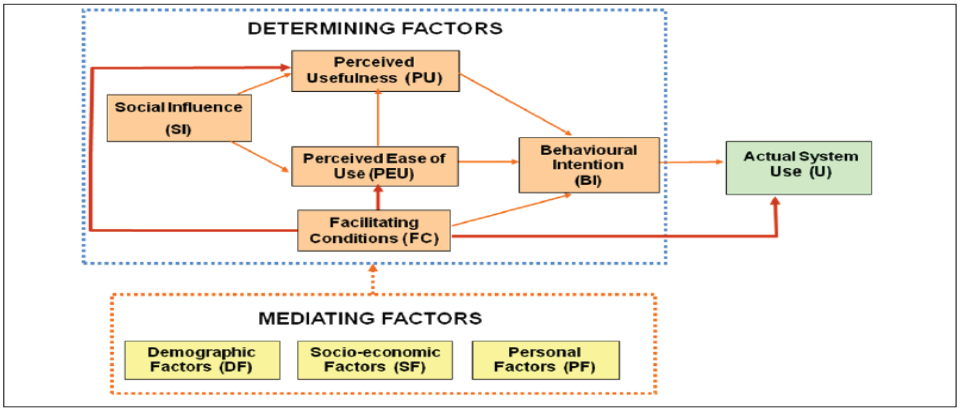
Figure 2.2 UTAUT Model- Venkatesh, Morris, Davis, and Davis (2003).



Effort expectancy is explained as the degree of ease associated with the use of technology and performance expectancy is the degree of individuals believes that using technology will help them improve their performance. Facilitating conditions refer to the degree individual believe that technical or organizational infrastructure exists to support the use of technology and social influence refers to the degree of perception of an individual that others believe s/he should use technology. UTAUT model (Venkatesh et al., 2003) introduced moderating factors such as experience, gender, age and voluntariness of use from the perspective of social psychology. The moderating factors were introduced to help resolve the weak explanatory power and inconsistency issues of the previous models and explain the difference in behavior of different people groups'.

UTUAT was extended to propose a model for mobile phone acceptance and use by Kwon and Chidambaram (2000), it was also a TAM extension which is made up of the following components: ease of use, extent of use, demographic factors, intrinsic motivation, social pressure, socioeconomic factors, extrinsic motivation (perceived usefulness), and apprehensiveness. Kwon and Chidambaram (2000) found that perceived ease of use significantly affected users' intrinsic and extrinsic motivation, while apprehensiveness about cellular technology had a negative effect on intrinsic motivation. In a further extension Van Biljon et al (2008) proposed the mobile phone technology adoption model as shown below

Figure 2.3 Mobile Phone Technology Adoption Model- Van Biljon (2008)



The limitation of this model is that it does not include infrastructural factors, which are essential in considering mobile technology. The model is relevant and majorly addresses the individual factors to the adoption of a mobile phone, the applicability of the model to mobile financial services is still untested and its relevance to the pro-poor factors may be lacking due to its setup to address the individual viewer and not group view.

The UTAUT model has been shown to have greater explanatory power than other competing models (Venkatesh et al. 2003; Venkatesh & Zhang 2010) as it was

formulated by incorporating all the previous theories, but only a little UTAUT-based research exists, particularly compared huge TAM/TPB-based research (Yu, 2012). However, in the study of factors affecting individuals to adopt mobile banking Yu (2012) extended the UTAUT Model to add the factors perceived credibility, perceived financial cost and perceived self-efficacy in their study. UTAUT has been extended to capture the pro-poor perspectives as explained in the next section

2.2.6 UTAUT Extension to Pro-Poor Perspective

This study is anchored greatly on the unified theory of acceptance and usage of technology which had come up with the following factors affecting behavioral intentions namely effort expectancy, social influence, performance expectancy, facilitating conditions and had age and gender as the moderators. This theory was significantly extended by Potnis (2014) to operationalize its variables in the pro-poor perspective which adopted effort expectancy. Performance expectancy is part of the community factors. Potnis (2014) also included financial cost and levels of literacy that were Bhavnani, et al. (2008) and Yu (2012) as indicators of community factor. This study could adopt community factors as operationalized by Potnis (2014) as part of pro-poor factors.

Potnis (2014) further proposed contextual factors which is also an extension of unified theory of acceptance and usage of technology. Venkatesh et al (2003) in the unified theory of acceptance and usage of technology defined facilitating conditions as the degree to which an individual believes that an organization and technical infrastructure exists to support technology use. Bhavani et al. (2008) and Potnis (2014) proposed context

indicators as part of pro-poor factors to measure contextual challenges and operationalized them as Technology infrastructure (such as supply of electricity, mobile network spread and signal strength), Type of government policies (such as investments allowed in telecom and banking sector, regulation for mobile network service providers and know your customer policy), technology standards (such as communication standards and protocols like 3G,4G and biometrics), and Banking policies (such as ratio of urban to rural branches).

This study could then adopt Potnis (2014) and Venkatesh et al (2003) operationalization to propose contextual factors which will have indicators of facilitating condition and regulatory policies as the context indicators. Facilitating condition includes technology infrastructure such as mobile network, supply of electricity and signal strength. Regulatory policies will include type of government policies, banking policies and technology standards. This shows how the study has used the contributions from prior studies to come up with contextual factors which are part of pro-poor factors having indicators of facilitating conditions and regulatory policies.

Potnis (2014) proposed cultural factors by incorporating social influence from the unified theory of acceptance and usage of technology. Venkatesh et al, (2003) used social influence to represent social norm which has been part of all prior information systems theories and defined social influence as the degree to which an individual perceives that important others believe s/he should use the technology. Puschel et al. (2010), Riquelme and Rios (2010) indicated that subjective norm was a salient influence on adoption of mobile banking.

Potnis (2014) in the study of pro-poor perspective borrowing from Hofstede, (1980) identified social cultural practices influence the user behavior to adoption and usage of ICT. The cultural factors include pre-existing social cultural practices such as male dominated societies where men would easily influence women's ability to use mobile financial services, women's tendency to avoid risk, type of culture (individualism vs collectivism) and expected roles to be carried out by men and women influence the adoption and usage of mobile financial services. This study could adopt cultural factors operationalized as one of the pro-poor factors from the study by Potnis (2014). The indicators for cultural factors are type of culture as identified by Potnis (2014) and social influence as identified by Venkatesh et al. (2003).

This study could adopt demographic factors with indicators of age operationalized by Rogers (2003), Puschel et al. (2010), Laforet and Li (2005) and Yu (2012), and indicator of gender as operationalized by Riquelme and Rios (2010), Puschel et al. (2010) and Yu (2012). Venkatesh et al. (2003) found that UTAUT allows researchers to analyze the contingencies from the moderators that would amplify or constraint the effects of the core determinants. This study thus could adopt cultural factors and community factors that could be affected by the moderators of age and gender thus it is important to analyze whether demographic factors would moderate the relationship between community factors and adoption as well as cultural factors and adoption of mobile financial services by the poor.

This study could adopt most of the study variables from unified theory of acceptance and usage of technology as extended by Potnis (2014) to propose the pro-poor factors which includes community factors, cultural factors and contextual factors. This study could also adopt the demographic factors from the unified theory of acceptance and usage of technology to investigate the moderating effect of the age and gender indicators on the relationship between pro-poor factors (community and cultural factors) and adoption of mobile financial services. This theory is relevant to the study as it provides indicators that could be adopted in the conceptual framework, performance and effort expectancy as part of community factors, social influence part of the cultural factors, facilitating condition part of contextual factors and the moderating factors of age and gender part of demographic factors. This study also reviewed the theories of poverty to understand the traits and characteristic of the poor who are the population for this study, the social capital theory was also reviewed to understand the influence of a community in adoption of mobile financial services.

2.3 Empirical Review: Pro-Poor Perspective and Mobile Financial Services

Poverty reduction through the creation of employment, basic social service provision and economic growth has dominated Kenya's development efforts (Kimalu et al., 2002). These efforts have not brought about the desired results as more than half of the population are still in poverty (Kabubo-Mariara, 2007) and the number of people who escaped poverty is less than the number who became poor over the same period (Kristjanson et al., 2009).

The pro-poor terminology has been widely used to mean towards the poor or for the benefit of the poor by the donor communities. It is from this background that the concept of pro-poor perspective that focuses on context, culture, and communities was introduced by Potnis (2014). He stated that mobile banking being a social informatics phenomenon is embedded in social context, its adoption and usage is dependent on poor's ability to overcome challenges to using a mobile phone and mobile financial services. World Bank (2012) stated that contextual and cultural characteristic of the communities significantly influences the adoption and usage of ICT.

The pro-poor perspective is informed by the three dimensions of context, culture, and communities and not by mobile operators, government agencies or other stakeholders, thus a bottom-up approach which does not impose or borrow any external predefined theoretical constructs, unlike several other theoretical top-down perspectives that have been used to study mobile financial services. Potnis (2014) identified pro-poor factors such as contextual, community and cultural factors affecting adoption of mobile banking in developing nations. This study adopted pro-poor factors to investigate its effects on adoption of mobile financial services as detailed below.

2.3.1 Contextual Factors and Adoption of Mobile Financial Services

Sanfilippo and Fichman (2014) stated that by providing contextual evidence the common conception and expectation of social informatics are examined. Context is a critical dimension of the pro-poor perspective for examining social informatics phenomenon (Potnis, 2014). The context details the study environment inhabited by the poor, characterized by prevalent contextual factors. Telecom operators are profit driven, thus have been unwilling to invest in areas inhabited by the poor due to high network

infrastructure investment cost and little returns on their investment due to poverty, denying the poor access to mobile financial services without which adoption and usage may not arise.

The empirical literature is rich with various studies identifying contextual factors. Bhavnani, et al. (2008) observed that the rural poor population characteristics are not conducive to ICT adoption. They identified constraints that exclude the poor from ICT innovations such as institutional environmental constraints such as lack of local content in local language, lack of skilled human resource to develop applications and service end user, as well as the lack of an institutional mechanism that is developed well and functioning to implement policies and regulation. They further identified rural infrastructure constraint which is undeveloped due high cost of last mile connectivity, intermittent and unreliable power if any, and low priority of ICT investments due to more pressing needs.

Potnis (2014) found under-developed technology infrastructures such as the limited supply of electricity, unavailable mobile network coverage and signal strength as the biggest contextual challenge of mobile financial services. This is due to under-developed formal banking infrastructure, resulting in fewer branches, automated teller machines, and low internet penetration.

Potnis (2014) further stated types of government policies such as regulation for mobile network providers, know your customer policies and percentage of foreign direct investment allowed in telecom and banking sector as contextual factors. Technology standards such as communication standards and protocols like 3G and 4G and banking

policies such as the ratio of rural and urban bank branches are other contextual factors (Potnis, 2014). Mohan and Potnis (2015) found that the high cost of the mobile phone, poor technology infrastructure hampers the use of mobile banking.

Provision of access to mobile financial services for the poor is therefore influenced by contextual factors such as facilitating conditions and regulatory policies. Formal financial service providers were unable or unwilling to provide financial services due to the profit and/or policy constraints. This study adopted contextual factors to study its effects on adoption of mobile financial services by the poor and the contextual factor indicators of facilitating condition and regulatory policies would be used to measure the relationship between contextual factors and adoption. Accordingly, following hypothesis is posited. *H_{1A}: There is a relationship between contextual factors and adoption of mobile financial services among the poor in Kenya.*

2.3.2 Community Factors and Adoption of Mobile Financial Services

McMillan and Chavis (1986) stated that community is formed when people with similar values and believe that by joining together their goals, needs and priorities are better satisfied. Mas and Kumar (2008) stated that for poor communities, mobile financial services presents a delicate balance between a conceptually powerful opportunity and practical challenges thus community factors could influence adoption and usage of mobile financial services.

The empirical literature has identified community factors, Bhavnani, et al. (2008) identified rural poor population constraints such as low level of functional literacy, low awareness, none or basic computer literacy, low disposable income, a constant struggle

for survival, poor health, poor living conditions, remoteness and low population density. They further pointed out rural poverty reduction strategies constraints such as ICT not well integrated into rural poverty reduction strategies. Yu (2012) found that individual intention to adopt mobile banking is influenced by perceived financial cost, performance expectancy and not effort expectancy. Potnis (2014) identified community factors such as perceived ease of use, the level of language literacy and level of financial literacy. Mohan and Potnis (2015) also found low literacy levels hamper the use of mobile banking. This study adopted community factors that have indicators of performance expectancy and effort expectancy from Yu (2012), literacy levels from Mohan & Potnis (2015) and financial cost from study by Bhavnani et al (2008).

Adoption is dependent on the ability of the poor to use a mobile phone to access mobile financial services which are dependent on their levels of literacy and their ability to sustain the cost of using financial services. The perception that mobile financial services are expensive or complex could lower the levels of adoption, thus there is a relationship between community factors and adoption. This study adopted community factors to examine its effect on adoption of mobile financial services by the poor using the community factor indicators such as performance expectancy, effort expectancy, literacy levels and financial cost. These indicators were used to measure the relationship between community factors and adoption. This study thus hypothesized.

> *H_{1B}: There is a relationship between community factors and adoption of mobile financial services among the poor in Kenya.*

2.3.3 Cultural Factors and Adoption of Mobile Financial Services

Culture is described as values that are shared across people in a society and these underlying values influence individuals' attitudes and behaviors (Straub, Loch, Evaristo, Karahanna & Srite, 2002). Various empirical literatures has identified cultural factors, Bertolotti (1984) pointed out that culture greatly affects the acceptance of technology through its belief and values, thus culture leads a social influence where members who share the same culture can influence other members within that culture.

Adoption is dependent on the social-cultural influence of the poor if there exist a positive social influence and favorable cultural practices adoption could be higher as opposed to negative social-cultural influence on adoption. The dependency of adoption on social and cultural influence makes the relationship between cultural factors and adoption important. This study adopted cultural factors to investigate the effects of cultural factors on the adoption of mobile financial services by poor. The cultural factor indicators such as social influence and types of culture would be used to measure the relationship between cultural factors and adoption accordingly posit this hypothesis.

H_{1C}: There is a relationship between cultural factors and adoption of mobile financial services among the poor in Kenya.

2.3.4 Cultural, Community, Demographic Factors and Adoption of MFS

The influence of demographic factors such as age and gender on adoption has been significantly researched, Rogers (2003) found that early technology adopters are young, have high social status, better educated and have high incomes. Puschel et al. (2010) found that most mobile banking users are less than 30years old and Yu (2012) observed

that there is a high-performance expectancy in older respondents and the effect of social influence was significantly amplified in younger respondents, however, studies like Laforet and Li (2005) found that the main users of mobile banking were not necessarily young and highly educated. Though inconsistent in various studies, it is important to test whether age moderates adoption of mobile financial services among the poor in Kenya.

The empirical studies have also significantly tested the influence of gender on adoption, Riquelme and Rios (2010) found among women stronger social norm influence intention to adopt than in men, in contrast, Puschel et al. (2010) males are predominantly users of mobile banking. Yu (2012) found that performance expectancy and perceived financial cost were more crucial to men. Yu (2012) adopted unified theory of acceptance and use of technology with age and gender as moderating effects to investigate what affecting individuals to adopt mobile banking. This study adopted demographic factors to investigate the influence of demographic factors on the relationships between cultural factors and adoption as well as between community factors and adoption using the demographic factor indicators such as age and gender. Accordingly, hypothesis below is formulated.

> *H_{2A}: Demographic factors have a significant influence on the relationship between community factors and adoption of mobile financial services among the poor.*
>
> *H_{2B}: Demographic factors have a significant influence on the relationship between cultural factors and adoption of mobile financial services among the poor in Kenya.*

2.3.5 Adoption and Usage of Mobile Financial Services

Technology adoption is defined as a set of sequential activities that lead to initial acceptance or adoption followed by technology usage (Karahanna, 1999). The introduction of mobile financial services brought forth the opportunity for the poor to adopt, but not without challenges as Yu (2012) in a study of mobile banking found that individual intention to adopt is influenced by perceived financial cost, performance expectancy, social influence and perceived credibility while usage behavior is affected by intention and facilitating conditions. Therefore the ability of the poor to overcome the individual behavioral intention and usage behavioral factors determine adoption of mobile financial services, this study adopts usage intention and behavioral intention as an indicator to measure adoption.

Usage builds on initial adoption of mobile financial services, but Bhattacherjee (2001) states that the eventual success of new IT is more dependent on the continued usage than the initial adoption. Lee, Shin, & Lee. (2009) in their study of the post-adoption usage of mobile data services, found that usage can be measured by change in usage frequencies such as increase or decrease in usage. The usage of mobile financial services can be for various purposes leads to usage benefits for the poor, which in turn lead to an improvement in their livelihood and reduction in poverty.

This study adopted a change in usage frequency and usage purposes as the indicators for measuring usage of mobile financial services by the poor to ascertain levels of usage, where high usage frequency will mean high levels of usage and examine if usage of mobile financial services has been beneficial to the poor. Usage is dependent on adopting

as it could significantly influence how they use mobile financial services. It is thus possible that successful adoption could lead to higher levels of usage, thus exist a relationship between adoption and usage. Adoption and usage could be explored further to establish the relationships and effects that adoption has on usage. This study accordingly hypothesized. *H_3: There is a relationship between adoption and usage of mobile financial services among the poor in Kenya.*

H_4: There is a relationship between pro-poor factors and usage of MFS by the poor in Kenya.

H_5: There is a relationship between pro-poor factors, demographic factors, adoption and usage of mobile financial services among the poor in Kenya.

2.4 Research Gap

The table below shows the relevant empirical studies, the methodology used to study, the findings of the study and the research gaps.

Table 2.1 Summary of Relevant Studies and Research Gaps

Author	Focus of Study	Methodology	Major Findings	Research Gaps	Current Study
Bhavnani, et al. (2008)	The role of mobile phones in sustainable rural poverty reduction (done at world bank in the USA)	Qualitative study	The following constraints as causes of poor exclusion from technology innovations a) Institutional environment b) ICT infrastructure c) Rural population d) Rural poverty reduction strategies	-Focused on mobile phones, not mobile financial services -No Quantitative study to test the relationship between constraints and adoption	A focus on mobile financial services and perform quantitative study to test the relationships
Puschel et al. (2010)	Mobile banking: Proposition of an integrated adoption intention framework (done in Brazil)	Quantitative study using partial least square method	-Intention to use is impacted by subjective norm, attitude and behavioral control. - Attitude is impacted by perceived ease of use, compatibility, visibility and relative advantage -Perceived behavioral control impacted by facilitating condition	-Online questionnaire does not cover poor communities -Focused only mobile banking, excludes other mobile financial services	A focus on mobile financial services and Conduct the study in the context of the poor
Yu (2012)	Factors Affecting Individuals To Adopt Mobile Banking: Empirical Evidence From The Utaut Model(done in Taiwan)	Quantitative study using partial least square regression analysis	-Individual intention to adopt influenced by social influence, perceived financial cost, performance expectancy, and perceived credibility. -Behavior affected by individual intention and facilitating conditions -Gender moderated effects of performance expectancy and perceived financial cost	-Not pro-poor oriented study thus contextual gap -Does not show effects of social, culture and community factors on individual behavior, how it influences access, adoption, and	A study carried out among the poor to test the relationship between the pro-poor factors

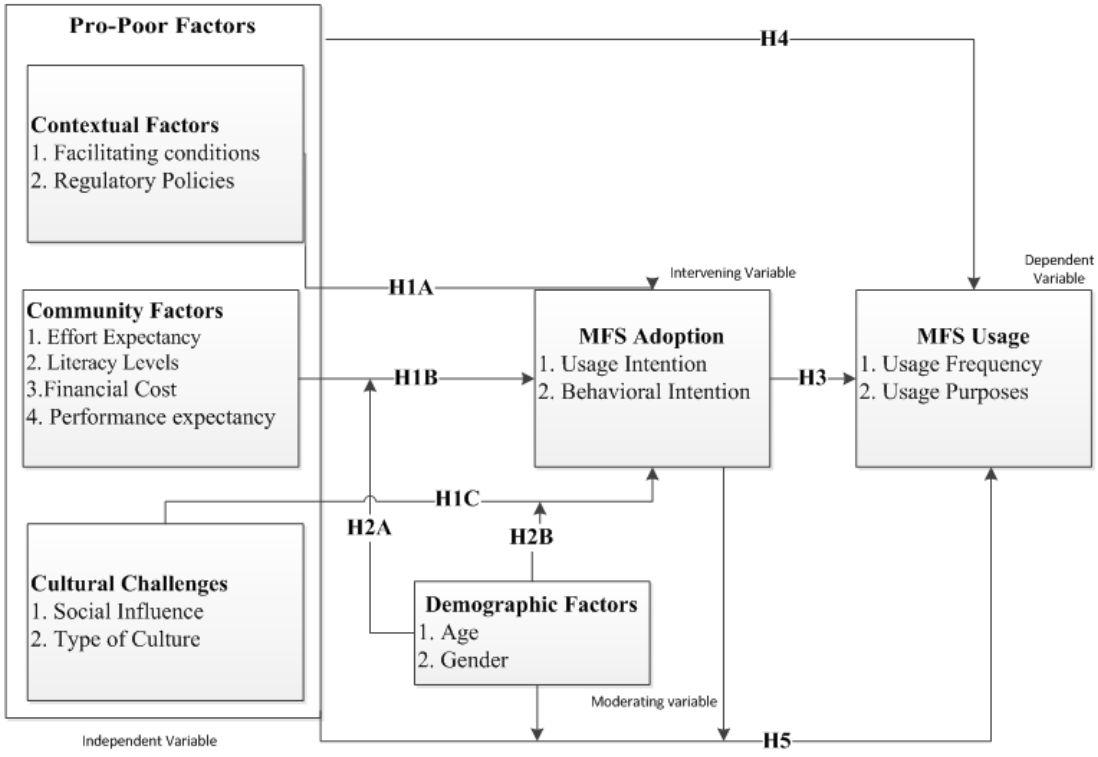
			on behavioral intention -Age moderated the effects of facilitating conditions and perceived self-efficacy on actual adoption behavior	usage of mobile financial services	
Potnis (2014)	Examining Mobile Banking in Developing Nations from Pro - Poor Perspective (done in the USA)	Qualitative Analysis of studies of adoption (reviewed over 25 journals, over 75 project reports)	Identified pro-poor cultural factors, community factors and contextual factors that influence the adoption and usage of mobile banking.	-No field research and quantitative study were done on pro-poor perspective. -No model pro-poor model	Conduct quantitative field research and propose an alternative conceptual model
Mohan and Potnis. (2015)	Mobile Banking for the Unbanked Poor without Mobile Phones (Done in India)	Qualitative study (review of annual reports, case studies, and over 40 journals)	- Found high cost of mobile phone, low literacy levels, poor technology infrastructure	-No field study and quantitative study to test the effects of technological factors in adoption	Conduct quantitative field research among the poor
Wamuyu P.K (2014)	The role of contextual factors in the uptake and continuanc e of Mobile money usage in Kenya	Quantitative study using survey questionnaire	-Found that demographic and cultural practices led to success of MPESA	-Not done among the poor -Missing the community factors	Conduct quantitative field research among the poor

Source: Research Data, 2016.

2.5 Conceptual Framework

The framework has pro-poor factors influence mobile financial service adoption, which in turn influences its use. Demographic factors influence the relationships between the community factors and cultural factors.

Figure 2.4 The Conceptual Model



2.6 Hypothesis

Based on the conceptual framework this study posits the following hypothesis

H1A: There is a relationship between contextual factors and adoption of mobile financial services.

H1B: There is a relationship between community factors and adoption of mobile financial services.

H1C: There is a relationship between cultural factors and adoption of mobile financial services.

H2A: Demographic factors have a significant influence on the relationship between community factors and adoption of mobile financial services.

H2B: Demographic factors have a significant influence on the relationship between cultural factor and adoption of mobile financial services.

H3: There is a relationship between adoption and usage of mobile financial services.

H4: There is a relationship between pro-poor factors and usage of mobile financial services.

H5: There is a relationship between pro-poor factors, demographic factors, and usage of mobile financial services.

2.7 Chapter Summary

This chapter was a review of existing literature focusing on various relevant theories such as UTAUT, Poverty Theories and Social Capital theory. The empirical review and relationships between variables was identified, research gap established, conceptual model drawn and hypothesis was posited.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter covers research philosophy, research design, research population, decides on the sampling design and procedures, then choose a method of data collection and analysis.

3.2 Research Philosophy

The three main philosophical approaches that dominate information system research are the critical theory, interpretivism, and positivist approach. Orlikowski and Baroudi (1991) discuss critical realism as attempting to evaluate critically and transforming the social reality through the provision of an evaluative dimension. Byrman (2001) states that the interpretive approach has been described as the reality that is socially constructed to understand the inter-subjective meaning embedded in social life. Its main critic is it ignores possible conflict structures that can generate change.

Orlikowski and Baroudi (1991) state that the positivist approach believes in the existence of a physical and social world that is independent of human being. It assumes that knowledge, reality, and instruments are quantifiable, measurable and objective using properties which are independent of the researcher. Somasundaram and Karlsbjerg (2003) states that positivist approach is over simplification and abstraction of complex phenomena through few unilateral relationships. Despite the criticism, this approach has been widely used in the literature due to its strengths in offering explanations. This study adopted a positivist philosophy as the best way to answer the research questions by testing the hypothesis statements backed by facts obtained from the primary data and deductive logic.

3.3 Research Design

Levin (2006) states that cross-sectional study is appropriate as it is robust to the effects of relationship studies that aims to establish the associations among variables and enhances the credence of results by providing a conclusion on data at a specific point in time. This study adopted a cross-sectional survey design as the study is best by collecting data at apt in time and correlating to test the hypotheses. This design has been used in other studies such as Barnes and Corbitt (2003), and Baron, Patterson, and Harris (2006).

3.4 Population and Sampling

The target population of the study was the adult poor living in the slums of Nairobi, the poor are defined by Alsi and Klaper (2012) as those living below poverty line of 2.5$ a day and World Bank (2014) puts the percentage of poor in Kenya at 45.9%. As a result of low income they live in slums which is an informal settlement characterized by lack of proper sanitation and deplorable living conditions. The characteristic of the poor living in Nairobi is a representative of the poor living in Kenya as they possess similar characteristics such as low income. Nairobi County hosts Kenya's political, commercial and industrial capital and has an adult population of 2,042,769 (Census, 2009), with the percentage of the poor at 22% (Economic Survey, 2014), the calculated adult poor population is 449,409 and taking further consideration that the mobile penetration is 82.6% the calculated adult poor population with mobile phone access is 371,212. Using the Cochran's 1977 sample size formula, with a confidence level of 95% and confidence interval of 5 the sample size is 384 people and adding 16 for none response and heterogeneity the sample size is 400 people

The sampling method adopted by this study was stratified random sampling, Nairobi is stratified into nine sub-counties of Nairobi namely Starehe, Kamukunji, Kasarani, Makadara, Embakasi, Njiru, Dagoretti, Langata, and Westlands. Slums in the sub-counties of Langata, Embakasi, and Makadara are selected as they are representative of the slums of Nairobi as they have similar characteristics, living standards and are inhabited by the poor. The respondents from the three slums were selected using random sampling and responses from each of the three slums were obtained.

3.5 Data Collection

The study collected primary data from respondents with the aim of answering the research questions. Data was collected using a semi-structured survey questionnaire which contains a mixture of open-ended questions that permit the respondents to give detailed answers and close ended questions. Leedy and Ormrod (2005) state that survey questionnaire is apt as it assists in understanding the phenomena that are occurring in the present situation and useful obtaining information from different locations.

The questionnaire was structured into six sections. Section A covers the demographic information, while section B to F covers the questions based on the research questions. Some items on the questionnaire will be measured in 7 point Likert scales ranging from strongly agree to strongly disagree and included closed and open-ended questions.

The questionnaire was administered with the help of trained research assistants to slum residents in the three sub-counties. Kibera slum from Langata, Lunga Lunga slum from Makadara and Mukuru Kwa Njenga slum from Embakasi in Nairobi County was randomly selected to get a response from the adult poor. The interviews were conducted home visits, people sitting near shops and approaching people walking on the streets.

3.6 Pilot Study

The pilot study to pretest the questionnaire was conducted where it was reviewed by colleagues, practitioners in telecommunication companies and scholars who reviewed and suggested various adjustments, refinements, modifications and corrections in the content, adequacy of the questions, clarity, and wording which were immediately done. The final questionnaire accompanied by introduction letter was sent out for data collection with the help of trained research assistants who were first trained for two days on the questionnaire testing their understanding of the questions and the ability to communicate with the respondents to clarify respondent's queries.

The data were collected from respondents in the identified areas by random sampling, where people on the streets, others sitting around the shops and others in their houses were approached, shown the letter and requested for their time to help to respond to the questionnaire. Despite the explanations that this was purely for academic purpose some still wanted to know if they will be paid to respond to which the researcher and the research assistants explained that there was no payment, thus some walked away indicating they are busy while others spent the time to respond to the questionnaire.

3.7 Operationalization of Variables

The process of figuring out how to measure the research concepts is referred to as operationalization. The variable operationalization for empirical tests may require some modification of selected definitions. The variables and operational definitions in this study are employed from previous studies as shown in the table 3.2 below.

Table 3.2 Operational Definitions and Measurement of Research Variables

Variable	**Nature**	**Operational Definition**	**Questionnaire Section**	**Source**
Community Factors	Exogenous	Effort Expectancy	E (55-60)	Venkatesh et al. (2003); Yu (2012) Potnis (2014); Luarn & Lin (2005); Venkatesh & Zhang (2010)
		Performance Expectancy	E (65-69)	
		Financial Cost	E (51-54)	
		Literacy Levels	E (61-64)	
Demographic Factors	Endogenous	Age	A (1)	Venkatesh et al (2003)
		Gender	A (2)	
Contextual Factors	Exogenous	Facilitating Conditions	D (43-50)	Venkatesh et al. (2003); Venkatesh & Zhang (2010); Potnis (2014);
		Regulatory Policies	D (40-42)	
Cultural Factors	Exogenous	Social Influence	F (70-78)	Venkatesh et al. (2003); Venkatesh & Zhang (2010); Potnis (2014);
		Type of Culture	F (79-86)	
Mobile financial services Adoption	Endogenous	Usage Intention	B (3-22)	Yu (2012); Venkatesh et al.(2003);Venkatesh & Zhang (2010); Luarn & Lin (2005);
		Behavioral Intention		
Mobile financial services Usage	Endogenous	Usage Frequency	C (23-39)	Lee, Shin, & Lee. (2009); Wamuyu (2014)
		Usage Purposes		

Source: Research Data, 2016.

3.8 Reliability and Validity

DeVellis (1991) stated that reliability is the degree to which the measure is free of variable error. Reliability is enhanced by the accuracy and precision of the measurement procedure. The survey questionnaires were tested for reliability and validity and have the same questions for all the respondents' in order to provide consistent results. The constructs internal consistency loading and values was inspected to assess the individual item's reliability.

The Cronbach's alpha test for internal consistency was used to test the findings of the data to indicate the extent to which a set of items can be treated as using a latent variable and a coefficient of 0.6 was considered for this study to determine the reliability of the scales and the result Goodhue (1998). To establish whether the constructs are represented by the indicators in the measurement model, composite reliability was assessed noting the threshold of 0.6 and above. The measurement scale reliability was also assessed using an item to total correlation with a threshold of 0.5 and the inter-item correlation of 0.3 (Bryne, 2001).

The validity of the instrument was tested for face and content validity. Since the measurement scales are derived from extensive review of conceptual and empirical literature review the instrument was deemed to have face validity as they reflect the key component of pro-poor factors, demographic factors, adoption and usage of mobile financial services. The content validity was ensured through review and verification of extant literature for the items contained in the questionnaire and carefully reworded to fit the context of this study. The questionnaire was reviewed by supervisors, other doctoral

students, and practitioners in the banks and mobile telecommunication companies.

The convergent validity test was done using Smartpls and the obtained average variances explained were checked against the threshold of 0.5. Discriminant validity assessed whether the constructs analyzed are distinguishable by measuring the average variance explained being within the acceptable range of the constructs and found that the constructs passed discriminant validity Fornell and Larcker (1981). Other studies such as Puschel et al. (2010), Yu (2012) and Lu (2005) used these tests for reliability and validity.

3.9 Data Analysis

The data collected through questionnaires were coded and summarized ready for analysis. This study employed structural equation modeling (SEM) technique to model and analyze relationships and parameters of all constructs of the conceptual framework. Urbach and Ahlemann (2010) state that SEM is a single systemic statistical technique for the testing and estimation casual relationships among latent variables.

SEM Partial Least Squares (SEM-PLS) approach was employed to estimate the relationship between pro-poor factors, adoption and usage of mobile financial services by the poor in Kenya. SEM-PLS is an approach that uses empirical data to simultaneously test multivariate models (Hair, Hult, Ringle & Sarstedt, 2013). It estimates both the

causal and linear relationships between the multiple independent or dependent, endogenous or exogenous constructs by simultaneous multiple equation estimation processes (Babin & Svensson, 2012).

The actual analysis started after data collection in a systematic way, the questionnaires were coded and data transferred from the paper questionnaire into an excel file where all the questions are captured and the responses are recorded for each question tracking each question using a unique identifier. The data were then screened to check for mistakes such as one question having two responses where one was expected, or having no feedback for this question, the general rule was in any such cases the questionnaire will be removed from the list and considered as spoilt depending on the extent of the mistake.

The responses were fed into SPSS 20 and descriptive analysis is performed to get the response rates, general characteristics of the responses and identification of missing values. This was followed by checking to see if there are any outliers and testing of normality of the data and the presence of multi-collinearity problems using descriptive statistics.

The measurement model was developed in SmartPLS 3.0 to perform the model analysis by performing various tests such as reliability and validity tests. Data purification using exploratory factor analysis was performed to refine the variables into the most effective number by choosing to retain variables with high corrections among self but low with other variables. This was done using principle component analysis using varimax rotation. The results of exploratory factor analysis were reviewed and items with high cross-loadings, low item to total correlations were removed. This method was relevant for

this study as it can handle multiple variables simultaneously and was extensively used in literature which includes Puschel et al. (2010), Yu (2012) and Lu (2005) in similar studies such as adoption of mobile banking and mobile technologies confirming its suitability for this study.

Table 3.3 Summary of Data Analysis and Procedures

Research Objective	**Hypo**	**Analysis Method**	**Model Estimation**	**Interpretation**
To examine the relationship between contextual factors and adoption of mobile financial services by the poor in Kenya.	**H1A:**	Structural Equation Modelling	$\beta_4=\alpha_4+\beta_{41}\beta_1+e_4$	-Adoption (β_4) is a function of contextual factors (β_1). α_4 and β_{41} are regression coefficients and e_4 is the error term
To evaluate the relationship between community factors and adoption of mobile financial services by the poor in Kenya.	**H1B:**	Structural Equation Modelling	$\beta_4=\alpha_4+\beta_{42}\beta_2+e_4$	-Adoption (β_4) is a function of community factors (β_2). α_4 and β_{42} are regression coefficients and e_4 is the error term
To establish the relationship between cultural factors and adoption of mobile financial services by the poor in Kenya.	**H1C:**	Structural Equation Modelling	$\beta_4=\alpha_4+\beta_{43}\beta_3+e_4$	-Adoption (β_4) is a function of cultural factors (β_3). α_4 and β_{43} are regression coefficients and e_4 is the error term
To investigate the effect of demographic factors on the relationship between community factors and adoption of mobile financial services by poor in Kenya	**H2A:**	Structural Equation Modelling	$\beta_4=\alpha_4+\beta_{47}\beta_7+e_4$ where $\beta_7=\beta_2\beta_5$	-Adoption (β_4) is a function of the product of community factors (β_2) and demographic factors (β_5). α_4 and β_4 are regression coefficients and e_4 is the error term
To investigate the effect of demographic factors on the relationship between cultural factors and adoption of mobile financial services by the poor in Kenya.	**H2B:**	Structural Equation Modelling	$\beta_4=\alpha_4+\beta_{48}\beta_8+e_4$ where $\beta_8=\beta_3\beta_5$	-Adoption (β_4) is a function of the product of cultural factors (β_3) and demographic factors (β_5). α_4 and β_4 are regression coefficients and e_4 is the error term
To investigate the relationship between adoption and usage of mobile financial services by the poor in Kenya.	**H3:**	Structural Equation Modelling	$\beta_6=\alpha_6+\beta_{64}\beta_4+e_6$	-Usage (β_6) is a function of adoption (β_4). α_6 and β_{64} are regression coefficients and e_6 is the error term
To establish the relationship between pro-poor factors and usage of mobile financial services by the poor in Kenya.	**H4**	Structural Equation Modelling	$\beta_6=\beta_1+\beta_2+\beta 3+e_6$	-Usage (β_6) is a function of pro-poor factors (β_1, β_2, $\beta 3$,) and e_6 is the error term

β_1= Contextual Factors, β_2= Community Factors, β_3= Cultural Factors, β_4= Adoption, β_5= Demographic factors, β_6=Usage; Source: Research Data, 2016.

CHAPTER FOUR: DATA ANALYSIS AND FINDINGS

4.1 Introduction

The main objective of this chapter is to present the statistical analysis results of the measurement model, interpretations, and findings. The presentation of the analysis conducted to test the conceptual model and present its results. The chapter provides the information on the response rates, respondents' demographics and respondents' characteristics, data screening procedure, test results for non-response bias and measurement differences, hypothesis testing and model estimation using PLS regression.

4.2 Study Response Rate

The target population was 400 poor people living in the sampled slums of Nairobi a total of 398 questionnaires was returned resulting in a response rate of 99.5%. On preliminary analysis, 13 questionnaires had some sections of the questionnaire not responded to thus consider as incomplete and removed from the analysis. There were 5 questionnaires that had a total of 11 missing responses which could be as a result of the rush to fill in all the questions or intentionally skipped by the respondents. The missing response was replaced using the sub-group mean value replacement function (Ringle, Wende & Will, 2005; Hair, Hult, Ringle & Sarstedt, 2013).

On removing the 13 incomplete cases, 385 questionnaires were used and the adjusted response rate of 96.25%, which was a high response rate compared to Micheni, Lule, and Muketha (2013) who had a response rate of 83.3%. This was a result of researcher moving along with the research assistant from one slum to another to request the respondents to spend a few minutes to respond to the questionnaire, the introductory

letter from the university significantly helped in convincing some respondents who appeared suspicious of our movement in the slums.

4.3 Demographic Data

This study seeks to understand the adoption of mobile financial services among the poor, the results show that out of the 385 respondents, 54% are male and 46% are female this finding shows that this study was not gender biased, it is reflective of the population numbers in the country. The age of the respondents also reveals an interesting pattern 43.2% are under 25 years, 52% between 26-40 years and 5% above 40 years. The finding that the majority of the respondents who are randomly sampled are young confirms the census numbers that the young population in Kenya is relatively high and since this study was done during the day most of the elderly were out of the slum working.

The study found that 20.3% of the respondents have their highest level of education as primary school level, 45.5% secondary school level, 26.8% as the college Diploma level and only 7.5% as the University Degree level, revealing that 65.8% have the basic education of secondary and below while only 34.3 have accessed higher education. The study further revealed that 90.6% own a mobile phone while only 9.4% do not own a mobile phone; this confirms the mobile penetration number of 87.7% given by Communication Authority. The inability to own a phone does not mean that one does not have access as the study shows that 23.9% are sharing their phone with other people, the study further shows that of the 23.9% who are sharing their phone, 18.7% (which is 78.2% of the 23.9%) are sharing with one or two other people indicating that a mobile phone is a private and personal device.

4.4 Contextual Factors

The contextual factors have indicators of regulatory policy and facilitating conditions which were measured using the summated subscales, each subscale was treated as a separate indicator for the latent variable contextual factors in the partial squares analysis. The scales were reviewed for reliability and convergent validity prior to PLS analysis. The table below shows the descriptive statistics for the contextual factors latent variable.

Table 4.4 Contextual Factors

Contextual Factors	**Descriptive Statistics**		
	N	**Mean**	**Std. Dev**
Good Government policies and regulations that allow investment	385	4.97	1.396
Favorable banking regulations and policies that allow investment	385	5.02	1.404
Well-developed institutional mechanism to implement policies and regulations that promote mobile financial services	385	5.31	1.440
Good network infrastructure and network coverage in my area	385	5.37	1.388
Excellent network signal strength in my area	385	5.07	1.301
Ability to own a mobile phone to access mobile financial services	385	4.79	1.548
Availability of help when I get problem using it	385	4.92	1.492
Access to electricity to charge mobile phone	385	4.73	1.407
Widespread and availability of the agent network to facilitate mobile financial services transactions	385	4.80	1.479
Reliability Coefficients for the 9 items: Cronbach Alpha = 0.886, Standardized Item Alpha = 0.887. Kaiser-Meyer-Olkin measure of sampling adequacy =0. 888 Bartlett's test of sphericity =0. 000 Correlation matrix determinant value=0. 015			

Source: Research Data, 2016.

The regulatory policies consisted of 4 statements in the questionnaires that were related to the level of agreement with the statements on the regulatory policies that enable the adoption of mobile financial services. Each scale was rated on a seven-point Linkert type scale response framework ((1) = Strongly Disagree to (7) = Strongly Agree). The average scale ranged from 4.97 to 5.37. This indicated that the respondents highly agree that they were able to adopt mobile financial services due to the availability of favorable regulatory policies.

The highest rating of 5.37 was the statement "I am able to adopt mobile financial services due to good network infrastructure and network coverage in my area" (SD=1. 388, N=385). The statement with the lowest mean rating of 4.97 is "I am able to adopt mobile financial services due to good government policies and regulations that allow investments" (SD=1. 396, N=385). This shows that respondents agree that there exist good network infrastructure and network coverage in the country due to the completion between the mobile telephone operators. The respondents further appreciate that there exist sufficient regulatory policies that allow mobile financial service provision, but the lower mean rating could be attributed to the expectation that there is room for improving the existing regulatory policies.

The facilitating condition scale consisted of five items, the statement in the questionnaire relates to the ability to adopt due to the availability of the facilitating condition that enables the adoption of mobile financial services. Each scale was rated on a seven-point Linkert type scale ranging from 1denoting "strongly disagree" and 7 denoting "strongly agree". The average rating scale ranging from 4.73 to 5.07, this showed that respondents

believe that there are sufficient facilitating conditions that allow adoption of mobile financial services in Kenya.

The highest mean rating of 5.07 was the statement “I am able to adopt mobile financial services due to excellent network signal strength in my area” (SD=1. 301, N=385) and the lowest mean rating of 4.73 was the statement “ I am able to adopt mobile financial services due to access to electricity to charge mobile phone”. The findings for facilitating conditions shows that the respondent experience excellent network coverage and signal strength, but they are let down by the unavailability of electricity to charge their mobile phones which are a typical problem in the slums.

4.4.1 Factor Analysis of the Contextual factors

Contextual factors have the indicators of regulatory policies which has three items and facilitating conditions which has eight items has three items totaling to eleven items which seeks to measure the adoption of mobile financial services by the poor. Exploratory factor analysis was used to regroup and reduce the number of items to manageable factor and categorization, principal component analysis was used to extract factors with greater than 1 eigenvalue. Factor matrix with varimax rotation was used, Kaiser-Meyer-Olkin test of sampling adequacy was examined to validate the factor analysis as shown in table 4.5 below.

Table 4.5 Contextual Factors Factor Analysis

Contextual Factors	Factor loading		Reduced Interpretations
	1	2	
Good Government policies and regulations that allow investment	.856		Regulatory Policies
Favorable banking regulations and policies that allow investment	.795		
Well-developed institutional mechanism to implement policies and regulations that promote mobile financial services	.750		
Good network infrastructure and network coverage in my area	.680		
Excellent network signal strength in my area		.603	Facilitating Conditions
Ability to own a mobile phone to access mobile financial services		.645	
Availability of help when I get problem using it		.753	
Access to electricity to charge mobile phone		.756	
Widespread and availability of the agent network to facilitate mobile financial services transactions		.759	
Reliability Coefficients for the 9 items: Cronbach Alpha = 0.886, Standardized Item Alpha = 0.887. Kaiser-Meyer-Olkin measure of sampling adequacy =0. 888 Bartlett's test of sphericity =0. 000 Correlation matrix determinant value=0. 015			

Source: Research Data, 2016.

The exploratory factor analysis of contextual factors with the 11 items reveal that 9 items are well correlated, but two items FC7 and FC8 had a correlation loadings of higher than 0.8 thus were removed to avoid the problem of multicollinearity. The correlation matrix found in appendix 1.1, shows a determinant value of 0.0015 which is significant as it is greater than the threshold of 0.001. Kaiser-Meyer-Olkin measure of sampling adequacy is at 0.888 which is sufficient as it is above 0.5 thresholds (Kaiser, 1974), Bartlett's test of

sphericity significant at 0.000 indicating that correlation matrix is significantly different from an identity matrix and it is less than the threshold of 0.05.

The rotated component matrix has shown that all the 9 items strongly hold together among two factors, item FC1 was moved to regulatory policies indicator due to its higher factor loading on it as shown in table 4.5 above. The exploratory factor analysis with the principal component method was satisfactory as items have to be reduced and regrouped appropriately.

The reliability test conducted for the 9 items revealed a Cronbach alpha of 0.886 which is higher than the threshold of 0.6 thus all items are a reliable measure of the indicators. All the items are retained as they met the required thresholds for correlation, sampling adequacy, and reliability tests. The scree plot in figure 4.5 below shows how the debris develops on the various factors.

Figure 4.5 Adoption Scree Plot

Source: Research Data, 2016

4.5 Community Factors

The community factors have four indicators, namely, financial cost, effort expectancy, literacy levels and performance expectancy measured using the summated subscales, and each subscale was treated as a separate indicator for the latent variable contextual factors in the partial squares analysis. The scales were reviewed for reliability and convergent validity prior to PLS analysis. The table below shows the descriptive statistics for the contextual factors latent variable.

Table 4.6 Community Factors

Community Factors	**Descriptive Statistics**		
	N	**Mean**	**Std. Dev**
The transaction fee for sending money is low	385	4.04	1.648
Buying a mobile phone that can access it is cheap	385	4.11	1.593
I find it easy to get it to do what I want it to do	385	5.02	1.342
I am becoming skillful at using it	385	5.19	1.433
I find it easy to use	385	5.26	1.498
I understand English well, thus easy to use	385	5.10	1.393
It does not need one to be financially literate to use	385	4.85	1.486
It helps me do financial transactions faster and easier	385	5.40	1.236
It helps me accomplish things easily	385	5.41	1.191
It saves me time and money	385	5.70	1.350
Reliability Coefficients for the 10 items: Cronbach Alpha = 0.906, Standardized Item Alpha = 0.911. Kaiser-Meyer-Olkin measure of sampling adequacy = 0.889 Bartlett's test of sphericity = 0.000 Correlation matrix determinant value = 0.001			

Source: Research Data, 2016.

The financial cost indicator consisted of two statements in the questionnaires that were related to the level of agreement with the statements on the financial cost incurred to adopt mobile financial services. Each scale was rated on a seven-point Linkert type scale response framework 1 denoting strongly disagree to 7 denoting strongly agree. The average scale ranged from 4.04 to 4.11. This indicated that the respondents agree that they were able to adopt mobile financial services despite the financial cost involved.

The highest rating of 4.25 was the statement “I am able to adopt mobile financial services because buying a mobile phone that can access it is cheap” (SD = 1.593, N = 385). The statement with the lowest mean rating of 4.04 was the statement “I am able to adopt mobile financial services because the transaction fee for sending money is low” (SD = 1.648, N = 385). This shows that respondents agree that buying a mobile phone is cheap thus increasing access to mobile financial services, thus increased access enables adoption and usage of mobile financial services. The respondents further reject the statement that the transaction fees charged for performing a financial transaction are low, thus indicating their concern with the financial cost.

The effort expectancy scale consisted of three items, the statement in the questionnaire relate to the degree of ease associated with mobile financial services adoption and usage. Each scale was rated on a seven-point Linkert type scale ranging from 1denoting “strongly disagree” and 7 denoting “strongly agree”. The average rating scale ranging from 5.02 to 5.26, this showed that respondents believe that there is a high degree of ease associated with the adoption and use of mobile financial services.

The highest mean rating of 5.26 was the statement “I am able to adopt mobile financial services because I find it easy to use” (SD =1. 498, N = 385) and the lowest mean rating of 5.02 was the statement “I am able to adopt mobile financial services because it is easy to get it to do what I want it to do”. The findings for effort expectancy shows that the respondents finds it easy to use mobile financial services and are able to get it to do what they want it to do.

The performance expectancy scale consisted of three items, the statement in the questionnaire relate to the degree to which individuals believe that adopting and using mobile financial services will help them attain better performance outcome or results. Each scale was rated on a seven-point Linkert type scale ranging from 1denoting “strongly disagree” and 7 denoting “strongly agree”. The average rating scale ranging from 5.40 to 5.70, this showed that respondents believe that they are able to perform better by adopting and using mobile financial services.

The highest mean rating of 5.73 was the statement “I am able to adopt mobile financial services because it saves me money and time” (SD = 1.436, N = 385) and the lowest mean rating of 5.40 was the statement “I am able to adopt mobile financial services because it helps me do financial transactions easier and faster”. The findings for performance expectancy shows that the respondent find it easier and faster to do financial transactions as mobile financial services as significantly easier and faster to any other legacy methods of doing a financial transaction and this leads to time and money savings for the users of mobile financial services.

The literacy level scale consisted of two items, the statement in the questionnaire relate to the literacy levels of the respondents and its influence on adoption and usage of mobile financial services. Each scale was rated on a seven-point Linkert type scale ranging from 1denoting “strongly disagree” and 7 denoting “strongly agree”. The average rating scale ranging from 4.85 to 5.10, this showed that respondents have medium to high levels of literacy, which enables them to adopt and use mobile financial services.

The highest mean rating of 5.10 was the statement “I am able to adopt mobile financial services because I understand English well thus easy to use it” (SD = 1.393, N = 385) and the lowest mean rating of 4.85 was the statement “I am able to adopt mobile financial services because it does not need one to be financial literate to us it”. The findings for literacy levels indicate that the respondents have a sufficient level of English language literacy to be able to understand the mobile financial service instructions and how to use guides and it does not require one to be financially literate. This can be confirmed from the reported level of education where 65.7% have primary or secondary school level of education which is enough literacy to use mobile financial services.

4.5.1 Factor Analysis of the Community Factors

Community factors have a financial cost, effort expectancy, literacy levels and performance expectancy which had a total of 20 items which seeks to measure the adoption of mobile financial services by the poor. Exploratory factor analysis was used to regroup and reduce the number of items to manageable factor and categorization, principal component analysis was used to extract factors with greater than 1 eigenvalue.

Factor matrix with varimax rotation was used, Kaiser-Meyer-Olkin test of sampling adequacy was examined to validate the factor analysis as shown in table 4.7 below.

Table 4.7 Community Factors Factor Analysis

Community Factors	**Factor loading**		**Reduced Interpretations**
	1	**2**	
The transaction fee for sending money is low	.922		
Buying a mobile phone that can access it is cheap	.836		Financial cost
I find it easy to get it to do what I want it to do		.836	Effort & Performance Expectancy and literacy levels
I am becoming skillful at using it		.787	
I find it easy to use		.784	
I understand English well, thus easy to use		763	
It does not need one to be financially literate to use		.651	
It helps me do financial transactions faster and easier		.836	
It helps me accomplish things easily		.838	
It saves me time and money		.778	
Reliability Coefficients for the 10 items: Cronbach Alpha = 0.906, Standardized Item Alpha = 0.911. Kaiser-Meyer-Olkin measure of sampling adequacy = 0.889 Bartlett's test of sphericity = 0.000 Correlation matrix determinant value= 0.001			

Source: Research Data, 2016.

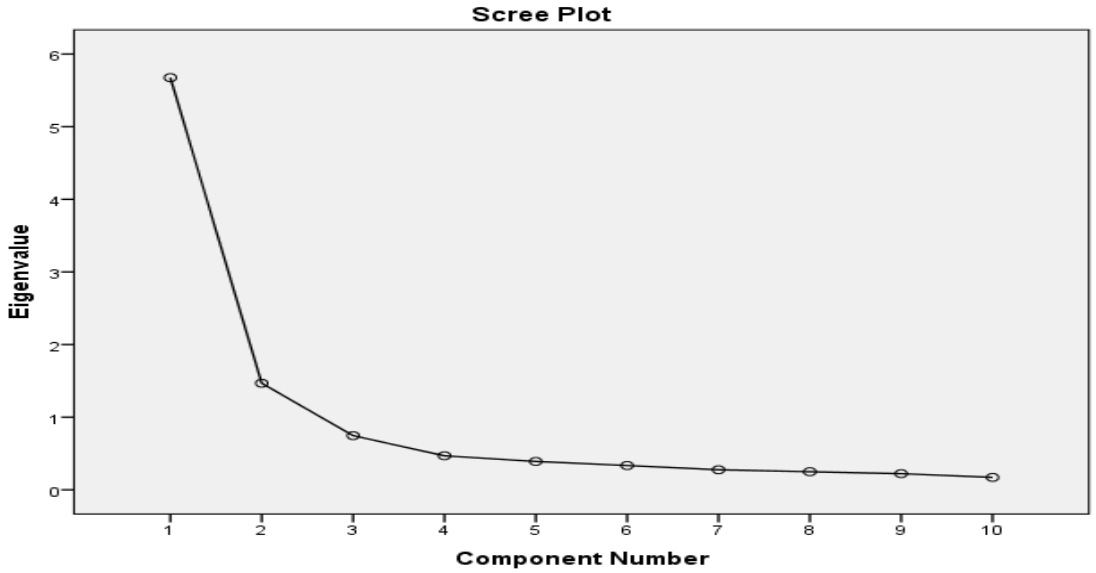
The exploratory factor analysis of community factors with the 20 items reveal that 10 items are well correlated, but 10 items CF3, CF4, CF5, EE1, EE5, EE6, LL1, LL3, PE3, and PE5 had a correlation loadings of higher than 0.8 thus were removed to avoid the problem of multicollinearity. The correlation matrix found in appendix 1.1, shows a determinant value of 0.001 which is significant as it is greater than the threshold of 0.0001. Kaiser-Meyer-Olkin measure of sampling adequacy is at 0.889 which is

sufficient as it is above 0.5 thresholds (Kaiser, 1974), Bartlett's test of sphericity significant at 0.000 indicating that correlation matrix is significantly different from an identity matrix and it is less than the threshold of 0.05.

The rotated component matrix has shown that all the ten items strongly hold together among two factors as shown in table 4.7 above. The exploratory factor analysis with the principal component method was satisfactory as items have to be reduced and regrouped appropriately. The reliability test conducted for the 10 items revealed a Cronbach alpha of 0.906 which is higher than the threshold of 0.6 thus all items are a reliable measure of the indicators. All the items are retained as they met the required thresholds for correlation, sampling adequacy, and reliability tests.

The scree plot in figure 4.6 below shows how the debris develops on the various factors.

Figure 4.6 Community Factors Scree Plot



Source: Research Data, 2016

4.6 Cultural Factors

The cultural factors have two indicators, namely social influence and the type of culture, measured, using the summated subscales, each subscale was treated as a separate indicator for the latent variable contextual factors in the partial squares analysis. The scales were reviewed for reliability and convergent validity prior to PLS analysis.

The table below shows the descriptive statistics for the cultural factors latent variable.

Table 4.8 Cultural Factors

Cultural Factors	**Descriptive Statistics**		
	N	**Mean**	**Std. Dev**
People important to me think I should adopt it	385	4.91	1.656
People who influence my behavior have adopted it	385	4.84	1.510
People in my community have adopted it	385	4.87	1.593
Friends and relatives influenced me to adopt it	385	5.04	1.560
Social norms influences me to use mobile financial services	385	5.14	1.681
In my culture, only men deal with family finances	385	2.97	1.776
My religion prohibits taking loan that attracts interest	385	3.46	1.634
My cultural supports sharing of wealth among family members	385	5.00	1.372
My lifestyle allows me to use mobile financial services	385	4.80	1.618
My culture promotes sharing of mobile phones to use mobile money	385	5.24	1.536
Reliability Coefficients for the 10 items: Cronbach Alpha = 0.813, Standardized Item Alpha = 0.817. Kaiser-Meyer-Olkin measure of sampling adequacy =0.865 Bartlett's test of sphericity =0.000 Correlation matrix determinant value=0.022			

Source: Research Data, 2016.

The social influence indicator consisted of five statements in the questionnaires that were related to the level of agreement with the statements on the respondent's ability to adopt mobile financial services as a result of social influence. Each scale was rated on a seven-point Linkert type scale response framework 1 denoting strongly disagree to 7 denoting strongly agree. The average scale ranged from 4.84 to 5.14. These results indicate that there is a high social influence among the respondents to adopt mobile financial services.

The highest rating of 5.14 was the statement "I am able to adopt mobile financial services because social norms influence me to use mobile financial services" (SD=1.681, N=385). The statement with the lowest mean rating of 4.84 was the statement "I am able to adopt mobile financial services because people who influence my behavior have adopted it" (SD=1.510, N=385). This result shows that there is a high social influence which is more by the social norm which influences the poor to adopt mobile financial services.

The responses to a question requiring respondents to indicate other cultural reasons came up with reasons such as peer influence, children influencing their parents to adopt, not wanting to be left behind by technology advancement and sharing financial resources with the rest of the community. The type of culture scale consisted of five items, the statement in the questionnaire relate to the influence of a particular cultural practice on adoption and usage of mobile financial services. Each scale was rated on a seven-point Linkert type scale ranging from 1denoting "strongly disagree" and 7 denoting "strongly agree". The average rating scale ranging from 2.97 to 5.24, this showed that there is high influence by the type of culture on the adoption and use of mobile financial services.

The highest mean rating of 5.24 was the statement “I am able to adopt mobile financial services because my culture promotes sharing of mobile phones to use mobile money” (SD=1.536, N=385) and the lowest mean rating of 2.97 was the statement “I am able to adopt mobile financial services because in my culture it is only men who deal with finances in the family”. The findings for the type of culture shows that culture promotes usage of mobile financial services highly and enables access through sharing of mobile phones, the respondents further reject the culture that only the male deal with finances in the family. This can be confirmed by the existence of women entrepreneurs, the existence of small Sacco or the Mary-go-round contributions among the women where one woman in the group receives a lump sum amount contributed by the rest of the group members on a rotational basis.

4.6.1 Factor Analysis of the Cultural Factors

Cultural factors have social influence and type of culture indicators which had a total of 10 items which seeks to measure the adoption of mobile financial services by the poor. Exploratory factor analysis was used to regroup and reduce the number of items to manageable factor and categorization, principal component analysis was used to extract factors with greater than 1 eigenvalue. Factor matrix with varimax rotation was used, Kaiser-Meyer-Olkin test of sampling adequacy was examined to validate the factor analysis as shown in table 4.9 below.

Table 4.9 Cultural Factors Factor Analysis

Cultural Factors	**Factor loading**		**Reduced Interpretations**
	1	**2**	
People important to me think I should adopt it	.820		Social Influence
People who influence my behavior have adopted it	.825		
People in my community have adopted it	.813		
Friends and relatives influenced me to adopt it	.777		
Social norms influences me to use mobile financial services	.756		
My cultural supports sharing of wealth among family members	.602		
My lifestyle allows me to use mobile financial services	.641		
My culture promotes sharing of mobile phones to use mobile money	.608		
In my culture, only men deal with finances in the family		.803	Type of culture
My religion prohibits taking loan that attracts interest		.788	
Reliability Coefficients for the 10 items: Cronbach Alpha = 0.813, Standardized Item Alpha = 0.817. Kaiser-Meyer-Olkin measure of sampling adequacy =0.865 Bartlett's test of sphericity =0.000 Correlation matrix determinant value=0.022			

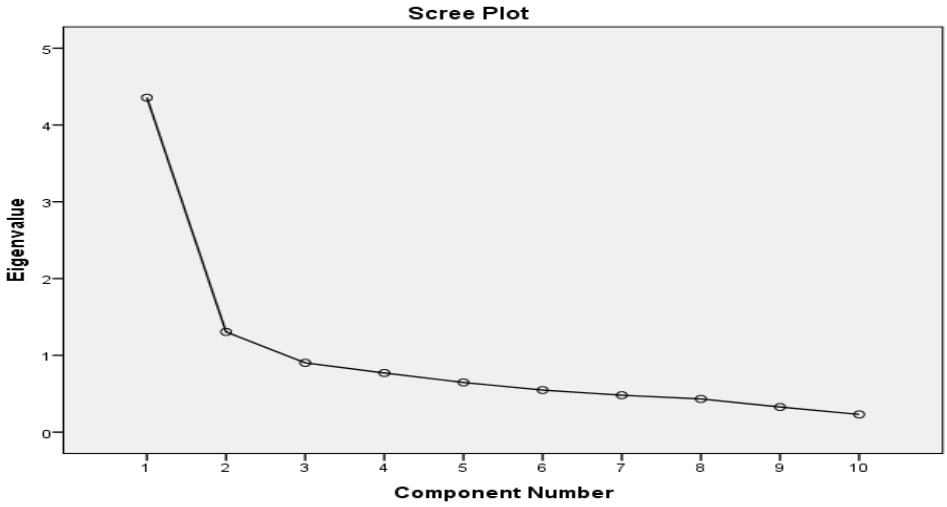
Source: Research Data, 2016.

The exploratory factor analysis for cultural factors with the 10 items reveals that 10 items are well correlated and no item had correlation loadings of higher than 0.8 to indicate that there is no problem of multicollinearity. The correlation matrix found in appendix 1.1, shows a determinant value of .022 which is significant as it is greater than the threshold

of 0.0001. Kaiser-Meyer-Olkin measure of sampling adequacy is at 0.865 which is sufficient as it is above 0.5 thresholds (Kaiser, 1974), Bartlett's test of sphericity significant at 0.000 indicating that correlation matrix is significantly different from an identity matrix and it is less than the threshold of 0.05.

The rotated component matrix has shown that all the ten items strongly hold together among two factors and items TC3, TC4, and TC5 have higher loading on social influence and thus were included in the social influence indicator as shown in table 4.9 above. The exploratory factor analysis with principal component method was satisfactory as items have to be reduced and regrouped appropriately. The reliability test conducted for the 10 items revealed a Cronbach alpha of 0.813 which is higher than the threshold of 0.6 thus all items are a reliable measure of the indicators. All the items are retained as they met the required thresholds for correlation, sampling adequacy, and reliability tests. The scree plot in figure 4.7 below shows how the debris develops on the various factors.

Figure 4.7 Cultural Factors Scree Plot



Source: Research Data, 2016

4.7 Adoption of Mobile Financial Services

The study results reveal high levels of adoption of mobile financial services, 87% have adopted mobile money services and 67.3% have adopted mobile banking. Only 6.2% have adopted internet banking, this is explained by the lack of cyber cafes to access the internet in the slums.

Mobile phones have significantly enabled the poor to access and adopt mobile financial services, this is evident from the results as only 60.8% have actual bank accounts with the banks meaning that out of the 87% who have adopted mobile money 26.2% do not have a bank account thus dependent entirely on mobile financial services as a means of financial inclusion.

The adoption construct was measured using the summated subscales of behavioral intention and usage intention, each subscale was treated as a separate indicator for the latent variable adoption in the partial squares analysis. The scales were reviewed for reliability and convergent validity prior to PLS analysis.

The table below shows the descriptive statistics for the adoption latent variable.

Table 4.10 Adoption

Adoption	**Descriptive Statistics**		
	N	**Mean**	**Std. Dev**
I intend to use mobile money	385	5.40	1.128
I intend to use M-Shwari	385	5.37	1.178
I intend to get credit cards	385	4.15	1.613
I intend to use online banking	385	4.15	1.595
I intend to use mobile banking	385	4.77	1.481
I recommend people to adopt	385	5.38	1.266
I enjoy using my phone	385	5.09	1.541
Reliability Coefficients for the 7 items: Cronbach Alpha = 0.795, Standardized Item Alpha = 0.803. Kaiser-Meyer-Olkin measure of sampling adequacy =0.716 Bartlett's test of sphericity =0.000 Correlation matrix determinant value=0.054			

Source: Research Data, 2016.

The usage intention consisted of 6 statements in the questionnaires that were related to the level of agreement with the statements on the intention to use mobile financial services. Each scale was rated on a seven-point Linkert type scale response framework ((1) = Strongly Disagree to (7) = strongly Agree ;). The average scale ranged from 4.15 to 5.40. This indicated that the respondents highly know and intended to use mobile financial services.

The highest rating of 5.40 was the statement "I know mobile financial services and I intend to use mobile money" (SD=1.128, N=385). There are two statements with the lowest mean rating of 4.15 which are "I know mobile financial serves and intend to get credit cards"(SD=1.613, N=385) and "I know mobile financial services and intend to use

online banking" (SD=1.595, N=385). This shows that both credit cards and online banking are not common among the poor people in the slums. There are limitations to obtaining a credit card and there are very few poor people who have access to the internet for use in online banking.

The behavioral intention scale consisted of one item, the statement in the questionnaire relates to the behavioral intentions of the poor to adopt mobile financial services. Each scale was rated on a seven-point Linkert type scale ranging from 1denoting "strongly disagree" and 7 denoting "strongly agree". The average rating scale was 5.09 this showed that respondents believe that they have high intentions to adopt mobile financial services.

The highest mean rating of 5.09 was the statement "I know mobile financial services and I enjoy using my phone" (SD=1.541, N=385). The findings for behavioral intention shows that the intention to adopt mobile financial services was high as they highly enjoyed using their phone. Since 90.6% of the respondents own a phone and the highest mean rating imply that all those who own a phone enjoy using it thus easier to adopt mobile financial services that are delivered using a mobile phone as 87% of the respondents have adopted it.

4.7.1 Factor Analysis on the Adoption Indicators

Adoption has the indicators of usage intention which has six items and behavioral intention which has three items totaling to nine items which seek to measure the adoption of mobile financial services by the poor. Exploratory factor analysis was used to regroup and reduce the number of items to manageable factor and categorization, principal component analysis was used to extract factors with greater than 1 eigenvalue. Factor

matrix with varimax rotation was used; Kaiser-Meyer-Olkin test of sampling adequacy was examined to validate the factor analysis as shown in table 4.11 below.

Table 4.11Adoption Factor Analysis

Adoption	**Factor loading**		**Reduced Interpretations**
	1	**2**	
I intend to use mobile money	.844		Usage Intention
I intend to use M-Shwari	.824		
I recommend people to adopt	.673		
I enjoy using my phone	.656		
I intend to use online banking		.932	Behavioural Intention
I intend to get credit cards		.868	
I intend to use mobile banking		.690	
Reliability Coefficients for the 7 items: Cronbach Alpha = 0.795, Standardized Item Alpha = 0.803. Kaiser-Meyer-Olkin measure of sampling adequacy =0.716 Bartlett's test of sphericity =0.000 Correlation matrix determinant value=0.054			

Source: Research Data, 2016.

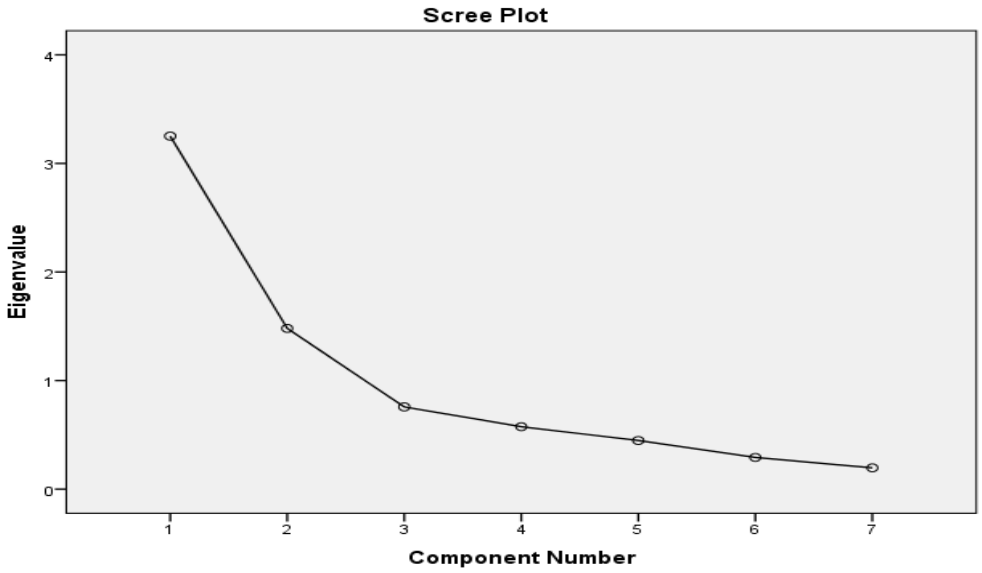
The exploratory factor analysis for adoption with 9 items reveal that 7 items are well correlated but two items BI2 and BI3 had a correlation loadings of higher than 0.8 thus were removed as it brings the problem of multicollinearity. The correlation matrix found in appendix 1.1, shows a determinant value of .054 which is significant as it is greater than the threshold of 0.001. Kaiser-Meyer-Olkin measure of sampling adequacy is at 0.795 which is sufficient as it is above 0.5 thresholds (Kaiser, 1974), Bartlett's test of sphericity significant at 0.000 indicating that correlation matrix is significantly different from an identity matrix and it is less than the threshold of 0.05.

The rotated component matrix has shown that all the 6 items strongly hold together among two factors, item B1 was moved to the usage intention factor while items UI4, UI3, and UI5 loaded best on the behavioral intention factor as shown in table 4.2 above. The exploratory factor analysis with principal component method was satisfactory as items have to be reduced and regrouped appropriately.

The reliability test conducted for the 7 items revealed a Cronbach alpha of 0.795 which is higher than the threshold of 0.6 thus all items are a reliable measure of the indicators. All the items are retained as they met the required thresholds for correlation, sampling adequacy, and reliability tests.

The scree plot in figure 4.8 below shows how the debris develops on the various factors.

Figure 4.8 Adoption Scree Plot



Source: Research Data, 2016

4.8 Usage of Mobile Financial Services

The study results reveal high levels of mobile financial services usage, 89.4% have used one or another type of mobile financial services that is 32.5% use it to send money,26.5% use it to withdraw cash,11.2% use it to buy airtime and19% use it to buy goods or services. It is also shown that 74.8% of the respondents are mobile money users and 21.8% use it to pay for food, 8.8% use it to pay school fees, 20.8% use it to pay rent and 22.9% use it to pay for utilities such as water and electricity, this indicate that mobile money is heavily used by the poor to meet their basic needs.

The results further show that 89.9% use these services periodically that is 34.8% use it daily, 22.9% use it weekly and 32.2% use it monthly. Only 3.9% use credit cards and only 11.2% use debit cards which clearly shows the low uptake of the mobile payment services offered by financial institutions by the poor living in the slums.

This shows a high level of usage of mobile financial services by the poor people living in the slums, this can be explained by the fact that it is not safe to carry cash in the slums due to multiple incidents of robbery thus mobile financial services have come up to be an alternate safe way of using and carrying money.

The slow uptake and usage of mobile payment and mobile banking services can be explained as a result of unavailability of banks in the slums, the restrictions on obtaining credit cards as well as the lack of the need to use such services now that mobile money service is readily available and accessible to all who can own or borrow a mobile phone.

The usage construct was measured using the summated subscales of usage frequency and usage purpose, each subscale was treated as a separate indicator for the latent variable usage.

The table below shows the descriptive statistics for the adoption latent variable.

Table 4.12 Usage

Usage	**Descriptive Statistics**		
	N	**Mean**	**Std. Dev**
I have never used after registering for it	385	2.19	1.111
I only used the first time then left it	385	2.35	1.288
Pay school fees	385	4.31	1.863
Buy goods at the shops	385	4.25	1.805
Pay electricity bill	385	4.79	1.776
Pay rent to landlord	385	4.35	1.948
Reliability Coefficients for the 6 items: Cronbach Alpha = 0.668, Standardized Item Alpha = 0.643. Kaiser-Meyer-Olkin measure of sampling adequacy =0.615 Bartlett's test of sphericity =0.000 Correlation matrix determinant value=0.141			

Source: Research Data, 2016.

The usage frequency consisted of two statements in the questionnaires that were related to the level of agreement with the statements on the frequency of usage of mobile financial services. Each scale was rated on a seven-point Linkert type scale response framework (Strongly Disagree to Strongly Agree). The average scale ranged from 2.19 to 2.35. This indicated that the respondents use the mobile financial services frequently and more than once.

The highest rating of 2.35 was the statement “I know mobile financial services and I used it once and left it” (SD=1.288, N=385). The statement with the lowest mean rating of 2.19 which are “I know mobile financial serves and I have never used it after registering for it” (SD=1.111, N=385). This shows that the respondents highly use mobile financial services more than the initial adoption or registration; the respondents also reject the statement that they have used it once and left it implying that there is a high usage frequency of mobile financial services by the poor. This has earlier been reported that 89.9% of the respondent use mobile money services periodically with high percentage using it daily and weekly.

The usage purposes scale consisted of four items, the statement in the questionnaire relates to the purpose of mobile financial services use by the poor. Each scale was rated on a seven-point Linkert type scale ranging from 1 denoting “strongly disagree” and 7 denoting “strongly agree”. The average rating scale ranged from 4.25 to 4.79 this showed that respondents believe that they have medium to high usage of mobile financial services for various usage purposes. The highest mean rating of 4.79 was the statement “I use mobile financial services to pay electricity bill” (SD=1.528, N=385) and the statement with the lowest mean rating of 4.25 was “I use mobile financial services to buy goods at the shop” (SD=1.805, N=385).

The findings for usage purposes shows that the poor people use mobile financial services highly for paying electricity bill which could be explained as a result of the convenience of paying the electricity bill and the urgency of getting back the light. Since the pre-paid meters automatically disconnect once the units bought are depleted thus the need to pay

for electricity bill quickly to regain the electric power which can easily be achieved by the use of mobile money services. It is also common that in slums the utility bills are paid by landlords thus the use indicated by the users could be attributed to sending money to the landlord to pay utility bills. The lowest rating for buying goods and services can be explained by the unavailability of till numbers to the merchants who operate in the slums and the added cost of withdrawal fees that have to be added by the buyer if the seller accepts that the money is transferred to their telephone numbers.

4.8.1 Factor Analysis on the Usage indicators

Usage has the indicators of usage frequency which has three items and usage purpose which has seven items totaling to ten items which seek to measure the usage of mobile financial services by the poor. Exploratory factor analysis was used to regroup and reduce the number of items to manageable factor and categorization, principal component analysis with varimax rotation was used to extract factors with greater than 1 eigenvalue. Kaiser-Meyer-Olkin test of sampling adequacy was examined to validate the factor analysis and the rotated component matrix is shown in table 4.13 below.

Table 4.13 Usage Factor Analysis

Usage	**Factor Loading**		**Reduced Interpretations**
	1	2	
Buy goods at the shops	.874		Usage Purpose
Pay school fees	.826		
Pay electricity bill	.745		
Pay rent to landlord	.615		
I only used the first time then left it		.895	Usage frequency
I have never used after registering for it		.849	
Reliability Coefficients for the 6 items: Cronbach Alpha = 0.668, Standardized Item Alpha = 0.643. Kaiser-Meyer-Olkin measure of sampling adequacy =0.615 Bartlett's test of sphericity =0.000 Correlation matrix determinant value=0.141			

Source: Research Data, 2016.

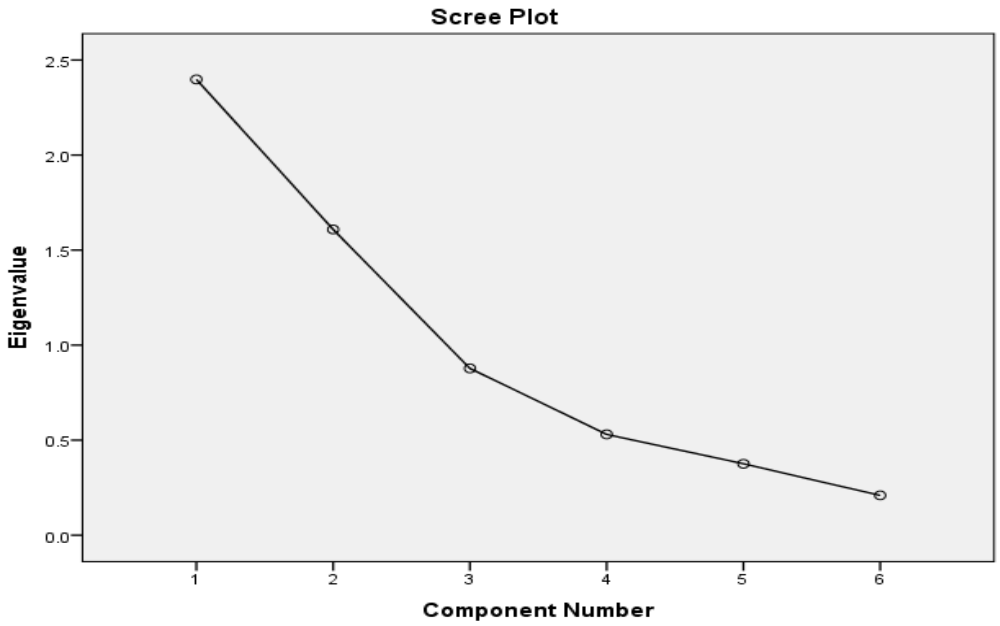
The exploratory factor analysis for usage with 10 items reveals that 6 items are well correlated as shown on the correlation matrix found in appendix 28 and four items namely UP3, UP5, UP6, and UF3 were dropped as they had a correlation of above 0.8 which indicates the problem of multicollinearity. Principal component analysis was run with the 6 items and all correlated with significant loadings; the correlation matrix shows a significant determinant value of 0.141 which is greater than the threshold of 0.001.

Kaiser-Meyer-Olkin measure of sampling adequacy is at 0.651 which is sufficient as it is above 0.5 thresholds (Kaiser, 1974), Bartlett's test of sphericity significant at 0.000 indicating that correlation matrix is significantly different from an identity matrix and it is less than the threshold of 0.05. The rotated matrix has shown that all the remaining 6 items strongly hold together among the two factors as labeled in table 4.13.

The reliability test conducted for the 6 items revealed a Cronbach alpha of 0.668 which is higher than the threshold of 0.6 thus all items are a reliable measure of the indicators. All the items are retained as they met the required thresholds for correlation, sampling adequacy, and reliability tests.

The scree plot in figure 4.9 below shows how the debris develops on the various factors.

Figure 4.9 Usage Scree Plot



Source: Research Data, 2016

4.9 Measurement Model Estimation

The PLS algorithm was used to examine the causal relationships among the latent variables this identified indicators that have significant effects on the latent variable. The inner model was evaluated using the bootstrapping test to determine the relationships among the variables and hypothesis testing was done to confirm or reject the proposed hypothesis using the research data. This was done by reviewing the resultant T-statistics to determine if the relationships are statistically significant. The estimates of path

coefficients, the T-values, significance levels for the paths and the model fit were evaluated to confirm the causal relationships among the constructs.

SEM-PLS regression tests the predictive model using a two stage procedure which included the initial stage of outer model evaluation to determine its reliability and availability and the second stage is the structural model assessment to the relationships under the investigation (Ringel et al., 2011).

The partial least square analysis was done after the reliability testing and purification of the measurement scale. To test the relationship between constructs and determine the predictive power of the conceptual model, partial least square analysis was used. SmartPLS software (Ringel et al., 2005) was used. Previous use of this methodology has been indicated in previous research and literature (Hensler et al., 2009; Hulland, 1999).

The outer model estimation was done to assess the relationship between the observable variable and the represented theoretical construct. The structural model specification, testing of the proposed relationship and the hypothesis ((Bryne, 2001) was done. There is a total of 82 items representing 13 Indicators and 6 factors in the research for which confirmatory factor analysis (CFA) was done to examine how each indicator relates to the respective latent variable. The details on the type of constructs are shown in table 4.14 below.

Table 4.14 Type of Constructs

Construct	No of Indicator	Type of Construct
Contextual Factors	2	Reflective
Community Factors	4	Reflective
Cultural Factors	2	Reflective
Demographic Factors	2	Formative
Adoption	2	Reflective
Usage	2	Reflective

Source: Research Data, 2016.

Chin (1998) stated that empirical conditions, theory and research objective influence how the constructs will be modeled either as formative or reflective. The constructs were conceptualized based on the empirical evidence and some were modified to fit the study contexts.

The contextual factor was reflective construct consisting of summated indicators of facilitating conditions and regulatory policies. The community factor was a reflective construct comprising of four first order reflective factors of financial cost, effort expectancy, literacy levels and performance expectancy. A Cultural factor was a reflective construct consisting of summated indicators of social influence and type of culture.

A demographic factor was a formative construct consisting of formative indicators of age and gender. Adoption was a first order reflective construct that comprises of two reflective indicators of usage intention and behavioral intention. Usage was a reflective construct that consists of two first-order indicators of usage frequency and usage intention.

4.9.1 Construct Reliability

The analysis of reliability is the internal consistency checks which are measuring the extent to which the underlying latent variable is repeatable Goodhue (1998). Hair et al., (2006) suggest that a value of .6 is acceptable for exploratory research. However, De Vellis (2003, p.95, cited in Hair et al., 2006, p.138) notes that it is not unusual to find scales with lower reliability coefficients. The construct reliability was assessed using the Cronbach Alpha which is used as an estimate of reliability using alpha scores of above 0.6 considered satisfactory, however alpha tests tend to provide conservative values in PLS as it uses inter-items correlation thus Bagozzi and Yi (1988) suggested the use of composite reliability as possible replacement of Cronbach alpha to relax his condition.

All other constructs had Cronbach Alpha values that were above the threshold of 0.6 as specified for PLS Analysis (Hair et al, 2010), the composite reliability were all above the threshold of 0.6 for all constructs except for cultural factors which has a higher Cronbach alpha of 0.813 and composite reliability of 0.4. Cultural factors also having Cronbach Alpha of 0.813 is significantly higher than the threshold of 0.6 to determine the reliability thus with such high Cronbach alpha of 0.813 the reliability question is satisfied. Since composite reliability was suggested by Bagozzi and Yi (1988) to the relax condition which is not necessary in this case as reliability is already satisfied by Cronbach Alpha. This shows that there is a good reliability for all the constructs in the model as shown in table 4.15 below.

Table 4.15 Reliability Analysis Data

	Cronbach's Alpha	Composite Reliability
Adoption	0.795	0.8
Community Factors	0.906	0.9
Community Moderation	1.000	1.0
Contextual Factors	0.886	0.9
Cultural Factors	0.813	0.4
Cultural Moderation	1.000	1.0
Usage	0.668	0.6

Source: Research Data, 2016.

4.9.2 Convergent Validity

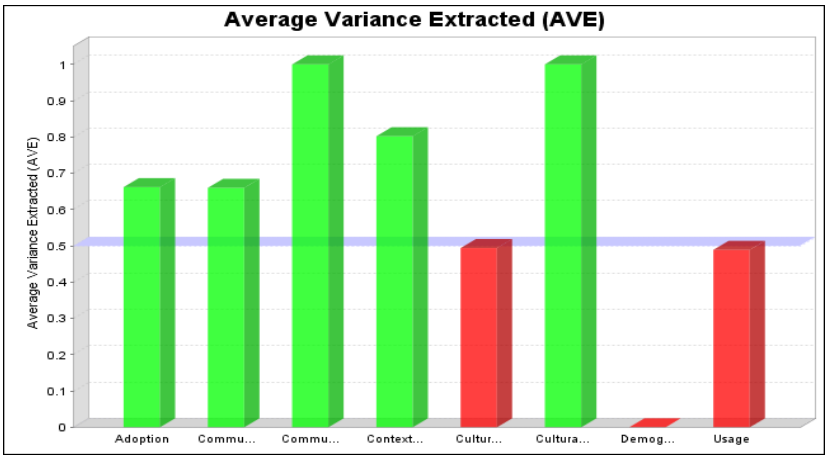
The measure of the degree to which multiple attempts to measure the same construct are in agreement is referred to as Convergent validity. The Average Variance Extracted coefficients are used to indicate how well the measurement indicators explain the construct. The threshold recommended as minimum construct AVE is 0.5 indicating good convergent validity. The table below shows that all constructs have AVE higher than 0.5 indicating that the measurements indicators explain the constructs thus having convergent validity.

Table 4.16 Average Variance Extracted

	Average Variance Extracted (AVE)
Adoption	0.7
Community Factors	0.7
Community Moderating Factor	1.0
Contextual Factors	0.8
Cultural Factors	0.5
Cultural Moderating Factor	1.0
Demographic Factor	
Usage	0.5

Source: Research Data, 2016.

Figure 4.10 Average Variance Extracted



Source: Research Data, 2016.

4.9.3 Discriminant Validity

The instrument was examined for discriminant validity by comparing the response partners of each construct against the other. According to Fornell and Larcker (1981) if there is empirical evidence that constructs being singled out is distinct from another by use of AVE square root against the inter-correlation of other constructs.

Table 4.17 Fornell-Larcker Criterion

Fornell-Larcker Criterion	Adoption	Community Factors	Community Moderation	Contextual Factors	Cultural Factors	Cultural Moderation	Usage
Adoption	**0.8**						
Community Factors	0.6	**0.8**					
Community Moderation	-0.2	-0.1	**1.0**				
Contextual Factors	0.5	0.7	0.0	**0.9**			
Cultural Factors	0.5	0.6	0.0	0.6	**0.7**		
Cultural Moderation	-0.1	0.0	0.6	-0.1	0.0	**1.0**	
Usage	0.4	0.5	0.0	0.6	0.4	0.0	**0.7**

Source: Research Data, 2016.

The table 4.17 above shows demonstrating the good discriminant validity of the model by comparing AVE to the highest square correction of each construct and the square roots of AVE on diagonal elements are greater that the bi-variate construct.

4.9.4 Collinearity

The instrument was examined for multicollinearity problems and the table below shows the collinearity statistics.

Table 4.18 Inner VIF Values

	Adoption	Usage
Adoption		1.687
Community Factors	2.234	2.345
Community Moderation	1.659	
Contextual Factors	2.012	2.058
Cultural Factors	1.773	1.798
Cultural Moderation	1.618	1.0
Demographic Factors	1.009	1.017

Source: Research Data, 2016.

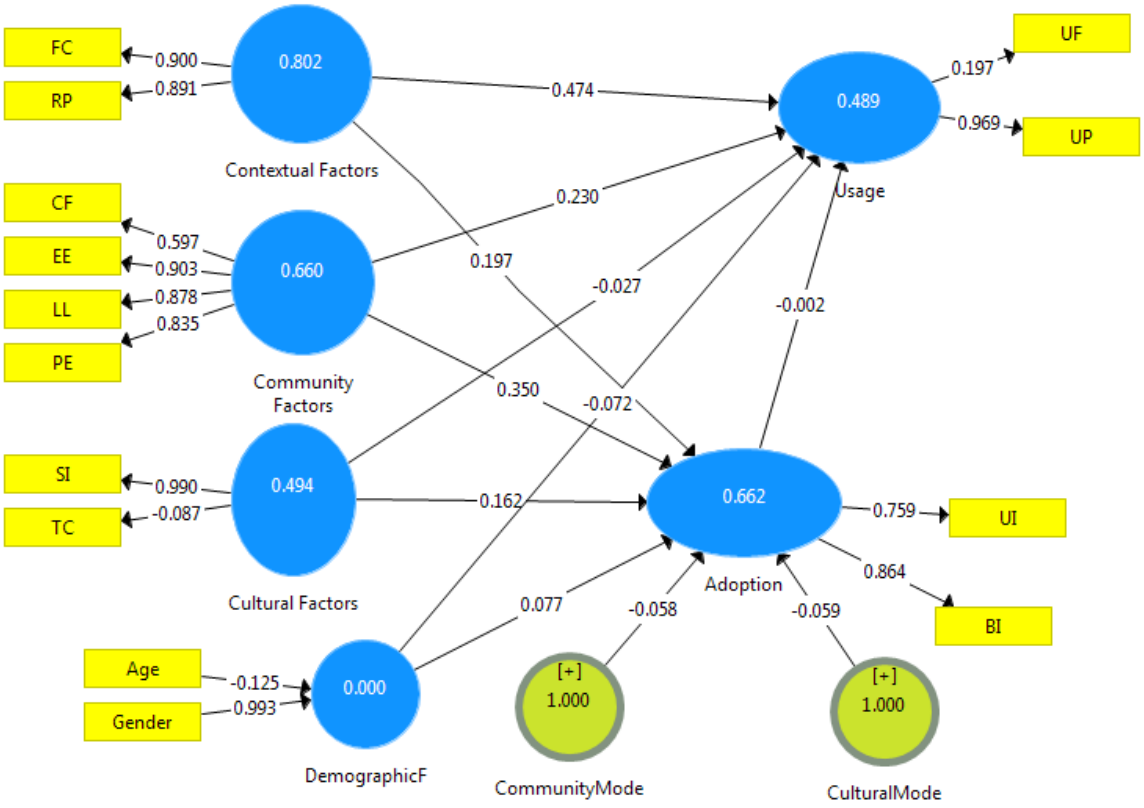
The multicollinearity problem was diagnosed using variance inflation factor (VIF) and as shown above, none of the factors registered VIF above 10 confirming that the problem of multicollinearity is not evident.

4.10 Measurement Model Overall Review

The overall model was assessed for the predictive relevance using R-squared for dependent latent variables and average variance extracted measures are utilized.

SmartPLS software uses a series of multi-linear regression to predict such causal effect (Haenlein & Kaplan 2004; Henseler, Ringle & Sinkovics 2009). Figure 4.11 shows the model with factor loadings and path coefficients.

Figure 4.11Measurement Model with Factor Loadings



Source: Research Data, 2016.

4.10.1 Factor Loadings

The factor loading for the model was obtained by running the PLS algorithm, all of the measurement indicators loaded onto the latent variable with most scoring above the 0.8 coefficient. As shown in Figure 4.11 above. The algorithm converged only after three iterations and the Factor loading summary is shown in Table 4.18 below.

Table 4.19 Factor Loadings

	Adoption	Community Factors	Community Moderation	Contextual Factors	Cultural Factors	Cultural Moderation	Demographic Factor	Usage
BI	0.9							
UI	0.8							
CF		0.6						
LL		0.9						
PE		0.8						
EE		0.9						
Community Factors * Demographic			1					
FC				0.9				
RP				0.9				
SI					1			
TC					-0.1			
Cultural Factors * Demographic						1		
Gender							1	
Age							-0.1	
UF								0.2
UP								1

Source: Research Data, 2016.

4.10.2 Path Coefficients

The conceptual model has analyzed the specifications identified by Wong (2013) of the significance level of 5%, the statistical power of 80% and coefficient of determination R^2 of at least 0.25. The figure 4.11 above shows that the independent variables accounted for 66.2% variance on adoption and 48.9% variance explains usage thus indicating medium to high explanatory power. This implies that the response from the 385 observations on the contextual, community, cultural factor and demographic factors predict 66% adopted mobile financial services and probability of 48.9% using mobile financial services.

The path between the latent constructs shows that community factors have the strongest positive effect of 0.3 on adoption the moderation effect of demographic factors on both the cultural and community factors have the highest negative effect of -0.1 on adoption. The path further reveals that contextual factors have the highest positive effect of 0.5 on usage while demographic factors have the strongest negative effect of -0.1 on usage. The table 4.19 below shows the path coefficients

Table 4.20 Path Coefficients

Path Coefficients	Adoption	Usage
Adoption		**0.0**
Community Factors	**0.3**	**0.2**
Community Moderation	**-0.1**	
Contextual Factors	**0.2**	**0.5**
Cultural Factors	**0.2**	**0.0**
Cultural Moderation	**-0.1**	
Demographic Factor	**0.1**	**-0.1**
Usage		

Source: Research Data, 2016.

Significance of Factors and Path Coefficients

Using bootstrapping procedure, a two-tailed test the estimated t-values for the indicator and path coefficients. The normality estimate of the distribution of the sample mean and the t-values for Factor loading was generated by bootstrapping algorithm using 5000 subsamples in SmartPLS.

Table 4.21 Bootstrapping Results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Age -> Demographic Factor	-0.1	0	0.4	0.3	0.8
BI <- Adoption	0.9	0.9	0	37.5	0
CF <- Community Factors	0.6	0.6	0	17.3	0
Community Factors * Demographic Factor <- Community Moderation	1	1	0		
Cultural Factors * Demographic Factor <- Cultural Moderation	1	1	0		
EE <- Community Factors	0.9	0.9	0	70	0
FC <- Contextual Factors	0.9	0.9	0	68.3	0
Gender -> Demographic Factor	1	0.8	0.4	2.8	0
LL <- Community Factors	0.9	0.9	0	51.4	0
PE <- Community Factors	0.8	0.8	0	42.5	0
RP <- Contextual Factors	0.9	0.9	0	61.1	0
SI <- Cultural Factors	1	1	0	65.5	0
TC <- Cultural Factors	-0.1	-0.1	0.1	0.7	0.5
UF <- Usage	0.2	0.2	0.1	1.3	0.2
UI <- Adoption	0.8	0.8	0.1	13.2	0
UP <- Usage	1	1	0	32.1	0

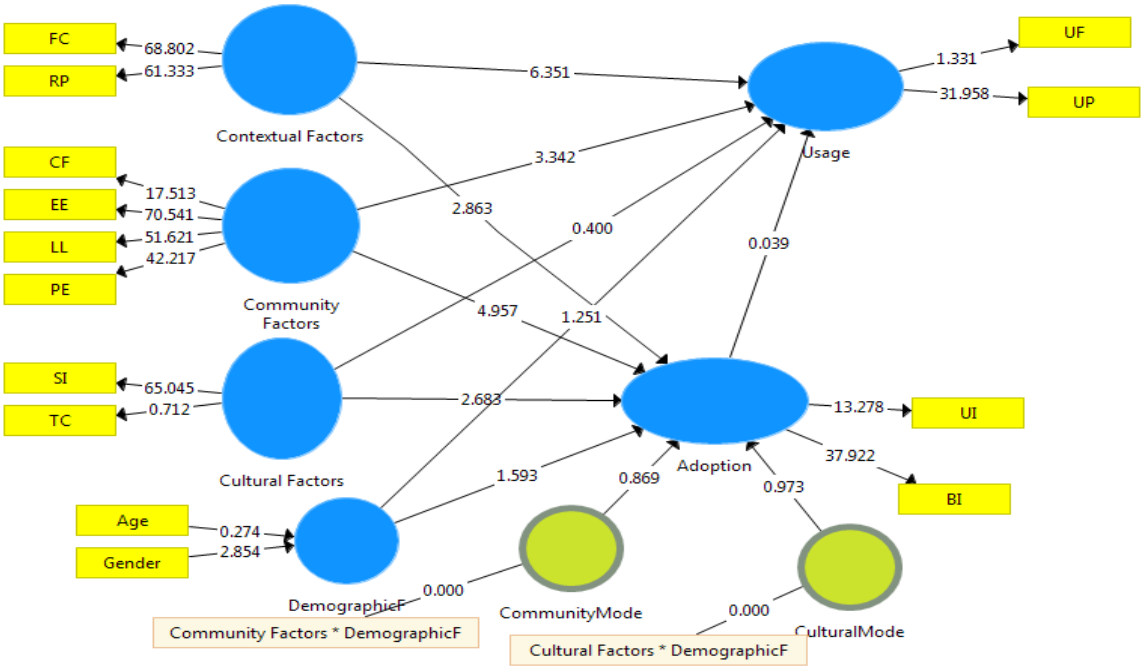
Source: Research Data, 2016.

Table 4.21 above shows highly significant factor loadings of items having t-values which is way higher than the critical value of 5%, except four indicators namely usage frequency on usage, age and gender on demographic factors and type of culture on cultural factors having t-value of less than 5% critical value.

Significance of Path Coefficients

The significance of the path coefficients for the relationships hypothesized was determined using the estimated t-values as shown in Figure 4.12 below. The T-values show the strength of the relationships between two variables and t>1.96 is considered significant and below the threshold is considered insignificant.

Figure 4.12 Measurement Model Showing Bootstrapping results



Source: Research Data, 2016

The Table 4.22 below shows a summary estimated path coefficient p-values, t-statistic and significance if t>1.96.

Table 4.22 Summary of Path Coefficients

Path coefficient t-values	P Value	T-Statistics (|O/STDEV|)	Significant t>1.96(Y/N)
Adoption -> Usage	1.0	0.0	No
Community Factors -> Adoption	0.0	5.0	Yes
Community Factors -> Usage	0.0	3.3	Yes
Community Moderation -> Adoption	0.4	0.9	No
Contextual Factors -> Adoption	0.0	2.9	Yes
Contextual Factors -> Usage	0.0	6.4	Yes
Cultural Factors -> Adoption	0.0	2.7	Yes
Cultural Factors -> Usage	0.7	0.4	No
Cultural Moderation -> Adoption	0.3	1.0	No
Demographic Factor -> Adoption	0.1	1.6	No
Demographic Factor -> Usage	0.2	1.2	No

Source: Research Data, 2016.

4.10.3 Summary of Path analysis

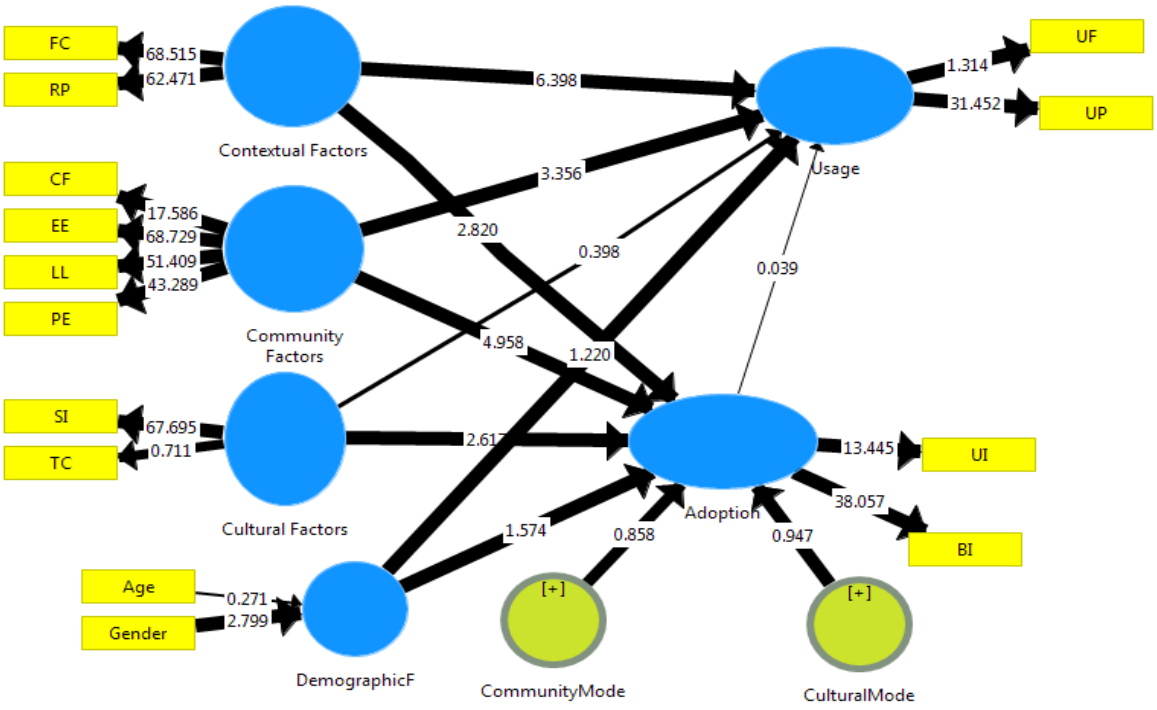
This section will summarize the study findings on the relationships that were hypothesized in this study and explain the findings in details below.

H1A Relationship between contextual factors and adoption

Based on the study results, there exist a positive and significant effect on contextual factors and adoption of mobile financial services with $t=2.863$, $p=0.004$ and $p<0.05$ and a further positive significant effect between contextual factors and usage of mobile financial services with $t=6.351$, $p=0.000$ and $p<0.05$. The total effects of contextual factors on adoption are $t=2.9$ and the total effect of contextual factors on usage is $t=6.7$.

This supports the hypothesis that there exist a significant relationship between contextual factors and adoption as well as the relationship between contextual factors and usage. Therefore basing our inference on the results we fail to reject the hypothesis H1A.

Figure 4.13 Measurement Model Showing the Paths



Source: Research Data, 2016

H1B. Relationship between community factors and adoption

The study results confirm that there exist a positive significant relationship between community factors and adoption of mobile financial services with t=4.956, p=0.000 and p<0.05. Further, there is a positive significant relationship between community factors and usage of mobile financial services with t=3.342 p=0.000 and p<0.05. The total effect of community factors on adoption is t=5 and usage is 3.3. This supports the hypothesis that there exist a relationship between community factors and adoption as well as the relationship between contextual factors and usage of mobile financial services. It is on this basis that we fail to reject hypothesis H1B.

H1C Relationship between cultural factors and adoption

Based on the study results, there exist a positive significant relationship between cultural factors and adoption of mobile financial services with t=2.863, p=0.004 and p<0.05, but there is no significant relationship between cultural factors and usage of mobile financial services with t=0.400 p=0.688. The total effect of cultural factors on adoption is t=2.7 while total effect of cultural factors on usage is t=0.4 therefore based on this statistical inference we fail to reject the hypothesis H1C that there exist a relationship between cultural factors and adoption.

H2A and H2B Relationship between demographic factors and adoption

The study results confirm that there is no positive significant relationship between demographic factors and adoption of mobile financial services with t=1.592, p=0.111. Further, there is no positive significant relationship between demographic factors and usage of mobile financial services with t=1.250 p=0.211. The results further show that the demographic factors do not have a significant influence on the relationship between community factors and adoption of mobile financial services with t=0.869 p=0.384 leading us to reject the hypothesis H2A that demographic factors have a significant influence on the relationship between community factors and adoption.

The study reveals that the demographic factors do not have a significant influence on the relationship between cultural factors and adoption of mobile financial services with t=0.972 p=0.330 thus we reject the hypothesis H2B that the demographic factors have a significant influence on the relationship between cultural factors and adoption of mobile financial services. This shows that demographic factors do not moderate the relationship

between community factors and adoption as well as the relationship between cultural factors and adoption of mobile financial services.

H3 Relationship between adoption and usage

The results of the study show that there exist no positive significant effect between adoption and usage of mobile financial services with t=0.0387 p=0.969 leading us to reject the hypothesis H3 that there is a relationship between adoption and usage of mobile financial services. This implies that adoption is a pre-requisite to usage but adopting does not influence the respondents in using mobile financial services.

H4. Relationship between pro-poor factors and usage

The results of the study show that there exist a positive significant effect between pro-poor factors and usage of mobile financial services with t=8.490 p=0.000 leading us to fail to reject the hypothesis H4 that there is a relationship between pro-poor factors and usage of mobile financial services. This implies that pro-poor factors jointly influence the usage of mobile financial services.

H5. Relationship between pro-poor factors, demographic factors, adoption and usage

The results of the study show that there exist no positive significant effect between pro-poor factors, demographic factors, adoption and usage of mobile financial services with t=0.414 p=0.000 leading us to reject the hypothesis H5 that there is a relationship between pro-poor factors, demographic factors, adoption and usage of mobile financial services. This implies that pro-poor factors, demographic factors and adoption do not jointly influence the usage of mobile financial services.

Table 4.23 Summary of Hypothesis Testing Results

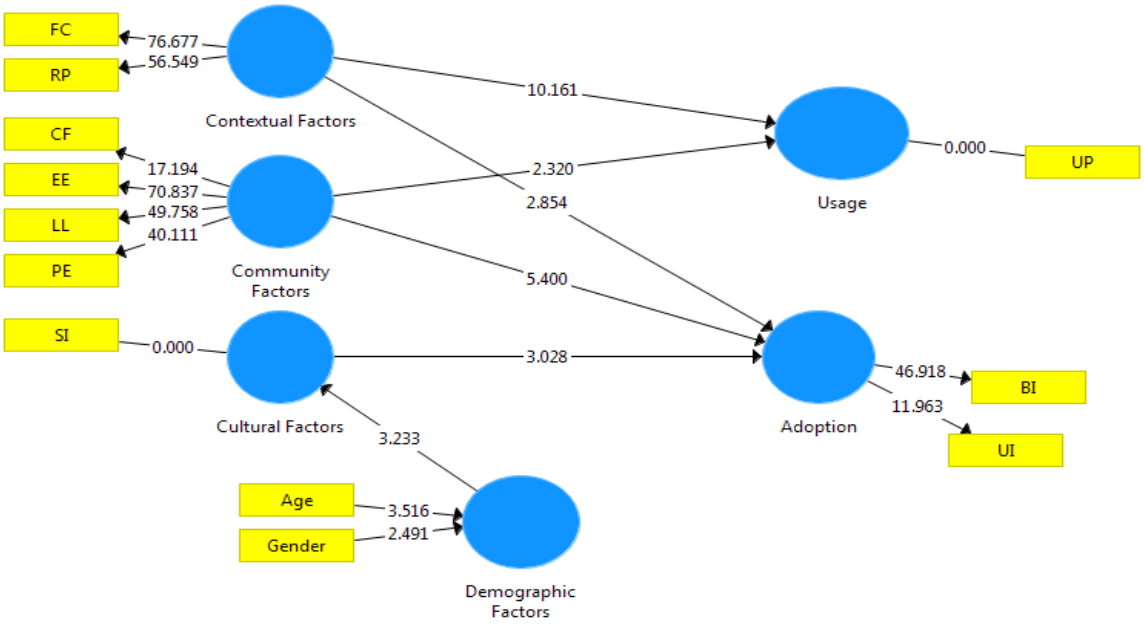
H	Hypothesis	P<0.05	T>1.96	Result	Empirical results
H1A	There is a relationship between contextual factors and adoption of mobile financial services.	0.004	2.863	Significant Positive	Supported
HIB	There is a relationship between community factors and adoption of mobile financial services.	0.000	4.956	Significant Positive	Supported
H1C	There is a relationship between cultural factors and adoption of mobile financial services.	0.004	2.863	Significant Positive	Supported
H2A	Demographic factors have a significant influence on the relationship between community factors and adoption of mobile financial services.	0.384	0.869	Insignificant Positive	Not Supported
H2B	Demographic factors have a significant influence on the relationship between cultural factor and adoption of mobile financial services.	0.330	0.972	Insignificant Positive	Not Supported
H3	There is a relationship between adoption and usage of mobile financial services.	0.969	0.038	Insignificant Positive	Not Supported
H4	There is a relationship between pro-poor factors and usage of mobile financial services	0.000	8.490	Significant Positive	Supported
H5	There is a relationship between pro-poor factors, demographic factor, adoption and usage of mobile financial services.	0.000	0.414	Insignificant Positive	Not Supported

Source: Research Data, 2016.

4.10.4 The Modified Measurement Model

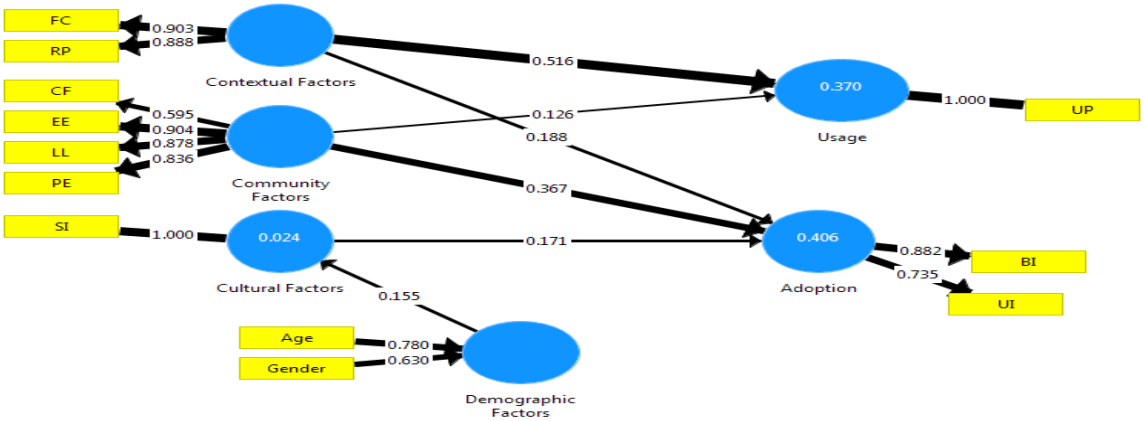
The model was revised to remove all insignificant relationships leaving only significant relationships and the paths with significant t-values the modified model is shown below

Figure 4.14 The Measurement Model(Boot Strapping)



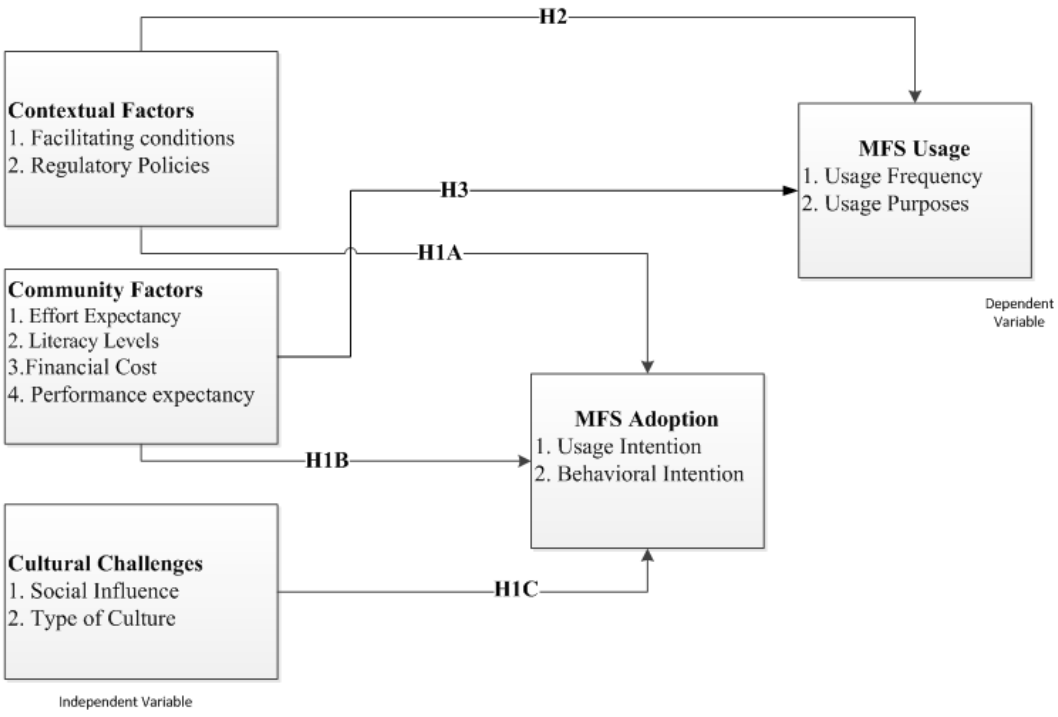
Source: Research Data, 2016.

Figure 4. 15 The Modified Measurement Model(PLSAlgorithm)



Source: Research Data, 2016.

Figure 4.16 The Revised Final Conceptual Model with only Significant Relationships



Source: Research Data, 2016.

4.10.1 Chapter Summary

This chapter analyzed the data and documented the findings of the study, it includes the study response rate, the demographics, factor analysis for each factor, and measurement of the estimation model, the reliability tests the path model and coefficients, the interpretation of the path coefficient in relation to the hypothesis.

CHAPTER FIVE: DISCUSSION OF FINDINGS

5.1 Introduction

This chapter presents the discussions of the findings; this study's general objective is to establish the effects of pro-poor factors on the adoption and usage of mobile financial services by the poor in Kenya. The pro-poor factors included contextual factors, community factors, and cultural factors. The study sought to establish the effects of pro-poor factors on adoption and usage of mobile financial services as well as the moderating effects of demographic factors of age and gender on the relationships between pro-poor factors and adoption.

The key objective of this chapter is to present the statistical analysis results of the measurement model, interpretations of the results and findings. The analysis is presented for the test of the conceptual model and presents the test results and the findings on the specific objectives shown below

i. To examine the relationship between pro-poor factors and adoption of mobile financial services by the poor in Kenya.
ii. To investigate the relationship between adoption and usage of mobile financial services by the poor in Kenya.
iii. To determine the influence of demographic factors on the relationship between community factors and adoption of mobile financial services by poor in Kenya
iv. To investigate the influence of demographic factors on the relationship between cultural factors and adoption of mobile financial services by the poor in Kenya.
v. To investigate the relationship between pro-poor factors and usage of mobile

financial services by the poor in Kenya

vi. To establish the joint relationship between pro-poor factors, adoption, demographic factors and usage of mobile financial services by the poor in Kenya.

5.2 Contextual Factors, Adoption, and Usage

The specific objective of the study was to examine the relationship between pro-poor factors and adoption of mobile financial services. The specific pro-poor factors are contextual factors, community factors, and cultural factors. We discuss the findings of the relationship between contextual factors and adoption as well as the relationship between contextual factors and usage.

The study focused on the two indicators of facilitating condition and regulatory policies which were identified by Bhavnani, et al. (2008) and Potnis (2014). The study found that there is a significant positive relationship between contextual factors and adoption as shown in Table 4.22. This could be attributed to the importance of having available the facilitating conditions such as the network infrastructure, electricity supply, and signal strength that are required to access mobile financial services for which without access to the mobile network or electricity to charge the phone adoption of mobile financial services are impossible.

The study reveals that contextual factors enable the adoption of mobile financial services as both the indicators significantly explain the latent variable contextual factors. This is consistent with the findings of Bhavnani, et al. (2008) and Potnis (2014) which confirms that contextual factors influence adoption of mobile financial services. Wamuyu (2014) states that mobile money success is as a result of two contextual factors namely

demographic characteristic and cultural practices of Kenyan people. Mas and Radcliffe (2010) found that several country-level environmental factors were necessary for the development of mobile money. Joshua and Koshy (2011) found that the more available the facilitating conditions such as infrastructure the higher the rate of adoption and use of mobile banking. This study supports the previous literature and confirms that there is a positive significant relationship between contextual factors and adoption of mobile financial services.

The study results show in Table 4.22 that there is a significant positive relationship between contextual factors and usage of mobile financial services. This being derived from the joint objective of determining the effect of pro-poor factors on usage. The existing literature is supported by these findings as Liang and Yeh (2011) confirm that the contextual factors influence continuous usage of mobile services. Mallat et al. (2008) found that contextual factors influence the use of mobile services. The current study supports the theory of unified theory of technology acceptance and usage of technology and the existing literature by confirming the existence of a significant positive relationship between contextual factors and usage of mobile financial services.

5.3 Community Factors, Adoption, and Usage

The specific objective of the study was to examine the relationship between pro-poor factors and adoption of mobile financial services. The specific pro-poor factors are contextual factors, community factors, and cultural factors. We discuss the findings of the relationship between community factors and adoption as well as the relationship between community factors and usage.

The study focused on the four indicators identified as effort expectancy by Yu (2012), performance expectancy Yu (2012), literacy levels by Mohan and Potnis (2015), financial cost by Yu (2012). The study as shown in Table 4.22 found that there is a significant positive relationship between community factors and adoption, all the indicators significantly explain the latent variable adoption. This can be explained from the study results by most of the respondents confirming that they are able to adopt mobile financial services due to the indicators, even the financial cost indicator was not seen to be an issue that deters adoption of mobile financial services as the poor had to adopt mobile financial services so that they can access financial services as this was their only route to financial inclusion.

This study supports the unified theory of acceptance and usage of technology and is consistent with the findings of Yu (2012), Mohan and Potnis (2015) which confirms that community factors influence adoption of mobile financial services. Park et al. (2007), Lu et al. (2009) found that effort expectancy and performance expectancy influenced adoption and use of mobile technology. Luarn and Lin (2005) found that financial cost negatively influenced adoption and usage of mobile banking. This study confirms that there is a positive significant relationship between community factors and adoption of mobile financial services and further finds that there is a significant positive relationship between community factors and usage of mobile financial services as shown in Table 4.22.

5.4 Cultural Factors, Adoption and Usage

The specific objective of the study was to examine the relationship between pro-poor factors and adoption of mobile financial services. The specific pro-poor factors are contextual factors, community factors, and cultural factors. We discuss the findings of the relationship between cultural factors and adoption as well as the relationship between cultural factors and usage.

The study focused on the two indicators of social influence identified by Puschel et al. (2010) and type of culture proposed by Potnis (2014). The study found that there is a significant positive relationship between cultural factors and adoption as shown in Table 4.22; this could be explained by finding that the peers influence their peers as well as children influencing their parents in the adoption of mobile financial services. The study reveals that the indicator type of culture has a negative insignificant effect on the latent variable cultural factors as shown in Table 4.21.

This study supports the social capital theory as social influences significantly influences adoption, the finding that others who do not own a mobile phone are able to borrow from their social associates to enjoy the benefits of mobile financial services confirms the usage and importance of social capital as proposed by social capital theory. This study further supports the unified theory of acceptance and usage of technology and its finding is consistent with the extant literature, Van Bilijon and Kotze (2008) confirm that culture influence adoption and usage of mobile phone. De Silva et al. (2009) confirms that social influence significantly affects adoption. Singh et al. (2010), Yu (2012), Amin et al. (2007) all found that social influence significantly affects the adoption and usage of

mobile banking. This study confirms that there exist a significant positive relationship between cultural factors and adoption of mobile financial services as shown in Figure 4.12 the t-value for the path cultural factor and adoption is t=2.683 which is higher than the threshold of t=>1.96. Despite finding by Amin et al. (2007) this study finds that as part of testing H4 there is an insignificant positive relationship between cultural factors and usage of mobile financial services as the path has a t-value of 0.400 which is less than the threshold as seen in Figure 4.12.

5.5 The Demographic Factors on Adoption and Usage

The specific objective of the study was to investigate the influence of demographic factors on the relationship between cultural factors and adoption as well as the influence of demographic factors on the relationship between community factors and adoption of mobile financial services by the poor in Kenya.

The study focused on two indicators of age identified by Rogers (2003), Laforet and Li (2005) and Puschel et al. (2010) as well as gender identified by Riquelme and Rios (2010), Puschel et al. (2010) and Yu (2012). The study found that demographic factors have an insignificant positive influence on the relationship between community factors and adoption as it can be seen from Figure 4.12 that the t-value is 0.869 which is below the threshold of 1.96. The study also revealed demographic factors have an insignificant positive influence on the relationship between cultural factors and adoption of mobile financial services as it can be seen from Figure 4.12 that the t-value is 0.973 which is less than the threshold of 1.96.

The gender indicator significantly explains the latent variable demographic factors as it can be seen from Figure 4.13 the loading for gender is 2.799 while age does not significantly explain the demographic factors as it has a loading of 0.271. This can be explained that as a result of the need and lack of other alternatives to the adoption of mobile financial services, the age and gender factor is significantly suppressed and the research findings shows t-value of 1.574 which is less than the threshold thus do not support the moderating effect of demographic factors of age and gender on adoption of mobile financial services.

The case of the relationship between demographic factors and usage is not too different either as there is an insignificant positive relationship of t-value of 1.220 between demographic factors and usage of mobile financial services as shown in Figure 4.13.This finding can also be attributed to the existing need of the poor to access financial services only through mobile financial services.

This study supports the unified theory of acceptance and usage of technology and its findings is consistent with the findings of Yu (2012) that gender and age do not significantly moderate the effect performance expectancy which is part of the community factors. Yu (2012) found that social influence part of the cultural factors was not significantly moderated by gender. This is in line with the study finding that the demographic factors do not moderate the relationships between community factors and adoption and also the relationship between cultural factors and adoption of mobile financial services. The study finds that as part of testing H5 there is an insignificant

positive relationship of t=1.220 between demographic factors and usage of mobile financial services.

5.6 Adoption and Usage

The specific objective of the study was to investigate the relationship between adoption and usage of mobile financial services. The study focused on two indicators of usage intention and behavioral intention identified by Yu (2012).

The study found as shown in Figure 4.12 that there is an insignificant positive of t=0.039 relationship between adoption and usage of mobile financial services. All the indicators significantly explain the latent variable adoption. This can be explained from the study results by most of the respondents confirming that they are able to adopt mobile financial services due to both the indicators of behavioral intention having loading of 38.057 and usage intention having a loading of 13.445 as shown in figure 4.13 but the insignificant relationship can be attributed to the need by the poor people to use mobile financial services. It is not the adoption that leads to increasing in usage but rather the need of the poor to send and receive money that drives the usage. This study has further found that pro-poor factors have significantly influenced users to use mobile financial services has there is a positive relationship between usage and the pro-poor contextual, community and cultural factors tested as part of the H4 as shown in Table 4.22.

Bhattacherjee (2001a) found that acceptance or pre-adoption refers to individual's decision to use technology for the first time while continuous usage refers to the individual's decision to use and continuously exploit it beyond the first use. The extant literature confirms that there are limited studies that relate adoption and usage and no

empirical evidence exist as to the influence of initial adoption to continue usage of mobile financial services.

This study as shown in Table 4.22 found that there is an insignificant positive relationship between adoption and usage thus revealing that there exist no significant relationship between adoption and usage. This can be attributed to initial adoption not influencing the future use. The empirical literature is rich with indicators such as satisfaction that determines the usage. This provides directions for future research to confirm the relationship between adoption and usage of mobile financial services.

The overall model compared to UTUAT it has revealed that the moderating effects of age and gender that are significant in UTUAT are not significant in the current study model. The variables that were part of the UTUAT model such as the effort expectancy, performance expectancy have all significant relations with the adoption as shown in Figure 4.13. This confirms that our model and UTUAT are related to some extent but some of the UTAUT variables have no significant positive relationships in our model. Though by extending UTAUT to mobile financial services adoption and usage our model is stronger as it goes beyond acceptance to adoption and usage of mobile financial services among the poor. UTAUT focuses on the individual factors as stated by Yu (2012) but our model extends it to community by incorporating the aspects of pro-poor perspective introduced by Potnis (2014). This is a significant extension of UTAUT to operationalize pro-poor perspectives in information systems studies thus enabling focus on a community rather than an individual perspective.

The overall model has operationalized the use of social capital theory in information systems studies as it provides parameters to measure effects of social relationships by away of social influence thus expanding the information systems theories to bring on board the social capital theory. The study found that 23.9% who did not have a phone borrowed from their social contacts thus enabling adoption and usage of the mobile financial services by utilizing their social capital confirming the social capital theory.

5.7 Chapter Summary

This chapter presented the findings outlining the study objective and showing the existence of both positive and negative relationships among the variables under study. The hypothesis posited have all be discussed and accordingly accepted or rejected based on their statistical significance.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

The summary of the findings, conclusion, theoretical and empirical contributions of the study are presented. Then policy and managerial implications of the study is discussed followed by the limitations of the study and future research directions.

6.2 Summary of Findings

The current research set out to investigate the influence pro-poor factors on adoption and usage of mobile financial services among the poor in Kenya. The study specifically delved into the investigation of the relationships between pro-poor contextual, community and cultural factors, demographic factors and adoption and usage of mobile financial services among the poor.

The first specific object of the study was to examine the relationship between pro-poor factors and adoption of mobile financial services by the poor in Kenya. This included three other sub-objectives such as the relationship between contextual factors and adoption of mobile financial services, the relationship between community factors and adoption of mobile financial services and the relationship between cultural factors and adoption of mobile financial services.

The objective of examining the relationship between contextual factors and adoption of mobile financial services was tested using partial least square analysis. The details of the hypothesis and the results are presented in Table 4.24. The relationship between contextual factors and adoption was tested and found to have a significant positive

relationship with the adoption of mobile financial services. The relationship between community factors and adoption was tested and found to have a significant positive relationship with the adoption of mobile financial services. The relationship between cultural factors and adoption was tested and found to have a significant positive relationship with the adoption of mobile financial services as shown in Table 4.22.

All the relationships between pro-poor factors of context, community, and cultural factors are found to have a significant positive relationship with adoption, the relationship between community factors and adoption was found to have the highest positive effect on adoption of mobile financial services which was closely followed by contextual factors and finally the cultural factors as shown in Table 4.22.

It can be seen from Figure 4.11 indicators facilitating condition and regulatory policy have a positive effect on contextual factors with facilitating condition having the highest positive effect on the latent variable contextual factors. The indicators financial cost, effort expectancy, literacy levels and performance expectancy have all a positive effect on the latent variable community factors with effort expectancy having the high positive effect while financial cost having the low positive effect. The indicator social influence have a positive effect on cultural factors while the type of culture has a negative effect on the cultural factors. All the three hypothesis of the relationship between pro-poor factors and adoption were supported.

The second objective was to investigate the relationship between adoption and usage of mobile financial services by the poor in Kenya. The results of testing the hypothesis found that adoption had an insignificant negative effect on usage of mobile financial

services as shown in Table 4.22. The indicators usage intention and behavioral intention had a positive effect on the latent variable adoption where behavioral intention had the highest positive effect as shown in Figure 4.11. The hypothesis on the relationship between adoption and usage is not supported.

The third objective was to determine the influence of demographic factors on the relationship between community factors and adoption of mobile financial services by poor in Kenya. The result of testing the hypothesis found that influence of demographic factors on the relationship between community factors and adoption is a statistically insignificant positive influence as shown in Table 4.22. The indicators of gender have a significant positive effect on demographic factors while age had an insignificant negative effect on demographic factors as shown in Figure 4.11. The hypothesis on the influence of demographic factors on the relationship between community factors and adoption was not supported.

The fourth objective was to investigate the influence of demographic factors on the relationship between cultural factors and adoption of mobile financial services by the poor in Kenya. The result of testing the hypothesis found that influence of demographic factors on the relationship between cultural factors and adoption is a statistically insignificant positive influence as shown in Table 4.22. The indicators of gender have a significant positive effect on demographic factors while age had an insignificant negative effect on demographic factors as shown in Figure 4.11. The hypothesis on the influence of demographic factors on the relationship between cultural factors and adoption was not supported.

The fifth objective was to establish the joint relationship between pro-poor factors, adoption, demographic factors and usage of mobile financial services by the poor in Kenya. The result of testing the hypothesis found that all contextual factors have a significant positive relationship with usage, community factors have a significant positive relationship with usage, cultural factors have an insignificant positive relationship with usage, demographic factors have an insignificant positive influence on usage and finally adoption has an insignificant positive relationship with usage as shown in Table 4.23.

It can be seen from Figure 4.12 that contextual factors have the highest significant positive relationship with usage while adoption has the lowest insignificant positive relationship with usage. The indicators of usage are usage frequency and usage purpose, the usage purpose has the highest positive effect on usage while usage frequency has the lowest positive effect on usage. The hypothesis under the fourth objective is partially supported by contextual factors and community factors have a significant positive relationship with usage while cultural factors, demographic factors, and adoption have an insignificant positive relationship with usage.

6.3 Conclusions of the Study

The following conclusions can be made as a result of the study findings, firstly the contextual factors influence both usage and adoption thus a lot of focus should be put in ensuring that there are available facilitating condition and favorable regulatory conditions to enhance the adoption and usage of mobile financial services by the poor. Secondly, the community factors significantly influence the adoption and usage of mobile financial services thus the effort expectancy, financial cost, performance expectancy and literacy

levels matter and should be considered when introducing mobile financial services to the poor.

Yang (2004) and Yu (2012) found that financial cost negatively influences adoption but on the contrary, this study found that financial cost did not have a significant influence on adoption of mobile financial services. This finding those regardless of the cost of transactions the poor were willing to use mobile financial services as they have the need to utilize these services which underplay the effect of the cost involved in transacting. This finding defers with previous studies as the impact of financial cost is only important when there are alternative avenues to satisfy the need, in this case the poor had only the mobile financial services as a medium to access financial services thus get financial inclusion. It is the need to access financial services, the lack of alternatives that could have led to the finding that financial cost was not significant to adoption and usage of mobile financial services.

Thirdly the social influence is a significant indicator of cultural factors and significantly influences the adoption and usage of mobile financial services and the type of culture negatively affect the cultural factors. Despite significantly influencing adoption cultural factors do not significantly affect usage of mobile financial services. This shows that mobile financial services adoption and usage is not limited to type of culture as the underlying need for financial inclusion or transfer of money is not dependent on the type of culture.

Fourthly age and gender do not significantly relate to both adoption and usage and do not significantly moderate the relationship between community factors and adoption as well as cultural factors and adoption. Thus the study reveals that gender or age do not influence adoption or usage of mobile financial services, this is against the findings of Laforet & Li (2005) that shows the influence of these factors on adoption is significant.

Fifthly usage of mobile financial services is not influenced by the initial adoption thus confirming that adoption is just pre-requisite to usage as one can adopt mobile financial services and subscribe to or register for such services but not to use them. Sixthly the adoption and usage of mobile financial services could help reduce poverty among the user community as it encourages financial inclusion providing the poor with access to financial services as well as enabling easy flow of capital between urban and rural or rich as poor through the use of social capital that can be easily transferred to relatives and reduction in distances travelled to access financial services.

Lastly the pro-poor perspective that is more of bottom up helps identify the factors that are influencing adoption and usage of mobile financial services thus developers of mobile financial services products can be able to customize their products to take full advantage of the majority market who are poor by putting into consideration those factors that influence adoption and usage of mobile financial services before the actual development of these products.

6.4 Implications of the Study

The contribution of the study is filling the knowledge gap, the contextual gap, the methodological gap, and theory by providing empirical evidence. The study further has implications for mobile telecom operators, innovators, and financial institutions each of these contributions and implications are discussed in details below.

6.4.1 Theoretical Contributions

The main theoretical contribution is extension of UTAUT theory by inclusion of pro-poor perspectives as proposed by Potnis (2014). This study provides empirical evidence to the UTAUT modification with the suggestions of Potnis (2014) of a mobile financial services adoption and usage framework in the context of the poor people within a developing country.

The study reveals the important role that the pro-poor factors such as community factors, cultural factors, and contextual factors play in the adoption and usage of mobile financial services by the poor. The effects of demographic factors on the relationships between community factors, cultural factors and adoption are demonstrated by the results of this study.

The study built on the unified theory of acceptance and use of technology theoretical framework to come up with a conceptual model that demonstrated a medium to high predictive and explanatory power thereby expanding our understanding of the influence of pro-poor factors on the adoption and usage of mobile financial services among the poor and within the Kenyan context. The extant literature identified the factors that influence adoption and usage of technology, this study extends that by empirically

confirming those factors and documenting the relationships. The investigation of the influence of the community, cultural and community factors contributes to the understanding of adoption and usage in relation to the Kenyan poor.

The study extended the application of social capital theory by operationalizing it to be used in information systems study, this study provides empirical evidence that 24% of the respondent adopted and usage mobile financial services due to use of their social capital by borrowing access to mobile financial services to people they know in their social cycles. The study contributes to the social capital theory by providing the parameters to estimate the use of social capital by the respondents thus enhancing the utilization of the theory by future studies. By providing the measurement instrument to explore this theoretical perspective the study extends the existing body of knowledge and enables further studies in the new theoretical perspective of social capital theory.

The conceptualization and measurement of adoption and usage of mobile financial services are enhanced by the contribution of empirical support by this study. This study developed measurement framework to understand the influence of pro-poor factors on adoption and usage of mobile financial services thus enriching literature in the context of poor people in Kenya.

6.4.2 Contributions of the Study to Knowledge

The conceptualization of the adoption and usage of mobile financial services was based on five theories and their arguments to obtain a better inference of the effects of the community, cultural, contextual and demographic factors on adoption and usage leading to the development of a conceptual framework which was validated by the study finding.

The study contributes to filling the knowledge gap by putting forth findings on the influence of pro-poor factors on adoption and usage of mobile financial services. For example, the literature indicates that the demographic factors influence technology adoption (Laforet & Li, 2005) but this is not the case in this study. The age and gender did not influence the adoption and usage of mobile financial services as shown in Table 4.22 providing a different view from the findings of Lafort and Li (2005). This finding provides a new finding in the context of the poor in Kenya.

The study of mobile financial services in the aspects of adoption and usage is not very common in the African or further in the Kenyan context. The specific study about the poor people in Kenya is an attempt to fill the contextual gaps in literature as it provides an insight as well as empirical evidence about the effects of the pro-poor factors, demographic factors on adoption and usage of mobile financial services among the poor. This enables comparison of adoption and usage of mobile financial services between a developing country and developed country, between the poor people and the not so poor people thereby expanding our understanding of the factors that affect the adoption and usage of the various mobile financial services.

6.5 Policy Recommendations

The findings of this study provide information for policy makers both international and local to refine the existing policies as a result of the information provided by this research. Locally the study reveals the factors that are affecting the adoption and usage by the poor thus introductions of national policies to enable access to mobile financial services by ensuring that the contextual factors are significantly addressed.

The provision of a conducive regulatory environment that allows investment in telecommunication and banking sectors will significantly expand the reach of mobile financial services technologies. The mobile network coverage should be increased by giving incentives to the operators to go on with last mile connectivity and expand the coverage of electricity, the internet, and mobile network.

The international policy makers such as the world bank that have previously focused on issues such as financial inclusion, poverty eradication now have empirical evidence that should be used when developing policies and products that can influence the national policy framework. This study recommends provision of affirmative action type solutions by the government regulators and the operators in expanding the access, adoption, and usage of mobile financial services.

6.6 Recommendations for Management Practice

The banks, mobile telecom operators, mobile phone manufacturers have an interest in understanding the factors that promote or hinder the adoption and usage of mobile financial services. This study recommends that the findings of this study be used by the operators in identifying solutions to the factors that hinder the adoption and usage of mobile financial services and accordingly come up with strategies to engage the market with aim of promoting their products through the elimination of the bottlenecks.

The bottom-up approach used in this study has identified the factors that are influencing the adoption and usage of mobile financial services thus it is of value to the operators and it is recommended that they should be considered before releasing the mobile financial

products to the markets. At the innovation stage, these factors can influence the development of the products that are more suitable to the poor people.

The results of this study show that demographic factors such as age and gender do not significantly impact the adoption and usage of mobile financial services. The study recommends that the practitioners to consider the influence of demographic factors before targeting a specific demography as the study findings reveal that demography does not influence adoption and usage of mobile financial services. The study has also revealed that the type of culture has a negative influence on the cultural factors, the study recommends the understanding the cultural orientation of the poor people in their market to mitigating the adverse effects that type of culture could have on the adoption and usage of their mobile financial services products.

The community factors have been found to be having a very significant effect on adoption, the study recommends that operators should direct their corporate social responsibility investment in addressing the issue of low literacy levels that are prevalent among the poor people. The study recommends that financial cost is reduced to allow many more poor people to be able to adopt and usage mobile financial services. The review of financial cost could lead to many more poor people adopting and using the mobile financial services.

6.7 Limitations of the Study

The study has several limitations few of which are highlighted in this section. The generalizability of the results is limited by the collection of data only from Nairobi County in Kenya. The study could be enriched by a collection of data from most of the

counties in Kenya so that the results can be more generalizable. The comparative analysis can be done by sampling rural and urban poor to determine the effects of pro-poor factors on adoption and usage of mobile financial services. Such comparative analysis could enrich the study more and provide sufficient empirical evidence that included both the urban poor and the rural poor. The study could also be carried out in multiple countries especially in East African Community partner countries who share common mobile telecom operators and banks with poor people of similar characteristics to come up with a multi-country study that can provide insight about the partner countries in the East African Community.

This study was based on cross-sectional data possibly limiting the direction of effects due to respondent's predisposition of any past event or conditions at the time of responding to the questionnaire though the model supports the empirical results from previous studies and the theoretical perspectives. The sample size is 400 and the response rate of 98% is adequate to draw conclusions about the sampled population. The limitations did not affect the quality of the study as the developed framework is authenticated in the research despite acknowledging these limitations.

6.8 Suggestions for Further Research

The future research could focus on addressing the shortcomings of this study or extending it to other applications and finally explore new areas of relevance to the industry or academics. There is a number of possible future research such as increasing the coverage of this study by obtaining data from multiple counties in Kenya.

Comparative studies can be done by obtaining data from rural poor and urban poor as well as comparing data from multiple countries. Since this study focused on the poor future studies can focus on the rich so that literature can be enriched.

Since this is a cross-sectional data, future studies can be of longitudinal data so to establish if the scales are generalizable at different times. Also, future research could be done using the qualitative technique to obtain results using different methodology. This study provides a good foundation for future research given the study's implication for academics, researchers, policy makers, innovators and products manufacturers.

6.9 Chapter Summary

This chapter summarized the study findings, composed study conclusions, defined the implications of the study, provided recommendations for policy and practices, identified study limitations and suggested directions for future research.

REFERENCES

Adongo, J. & Deen-Swarray, M. (2006). Poverty Alleviation in Rural Namibia through Improved Access to Financial Services. *NEPRU WORKING PAPER NO.109.*

Amin, H., Baba, R., and Muhammad, M. Z. (2007). An analysis of mobile banking acceptance by Malaysian customers. *Sunway University College Academic Journal,* 4, 1-12.

Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision process 50,* 179-211.

Babin, B., & Svensson, G. (2012). Structural equation modeling in social science research: Issues of validity and reliability in the research process. *European Business Review,* 24(4), 320-330.

Bagozzi, RP & Yi, Y 1988, 'On the evaluation of structural equation models', *Journal of the Academy of Marketing Science,* vol. 16, no. 1, pp. 74-94.

Bångens, L., & Söderberg, B. (2008). Mobile banking–Financial services for the unbanked?" *report from The Swedish Program for ICT in Developing Regions*

Barnes, S. J., & Corbitt, B. (2003). Mobile banking: Concept and potential. *International Journal of Mobile Communications, 1*(3), 273-288.

Baron, S., Patterson, A., & Harris, K. (2006). Beyond technology acceptance: understanding consumer practice. *International Journal of Service Industry Management, 17*(2), 111 - 135.

Bertolotti, D. (1984). Culture and technology. *Bowling Green State Univ Popular press.*

Bhattacherjee, A. (2001), Understanding information systems continuance: an expectation-confirmation model, *MIS Quarterly 25* (3) 351–370.

Bhavnani, A., Chiu, R., Janakiram, S. & Silarszky, P. (2008). The role of mobile phones in sustainable rural poverty reduction. *ICT policy division global information and communications department (GICT)* World Bank, Washington, D.C.

Boyd, C., & Jacob, K. (2007). Mobile financial services and the underbanked: opportunities and challenges for M-banking and m-payments. *Chicago, IL: The Center for Financial Services Innovation.*

Bryman, A. (2001), Social Research Methods, Oxford, UK, Oxford University Press.

Byrne, B. M. (2001). Structural equation modeling with AMOS: Basic concepts, applications, and programming. Mahwah, NJ: *Lawrence Erlbaum Associates*, Inc.

Chin, W. (2013). The partial least squares approach to structural equation modeling. *In Modern methods for business research* (pp. 295). New York: Psychology Press

Chung, N., & Kwon, S. (2009). The effect of customers' mobile experience and technical support on the intention to use mobile banking. *CyberPsychology and Behavior, 12*(5), 539-543.

Chung, N., & Kwon, S. J. (2009). Effect of trust level on mobile banking satisfaction: a multi-group analysis of information system success instruments. *Behaviour & Information Technology*, 28(6), 549-562.

Communication Authority (2015).Quarterly Sector Statistics Report. *Second Quarter of the financial year2014/15.* Communication Authority Kenya.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use and user acceptance of information technology. *MIS Quarterly, 13*, 319-340.

Dahlberg, T., Mallat, N., & Öörni, A. (2003a). Consumer acceptance of mobile payment solutions - ease of use, usefulness, and trust. *Paper presented at the 2nd International Conference on Mobile Business*, Vienna, Austria, 23-24.

Demirgüç-Kunt, A., & Klapper, L. F. (2012). Measuring financial inclusion: The global index database. *World Bank Policy Research Working Paper*, (6025).

De Silva, H., Ratnadiwakara, D., & Zainudeen, A. (2009). Social influence in mobile phone adoption: Evidence from the bottom of the pyramid in emerging Asia. Available at SSRN 1564091.

DeVellis, R. F. (1991). Scale Development. Theory and Practice. *Newbury Park, Sage Publications.*

Donner, J. (2005). Research Approaches to Mobile Phone Use in developing world: A Review of the literature. *The Information Society*, 24, 140-159.

Donner, J. (2006). The use of mobile phones by micro-entrepreneurs in Kigali, Rwanda: Changes to social and business networks. *Information Technologies and International Development,* 3(2), 3-19.

Dupas, P., & Robinson, J. (2009). Savings constraints and microenterprise development: Evidence from a field experiment in Kenya. *NBER Working Paper 14693*, National Bureau of Economic Research, Cambridge, MA.

Elesh, D. (1973). Poverty theories and income maintenance: validity and policy relevance. *Social science quarterly*, 359-373.

Fishbein, M., & Ajzen, I. (1975). Belief, Attitude, Intention and Behavior: An Introduction of Theory and Research. *Reading*, MA, USA: Addison-Wesley.

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research, 18*, 39-50.

Goodhue, DL 1998, 'Development and measurement validity of task-technology fit instrument for user evaluation of information systems', *Decision Sciences*, vol. 29, no 1 pp.105-138.

Gencer, M. (2011). The mobile money movement: Catalyst to jump-start emerging markets. *Innovations: Technology, Governance, Globalization, 6*(1), 101–117.

Hair, J.F., Hult, G. T. M., Ringle, C.M., Sarstedt, M. (2013). A Primer on Partial Least Squares Structural Equation Modelling (PLS-SEM) Sage, Thousand Oaks.

Hanifan, L. (1916). The rural school community center, *Annals of the American Academy of Political and Social Science 67*: 130-138

Hawe, P., & Shiell, A. (2000). Social capital and health promotion: a review. *Social science & medicine*, *51*(6), 871-885.

Henseler, J., Ringle, C.M., Sinkovics, R.R. (2009): The use of partial least squares path modeling in international marketing, in: Sinkovics, R. R. / Ghauri, P. N. (eds.), *Advances in International Marketing* 20, 277-320

Hofstede, G. (1980). Culture's consequences: International differences in work-related values. Beverly Hills, CA: *Sage Publications*.

Horst, H., & Miller, D. (2006). The cell phone: An anthropology of communication. *Berg*

Hughes, N. & Lonie, S. (2007). 'M-pesa: mobile money for the "unbanked" turning cellphones into 24-hour tellers in Kenya'. *Innovations: Technology, Governance, Globalization. In: MIT Press 2* (1-2), 63-81.

Hulland, J. (1999). Use of Partial Least Squares (PLS) in Strategic Management Research: A Review of Four Recent Studies. *Strategic Management Journal*, 20, 195-224.

International Fund for Agricultural Development (IFAD). (2011). *Enabling poor rural people to overcome poverty in Kenya*. Rome, Italy

Ivatury, G., & Mas, I. (2008). The early experience with branchless banking. *CGAP Focus Note, (46)*.

Ivatury, G., & Pickens, M. (2006). Mobile phone banking and low-income customers: evidence from South Africa. *Consultative Group to Assist the Poor*.

James, J., & Versteeg, M. (2007). Mobile phones in Africa: how much do we really know? *Social indicators research*, 84(1), 117-126.

Joshua, A. J., & Koshy, M. P. (2011). Usage patterns of electronic banking services by urban educated customers: Glimpses from India. *Journal of Internet Banking and Commerce*, 16(1), 1-12.

Kabubo-Mariara J. (2007). Poverty and Policy in Kenya: *Proceedings of a National Workshop*. University of Nairobi Press, Nairobi, Kenya.

Kaiser, H.F. (1974) an index of factorial simplicity. *Psychometrika*, 39, 31-36.

Karahanna, E., Straub, D. & Chervany, N. (1999). Information technology adoption across time: A cross-sectional comparison of post adoption and preadoption beliefs. *MIS Quarterly; 23*, 2; ABI/INFORM Global pg. 183.

Kimalu P, Nafula N, Manda D, Mwabu G, Kimenyi M. (2002). A Situational Analysis of Poverty in Kenya. *Kenya Institute of Public Policy Research Working Paper No. 6*. KIPPRA, Nairobi Kenya.

Kirui, O.K., J.J. Okello, G.W Njiraini and R.A. Nyikal (2013): Impact of mobile phone-based money transfer services in agriculture: evidence from Kenya. *Quarterly Journal of International Agriculture 52*, No. 2: 141-162.

Kreyer, N., Pousttchi, K., & Turowski, K. (2003). Mobile Payment Procedures: Scope and Characteristic. E-Service Journal, 2(3), 7-22.

Kristjanson P, Mango N, Krishna A, Radeny M, Johnson N. (2009).Understanding poverty dynamics in Kenya. *Journal of International Development, in press*. http://dx.doi.org/10.1002/jid.1598

Kwon, H. S., & Chidambaram, L. (2000). A test of the technology acceptance model: the case of cellular telephone adoption. *System Sciences.* Proceedings of the 33rd Annual Hawaii International Conference on (p. 7–pp).

Laforet, S., & Li, X. (2005). Consumers' attitudes towards online and mobile banking in China. *International Journal of Bank Marketing, 23*(5), 362-380.

Lam, T., & Hsu, C. H. (2004). Theory of planned behavior: Potential travelers from China. *Journal of Hospitality & Tourism Research*, 28(4), 463-482.

Lee, K. S., Lee, H. S., & Kim, S. Y. (2007). Factors Influencing the Adoption Behavior of Mobile Banking: A South Korean perspective. *Journal of Internet Banking & Commerce,* 12(2), 1-9.

Lee, S., Shin, B., & Lee, H. G. (2009). Understanding post-adoption usage of mobile data services: the role of supplier-side variables. *Journal of the Association for Information Systems,* 10(12), 2.

Leedy, P. & Ormrod, J. (2005). Practical research*: Planning and Design*, Prentice Hall, NJ

Levin, K. A. (2006). Study design III: Cross-sectional studies. *Evidence-based dentistry*, 7(1), 24-25. doi:10.1038/sj.ebd.6400375.

Liang, T. P., & Yeh, Y. H. (2011). Effect of use contexts on the continuous use of mobile services: the case of mobile games. *Personal and Ubiquitous Computing*, 15(2), 187-196.

Litondo, K. O., & Ntale, J. F. (2013). Determinants of Mobile Phone Usage for E-Commerce among Micro and Small Enterprises in the Informal Sector of Kenya. International Journal of Applied, 3(6).

Lötter, H. (2007). Are ICTs Prerequisites for the Eradication of Poverty? *International Review of Information Ethics* Vol.7.

Luarn, P., & Lin, H. H. (2005). Toward an understanding of the behavioral intention to use mobile banking. *Computers in human behavior*, 21(6), 873-891.

Lu, J., Yao, J., & Yu, C. (2005) Personal innovativeness, social influences, and adoption of wireless Internet services via mobile technology. *Journal of Strategic Information Systems* 14 (2005) 245–268. doi:10.1016/j.jsis.2005.07.003

Lu, J., Yu, C. S., & Liu, C. (2009). Mobile data service demographics in urban China. *Journal of Computer Information Systems*, 50(2), 117-126.

Lule, Isaiah; Omwansa, Tonny Kerage and Prof. Waema, Timothy Mwololo. Application of Technology Acceptance Model (TAM) in M-Banking Adoption in Kenya. *International Journal of Computing and ICT Research*, Vol. 6 Issue 1, pp 31-43.

Mallat N, Rossi M, Tuunainen VK, Oorni A (2008) an empirical investigation of mobile ticketing service adoption in public transportation. *Personal and Ubiquitous Computing* 12:57–65.

Mas, I. & Kumar, K. (2008). Banking on mobiles: Why, how, for whom? *CGAP Focus Note, (48*).

Mas, I. and Radcliffe, D. (2010) Mobile Payments go Viral: M-PESA in Kenya. In ChuhanPole, P. & Angwafo, M. (Eds.) Yes Africa Can: Success Stories from a Dynamic Continent. Washington, DC: World Bank.

Mathieson, K. (1991). Predicting user intentions: comparing the technology acceptance model with the theory of planned behavior. *Information systems research, 2*(3).

McNamara, K. (2003). Information and Communication Technologies, Poverty and Development: Learning from experience, *Background paper for the infoDev Annual Symposium*, Swiss State Secretariat for Economic Affairs.

McMillan, D and Chavis D (1986).Sense of Community: A Definition and Theory. *American Journal of Community Psychology, 14 (1), 6-23*.

Micheni, E. M., Lule, I., & Muketha, G. M. (2013). Transaction costs and facilitating conditions as indicators of the adoption of mobile money services in Kenya. *International Journal of Advanced Trends in Computer Science and Engineering* (IJATCSE), 2(5), 09-15.

Mohan, L. and Potnis, D. (2015). Mobile Banking for the Unbanked Poor without Mobile Phones: Comparing Three Innovative Mobile Banking Services in India. *48th Hawaii International Conference on System Sciences*, p.2168-2176.

Morawczynski, O. (2008). Surviving in the "dual system": How M-PESA is fostering urban-to-rural remittances in a Kenyan Slum. *Proceedings of IFIP WG Vol. 9*.

Morawczynski, O., & Miscione, G. (2008). Examining trust in mobile banking transactions: The case of M-PESA in Kenya. *In Social dimensions of information and communication technology policy* (pp. 287-298). Springer US.

Narayan, D. & Nyamwaya, D. (1996). "Learning from the Poor: A Participatory Poverty Assessment in Kenya" Washington, DC: *The World Bank.*

Nysveen, H., Pedersen, P. E., & Thorbjørnsen, H. (2005). Intentions to Use Mobile Services: Antecedents and Cross-Service Comparisons. *Journal of the Academy of Marketing Science*, 33(3), 330-346.

Omwansa, T. (2009). M-PESA: Progress and prospects. Innovations, 107-123.

Orlikowski, W., & Baroudi, J. (1991). Studying Information Technology in organizations: Research approaches and Assumptions. *Information system research*, 2(1), 1-28

Park, J. K., Yang, S. I. and Lehto, X. (2007). Adoption of mobile technologies for Chinese consumers. *Journal of Electronic Commerce Research*, 8 (3), 196-206.

Potnis, D. D.(2014) Examining Mobile Banking in Developing Nations from Pro-Poor "Context, Culture, and Community" Perspective. *ASIST 2014* Seattle, WA, USA.

Punch, K. F. (2006). *Developing Effective Research Proposals (2nd Ed.).* Sage Publication Ltd. London.

Pulver, R. (2009): The economics of branchless banking. *In: Innovations 4* (2): 57-76. MIT Press, Cambridge, Massachusetts.

Puschel, J., Mazzon, J. & Hernandez, J. M. (2010). Mobile banking: Proposition of an integrated adoption intention framework. *International Journal of Bank Marketing, Vol. 28,* No. 5: 389-409.

Renaud, K., & Biljon, J.V. (2008). Predicting technology acceptance and adoption Elderly: A qualitative study. *ACM International Conference Proceeding Series*, *338*, 210.

Ringle, C. M., Wende, S., & Will, S. (2005). SmartPLS 2.0 (M3) Beta, Hamburg,http://www.smartpls.de.

Riquelme, H. E., & Rios, R. E. (2010). The moderating effect of gender in the adoption of mobile banking. *International Journal of Bank Marketing*, *28*(5), 328-341.

Rogers, E. M. (1995). Diffusion of Innovations (4th Ed.). *New York: Free Press*.

Sanchez-Martinez, M., & Davis, P. (2014). *A review of the economic theories of poverty* (No. 435). National Institute of Economic and Social Research.

Sanfillippo, M., & Fichman, P. (2014). The evolution of social informatics research (1984-2013): Challenges and opportunities. *Social Informatics: Past, Present, and Future* (pp. 1-26). Cambridge, United Kingdom: Cambridge Scholars Publishing.

Sen, A. (1973).Poverty, Inequality, and Unemployment Some Conceptual Issues in Measurement *Economic and Political Weekly, Vol. 8*, No. 31/33, Special Number (Aug. 1973), pp.1457-1459.

Sheppard, B. H., Hartwick, J., and Warshaw, P. R. (1988). The Theory of Reasoned Action: A Meta-Analysis of Past Research with Recommendations for Modifications and Future Research, *Journal of Consumer Research* 15: 325-343.

Singh, S., Srivastava, V., and Srivastava, R. K. (2010). Customer acceptance of mobile banking: A conceptual framework. *SIES Journal of Management*, 7(1), 55-64.

Somasundaram, R., & Karlsbjerg, J. (2003). Research philosophies in the IOS Adoption fields. *ECIS 2003 proceedings*.

Straub, M., Loch, K., Evaristo, R., Karahanna, E. & Srite, M. (2002). 'Toward a theory-based measurement of culture', *Journal of Global Information Management, Vol. 10*, No. 1, pp. 13–23.

Todaro, M.P. (2000). Economic Development. *Addison Wesley Longman, Inc*. Seventh Ed.

Townsend, A M. 2000. Life in the Real-Time City: Mobile Telephones and Urban Metabolism. *Journal of Urban Technology*, pp. 85-104.

Urbach, N., & Ahlemann, F. (2010). Structural equation modeling in information systems research using partial least squares. *Journal of Information Technology Theory and Application*, 11(2), 5-40.

Van Biljon, J., & Kotzé, P. (2008). Cultural Factors in a Mobile Phone Adoption and Usage Model. *Journal of Universal Computer Science*, vol. 14, no. 16, 2650-2679.

Venkatesh, V. & Zhang, X. (2010) "Unified theory of acceptance and use of technology: U.S. vs. China," *Journal o*f Global Information Technology Management, Vol. 13*, No. 1: 5-27, 2010.

Venkatesh, V. and Davis, F.D. (2000). A theoretical extension of the technology acceptance model: four longitudinal field studies, *Management Science, Vol. 46*, no. (2), 186-204.

Venkatesh, V., Morris M. G., Davis, G. B., & Davis, F. D. (2003) "User acceptance of information technology: Toward a unified view," *MIS Quarterly, Vol. 27*, no. 3, 425-478.

Wamuyu, P.K. (2014). The role of contextual factors in the uptake and continuance of mobile money usage in Kenya, *The Electronic Journal of Information Systems in Developing Countries 64*, 4, 1-19.

Wilson, W. J. (1996). When work disappears. *Political Science Quarterly*, 567-595.

Woolcock, M., & Narayan, D. (2000). Social capital: Implications for development theory, research, and policy. *The World Bank research observer, 15*(2), 225-249.

Wold, S., A. Ruhe, H. Wold, & W. J. Dunn III, "The Collinearity Problem in Linear Regression: The Partial Least Squares (PLS) Approach to Generalized Inverses," *SIAM Journal of Scientific and Statistic Computing, Vol*. 5: 735-743, 1984.

Wu, J.-H., & Wang, S. (2005).What drives mobile commerce? An empirical evaluation of the revised technology acceptance model. *Information & Management, 42*(5), 719.

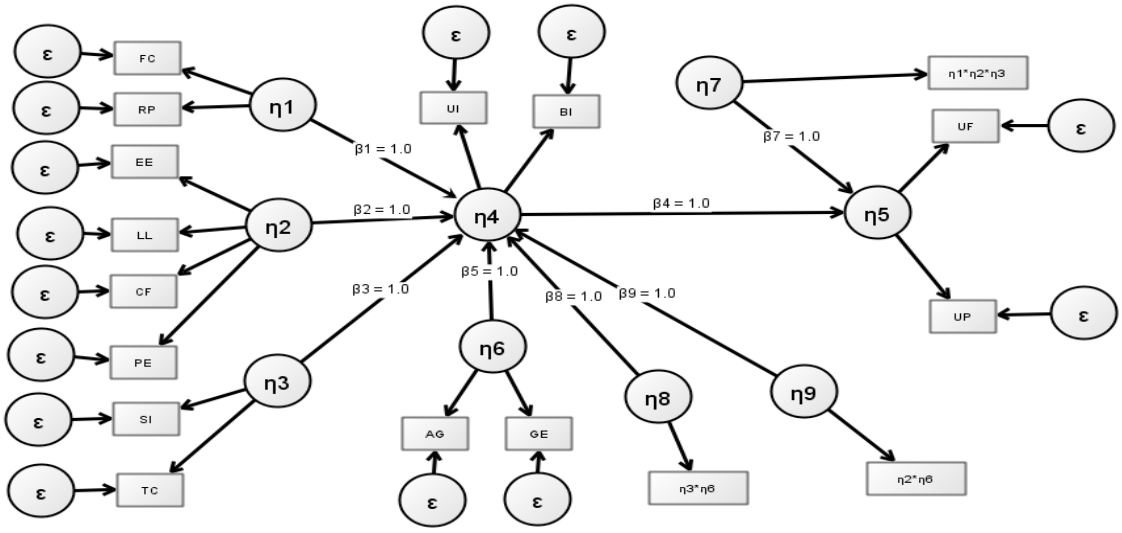
Yang, K. (2004). A comparison of attitudes towards Internet advertising among lifestyle segments in Taiwan. *Journal of Marketing Communications, Vol. 10*, No. 1: 195.

Yu, C. (2012) "Factors Affecting Individuals to Adopt Mobile Banking: Empirical Evidence from the UTAUT Model," J*ournal of Electronic Commerce Research, Vol. 13*, No. 2: 104-121, 2012.

Zheng, X., & Chen, D. (2003, June). Study of mobile payments system. *In E-Commerce, 2003. CEC 2003. IEEE International Conference on (pp. 24-27)*. IEEE.

APPENDICES

APPENDIX A: The SEM MODEL



η1= Contextual Factors (FC= Facilitating condition, RP= Regulatory Policies)

η2= Community Factors (EE= Effort Expectancy, LL= Literacy Levels, CF= Financial cost, PE=Performance Expectancy)

η3= Cultural Factors (=SI= Social Influence, TC= Type of Culture)

η4= mobile financial services Adoption (UI= Usage Intention, BI= Behavioral Intention)

η5= mobile financial services Usage (UF= Usage Frequency, UP= Usage Purpose)

η6= Demographic Factors (AG= Age, GE= Gender)

η7= Pro-poor Factors (Product of η1, η2, η3)

η8= Effect of Demographic factors on the relationship between cultural factors and adoption

η9= Effects of Demographic factors on the relationship between community factors and adoption

APPENDIX B: The Questionnaire

Dear respondent,

I am a Doctoral candidate at the University of Nairobi pursuing PhD in Business Administration. The purpose of this survey is to investigate the effects of pro-poor factors on adoption and usage of mobile financial services by the poor in Kenya. The information you provide will be used strictly for academic purpose and will be treated with utmost confidentiality. Thank you for your participation. Please answer ALL questions in ALL sections in this questionnaire. Completion of this form will take you 10-15 minutes.

Date: **Location: ……..**

Section A: Demographics Factors

In this section, we would like you to fill in some of your personal details. Please tick your answer and your answers will be kept strictly confidential.

1. What is your gender?
   Male ❑ Female ❑
2. What is your age …….?

Section B: Adoption of Mobile Financial Services

Please respond to the questions below by ticking the appropriate box

3. What is your level of education?
   Primary School ❑
   Secondary School ❑
   College Diploma ❑
   University Degree ❑
4. Do you have a phone?
   Yes❑ No ❑
5. Are u sharing a phone with someone else?
   Yes❑ No ❑

6. How many people are you sharing your phone with?

   1-2 ❑

   3-5 ❑

   More than 5 ❑

   None ❑

7. Have you registered mobile money (MPESA, Airtel Money etc.) on your phone?

   Yes ❑ No ❑

8. Have you registered for bank account on your phone?

   Yes ❑ No ❑

9. Which bank account have you registered for on your phone?

   M-Shwari ❑

   KCB M-Pesa ❑

   Others ❑ (specify)……..

   None ❑

10. Do you have a bank account?

    Yes ❑ No ❑

11. Have you registered to link your bank account with your phone?

    Yes ❑ No ❑

12. Have you registered for internet banking?

    Yes ❑ No ❑

13. Do you have a credit card?

    Yes ❑ No ❑

The sections in the table seek your opinion regarding the adoption of mobile financial services. Respondents are asked to indicate the extent to which they agree or disagree with each statement using 7 Likert scale [(1) = strongly disagree; (2) = disagree; (3) = somewhat disagree; (4) = neutral; (5) = somewhat agree; (6) = Agree; (7) = strongly agree;] response framework. Please respond to the questions below by ticking the appropriate box showing your level of agreement with statements below.

Adoption The statements below start with *I know mobile financial services and*									
No	Code		**1**	**2**	**3**	**4**	**5**	**6**	**7**
14.	UI1	I intend to use mobile money							
15.	UI2	I intend to use M-Shwari							
16.	UI3	I intend to get credit cards							
17.	UI4	I intend to use online banking							
18.	UI5	I intend to use mobile banking							
19.	UI6	I recommend people to adopt							
20.	BI1	I enjoy using my phone							
21.	BI2	I like making payment with my credit card							
22.	BI3	I enjoy making payments using mobile money							

Section C: Usage of Mobile Financial Services

Please respond to the questions below by ticking the appropriate box

23. What Mobile Money services do you use?

Send Money ❑

Withdraw Cash ❑

Buy Airtime ❑

Lipa na M-pesa ❑

Others ❑ Specify ……..

None ❑

24. How frequently do you use mobile financial services?

Daily ❑

Weekly ❑

Monthly ❑

25. What types of payments do you make using Mobile Money services?

Pay for food ❑

Pay for school fees ❑

Pay for rent ❑

Pay for utilities ❑

Others ❑ Specify ……..

None ❑

26. Do you use internet banking?

Yes ❑ No ❑

27. Do you use a credit card?

Yes ❑ No ❑

28. Do you use a debit card?

Yes ❑ No ❑

The sections in the table seeks your opinion regarding the usage of mobile financial services Respondents are asked to indicate the extent to which they agree or disagree with each statement using 7 Likert scale [(1) = strongly disagree; (2) = disagree; (3) = somewhat disagree; (4) = neutral; (5) = somewhat agree; (6) = Agree; (7) = strongly agree;] response framework.

Please respond to the questions below by ticking the appropriate box showing your level of agreement with statements below.

Usage Frequency The statements below start with *I know mobile financial services and*									
No	Code		**1**	**2**	**3**	**4**	**5**	**6**	**7**
29.	UF1	I have never used after registering for it							
30.	UF2	I only used the first time then left it							
31.	UF3	I recommend other people to use it frequently							
Usage Purposes The statements below start with *I use mobile financial services to*									

32.	UP1	Pay school fees							
33.	UP2	Buy goods at the shops							
34.	UP3	Buy airtime							
35.	UP4	Pay electricity bill							
36.	UP5	Pay water bill							
37.	UP6	Repay debts borrowed from friends							
38.	UP7	Pay rent to landlord							

Section D: Contextual Factors

This section is seeking your opinion regarding the effects of contextual factors on adoption. Respondents are asked to indicate the extent to which they agree or disagree with each statement using 7 Likert scale [(1) = strongly disagree; (2) = disagree; (3) = somewhat disagree; (4) = neutral; (5) = somewhat agree; (6) = Agree; (7) = strongly agree;] response framework.

Please respond to the questions below by ticking the appropriate box showing your level of agreement with statements below.

Regulatory Policies									
The statements below start with *I am able to adopt mobile financial services due to*									
No	Code		**1**	**2**	**3**	**4**	**5**	**6**	**7**
39.	RP1	Good Government policies and regulations that allow investment							
40.	RP2	Favorable banking regulations and policies that allow investment							
41.	RP3	Well-developed institutional mechanism to implement policies and regulations that promote mobile financial services							
Facilitating Conditions									
(The statements below start with *I am able to adopt mobile financial services due to)*									
42.	FC1	Good network infrastructure and network coverage in my area							

43.	FC2	Excellent network signal strength in my area							
44.	FC3	Ability to own a mobile phone to access mobile financial services							
45.	FC4	Availability of help when I get problem using it							
46.	FC5	Access to electricity to charge mobile phone							
47.	FC6	Widespread and availability of agent network to facilitate mobile financial services transactions							
48.	FC7	Availability of Internet to access internet banking services							
49.	FC8	Availability of debit and credits cards from the banks to make card payments							

Section E: Community Factors

This section seeks your opinion regarding the effects of community factors on adoption. Respondents are asked to indicate the extent to which they agree or disagree with each statement using 7 Likert scale [(1) = strongly disagree; (2) = disagree; (3) = somewhat disagree; (4) = neutral; (5) = somewhat agree; (6) = Agree; (7) = strongly agree;] response framework. Please respond to the questions below by ticking the appropriate box showing your level of agreement with statements below.

Financial Cost									
The statements below start with *I am able to adopt mobile financial services because*									
No	Code		**1**	**2**	**3**	**4**	**5**	**6**	**7**
50.	CF1	Transaction fee for sending money is low							
51.	CF2	Buying a mobile phone that can access it is cheap							
52.	CF3	Obtaining and having credit cards is not expensive to me							
53.	CF4	There is no risk of money loss using							

		mobile financial services							
54.	CF5	The cost of using the internet to use internet banking is cheap							
Effort Expectancy (The statements below start with *I am able to adopt mobile financial services because)*									
55.	EE1	It is easy for me to learn							
56.	EE2	I find it easy to get it to do what I want it to do							
57.	EE3	I am becoming skillful at using it							
58.	EE4	I find it easy to use							
59.	EE5	It is easy to interact with							
60.	EE6	I find it easy to understand its features							
Literacy Levels The statements below start with *I am able to adopt mobile financial services because*									
61.	LL1	The Mpesa menu is easy to use							
62.	LL2	I understand English well thus easy to use							
63.	LL3	I know how to use technology innovations							
64.	LL4	It does not need one to be financial literate to use							
Performance Expectancy The statements below start with *I am able to adopt mobile financial services because*									
65.	PE1	It helps me do financial transactions faster and easier							
66.	PE2	It helps me accomplish things easily							
67.	PE3	It is secure and reduces money loss							
68.	PE4	It saves me time and money							
69.	PE5	It increases my productivity							

Section F: Cultural Factors

This section is seeking your opinion regarding the effects of cultural factors on adoption. Respondents are asked to indicate the extent to which they agree or disagree with each statement using 7 Likert scale [(1) = strongly disagree; (2) = disagree; (3) = somewhat disagree; (4) = neutral; (5) = somewhat agree; (6) = Agree; (7) = strongly agree;] response framework. Please respond to the questions below by ticking the appropriate box showing your level of agreement with statements below.

Social Influence									
The statements below start with *I am able to adopt mobile financial services because*									
No	Code		**1**	**2**	**3**	**4**	**5**	**6**	**7**
70.	SI1	People important to me think I should adopt it							
71.	SI2	People who influence my behavior have adopted it							
72.	SI3	People in my community have adopted it							
73.	SI4	Friends and relatives influenced me to adopt it							
74.	SI5	Social norms influences me to use mobile financial services							

In the questions below please select the appropriate response in regard to social influence

75. My children or relatives send me money through mobile money thus I use it to collect money True ❑ False ❑

76. I am able to adopt mobile financial services due to the following cultural reasons------
---

Type of Culture The statements below start with *I am able to adopt mobile financial services because*									
No	Code		**1**	**2**	**3**	**4**	**5**	**6**	**7**
77.	TC1	In my culture, only men deal with finances in the family							
78.	TC2	My religion prohibits taking loan that attracts interest							
79.	TC3	My cultural supports sharing of wealth among family members							
80.	TC4	My lifestyle allows me to use mobile financial services							
81.	TC6	My culture promotes sharing of mobile phones to use mobile money							

In the questions below please select the appropriate response in regard to culture

82. It is the father who owns the only mobile phone in the family True ❑ False ❑

APPENDIX C: The MPESA Tariff 2015

Transaction Range (Ksh)		Transaction Type and Customer Charge (Ksh)			
Min	Max	Transfer to other M-PESA Users	Transfer to Unregistered Users	Withdrawal from M-PESA Agent	Percent Charged
10	49	1	N/A	N/A	0.0%
50	100	3	N/A	10	10.00%
101	500	11	44	27	5.4%
501	1,000	15	48	27	2.7%
1,001	1,500	25	58	27	1.8%
1,501	2,500	40	73	27	1.1%
2,501	3,500	55	110	49	1.4%
3,501	5,000	60	132	66	1.3%
5,001	7,500	75	163	82	1.1%
7,501	10,000	85	201	110	1.1%
10,001	15,000	95	260	159	1.1%
15,001	20,000	100	282	176	0.9%
20,001	25,000	110	303	187	0.7%
25,001	30,000	110	303	187	0.6%
30,001	35,000	110	303	187	0.5%
35,001	40,000	110	N/A	275	0.7%
40,001	45,000	110	N/A	275	0.6%
45,001	50,000	110	N/A	275	0.6%
50,001	70,000	110	N/A	330	0.47%
ATM Withdrawal					
Transaction Range (Ksh)					
Min	Max	Customer Charge			
200	2,500	33			1.3%
2,501	5,000	66			1.3%
5001	10,000	110			1.1%
10,001	20,000	193			1.0%

Note the Percentage charged column is calculated by the researcher using the formula

charge amount/max transaction amount*100

APPENDIX D: The Research Output Data

Appendix 1: Adoption Descriptive Statistics

	Mean	Std. Deviation	Analysis N
UI1	5.40	1.128	385
UI2	5.37	1.176	385
UI3	4.15	1.613	385
UI4	4.15	1.595	385
UI5	4.77	1.481	385
UI6	5.38	1.266	385
BI1	5.09	1.541	385

Appendix 2: Adoption Correlation Matrix[a]

		UI1	UI2	UI3	UI4	UI5	UI6	BI1
Correlation	UI1	1.000	.702	.212	.134	.291	.485	.361
	UI2	.702	1.000	.213	.261	.406	.505	.346
	UI3	.212	.213	1.000	.742	.459	.322	.153
	UI4	.134	.261	.742	1.000	.581	.344	.043
	UI5	.291	.406	.459	.581	1.000	.514	.303
	UI6	.485	.505	.322	.344	.514	1.000	.365
	BI1	.361	.346	.153	.043	.303	.365	1.000
Sig. (1-tailed)	UI1		.000	.000	.004	.000	.000	.000
	UI2	.000		.000	.000	.000	.000	.000
	UI3	.000	.000		.000	.000	.000	.001
	UI4	.004	.000	.000		.000	.000	.198
	UI5	.000	.000	.000	.000		.000	.000
	UI6	.000	.000	.000	.000	.000		.000
	BI1	.000	.000	.001	.198	.000	.000	

a. Determinant = .054

Appendix 3: Adoption KMO and Bartlett's Test

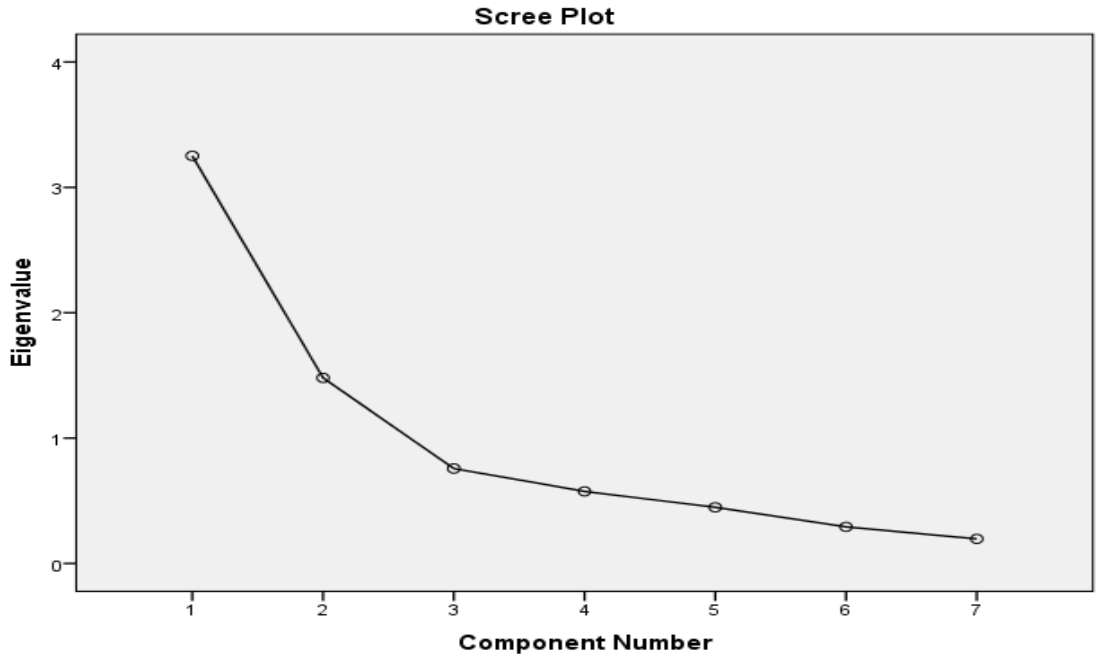
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.716
Bartlett's Test of Sphericity	Approx. Chi-Square	1113.279
	Df	21
	Sig.	.000

Appendix 4: Adoption Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.251	46.447	46.447	3.251	46.447	46.447	2.444	34.920	34.920
2	1.480	21.145	67.592	1.480	21.145	67.592	2.287	32.672	67.592
3	.758	10.824	78.416						
4	.575	8.214	86.629						
5	.448	6.399	93.028						
6	.292	4.170	97.198						
7	.196	2.802	100.000						

Extraction Method: Principal Component Analysis.

Appendix 5: Adoption scree plot



Appendix 6: Adoption Rotated Component Matrix[a]

	Component	
	1	2
UI1	.844	.072
UI2	.824	.184
UI3	.085	.868
UI4	.044	.932
UI5	.402	.690
UI6	.673	.387
BI1	.656	.027

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 3 iterations.

Appendix 7: Adoption Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.795	.803	7

Appendix 8: Adoption Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
UI1	28.90	35.832	.498	.546	.775
UI2	28.94	34.626	.565	.562	.764
UI3	30.16	31.564	.534	.581	.768
UI4	30.15	31.656	.536	.660	.767
UI5	29.54	30.999	.645	.487	.744
UI6	28.92	33.288	.612	.421	.754
BI1	29.22	35.166	.344	.239	.804

Appendix 9:What is your Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	209	54.3	54.3	54.3
	Female	176	45.7	45.7	100.0
	Total	385	100.0	100.0	

Appendix 10: what is your age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	16	1	.3	.3	.3
	17	3	.8	.8	1.0
	18	6	1.6	1.6	2.6
	19	20	5.2	5.2	7.8
	20	13	3.4	3.4	11.2
	21	25	6.5	6.5	17.7
	22	12	3.1	3.1	20.8
	23	29	7.5	7.5	28.3
	24	33	8.6	8.6	36.9
	25	24	6.2	6.2	43.1
	26	19	4.9	4.9	48.1
	27	28	7.3	7.3	55.3
	28	18	4.7	4.7	60.0
	29	28	7.3	7.3	67.3
	30	22	5.7	5.7	73.0
	31	20	5.2	5.2	78.2
	32	19	4.9	4.9	83.1
	33	16	4.2	4.2	87.3
	34	4	1.0	1.0	88.3
	35	2	.5	.5	88.8
	36	5	1.3	1.3	90.1
	37	8	2.1	2.1	92.2
	38	1	.3	.3	92.5
	39	4	1.0	1.0	93.5
	40	9	2.3	2.3	95.8
	41	2	.5	.5	96.4
	42	6	1.6	1.6	97.9
	43	1	.3	.3	98.2
	45	2	.5	.5	98.7
	47	1	.3	.3	99.0
	49	2	.5	.5	99.5
	50	1	.3	.3	99.7
	54	1	.3	.3	100.0
	Total	385	100.0	100.0	

Appendix 11: What is your level of education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Primary School	78	20.3	20.3	20.3
	Secondary School	175	45.5	45.5	65.7
	College Diploma	103	26.8	26.8	92.5
	University Degree	29	7.5	7.5	100.0
	Total	385	100.0	100.0	

Appendix 12:Do you have a phone

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	349	90.6	90.6	90.6
	No	36	9.4	9.4	100.0
	Total	385	100.0	100.0	

Appendix 13: Are you sharing your phone with someone else

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	92	23.9	23.9	23.9
	No	293	76.1	76.1	100.0
	Total	385	100.0	100.0	

Appendix 14: How many people are you sharing phone with

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-2	72	18.7	18.7	18.7
	3-5	17	4.4	4.4	23.1
	More than 5	4	1.0	1.0	24.2
	None	292	75.8	75.8	100.0
	Total	385	100.0	100.0	

Appendix 15: Have you registered for mobile money on your phone

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	335	87.0	87.0	87.0
	No	50	13.0	13.0	100.0
	Total	385	100.0	100.0	

Appendix 16: Have you registered for a bank account on your phone

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	259	67.3	67.3	67.3
	No	126	32.7	32.7	100.0
	Total	385	100.0	100.0	

Appendix 17: Which bank account have you registered for on your phone

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	M-Shwari	190	49.4	49.4	49.4
	KCB MPESA	66	17.1	17.1	66.5
	Others	19	4.9	4.9	71.4
	None	110	28.6	28.6	100.0
	Total	385	100.0	100.0	

Appendix 18:Do you have a bank account

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	234	60.8	60.8	60.8
	No	151	39.2	39.2	100.0
	Total	385	100.0	100.0	

Appendix 19: Have you registered to link your bank to your mobile phone

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	147	38.2	38.2	38.2
	No	238	61.8	61.8	100.0
	Total	385	100.0	100.0	

Appendix 20: Have you registered for internet banking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	24	6.2	6.2	6.2
	No	361	93.8	93.8	100.0
	Total	385	100.0	100.0	

Appendix 21:Do you have a credit card

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	19	4.9	4.9	4.9
	No	366	95.1	95.1	100.0
	Total	385	100.0	100.0	

Appendix 22: What mobile money services do you use

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Send Money	125	32.5	32.5	32.5
	Withdraw cash	102	26.5	26.5	59.0
	Buy Airtime	43	11.2	11.2	70.1
	Lipa na Mpesa	73	19.0	19.0	89.1
	Others	1	.3	.3	89.4
	None	41	10.6	10.6	100.0
	Total	385	100.0	100.0	

Appendix 23:How frequent do you use mobile financial services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Daily	134	34.8	34.8	34.8
	Weekly	88	22.9	22.9	57.7
	Monthly	124	32.2	32.2	89.9
	None	39	10.1	10.1	100.0
	Total	385	100.0	100.0	

Appendix 24: What types of payment do you make using mobile money services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Pay for food	84	21.8	21.8	21.8
	Pay for school fees	34	8.8	8.8	30.6
	Pay for rent	80	20.8	20.8	51.4
	Pay for utilities	88	22.9	22.9	74.3
	Other	2	.5	.5	74.8
	None	97	25.2	25.2	100.0
	Total	385	100.0	100.0	

Appendix 24: Do you use internet Banking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	19	4.9	4.9	4.9
	No	366	95.1	95.1	100.0
	Total	385	100.0	100.0	

Appendix 26:Do you use credit card

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	15	3.9	3.9	3.9
	No	370	96.1	96.1	100.0
	Total	385	100.0	100.0	

Appendix 27: Do you use Debit card

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	43	11.2	11.2	11.2
	No	342	88.8	88.8	100.0
	Total	385	100.0	100.0	

Appendix 28: Usage Descriptive Statistics

	Mean	Std. Deviation	Analysis N
UF1	2.19	1.111	385
UF2	2.35	1.288	385
UP1	4.31	1.863	385
UP2	4.25	1.805	385
UP4	4.79	1.776	385
UP7	4.35	1.948	385

Appendix 29: usage Correlation Matrix[a]

		UF1	UF2	UP1	UP2	UP4	UP7
Correlation	UF1	1.000	.571	.015	-.019	.045	-.055
	UF2	.571	1.000	.172	.155	-.002	-.126
	UP1	.015	.172	1.000	.782	.412	.260
	UP2	-.019	.155	.782	1.000	.482	.337
	UP4	.045	-.002	.412	.482	1.000	.437
	UP7	-.055	-.126	.260	.337	.437	1.000
Sig. (1-tailed)	UF1		.000	.386	.356	.190	.140
	UF2	.000		.000	.001	.485	.007
	UP1	.386	.000		.000	.000	.000
	UP2	.356	.001	.000		.000	.000
	UP4	.190	.485	.000	.000		.000
	UP7	.140	.007	.000	.000	.000	

a. Determinant = .141

Appendix 30: usage KMO and Bartlett's Test

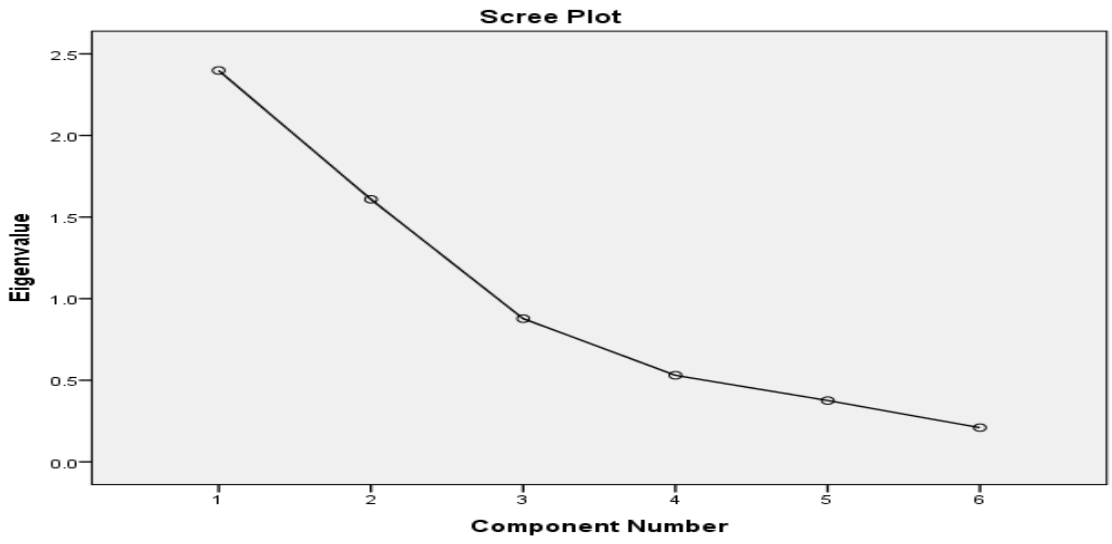
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.615
Bartlett's Test of Sphericity	Approx. Chi-Square	745.396
	Df	15
	Sig.	.000

Appendix 30: usage Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.398	39.965	39.965	2.398	39.965	39.965	2.385	39.755	39.755
2	1.608	26.808	66.773	1.608	26.808	66.773	1.621	27.018	66.773
3	.878	14.627	81.401						
4	.531	8.843	90.243						
5	.376	6.262	96.506						
6	.210	3.494	100.000						

Extraction Method: Principal Component Analysis.

Usage Scree Plot



Appendix 31: Usage Rotated Component Matrix[a]

	Component	
	1	2
UP2	.874	.117
UP1	.826	.167
UP4	.745	-.027
UP7	.615	-.240
UF2	.064	.895
UF1	-.038	.849

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Appendix 32: Usage Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.668	.643	6

Appendix 33: usage Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
UF1	20.03	34.595	.119	.352	.696
UF2	19.88	33.187	.171	.388	.688
UP1	17.92	23.163	.600	.616	.543
UP2	17.98	22.768	.660	.656	.519
UP4	17.44	25.232	.505	.332	.585
UP7	17.88	27.187	.316	.236	.663

Appendix 34: Contextual Factors Descriptive Statistics

	Mean	Std. Deviation	Analysis N
RP1	4.97	1.396	385
RP2	5.02	1.404	385
RP3	5.31	1.440	385
FC1	5.37	1.388	385
FC2	5.07	1.301	385
FC3	4.79	1.548	385
FC4	4.92	1.492	385
FC5	4.73	1.407	385
FC6	4.80	1.479	385

Appendix 35: Contextual Factors Correlation Matrix[a]

		RP1	RP2	RP3	FC1	FC2	FC3	FC4	FC5	FC6
Correlation	RP1	1.000	.645	.572	.539	.526	.394	.329	.336	.308
	RP2	.645	1.000	.558	.541	.472	.414	.419	.421	.312
	RP3	.572	.558	1.000	.595	.524	.440	.456	.342	.383
	FC1	.539	.541	.595	1.000	.644	.433	.449	.453	.416
	FC2	.526	.472	.524	.644	1.000	.500	.514	.510	.506
	FC3	.394	.414	.440	.433	.500	1.000	.623	.387	.385
	FC4	.329	.419	.456	.449	.514	.623	1.000	.500	.424
	FC5	.336	.421	.342	.453	.510	.387	.500	1.000	.531
	FC6	.308	.312	.383	.416	.506	.385	.424	.531	1.000
Sig. (1-tailed)	RP1		.000	.000	.000	.000	.000	.000	.000	.000
	RP2	.000		.000	.000	.000	.000	.000	.000	.000
	RP3	.000	.000		.000	.000	.000	.000	.000	.000
	FC1	.000	.000	.000		.000	.000	.000	.000	.000
	FC2	.000	.000	.000	.000		.000	.000	.000	.000

FC3	.000	.000	.000	.000	.000		.000	.000	.000
FC4	.000	.000	.000	.000	.000	.000		.000	.000
FC5	.000	.000	.000	.000	.000	.000	.000		.000
FC6	.000	.000	.000	.000	.000	.000	.000	.000	

a. Determinant = .015

Appendix 36: Contextual Factors KMO and Bartlett's Test

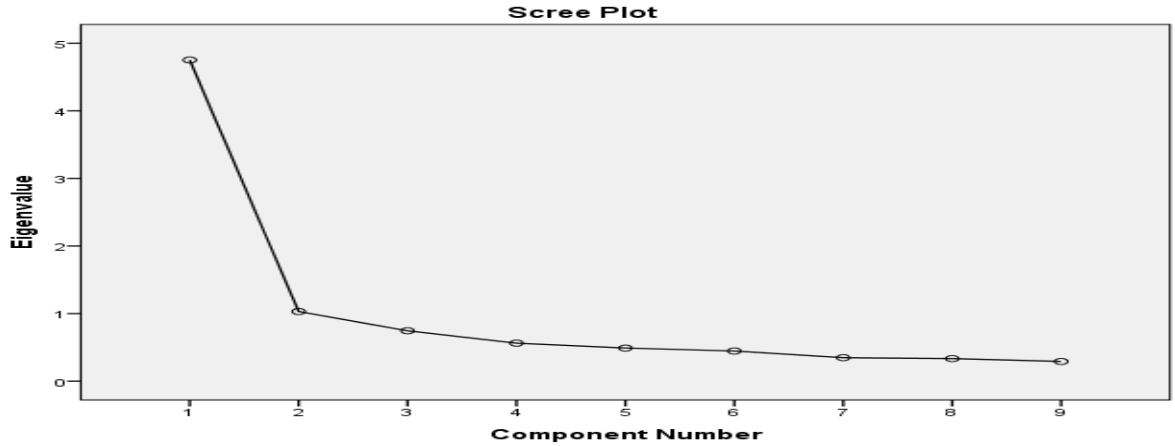
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.888
Bartlett's Test of Sphericity	Approx. Chi-Square	1591.212
	Df	36
	Sig.	.000

Appendix 37: Contextual Factors Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.752	52.798	52.798	4.752	52.798	52.798	2.932	32.573	32.573
2	1.030	11.449	64.248	1.030	11.449	64.248	2.851	31.675	64.248
3	.746	8.284	72.531						
4	.562	6.248	78.779						
5	.490	5.447	84.226						
6	.446	4.959	89.185						
7	.347	3.860	93.045						
8	.334	3.712	96.757						
9	.292	3.243	100.000						

Extraction Method: Principal Component Analysis.

Appendix 38: Contextual Factors Scree plot



Appendix 39: Contextual Factors Rotated Component Matrix[a]

	Component	
	1	2
RP1	.856	.149
RP2	.795	.239
RP3	.750	.308
FC1	.680	.428
FC2	.533	.603
FC3	.345	.645
FC4	.269	.753
FC5	.208	.756
FC6	.154	.759

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Appendix 40: Contextual Factors Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.886	.887	9

Appendix 41: Contextual Factors Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
RP1	40.02	70.200	.620	.523	.875
RP2	39.97	69.543	.646	.518	.873
RP3	39.68	68.729	.663	.502	.871
FC1	39.62	68.617	.700	.543	.868
FC2	39.92	69.201	.728	.562	.867
FC3	40.20	68.573	.611	.455	.876
FC4	40.06	68.634	.639	.506	.873
FC5	40.26	70.662	.592	.433	.877
FC6	40.19	70.763	.551	.378	.881

Appendix 42: Community Factors Descriptive Statistics

	Mean	Std. Deviation	Analysis N
CF1	4.04	1.648	385
CF2	4.11	1.593	385
EE2	5.02	1.342	385
EE3	5.19	1.433	385
EE4	5.26	1.498	385
LL2	5.10	1.393	385
LL4	4.85	1.486	385
PE1	5.40	1.236	385
PE2	5.41	1.191	385
PE4	5.70	1.350	385

Appendix 43: Community Factors Correlation Matrix[a]

		CF1	CF2	EE2	EE3	EE4	LL2	LL4	PE1	PE2	PE4
Correlation	CF1	1.000	.768	.363	.406	.405	.289	.423	.273	.188	.185
	CF2	.768	1.000	.332	.408	.313	.271	.323	.261	.226	.228
	EE2	.363	.332	1.000	.767	.730	.719	.624	.657	.639	.560
	EE3	.406	.408	.767	1.000	.731	.695	.601	.637	.567	.549
	EE4	.405	.313	.730	.731	1.000	.625	.641	.583	.592	.558
	LL2	.289	.271	.719	.695	.625	1.000	.564	.566	.536	.473
	LL4	.423	.323	.624	.601	.641	.564	1.000	.510	.471	.417
	PE1	.273	.261	.657	.637	.583	.566	.510	1.000	.752	.652
	PE2	.188	.226	.639	.567	.592	.536	.471	.752	1.000	.664

	PE4	.185	.228	.560	.549	.558	.473	.417	.652	.664	1.000
	CF1		.000	.000	.000	.000	.000	.000	.000	.000	.000
	CF2	.000		.000	.000	.000	.000	.000	.000	.000	.000
	EE2	.000	.000		.000	.000	.000	.000	.000	.000	.000
	EE3	.000	.000	.000		.000	.000	.000	.000	.000	.000
Sig. (1-tailed)	EE4	.000	.000	.000	.000		.000	.000	.000	.000	.000
	LL2	.000	.000	.000	.000	.000		.000	.000	.000	.000
	LL4	.000	.000	.000	.000	.000	.000		.000	.000	.000
	PE1	.000	.000	.000	.000	.000	.000	.000		.000	.000
	PE2	.000	.000	.000	.000	.000	.000	.000	.000		.000
	PE4	.000	.000	.000	.000	.000	.000	.000	.000	.000	

a. Determinant = .001

Appendix 44: Community Factors KMO and Bartlett's Test

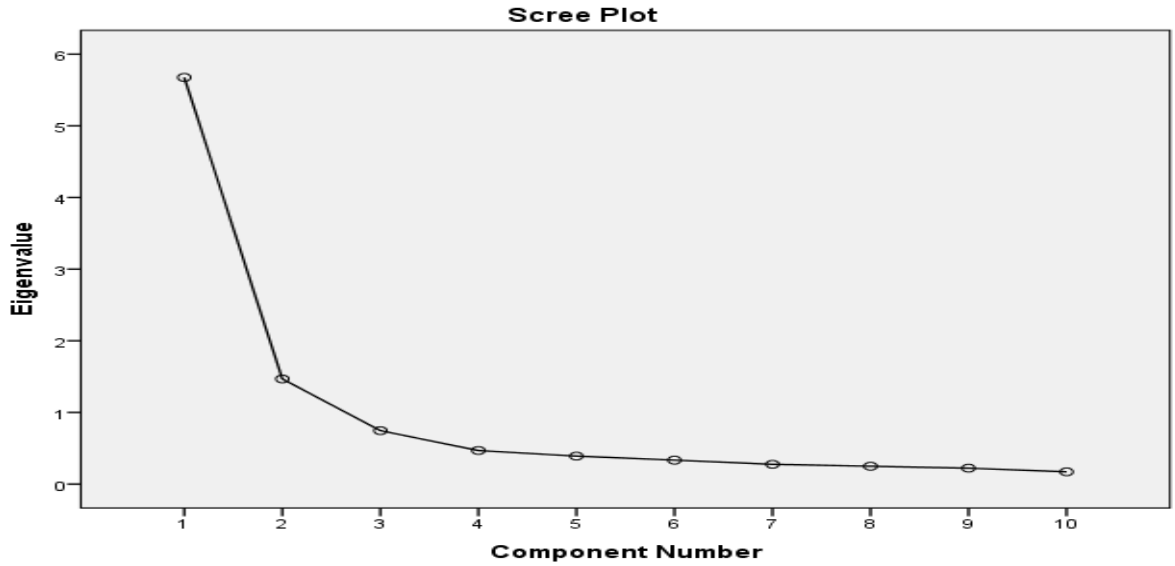
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.889
Bartlett's Test of Sphericity	Approx. Chi-Square	2626.893
	Df	45
	Sig.	.000

Appendix 45: Community Factors Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.675	56.747	56.747	5.675	56.747	56.747	4.993	49.933	49.933
2	1.468	14.678	71.425	1.468	14.678	71.425	2.149	21.492	71.425
3	.746	7.460	78.885						
4	.469	4.687	83.572						
5	.390	3.902	87.473						
6	.335	3.345	90.819						
7	.276	2.762	93.580						
8	.249	2.487	96.067						
9	.222	2.225	98.292						
10	.171	1.708	100.000						

Extraction Method: Principal Component Analysis.

Appendix 45: Community Factors scree plot



Appendix 46: Community Factors Rotated Component Matrix[a]

	Component	
	1	2
CF1	.162	.922
CF2	.146	.895
EE2	.836	.271
EE3	.787	.358
EE4	.784	.307
LL2	.763	.216
LL4	.651	.380
PE1	.836	.099
PE2	.838	.013
PE4	.778	.019

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Appendix 47: Community Factors Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.906	.911	10

Appendix 48: Community Factors Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
CF1	46.03	91.611	.495	.650	.909
CF2	45.96	93.009	.469	.619	.910
EE2	45.05	87.802	.809	.722	.888
EE3	44.88	86.380	.808	.707	.888
EE4	44.81	86.144	.775	.667	.890
LL2	44.97	89.572	.699	.583	.895
LL4	45.22	88.695	.681	.507	.896
PE1	44.67	91.473	.717	.662	.894
PE2	44.66	93.052	.674	.653	.897
PE4	44.37	92.144	.617	.526	.900

Appendix 49: Cultural Factors Descriptive Statistics

	Mean	Std. Deviation	Analysis N
SI1	4.91	1.656	385
SI2	4.84	1.510	385
SI3	4.87	1.593	385
SI4	5.04	1.560	385
SI5	5.14	1.681	385
TC1	2.97	1.776	385
TC2	3.46	1.634	385
TC3	5.00	1.372	385
TC4	4.80	1.618	385
TC5	5.24	1.536	385

Appendix 50: Cultural Factors Correlation Matrix[a]

		SI1	SI2	SI3	SI4	SI5	TC1	TC2	TC3	TC4	TC5
Correlation	SI1	1.000	.740	.628	.522	.547	.190	-.034	.383	.489	.391
	SI2	.740	1.000	.602	.583	.559	.073	-.060	.378	.451	.436
	SI3	.628	.602	1.000	.646	.584	.010	.022	.405	.489	.354
	SI4	.522	.583	.646	1.000	.520	.025	.011	.412	.403	.448
	SI5	.547	.559	.584	.520	1.000	.057	-.007	.357	.411	.430
	TC1	.190	.073	.010	.025	.057	1.000	.292	.187	.128	.071
	TC2	-.034	-.060	.022	.011	-.007	.292	1.000	-.078	.002	-.088
	TC3	.383	.378	.405	.412	.357	.187	-.078	1.000	.323	.388
	TC4	.489	.451	.489	.403	.411	.128	.002	.323	1.000	.234
	TC5	.391	.436	.354	.448	.430	.071	-.088	.388	.234	1.000
Sig. (1-tailed)	SI1		.000	.000	.000	.000	.000	.252	.000	.000	.000
	SI2	.000		.000	.000	.000	.076	.119	.000	.000	.000
	SI3	.000	.000		.000	.000	.425	.331	.000	.000	.000
	SI4	.000	.000	.000		.000	.313	.412	.000	.000	.000
	SI5	.000	.000	.000	.000		.132	.443	.000	.000	.000
	TC1	.000	.076	.425	.313	.132		.000	.000	.006	.081
	TC2	.252	.119	.331	.412	.443	.000		.062	.483	.043
	TC3	.000	.000	.000	.000	.000	.000	.062		.000	.000
	TC4	.000	.000	.000	.000	.000	.006	.483	.000		.000
	TC5	.000	.000	.000	.000	.000	.081	.043	.000	.000	

a. Determinant = .022

Appendix 51: Cultural Factors KMO and Bartlett's Test

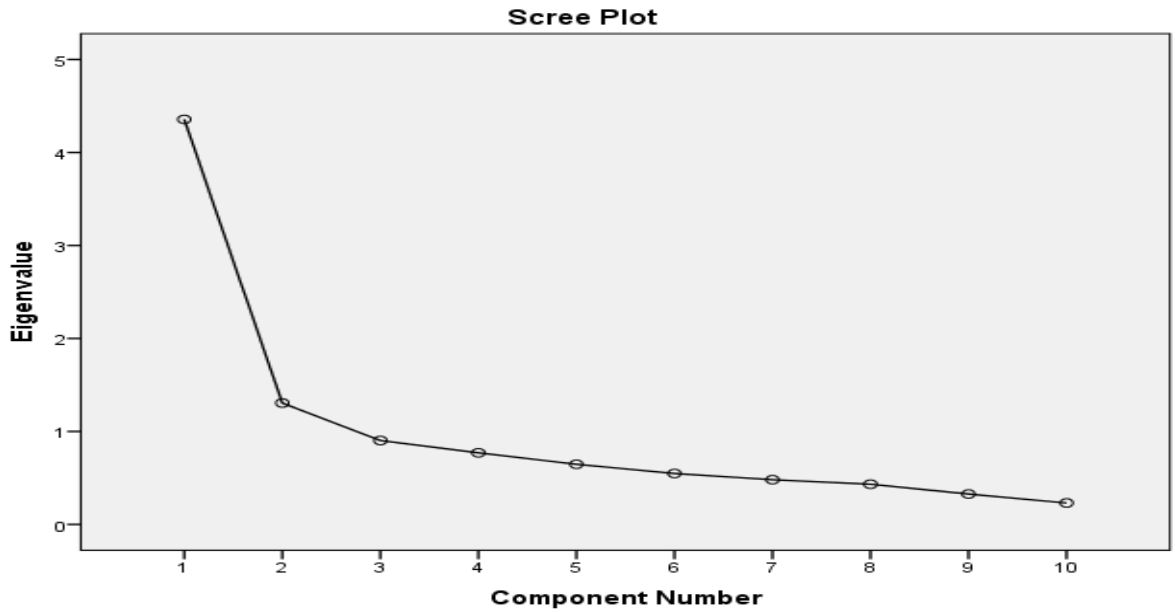
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.865
Bartlett's Test of Sphericity	Approx. Chi-Square	1450.612
	df	45
	Sig.	.000

Appendix 51: Cultural Factors Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.356	43.561	43.561	4.356	43.561	43.561	4.349	43.492	43.492
2	1.306	13.059	56.619	1.306	13.059	56.619	1.313	13.127	56.619
3	.902	9.025	65.644						
4	.770	7.702	73.346						
5	.647	6.470	79.815						
6	.548	5.482	85.297						
7	.481	4.806	90.103						
8	.432	4.324	94.427						
9	.327	3.269	97.696						
10	.230	2.304	100.000						

Extraction Method: Principal Component Analysis.

Appendix 52: Cultural Factors scree plot



Appendix 53: Cultural Factors Rotated Component Matrix[a]

	Component	
	1	2
SI1	.816	.097
SI2	.827	-.024
SI3	.814	-.005
SI4	.780	-.025
SI5	.757	-.006
TC1	.115	.809
TC2	-.070	.786
TC3	.599	.079
TC4	.636	.128
TC5	.612	-.087

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

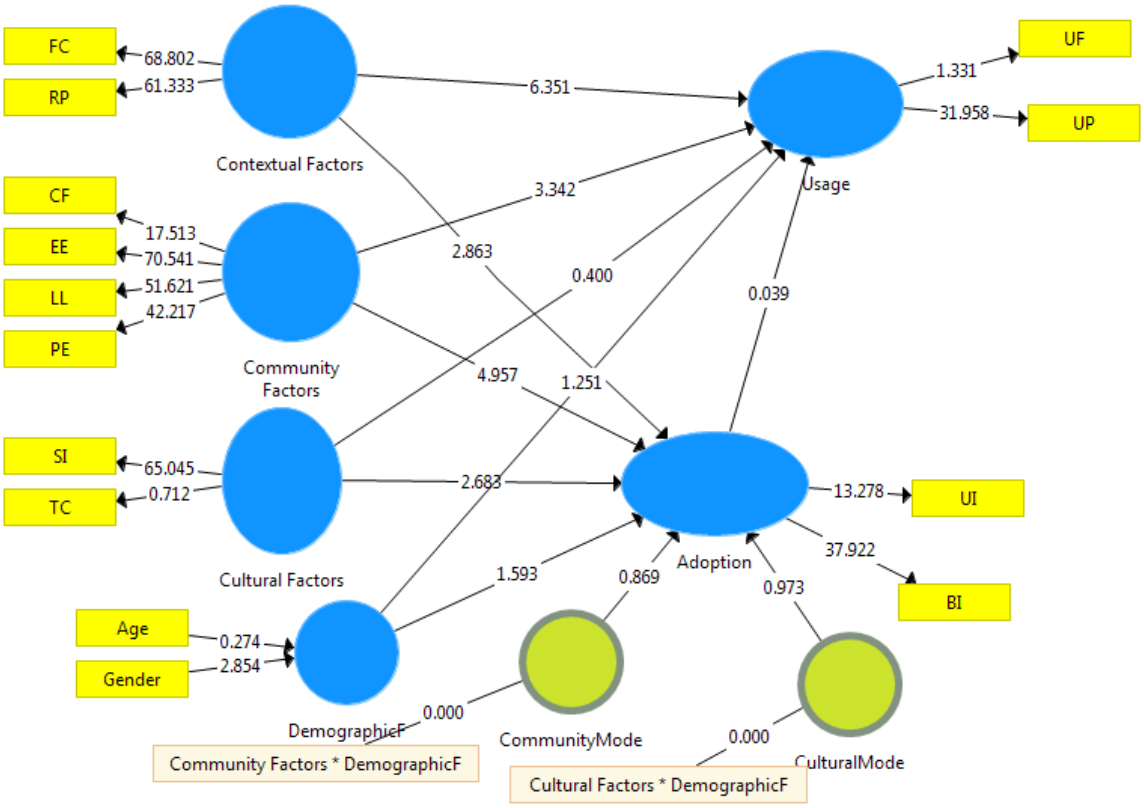
Appendix 54: Cultural Factors Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.813	.817	10

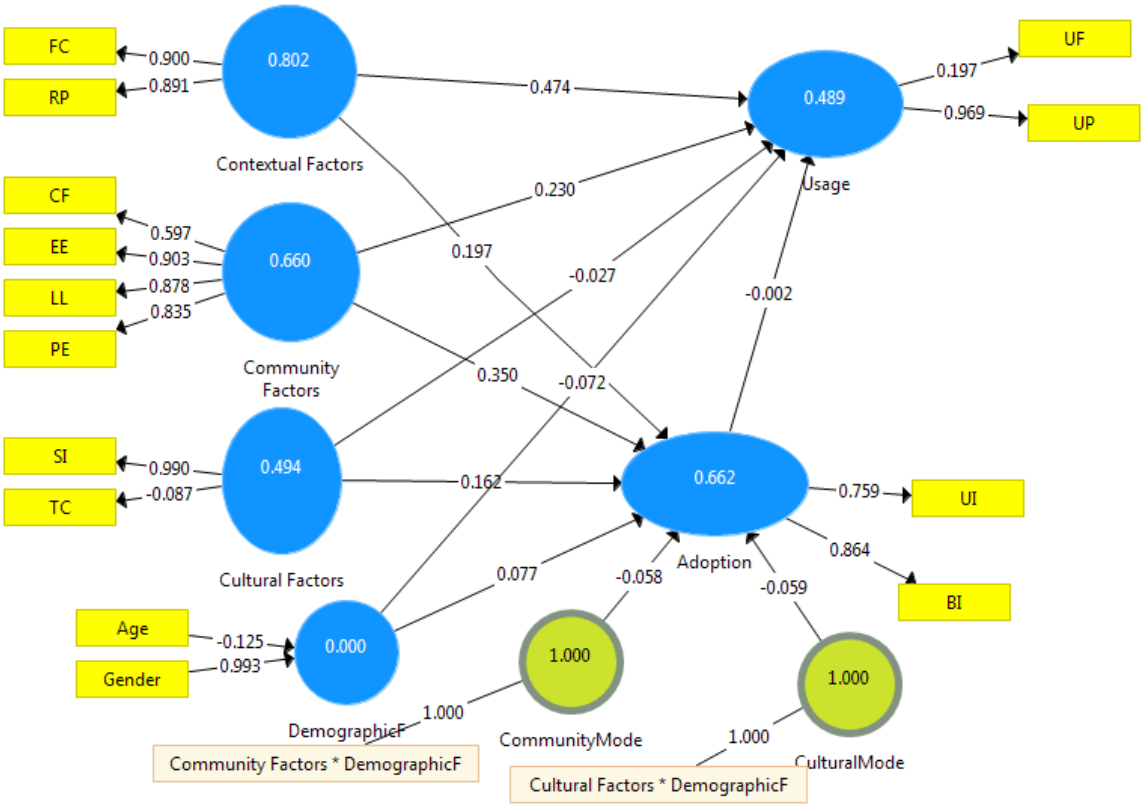
Appendix 55: Cultural Factors Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
SI1	41.35	72.124	.712	.637	.770
SI2	41.42	74.552	.693	.626	.775
SI3	41.39	73.625	.686	.595	.774
SI4	41.22	74.945	.649	.520	.779
SI5	41.13	73.929	.628	.456	.780
TC1	43.29	85.983	.175	.196	.833
TC2	42.81	91.668	.018	.132	.845
TC3	41.26	80.898	.491	.298	.797
TC4	41.46	77.322	.526	.319	.792
TC5	41.02	79.677	.469	.313	.798

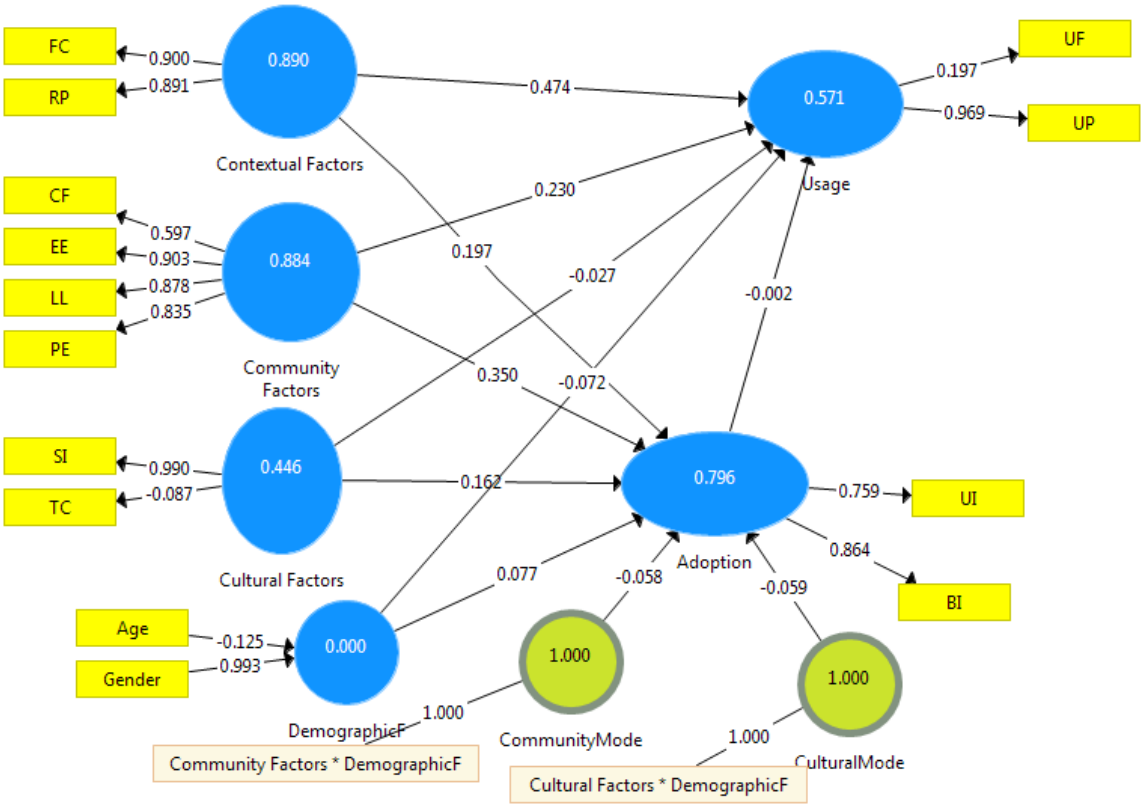
Boot strapping final



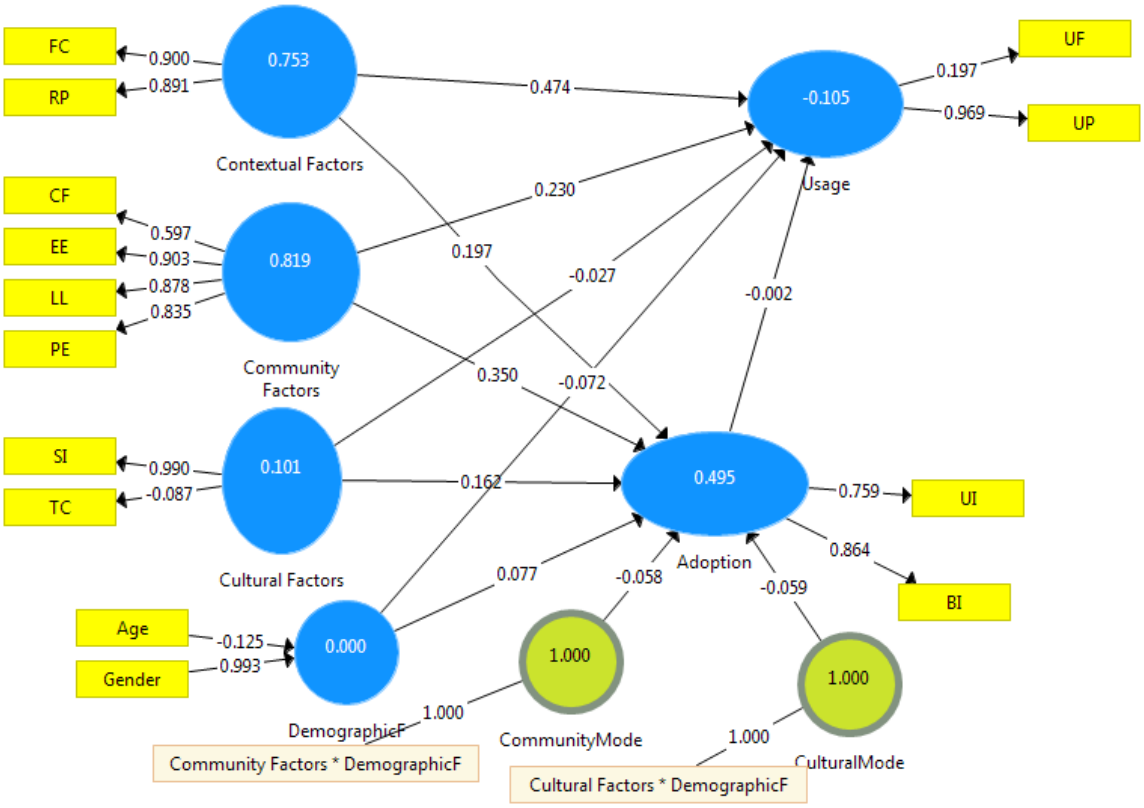
PLs algorithm final



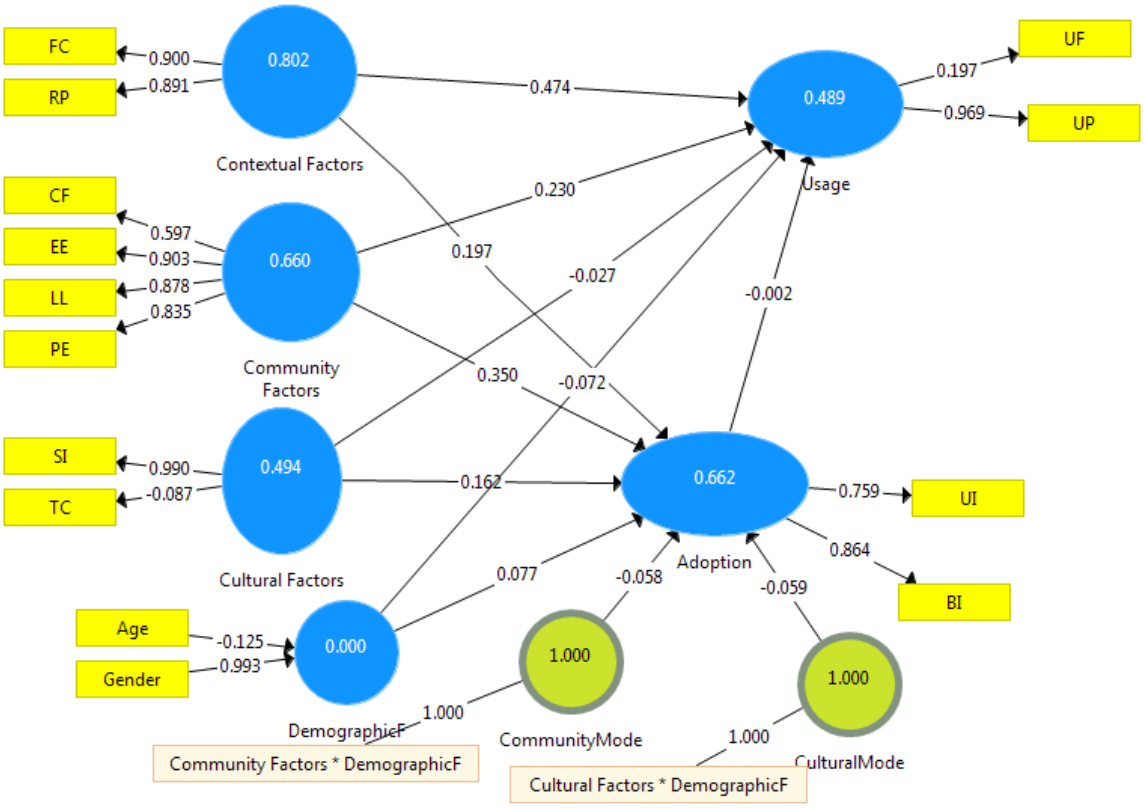
Composite reliability final



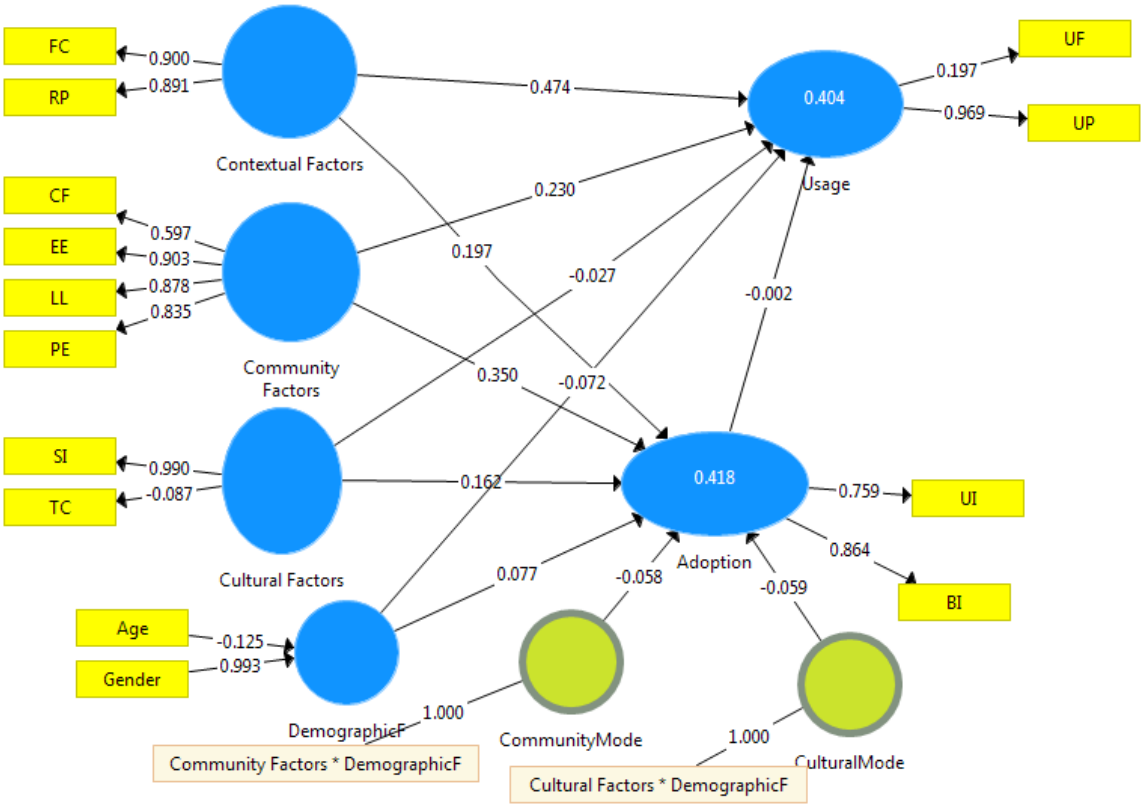
Cronbach alpha final



Average variance extracted final



R squared final



R Squared Adjusted final