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# **The Determinants of Mobile Money Adoption and Usage: The Case of Lesotho**



Submitted in fulfilment of the requirements for the degree

**Magister Commercii (MCom)**

***(Business Management)***

In the Department of Business Management

Faculty of Economic and Management Sciences

University of the Free State

*By*

***Mamots'eli Jacqueline Ntlatlapa***

***2006098517***

**Study Leader:** Dr. Neneh Brownhilder

November 2017

Bloemfontein, South Africa

## DECLARATION

I, 'Mamots'eli Jacqueline Ntlatlapa, the undersigned, declare that the Master's Degree research dissertation that I herewith submit for the Master's Degree qualification, Magister Commercii (MCom) in Business Management at the University of the Free State is my independent work, and that I have not previously submitted it for a qualification at another institution of higher education.

.....  
'Mamots'eli Jacqueline Ntlatlapa

.....  
Date

## **DEDICATION**

This dissertation is dedicated to my parents, Mr Temeki Alex Ntlatlapa and Mrs ‘Mabafokeng Maureen Ntlatlapa, I hope I get to make you proud one day. To my little brother, Tebello Andrew Ntlatlapa, I would love for this to be an inspiration to you, to show that you can achieve anything you put your mind to.

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- My parents, especially my mother, for the continued support (financial and emotional), for the hard work to ensure that my brother and I have the best in life.
- The department of Business Management, for the opportunity to study towards my Master's Degree
- Dr Neneh Brownhilder (my supervisor), I say, thank you for your patience, support and advice. This dissertation would not be not be of the standard it is today without all your input.

## ABSTRACT

The proliferation and use of digital technologies in the various sectors of the modern society, including the financial sector has resulted in an increased interest from different stakeholders regarding the adoption and use of different digital financial services. One such digital financial solution is mobile money (M-money), which broadly refers to the distribution of financial services through a mobile device. M-money has been widely touted as a possible solution for bridging the financial inclusion gap in many developing countries such as Lesotho, where only 38 percent of adults have access to formal financial services. Additionally, the bulk of financial services are offered in Maseru, the capital city, while in other parts of the country there is a lack of opportunities to get financial services. Given the enormous potential of M-money, it is imperative to understand the factors that influence its adoption in the context of Lesotho, so that different stakeholders can use the information to make better decisions for improving financial inclusion.

As such, this study aimed at identifying the factors that influence the adoption and use of M-money services in Lesotho. The extended unified theory of acceptance and use of technology (UTAUT2) was adopted as the underlying model for the study. The UTAUT2 was further extended with perceived risk and perceived trust, in order to ensure that the new model captured all the relevant factors pertinent to the context of the study. This extended version of the UTAUT2 contained nine predictor variables namely performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), hedonic motivation (HM), price value (PV), habit (H), perceived trust (PT) and perceived risk (PR).

Data was collected using a questionnaire that was developed and distributed to customers of mobile network operators (MNOs) in Lesotho. Out of the 600 distributed questionnaires, 488 were returned and found usable for analysis resulting in 81.3% response rate. Data collected was analysed with the assistance of the Statistical Package for Social Sciences (SPSS) to generate descriptive statistics. Structural Equation Modeling (SEM) with the assistance of SMARTPLS 3.0 was used to evaluate the hypothesised paths in the proposed model. The findings from these analyses showed that M-money was mostly used by participants to receive money, purchase airtime and pay bills respectively. The results also established that out of the nine constructs, only six were relevant in determining the behavioural intention to adopt M-money services in Lesotho. These relevant determinants included performance expectancy (PE), social influence (SI), facilitating conditions (FC), price value (PV), perceived risk (PR),

and perceived trust (PT). Furthermore, it was observed that both facilitating conditions (FC) and behavioural intentions (BI) had a significant positive influence on the use behaviour (UB) of M-money services in Lesotho.

The findings of the study provided several practical and theoretical contributions. From a practical view point, several recommendations have been provided on how different stakeholders such as M-money service providers and policy makers can use the findings to improve the adoption and use of M-money services by the general populace of Lesotho. From a theoretical perspective, the study contributed to the growing body of knowledge on M-money adoption in developing countries by providing evidence from Lesotho. Additionally, by extending the UTAUT2 with perceived risk and perceived trust, this study showed that the modified model explained 11.4% more variance than the original UTAUT2. This clearly indicates the need for researchers adopting the UTAUT2 as their theoretical framework to modify it with relevant factors to suit their research context.

**Keywords:** Mobile money, financial inclusion, mobile phone, mobile network operator, banking, mobile payments, technology adoption, UTAUT2, Lesotho

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## LIST OF ACRONYMS

ATM	Automated Teller Machine
AVE	Average Variance Extracted
B2B	Business to Business
C2B	Customer to Business
CBL	Central Bank of Lesotho
CFA	Confirmatory Factor Analysis
CICO	Cash in Cash out
E-commerce	Electronic Commerce
E-money	Electronic money
ETL	Econet Telecom Lesotho
IAP	Instant Activation Perspective
ICT	Information Communication Technology
IDT	Innovation Diffusion Theory
IT	Information Technology
LCA	Lesotho Communication Authority
M-commerce	Mobile Commerce
M-money	Mobile Money
MNO	Mobile Network Operator
MPUC	Model of Personal Computer Utilisation
NFC	Near Field Communications
NFI	Normed Fit Index
P2P	Person to Person
PIN	Personal Identification Number
PLS	Partial Least Squares
POS	Point of Sale terminal
SAGE	Social Assistance Grants for Empowerment

SCT	Social Cognitive Theory
SEM	Structural Equation Modeling
SIM	Subscriber Identity Module
SME	Small and Medium Enterprise
SMS	Short Message Service
SPSS	Statistical Package for Social Sciences
SRMR	Standardised Root Mean Square Residual
TAM	Technology Acceptance Model
TBP	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
USF	Universal Service Fund
USSD	Unstructured Supplementary Service Data
UTAUT	Unified Theory of Acceptance and Use of Technology
UTAUT2	Modified Unified Theory of Acceptance and Use of Technology
VCL	Vodacom Lesotho



# CHAPTER 1

## Introduction

### 1.1 Introduction

Advances in the development and use of information and communication technologies (ICTs) in the last two decades have brought forth a wide range of novel features for mobile devices (Shaikh & Karjaluoto, 2015). These new features have enabled mobile devices to support numerous financial services such as money transfers, bill payment, proximity payments such as point of sale payments, remote payments and bulk payments such as salary payments (Wanyonyi & Bwisa, 2013). The increasing opportunity to provide financial services over a mobile device has opened room for the creation of the mobile money (M-money) business model which has gained huge attention from various stakeholders (e.g. governments, private sector, academia, and the general population) over the last decade (Wanyonyi & Bwisa, 2013). The M-money business model can generally be described as the delivery of financial services through mobile devices (Donovan, 2012).

According to Wanyonyi and Bwisa (2013: 502), “M-money services have three categories namely, M-money transfer, mobile banking (M-banking) and mobile payments (M-payments)”. M-money transfer is a service that exchanges physical cash into ‘virtual’ money that can be transferred through the service provider from one person to another using a mobile phone (Wanyonyi & Bwisa, 2013). M-banking is a product or service offered by a bank or a microfinance institution for performing financial and non-financial transactions using a mobile device such as a mobile phone, smartphone or tablet (Shaikh & Karjaluoto, 2015). This makes execution of traditional banking services such as balance checks, transferring money between accounts and making payments easier (Wanyonyi & Bwisa, 2013). M-payments are another category of M-money services whereby payments of products and services are made through the use of M-money accounts. This can be in the form of customer to business, such as paying utility bills or purchasing of products/services from a business. Businesses can also distribute funds to individuals (e.g. paying wages). Likewise there can also be a transfer of funds from one business to another business (Murendo, Wollni, de Brauw & Mugabi, 2015).

In recent years, M-money has revolutionised the financial services sector with several individuals, households and businesses conducting a significant amount of financial transactions over mobile phones (Murendo et al., 2015). The great potential for M-money

especially in developing and least developed economies lies in its ability to bridge the financial inclusion gap by enabling the unbanked (i.e. people without a formal bank account) population to gain access to formal financial services (Lal & Sachdev, 2015). Financial inclusion can be described as a situation whereby individuals who were previously unbanked gain access to financial services from formal financial institutions (e.g. commercial banks, micro-finance institutions, and insurance companies) and become part of the formal financial system (Lal & Sachdev, 2015; Munyegera & Matsumoto, 2016). Financial inclusion is considered as an important way of alleviating poverty in resource-poor communities and hence a driving force for economic growth, this is because more people partake in the financial sector (Lal & Sachdev, 2015).

It is widely asserted that M-money can improve the lives of the estimated two billion people in the developing world who live on less than \$2 a day by enabling safer, reachable and dependable methods of saving and transfer of money (Balasubramanian & Drake, 2015). This is because M-money can leverage off the great success of mobile phone penetration in developing countries by using it as a vital channel for reaching the unbanked population (Kshetri & Acharya, 2012). Consequently, recent initiatives for bridging the financial inclusion gap in the developing world have been prominently based on the M-money business model (de Koker & Jentzsch, 2013). Nonetheless, not all M-money deployments in developing countries have experienced significant levels of success. For example, out of the 150 M-money deployments in 96 countries documented at the end of 2012, only 14 of the deployments are considered truly successful (Lal & Sachdev, 2015; Maitrot & Foster, 2012). The disparities in the success levels of M-money deployments across different regions can be attributed to the different rates of adoption of M-money services which could either be influenced by macro level factors such as the regulatory environment (Lal & Sachdev, 2015; Makulilo, 2015; Peruta, 2015) or micro level factors, such as customer characteristics and preferences (Mukherjee, 2015; Shaikh & Karjaluoto, 2015).

“Service providers, governments and international development organisations have been working and therefore introduced mobile-based solutions to address a variety of social challenges in the sub-Saharan region. Most of these solutions address challenges arising from lack of access to essential services, such as basic education and health, due to poor social infrastructure and difficulties reaching citizens in remote communities” (GSMA, 2015: 36). For the reason that many peoples’ behaviour regarding financial services stems from what they

think rather than reality, micro level aspects of M-money adoption are deemed as important in developing countries at present (MAP, 2014). Macro factors have been addressed in different regions, however, there are still prevalent differences in adoption rates that could be attributed to micro factors (Peruta, 2015). Therefore, this study will be limited to micro level factors.

Moreover, there is an increasing need for context specific customer adoption studies on M-money given that the deployment of the same M-money product in two geographical regions provides wide inconsistent outcomes. A classic example is that of M-Pesa M-money deployments in Kenya and South Africa. While M-Pesa deployment in Kenya has seen huge success with millions of daily M-money transactions and over 14 million active users (Ibrahim, 2015; Safaricom, 2011), the deployment in South Africa is coming to a close due to poor adoption by South African customers (Chutel, 2016; Mbele, 2016). As such M-Pesa is seen as the “*crème de la crème*” of M-money business thriving in some locations and failing woefully in others. Consequently, there has been increasing interest from researchers to examine customer factors that affect adoption of M-money services in various geographic locations (e.g. Marumbwa & Mutsikiwa, 2013; Murendo et al., 2015; Tobbin, 2010). However, none of the existing studies have focused on Lesotho. According to Sekantsi and Motelle (2016), Central Bank of Lesotho (CBL), as well as, the government of Lesotho have realised the potential of M-money as a financial tool. Research is therefore necessary to illuminate the underlying factors that could hinder adoption in Lesotho as the inconsistencies in previous studies have shown that geographic specification is essential. As such, this study intends to contribute to the growing literature on M-money adoption by examining the customer level factors that can make M-money successful as a means to explain or predict its adoption. Lesotho is also an interesting geographical location for M-money adoption studies as M-Pesa, the currently recognised giant of M-money services, operates there.

Lesotho (also known as the mountain kingdom), is a landlocked country enclosed by South Africa. It is a small economy, both in terms of market size and population. However, it is characterised by a strong presence of foreign banks which dominate the financial services sector (Motelle, 2014). With limited competition among banks and a high cost of financial transactions, financial inclusion is a key concern as many Lesotho citizens are unable to access formal financial services (Motelle, 2014). The introduction of M-money services in Lesotho is a possible strategy to address the financial inclusion gap. Since the launch of M-Pesa by Vodacom Lesotho (VCL) in 2013 and Eco-cash by Econet Telecom Lesotho (ETL) in

September 2012, about 25 % of Basotho (people living in Lesotho) have subscribed to M-money services (Jefferis & Manje, 2014). In Lesotho, access to banking is fairly low as only 38% of adults are banked. Lesotho rural areas have even more unbanked people, as only 29.5% are banked compared to 57.9% in urban areas (Finscope, 2011). Since the accessibility of mobile phones brings about opportunities in the distribution of financial services (Jenkins, 2008), and mobile phone penetration is high (86.3%) in Lesotho (World Bank, 2014), it is therefore not surprising that the Central Bank of Lesotho (CBL) looks to M-money as a key approach to financial inclusion (United Nations Capital Development Fund, 2014). Nonetheless, for this to become an effective financial inclusion strategy, the unbanked population of Lesotho must significantly adopt M-money services. As earlier indicated, even though adoption of M-money services has been researched across several geographic regions, success stories are not directly replicable across regions making it important to understand context specific factors influencing M-money adoption. This study will attempt to unearth the factors influencing the adoption and usage of M-money in Lesotho as a means to aid in strategies for advancing financial inclusion in the mountain Kingdom.

Suebsin and Gerdri (2009: 2639), defines technology adoption as, “the first use or acceptance of a new technology”. Hultman (2004), explains adoption as the process in which a decision on whether to embrace or reject a specific technology is made. Adoption is an important step toward accepting a particular technology as significant, success however can only be realised if customers continue to use a technology (Kim & Zhang, 2010). For a technology to advance from adoption to usage, a continued pattern of using that particular technology has to be developed. The success of a new technology is reliant on sustained usage of a technology over its initial acceptance (Bhattacharjee, 2001). As such, in understanding M-money adoption, studies of Mbele (2016); Chutel (2016); Ibrahim (2015); Marumbwa and Mutsikiwa (2013); Murendo et al. (2015); Safaricom (2011); Tobbin (2010) have stressed the need for context specific customer adoption studies on M-money given the deployment of the same M-money product in different geographic regions provides widely inconsistent outcomes.

## **1.2 Explanation of terms**

Many authors over the years have attempted to explain M-money in different ways. Although there are a few variations in the different descriptions, the underlying factors are similar. For example, Balasubramanian and Drake (2015) define M-money as the use of electronic money through cellular devices. Diniz, Albuquerque and Cernev (2011) state that M-money is a virtual storehouse of electronic money that is established and instigated on mobile devices. Similarly,

M-money has been described as the delivery of financial services via mobile devices (Sayid et al., 2012). Furthermore, Jenkins (2008) describes M-money as money that can be stored, retrieved and used through a mobile phone.

Researchers (Jenkins, 2008; Wanyonyi & Bwisa, 2013) have generally classified M-money into three groups namely, M-money transfer, mobile banking and mobile payments. These categories as stated by Jenkins (2008) and Wanyonyi and Bwisa (2013) have been used interchangeably with M-money by different authors irrespective of their original meanings (Diniz et al., 2011). Table 2.1 provides a description of each of these concepts.

**Table 1.1. Explanation of terms**

<b>M-money concept</b>	<b>Explanation</b>	<b>Source</b>
Mobile payments	This entails payments for goods or services using a mobile device. This term is strictly used for payment of products or services rendered. Mobile payment is a three party process between customer, merchant and service provide (e.g. bank or Telecom Company deploying M-money). With recent M-money business models the bank does not necessarily have to be involved.	Oliveira et al., 2016; Wanyonyi & Bwisa, 2013
Mobile transfer	Transferral of virtual money from one person to another using a mobile phone through the service provider. This does not necessarily have to involve a bank. Transfers are usually peer-to-peer (P2P), which is from one individual to another.	Wanyonyi & Bwisa, 2013
Mobile banking	Involves a direct relationship between a customer and bank. Services available through mobile banking involve a known financial institution (bank or microfinance institute). With mobile banking, services traditionally offered via face-to-face bank interactions can be done wirelessly with the use of a mobile device.	Oliveira et al., 2016

For purposes of this study, the M-money definition presented by Jenkins (2008) will be used as it covers all three categories described in Table 2.1 (i.e. money that can be stored, retrieved and used through a mobile phone). This is because M-money can be best seen in the African

context as an umbrella term that encompasses the other terms that are usually used in its replacement (Wanyonyi & Bwisa, 2013).

### **1.3 Theoretical Framework**

Pagani (2004: 47) indicates that “advancement of technology researchers have made progress in developing theories to study the determinants of technology acceptance”. Most technology adoption models have their origins in the innovation diffusion theory (IDT), where adoption behaviour is affected by individuals’ perceptions about using technology (Pagani, 2004). IDT theorises that the adoption rate of a new technology is a direct consequence of comparative advantage, compatibility, complexity, observability and trialability. Other theoretical models that explicate the association between user beliefs, attitudes, intentions and behaviour towards technology adoption and usage include the theory of reasoned action (TRA), the theory of planned behaviour (TPB) and the technology acceptance model (TAM). TRA and TPB assert that a person’s actions stem from the intention to perform, while attitude and personal norms can be traced back to a persons’ behavioural and normative beliefs (Lu, Yao & Yu, 2005).

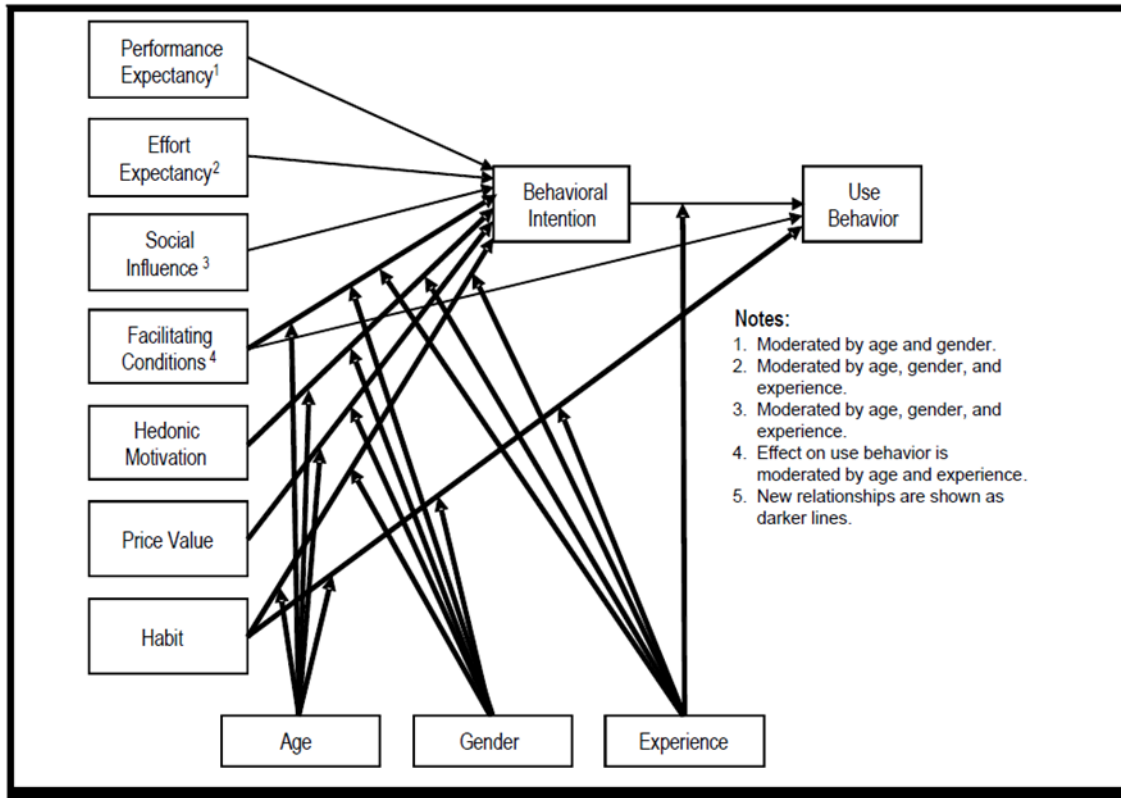
TAM, which is one of the most widely used models, hypothesises that perceived ease of use and perceived usefulness can predict the adoption and usage of technology (Shaikh & Karjaluoto, 2015). TAM however, has been noted to explain only about 40% of a system’s use (Pagani, 2004). As such, Lu et al. (2005) reiterated that TAM is a useful model, nonetheless, it has to be incorporated into an extensive model to enhance the predictive power. It is in this light that several technology adoption studies (e.g. Kim & Sundar, 2014; Kumar, Bose & Raghavan, 2011; Morosan, 2011) have extended the TAM to suit a given context. While TAM remains one of the most influential theories in technology adoption research, Benbasat and Barki (2007: 212) argue that “the independent attempts by several researchers to expand TAM in order to adapt it to the constantly changing information technology (IT) environments has led to a state of theoretical chaos and confusion in which it is not clear which version of the many iterations of TAM is the commonly accepted one”. Additionally, the authors note that over-emphasis on the TAM simply creates an illusion of progress in the generation of new knowledge while preventing researchers from unearthing new adoption dimensions (Benbasat & Barki, 2007). These views have been shared by several researchers such as Loiacono, Watson and Goodhue (2007) and Venkatesh, Thong and Xu (2012). Consequently, in recent years there has been novel theoretical contributions in advancing new dimensions of technology adoption that are customer oriented. One of such models that have emerged as a

criticism of the TAM and its extensions is the modified unified theory of acceptance and use of technology model (UTAUT), known as the UTAUT2, which was developed by Venkatesh et al. (2012). This model extends the earlier UTAUT which was developed by Venkatesh, Morris, Davis and Davis (2003) as a response to the criticisms of the TAM.

The UTAUT model was developed from the assessment of eight models from prior researches that attempt to explain technology usage behaviour. These models are: TRA, TAM, motivational model, TPB, combined TAM and TPB, model of PC utilisation, IDT and social cognitive theory (Osang, Abinwi & Tsuma, 2015). Currently, the TAM and UTAUT are the most widely used models by the researchers in studying behavioural traits in the adoption and usage of technology (Goswami & Dutta, 2016). There are several adoption studies that have made use of the UTAUT model in the context of M-money by examining the adoption and usage of one or more of the three dimensions of M-money (i.e. M-money transfers, M-banking or M-payments). For example, Zhou, Lu, and Wang (2010) made use of the UTAUT to determine user adoptability trends of M-banking in China. Likewise, Yu (2012) made use of the UTAUT model to study factors influencing customer decisions to adopt M-banking. Additionally Tobbin (2010) examined the adoption of M-money transfers in Uganda based on the UTAUT.

UTAUT states that there are three determinants of intention to use a new technology namely: performance expectancy, effort expectancy and social influence. Furthermore there are two causes of usage behaviour known as intention and facilitating conditions. UTAUT also comprises four moderators which are age, gender, experience and voluntariness of use. These moderators lead to a clear understanding of the complication of technology acceptance by individuals. UTAUT also theorises that attitudes toward using technology, self-efficacy and anxiety are not direct determinants of intention (Carlsson, Carlsson, Hyvönen, Puhakainen & Walden, 2006). While UTAUT has been widely used in technology adoption studies, Venkatesh et al. (2012) shows that there was a need to extend the UTAUT with vital additional constructs and relationships to enhance its applicability in a customer use context. As a result, the UTAUT2 was developed which has shown to be a much more robust and efficient model in explaining behavioural intentions and technology use in a customer context (Venkatesh et al., 2012). A graphical depiction of the UTAUT2 is presented in Figure 1.1 below.





**Figure 1.1: Modified Unified Theory of Acceptance and Use of Technology Model (UTAUT2)**

**Source: Venkatesh et al. (2012).**

The UTAUT2 incorporates three new variables into the UTAUT namely: hedonic motivation, price value and habit, as constructs playing an important role in the use of new technologies by customers (Arenas-Gaitán, Peral-Peral & Ramón-Jerónimo 2015; Venkatesh et al., 2012). The main difference between UTAUT and UTAUT2 is that experience with technology moderates the behavioural intention and the use relationship. Furthermore, individual characteristics moderate the effect of habit on the behavioural intention (Arenas-Gaitán et al., 2015). Since this study takes on a customer perspective of M-money adoption, the UTAUT2 is a more suitable model. This is in line with recent studies (e.g. Baptista & Oliveira, 2015; Morosan & DeFranco, 2016; Oliveira, Thomas, Baptista & Filipe Campos, 2016) which used the UTAUT2 to examine customer adoption of M-payments and M-banking services.

Additionally, the UTAUT2 was extended with two other factors: perceived risk and perceived trust. Unyolo (2012), states that because of the different challenges faced by service providers in developing countries, the UTAUT2 requires adaptation. The UTAUT2 is ideal for a developed country, for a developing country, however, issues of trust and risk are a major



contributor (Tobbin, 2010). These extensions have been widely accepted as relevant additions to the UTAUT2 and influential factors in adoption of payment systems (Oliveira et al., 2016; Yang, Pang, Liu, Yen & Tarn, 2015). Tobbin (2010), describes perceived risk as the perception that using a service (M-money in this case) would result in unfavourable conditions. Perceived trust is the perception that a service provider will fulfil what it promises to (Tobbin, 2010).

## **1.4 Problem Statement**

The significant potential of M-money to bridge the financial inclusion gap in developing countries has made the study of M-money adoption indispensable as increased financial inclusion will have long-term economic benefits, especially in addressing inequality and aiding in poverty reduction (Balasubramanian & Drake, 2015; Bampoe, 2015; Lal & Sachdev, 2015). Recent research has shown that financial inclusion can have noteworthy beneficial effects for individuals in any country (Allen, Demirguc-Kunt, Klapper & Peria, 2012; Munyegera & Matsumoto, 2016). In addition to financial inclusion, literature has also identified other benefits of M-money such as being a more secure means to keep and transfer money as opposed to cash (Plyler, Haas & Nagarajan, 2010), employment creation and promotion of entrepreneurship (Kendall, Maurer, Machoka, & Veniard, 2012; Plyler et al., 2010), enhancing money circulation in an economy (Demombynes & Thegaya, 2012), increasing savings (Demombynes & Thegaya, 2012) and fostering the accumulation of social capital (Morawczynski, 2009; Plyler et al., 2010).

While M-money might present the above mentioned benefits for developing countries, not many countries, especially in sub-Saharan Africa, have been able to emulate the kind of M-money success experienced by M-PESA in Kenya. For example, while the adoption of M-Pesa in Kenya is considered a massive success, its replication in other Sub-Saharan African countries like Ghana, Tanzania, South Africa and Lesotho have not seen similar success (Bampoe, 2015; Camnar & Sjöblom, 2009; Chutel, 2016; Mbele, 2016). Likewise other M-money services, such as Mcash, Ecocash, MTN M-money and Orange money operating in Sub-Saharan Africa have had different success rates across different countries. There is, however, a lack of research in Sub-Saharan African countries that examines the factors affecting M-money adoption from a customer perspective to shed light of the disparities in M-money adoption across different countries.

Extant M-money adoption studies have focused on M-banking and M-payments with little research on M-money transfer (Bampoe, 2015). Additionally, there has been lack of

consistency in the factors affecting M-money adoption across different countries, suggesting that adoption factors might be unique for each geographical location. While perceived usefulness, and social influence were seen to influence M-money adoption in Ghana and Somalia (Bampoe, 2015; Sayid, Echchabi & Aziz, 2012), Aboelmaged and Gebba (2013) found no support for perceived usefulness in Dubai and Unyolo (2012) found no support for social influence in Malawi. Also, Sayid et al. (2012), established that perceived ease of use influenced M-money adoption in Somalia, but Bampoe (2015) found the influence of perceived ease of use to be insignificant in Ghana. Additionally novel models like the UTAUT2 have not been visibly tested with M-money in Sub-Saharan Africa with only few cases such as Unyolo (2012) in Malawi.

With the benefits associated with proper implementation of M-money that have been recorded globally, particularly in Africa, there is therefore a need to grasp the concept of M-money adoption through exploring aspects that influence users' intention to use such services. With such understanding it becomes easy to tailor services that are specific to customers. Moreover, proper understanding of the geographic culture limits low usage rates as service providers can employ appropriate strategies to boost adoption and usage. Consequently, this study aimed at determining the specific customer factors that affect M-money adoption in Lesotho, using the UTAUT2 as the fundamental adoption model.

## **1.5 Research Objectives**

The primary objective of this study was to assess the main determinants of M-money adoption and usage in Lesotho.

Secondary objectives were:

- To review the literature on the concept of M-money services.
- To identify the various factors influencing M-money adoption and usage based primarily on the UTAUT2 model.
- To examine the direct effects of the determinants of M-money adoption and usage in Lesotho.
- To examine the moderating effects on the behavioural intention to adopt and use M-money in Lesotho using age, gender, and experience as the key moderators.
- To make recommendations based on the findings with regards to the improvement of M-money services adoption

## **1.6 Significance of the study**

The potential of M-money to bridge the financial inclusion gap has been widely emphasised and also gained momentum as a noteworthy agenda for policy and business research (de Koker & Jentzsch, 2013; Lal & Sachdev, 2015). It is with such strong convictions that the Ministry of Finance and the CBL have touted M-money as a possible panacea for addressing the issue of financial inclusion in Lesotho (Jefferis & Manje, 2014). However, for M-money to become an effective tool for bridging the financial inclusion gap, customers need to be actively involved in adoption and usage of M-money services. As such, understanding the factors that drive customer adoption and usage of M-money is vital for development of appropriate strategies and policy measures to get more customers engaged in the M-money ecosystem. This study plays a valuable part in the journey of financial inclusion in Lesotho by establishing empirical evidence to create tangible awareness relating to the acceptance behaviour and intention to use M-money in Lesotho. The findings are also valuable to government and international development partners working to integrate the unbanked into the formal financial system in similar developing world countries.

Additionally, despite the increasing interest in M-money in developing countries, there is still a dearth of scholarly research addressing the fundamental drivers of M-money adoption and use (Ammar & Ahmed, 2016; Ariguzo & White, 2013). This study therefore contributes to the existing literature on M-money adoption in developing countries. Additionally, it also provides further evidence on the validity of the UTAUT2 in evaluating technology adoption from a customer perspective in developing countries as most studies have either focused on the TAM and its extended versions or the initial version of the UTAUT. This serves as a base reference for future studies and also highlight useful insights for further studies in the domain of M-money as a tool for financial inclusion.

## **1.7 Research Methodology**

In order to effectively address the research problem and attain the outlined objectives, this study made use of an extensive theoretical foundation (literature review) to examine the key constructs and an empirical evaluation to test the constructs.

### **1.7.1 Research design**

Research design is defined as an outline of how the researcher intends to undertake the research. It focuses on the end product and on gathering the best results (Bhattacharjee, 2012). A research

design portrays the general strategy chosen for integrating the different parts of a study in a coherent and flawless way that enables effective attainment of the research objectives (Bhattacharjee, 2012). Research designs can be broadly grouped into three categories namely: quantitative, qualitative and mixed methods (Creswell, 2014). This study adopted a quantitative approach, more specifically the correlational research design. Quantitative research design involves identifying a population and a sample, gathering and evaluating data, making interpretations and presenting the outcomes (Creswell, 2013:155), while correlational research expounds the relationships between two or more naturally occurring variables (Whitley & Kite, 2013). In this study, the UTAUT2 serves as the core model that guides the development of the analysis instrument.

### **1.7.2 Target Population**

The target population for this study was made up of residents of Lesotho who have access to a mobile phone. This is because among people with a mobile phone, there are those that have adopted and those that have not adopted M-money. Thus the target population is residents who use and those who do not use M-money in Lesotho, this is so that both ends of the spectrum can be highlighted. There are two mobile network operators (MNOs) in Lesotho (i.e. Vodacom and Econet) and each of these MNOs offer M-money service. As such, a customer of any of these networks was a potential M-money user. This is in line with prior studies such as Unyolo (2012) whose target population on her study on customer M-money adoption in Malawi were users and non-users of M-money in Malawi. The research was based in different parts of Maseru central city which is an urban area, outskirts of Maseru which is peri-urban area and Mafeteng, south of Maseru which is a rural area.

### **1.7.3 Sampling**

Sampling refers to “process of selecting a subset of a population of interest for purposes of making observations and statistical inferences about that population” (Bhattacharjee, 2012: 65). Probability sampling, specifically stratified random sampling technique were used in this study. Probability sampling is one where every individual in the population has equal chance of being part of the sample (de Leeuw, Hox & Dillman, 2008). “Stratified random sampling is one that ensures that the sample contains representation from population subgroups of interest. The population is divided into groups called strata” (de Leeuw et al., 2008: 106). The stratum in this study was by age and was broken into five strata which are: 18-25, 26-35, 36-45, 46-55 and above 55. This was to ensure that the whole population is covered especially the strata

which is not widely spread. According to World Bank (2015), Lesotho's population is 2, 135 million with young people below the age of 24 forming the bulk of the population. The estimated number of respondents was 600, each strata was calculated based on the number of the entire population in mind. Table 1.1 below shows the different stratum used in the study at hand.

**Table 1.2. Stratified Sampling for Subscribers**

<b>Stratified Sampling for Mobile Subscribers for a sample of 600.</b>			
		<b>Sample description</b>	<b>Sample size</b>
Strata 1	18- 25	This stratum was made up of tertiary students who receive money from their parents and mainly buy airtime.	191
Strata 2	26-35	This stratum consisted of the young working class who use M-money mainly to send money, pay utility bills and buying airtime.	159
Strata 3	36-45	Respondents in this stratum were mostly the established working class, they are parents who send money and also receive from their relatives in towns and use it to buy airtime.	103
Strata 4	46-55	This stratum was made up parents who receive money from their children in town, buy airtime and purchase commodities.	81
Strata 5	Above 55	The last stratum was made up of parents and pensioners who receive money from their children and also save their pensions.	66

### **1.7.5 Data collection and analysis**

The self-administered questionnaires comprised questions measuring key constructs that explore behavioural intention and behavioural use. All scales capturing the independent and dependent variables were adapted from prior literature. The scales of the UTAUT2 instrument as developed by Venkatesh et al. (2012) were used to measure the UTAUT2 constructs while the demographic variables were self-developed by the researcher.

Secondary data that formed the basis of the literature review was collected from secondary sources of information such as online databases (e.g. EBSCOHost, Science Direct, Scopus and

Springer). Books and status reports were also used as a source of information on well-established theories. Some information in the form of statistics was sourced from reputable newspaper articles and online articles as well as business statistics and relevant government publications.

Primary data was collected using structured questionnaires that were self-administered by the researcher. In the urban areas, questionnaires were handed out at government complexes and local tertiary institutions. At government complexes, the researcher randomly distributed questionnaires to individuals. Thereafter, the researcher introduced herself and the reason for the interaction, then proceeded to hand out the informed consent together with the questionnaire. The researcher came back after two weeks to collect filled questionnaires. In the case of tertiary institutions, the researcher first asked for permission from the relevant authorities, after permissions had been granted questionnaires together with the informed consent were handed out. The researcher then collected filled questionnaires when respondents indicated they had completed filling them in. The above mentioned places were chosen because of the high volume of potential respondents. In the peri-urban and rural areas, questionnaires were handed out at the local chiefs' regular gathering known as "pitso". Pitso is a local meeting or gathering held in the village. This is because residents of rural areas attend the chiefs' call in high numbers. Preparations were made with the local chief beforehand to give out questionnaires. A method of stratified random sampling was used to hand out questionnaires at the gathering. Collection of filled questionnaires was after a few minutes when respondents indicated they had completed the process of filling in the questionnaires.

The causal relationships were evaluated using structural equation modeling (SEM). SEM was selected because of its ability to differentiate measurement and structural models while taking into account the measurement error (Henseler, Ringle & Sinkovics, 2009). SEM can either take the form of a variance based approach or a covariance based approach. Some of the key aspects to consider when deciding which SEM approach to follow are the distribution of the data and the complexity of the model. Variance based SEM holds no assumptions on data distribution while covariance based SEM requires data to be normally distributed. Additionally, variance based SEM handles complex models more efficiently than covariance SEM. Evidence from prior usage of the UTAUT2 suggests that the UTAUT2 is a complex model and not all variables are normally distributed (Baptista & Oliveira, 2015; Oliveira et al., 2016). As such it is more suitably tested using the variance based SEM. For the purpose of this study, the variance based

approach using partial least squares (PLS) was used. This is in line with prior studies (Baptista & Oliveira, 2015; Morosan & DeFranco, 2016; Oliveira et al., 2016) that have used the UTAUT2 model. SmartPLS 3.2.4 software was used to estimate the model.

## **1.8 Ethical Considerations**

The ethics code is a way to regulate researchers and aids in protecting the rights of respondents. It further guides the researcher on how to handle themselves (de Leeuw et al., 2008). For this study, ethical authorisation was obtained from the Faculty's ethical clearance board so as to abide by the guidelines put in place for the researcher at the Department of Business Management. Before partaking in the study, concepts were clearly explained to respondents to avoid any confusion. Respondents participated in the study voluntarily, if at any time respondents felt like they do not want to participate, they were not forced to. Additionally, information obtained from the respondents for the purpose of this study remained strictly confidential and was used for purposes of this study only. Data collected during the study was not misrepresented and distorted. Finally all sources of information were recognised and referenced accordingly.

## **1.9 Limitations of the study**

A key concern with dealing with the unbanked is the high likelihood of encountering people who cannot read or fully understand the contents of the questionnaire and this can often lead to misrepresentation of the responses. Nonetheless, this limitation was mitigated by the fact that questionnaires were self-administered and the administrators provided needed guidance to respondents by providing explanations to questionnaire items using the native language of the respondents. Another limitation was that the study focused only on the customer perspective of M-money adoption which is solely a demand side perspective. This limits understanding of the whole complexity of M-money adoption and use in Lesotho because the supply side factors are not considered. Additionally, regulatory and macro-economic factors also play a role in M-money adoption and use. However, to incorporate all perspectives would be far beyond the scope of this study. Nonetheless, since customers remain the main ingredients for M-money success, findings from a customer perspective remain relevant to all other stakeholders such as M-money service providers (supply side) and policy makers (regulatory aspect) who will use the information to better their decisions. Another limitation was that the study is restricted to variables from the UTAUT2 model with the addition of perceived risk and perceived trust. There could be many other factors that affect the adoption of M-money services that were not

examined in this study. The study at hand however, focused on variables from UTAUT2 because the model has been validated by many other studies in the area of M-money adoption.

### **1.10 Structure of the dissertation**

This chapter has provided a brief introduction to the study. It has given an overview and background of the study that explored the determinants of M-money adoption and use in Lesotho. The research problem and objectives have been presented in this chapter. The methodology, data collection procedure and analysis methods have also been shown. The next chapter discusses the literature relevant to the areas that this study attempts to investigate. Table 1.2 provides the structure of this study.



**Table 1.3 Study layout**

<b>Chapter</b>	<b>Title</b>	<b>Aim of the chapter</b>
Chapter 1	Introduction	To introduce the research study
Chapter 2	Literature review	To give a detailed description of the following: <ul style="list-style-type: none"><li>• Description of M-money services</li><li>• Evolution of M-money</li><li>• State of M-money services in Lesotho</li></ul>
Chapter 3	Hypotheses development	To give a detailed description of the development of a model which was used to test the adoption and use of M-money services. <ul style="list-style-type: none"><li>• Technology acceptance theories</li><li>• UTAUT2</li><li>• Hypotheses used in this study</li></ul>
Chapter 4	Research methodology	To present a detailed description on the research approaches, design, methods, and data analysis procedure.
Chapter 5	Results and discussions	To present the results which were generated from the analysis of data collected for this study.
Chapter 6	Conclusions and recommendations	An overview of conclusion made by the study and to present the recommendations made by this study.

## **CHAPTER 2**

### **Literature Review**

#### **2.1 Introduction**

The previous chapter presented an overview of the study by briefly introducing the topic at hand as well as the methods used. In order to have a good understanding of what M-money entails, this chapter begins by explaining the meaning of M-money from pre M-money era to the current state of M-money. Related M-money concepts are also explored and explained. Then the history of M-money is reviewed. Next, M-money ecosystems are discussed placing emphasis on how M-money works, the stakeholders involved, stages of M-money, M-money service channels and the associated service offerings. Thereafter, the chapter presents benefits of M-money as previously reviewed by other studies. The drivers, barriers and M-money business models are also discussed with the purpose of discovering the underlying factors that have been known to affect the success of M-money in other countries. Finally, the chapter presents a review of the state of M-money in Lesotho.

#### **2.2 Evolution of M-Money**

##### **2.2.1. Pre M-money Era**

To understand what M-money involves, it is vital to examine the technological advances that paved the way for M-money. The Internet is one of the most revolutionary innovations in history. The introduction of the Internet dates back to the twentieth century with the phenomena of emails beginning in the 1960s (Edosomwan, Prakasan, Kouame, Watson & Seymour, 2011). The years 1984-1989 saw the entry of the Internet into the commercial phase, enabling the entry of the Internet is the development of new software programs and the growing number of interconnected international networks (Cohen-Almagor, 2011). However, usage of the internet only became available to the public in 1991 (Edosomwan et al., 2011).

During the 1990s business and personal computers joined the universal network and usage rates instantly grew (Cohen-Almagor, 2011). The late 1990s saw people begin to voice their views on certain topics as websites facilitated the proliferation of user-generated content (Dewing, 2012). Kabir and Hasin (2011), state that the progression of commercial services to the Internet has been termed electronic commerce (E-commerce). “E-commerce is all business activities that can be done over the internet that generate revenue” (AL-Fawaeer, 2014: 142). E-

commerce further evolved toward mobile commerce (M-commerce), which allows users to conduct commercial activities while they are on the move by capitalising on the ubiquity of mobile devices. M-commerce can be broadly described as all business activities conducted through wireless telecommunication networks (Zhang, Zhu & Liu, 2012).

M-commerce applications have been developed and are already in use. These applications cover a wide variety of business functions from advertising and auctions to banking and shopping (Faqih & Jaradat, 2014). M-money is, therefore, the aftermath of M-commerce as it can be seen as a mobile business model and also a complementary component of M-commerce. This is due to the role of being a payment mechanism for M-commerce transactions in many countries (Stair & Reynolds, 2016). Just as M-commerce evolved from E-commerce, M-money also evolved from electronic money (E-money). E-money refers to virtual money stored over telecommunications networks like the Internet to assist in payments through point-of-sale terminals or transfers between networks (Alampay & Bala, 2010). As people began using their mobile devices for more than communicating the term M-money was conceptualised in association with the increasing use of mobile devices for financial transactions. Initial forms of M-money services were remote micro payments for services such as buying ring tones and accessing weather information (Alampay & Bala, 2010). Network services were able to collect from subscribers by deducting from customers' airtime values (Alampay & Bala, 2010). For M-money to be widespread, individuals who are potential customers need the basic infrastructure that supports M-money which is a mobile device.

According to Demombynes and Thegeya (2012), mobile phone penetration impacts positively on the lives of many Africans by enabling better communication. The mobile device is gradually becoming a tool with which basic financial services can be accessed, as it further aids in the availability of common financial services and brings forth more ways of conducting business, which can potentially improve the lives of many people (Demombynes & Thegeya, 2012; Fang, 2015). Mobile phone usage has considerably increased on the African continent, with visible progress as there was basically no mobile phone coverage in the 1990s, however, by 2008 mobile coverage had increased to over 65% (Aker & Mbiti, 2011). Sub-Saharan Africa, which Lesotho is part of boasts 60% of mobile phone coverage (Aker & Mbiti, 2011). In Lesotho, Vodacom and the Lesotho Telecommunication Corporation has been delivering mobile phone services since 1995 (Mutula, 2002). Mobile phone penetration in Lesotho is 86.3%, while accessibility of smartphones is approximated at 20% (Lesotho Times, 2014; World Bank, 2014).

### **2.2.2. M-money Era**

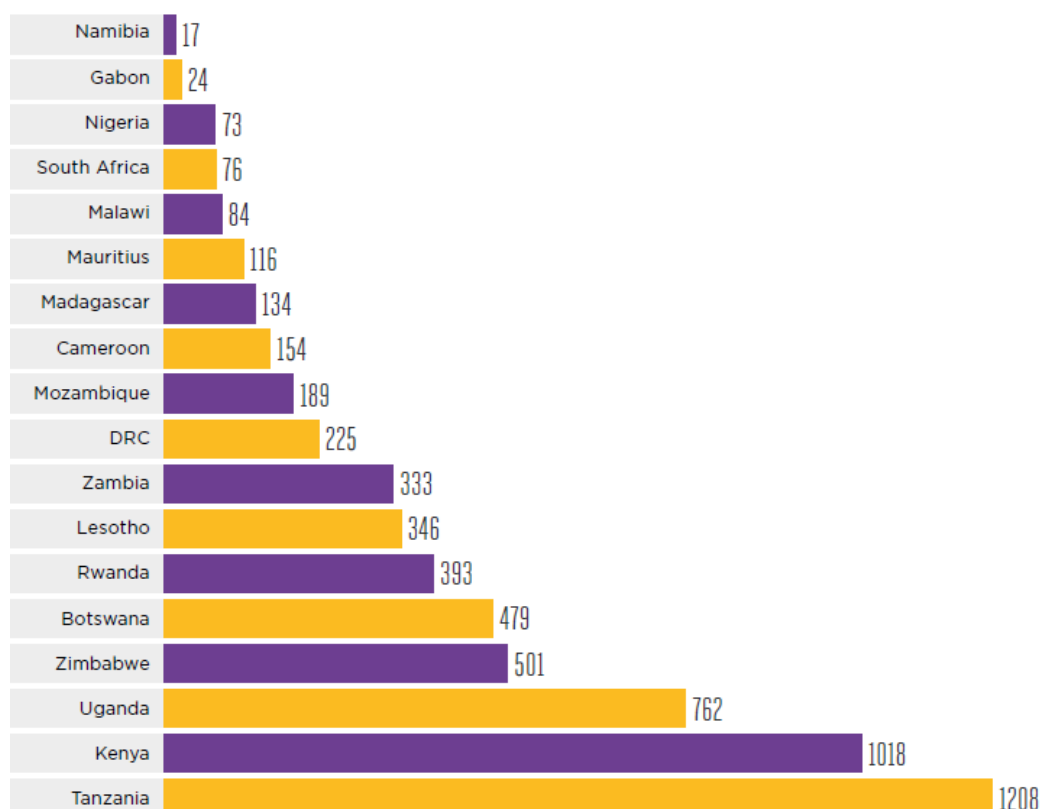
With the mobile phone penetration and coverage having improved in developing countries, network operators tapped into the opportunity that exists to provide financial services through the mobile phone. Prior to the advent and progress of M-money, students would generally recharge vouchers as a payment method for services or gifts (Dibia, 2014). Dibia (2014), elucidated that, getting and giving recharge vouchers as birthday presents to use for exchange of service became a social norm amongst tertiary students. Throughout the years, however, there has been advancement from mere recharge vouchers to other financial services such as bill payments, loan transactions, local and international remittances and public transport payments (Sekantsi & Motelle, 2016). Kenya has been in the forefront of M-money with its introduction of M-Pesa, which was introduced in 2007 by Safaricom (Sekantsi & Motelle, 2016). As much as Kenya has seen great success in M-money deployment, there were earlier forms of M-money in other regions such as the Philippines. In 2001 SMART Communications introduced SMART Money in the Philippines. SMART money is a service that allows customers to buy airtime, send and receive money using their mobile devices (African, Caribbean and Pacific -ACP, 2014). South Africa is another country that launched M-money services earlier than M-Pesa, MTN Mobile Money was introduced in 2005 as a joint venture between a network operator MTN and Standard Bank. However, both SMART money and MTN Mobile money were not as successful as M-Pesa (ACP, 2014).

As a result of the successful uptake of M-money in Kenya, several other countries followed the example of Kenya in an effort to offer financial services through the use of mobile devices (Sekantsi & Motelle, 2016). Tanzania followed suit and saw a growth of 280,000 users and 1,000 agents a year after its introduction. Uganda also launched MTN money in 2009, and other services such as Airtel money, M-Cash and M-sente were further launched in Uganda. To date, many African countries have some form of M-money services. Examples of such countries include Zimbabwe with the launch of Ecocash in 2011, Ghana which had five licensed M-money services in 2010 and Nigeria with eighteen licensed M-money services in 2014 (Sekantsi & Motelle, 2016). In addition to M-money services operating in each country, cross-border transfer of finances is slowly becoming popular within the African continent. An example is the operation of Orange that links Côte d'Ivoire, Mali and Senegal for international money transfer (GSMA, 2015a). Similarly, there has been increased interoperability amongst the different M-money service providers. For example, in South Africa, M-Pesa and MTN M-money allow customers to transfer funds between the two services and enables M-Pesa

customers in Kenya, Tanzania, the DRC, and Mozambique to transfer money to and from MTN M-money customers in Uganda, Rwanda and Zambia (GSMA, 2015a).

According to GSMA (2015a), there are more registered M-money accounts than bank accounts in several African countries, of which Lesotho is part. The introduction of M-money services in Lesotho began with the launch of Eco-cash by Econet Telecom Lesotho (ETL) in October 2012. Months after the launch of Eco-cash, Vodacom Lesotho (VCL) also introduced M-Pesa in July 2013 (Sekantsi & Motelle, 2016). M-Pesa signed up to 745,242 customers with 1999 agents in Lesotho in 2015, while Eco-cash, on the other hand has 318,786 customers and 1480 agents countrywide during the same period (Sekantsi & Motelle, 2016). In addition, Lesotho has seen a circulation of M 67 948 397.00 with M 221 257.00 just for bill payments from December 2015 to May 2016, clearly showing the appreciation and high usage of M-money services in the country (Mpaki, 2016). Together ETL and VCL realised 48% market penetration in 2015, three years after initial introduction (Sekantsi & Motelle, 2016). The gradual growth is promising and can be attributed to the continued rise in usage of the service.

M-money services in Lesotho are mostly used in urban areas and not so much in rural areas. This supposed urbanisation of M-money services poses a problem because the rural areas in Lesotho are characterised by high financial inclusion gap because of limited banking infrastructure (Sekantsi & Motelle, 2016). There is, therefore, need to put into effect aggressive strategies that will lead to M-money adoption in rural areas as M-money services are of essential necessity in rural areas. In comparison to other African countries, Lesotho is doing fairly well, as it is ranked the seventh Sub-Saharan country with the most registered M-money users (GSMA, 2015a). Figure 2.1 below shows that Tanzania has the most registered number of adults on M-money services, Lesotho is ranked in seventh place ahead of many other countries such as Nigeria, South Africa, and Mozambique. Nevertheless, it is imperative to acknowledge the fact that the population of Lesotho is quite small in comparison to these other African countries.



**Figure 2.1: Number of registered M-money accounts per 1,000 adults in 2014**

**Source: GSMA (2015)**

## **2.3 Mobile Money Ecosystem**

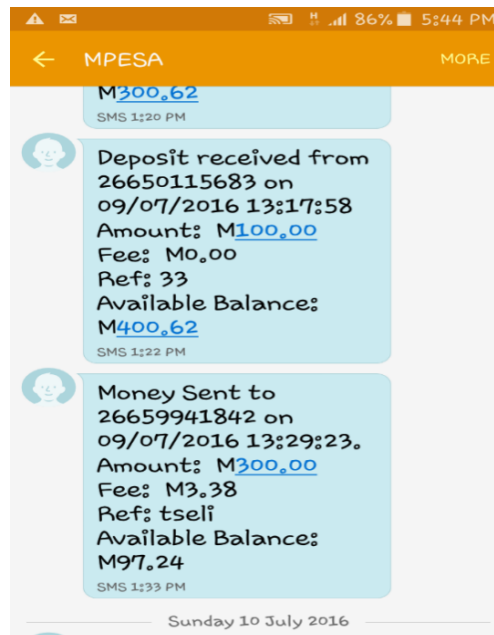
### **2.3.1 How M-money works**

Customary M-money services are owned and operated by either an MNO or a financial institution. Just like any other institution that deals with money, regulations and control in many countries is the responsibility of the country's Central Bank (Maitrot & Foster, 2012). MNOs offer the service strategically as a competitive advantage over their competitors by including M-money as part of other services within the service providers' menu (Njenga, 2009). Service providers have the advantage of ownership because they have access to customers' phone numbers, however, they lack experience in dealing with financial services (Lal & Sachdev, 2015). A bank or other financial institution is an entity with a banking license and structure that enables different financial services (Kufandirimbwa, Zambabwe, Hapanyengwi & Kabanda, 2013). In some instances, MNOs are forced to work with banks because of regulatory constraints (Chatain, Zerzan, Noor, Dannaoui & de Koker, 2011). Some countries such as Mexico require M-money service providers to have a banking license, thereby coercing MNOs to work with an institution with a banking license (Chatain et al., 2011). Banks have the

knowledge of offering financial services which MNOs lack. As such, the combination of skills from both the bank and service provider results in a more well-organised service offering (Lal & Sachdev, 2015). With banks, money is stored in a customers' bank account and can be withdrawn at a bank or an automated teller machine (ATM) at any time. With regards to M-money, the link between physical cash and virtual money is made possible by the existence of cash-in/cash-out (CICO) agents that are strategically placed in easy to reach areas (Balasubramanian & Drake, 2015).

Agents are the middle-men between the financial service provider and the customer. These agents can be small or big businesses that have applied with the service provider. In most cases, agents are small shop-owners that convert cash to virtual money by accepting physical cash and crediting customers' account (cash-in) or giving physical cash by debiting a customers' account (cash-out) for a commission agreed upon (Balasubramanian & Drake, 2015; Econet Telecom Lesotho, 2016). Agents are situated close to customers they serve, provide services including account registration, cash-in or cash-out services and assist with educating customers about the services. Agents are, therefore, the main way in which customers will interact with the service (Lal & Sachdev, 2015).

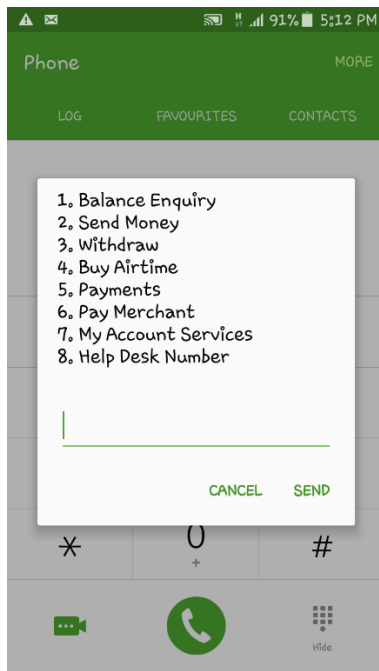
To execute a transaction, an individual or customer purchases a subscriber identity module (SIM) card, inserts it in a mobile phone then proceeds to register with a service provider. After registration, the customer is given an electronic money account that is linked to his/her phone number or bank account in the case of M-banking (Ibrahim, 2015; Wanyonyi & Bwisa, 2013). Once the customer has registered, they can perform the activities available on the service. The customer will put some cash into their M-money account before they can make or engage in any activities. This is done by giving cash to the agent and providing the agent with their mobile number. The agent then uses their mobile numbers to send a mobile message, which transfers e-cash from agents' account to that of the customer. Once the conversion is complete, the customer will now receive a text message confirming the deposit, with a summary of the updated balance on their account (Balasubramanian & Drake, 2015; Maitrot & Foster, 2012). An example of a text message sent by the service provider is shown in Figure 2.2.



**Figure 2.2. An example of a text message sent by the service provider**

Once a customer has deposited money in their M-money account, they can choose from an array of services offered by their service provider. To send money, a customer needs to have adequate funds in their account and know the mobile number of the receiver and the amount transferred needs to be imputed into the senders' mobile (Vodacom Lesotho, 2016). Both the sender and the receiver will receive a text message notifying them of the transaction. In a similar manner, a cash withdrawal requires sufficient funds. This occurs when a user chooses to convert their virtual cash into physical cash. Cash withdrawal occurs when a user goes to a cash agent where they will convert their virtual e-money into cash and their M-money account will be deducted with the amount of their choice. Users are not obliged to withdraw immediately on receipt of funds as their accounts can also act as storage savings account where a user can decide to save money (Maitrot & Foster, 2012). Figures 2.3 and 2.4 are an example of the layout and menu offerings by VCL and ETL respectively.





**Figure 2.3. VCL's M-Pesa menu offering**



**Figure 2.4. ETL's Eco-cash menu offering**

Commonly, M-money has two types of fee structures namely, fixed and transaction-based fees. A fixed fee structure is one whereby a service provider charges a constant amount regardless of the amount sent or withdrawn. A transaction based structure, on the other hand, is a fee charged based on the amount of a particular transaction. Transaction based structures can either be implemented in the form of percentage or range of different amounts for different transaction levels. An example of percentage form is a service provider that charges 10 percent on the amount transacted. The range form applies when transactions for a given range are charged a certain amount, while the amount above that range is charged more. (Lal & Sachdev, 2015).

### **2.3.2 M-money Stakeholders**

There are various businesses, organisations or institutions that are involved in the process of delivering M-money services. Below is a list of the key stakeholders in the M-money supply chain:

#### **2.3.2.1 Mobile network operators (MNOs)**

The MNOs provide the infrastructure for the payment structure (Kufandirimbwa et al., 2013). Operators have access to the network of customers and customer billing relationships (Kufandirimbwa et al., 2013). Network operators can leverage the relationships with customers to foster growth of M-money services. Furthermore, M-money can be a competitive advantage

strategy which brings customer loyalty while boosting revenue for MNOs (Merritt, 2011). The role played by the MNOs besides providing infrastructure is to administer agents and ensure that these agents act as a reputable representative of the service provider. Another important role of MNOs is to use their experience and customer trust to engage other stakeholders and advise other M-money service providers on strategies (Jenkins, 2008; Merritt, 2011). The downside of MNOs is the insufficient experience in handling financial services, managing financial risk, and no knowledge of legal compliance of the financial sector (Lal & Sachdev, 2015).

#### **2.3.2.2 Financial institutions**

Payment systems globally have been dominated by banks and other financial institutions (Merritt, 2011). Financial institutions have the opportunity to add value to the customer with the addition of mobile technology which results in customer retention. Due to their experience, financial institutions can effortlessly put in place risk management programs that safeguard against money laundering and other risks that may be involved (Merritt, 2011). The role played by financial institutions is the knowledge in the smooth handling of money and the legal know-how based on “centuries” of experience (Dolan, 2009). The key limitation that financial institutions face, is the restrictions in customer base because of no access to MNO customers. Also, minimal experience or interest in dealing with low-income customers can be a limitation for financial institutions engaging fully in M-money (Jenkins, 2008).

#### **2.3.2.3 Agents**

Agents are in the form of the service provider’s own retail shop or other retailers such as village shops and garages. Agents typically handle deposits and withdrawals on behalf of the M-money providers (Balasubramanian & Drake, 2015). The agents work as outlets for the M-money providers and are also the primary interaction the customer has with the service. The web of local agents can expand the service provider’s spread to remote areas in order to attain a higher level of penetration (Merritt, 2011). Agents range from those in rural settings to high-end shopping malls, car washes, restaurants, etc. Figures 2.5 and 2.6 below show an example of agents in Lesotho.



**Figure 2.5. Agent in an urban area**



**Figure 2.6. Agent in a rural area**

The role played by agents include educating potential and existing customers about M-money, helping the customers with registration and carrying out cash in and cash out services for customers (Merritt, 2011). Agents get to know customer habits and behaviours because of the physical interaction between agents and customers. This knowledge agents have can play an enlightenment role to the MNO (Jenkins, 2008). Limitations agents face include money shortages, lack of management skills, lack of trust and the limitation to partner with big businesses (Merritt, 2011).

#### **2.3.2.4 Regulators**

According to Merritt (2011: 8), “regulators play a critical role in the M-money ecosystem, as they work to strike a balance between providing sensible, risk-based oversight and encouraging innovation, efficiency and financial inclusion”. Regulators can either restrict or inspire other stakeholders from being involved in M-money services (Evans & Pirchio, 2015). During the initial introductory stages of M-money, regulation was the biggest challenge because many countries had no policies directed at M-money (Dolan, 2009). In most countries it is the role of the Central Bank to regulate and oversee the process of M-money (Fung, Molico & Stuber, 2014). Commonly, central banks have three roles regarding payment systems, to be an enabler, overseer and operator (Fung et al., 2014). However more recently, M-money service providers have formed relationships with regulators to build enabling environments for M-money (Dolan, 2009). Dolan (2009: 14), further states that “regulations must be executed progressively and designed to evolve as a way to respond to risks in the M-money environment as they emerge”.

### 2.3.3 Stages of M-money

The M-money industry has a life-cycle like any other industry, which comprises three phases namely emerging, expansion and the maturity phase (Dolan, 2009). Table 2.2 below depicts the different stages of M-money.

**Table 2.2 Stages of maturation of the M-money industry**

	<b>Emerging</b>	<b>Expanding</b>	<b>Mature</b>
Actors	Small-scale mobile money operations emerge from mobile Operator-led, bank-led, or 3rd-party models. Many require subsidies from parent companies, main businesses	Base revenue from urban markets to support rural market operations. Some players start to provide m-money revenue segment information in their financial reports. Several large domestic players. Many global service provider spin off m-money operations.	Mergers and acquisitions. Some very large international players act as independent payment service providers.
Level of Regulation	Regulators encourage emergence of the actors in the ecosystems.	Regulators modestly control yet nurture the actors in the ecosystem	Regulators impose robust control over the actors in the ecosystem.
Number of Users (per provider) and Frequency of Use	only “early adopters but not using regularly	Majority using regularly; large scale uptake.	More than 70% adult penetration in most developing markets and 90% in developed markets. Widespread usage as part of daily life.
Payment Characteristics	Mostly person-to-person (P2P) remittances and pre-paid value storage.	Regular payments e.g. payroll, utility bills, government-to-person, P2P	Any type of payments.
Level of Interoperability	Limited interoperability.	Users demand substantial interoperability.	Full interoperability.

Source: Dolan (2009: 9)

Firstly, in the emerging phase (which is also known as the introductory phase), service providers invest six to eight times the returns expected to be generated by M-money. When introducing M-money services in emerging markets, service providers need to find a specific need in the market. A proper distribution channel that has proper knowledge of customer

locations is needed (Debray, Kwon & Gill, 2014). M-money implementation needs time and resources to set up a dynamic network and to attain and inform customers. Profitability is not a key focus at this stage (Almazán & Vonthron, 2014).

Secondly, the expanding phase or high-growth phase is characterised by a better understanding of the industry and increased revenue generated from rising transaction volumes (Almazán & Vonthron, 2014). Lastly, in the maturity phase, the service provider has a complete understanding of the market and its characteristics, and thus expects healthy profit margins and a strong cash flow (Almazán & Vonthron, 2014; Dolan, 2009).

#### **2.3.4 M-money Service Channels**

Delivery of M-money services is made possible by the different technologies used by service providers. According to Ernst and Young (2009), the technologies that enable delivery of M-money are near field communications (NFC), chip embedded mobile SIM, mobile network technologies, recent advances in handsets and enhanced security.

##### **2.3.4.1 NFC**

NFC is a technology that is based on short-range wireless link put in mobile phones that permits collaborative exchanges between a mobile phone and another electronic device (Ernst & Young, 2009). The technology involves electronic devices that allow communication between each other simply by bringing them close to each other, NFC operates with very short distances of a few centimetres away from the receiver (Ulvedal, 2013). With this kind of technology transactions become more efficient and safe by decreasing errors (Donovan, 2012b).

One of the major benefits of NFC technology is the short signal distance of only a few centimetres, making it hard to intercept. The short distance, therefore, makes it a secure method of mobile payment (Ulvedal, 2013). Other advantages of NFC include low power consumption, ease of use and simplicity (Khalilzadeh, Ozturk & Bilgihan, 2017). NFC does not need any setup or coupling, as communication between devices is possible through bringing two devices that both have the technology close to each other without any prior setups (Cruz, 2011).

##### **2.3.4.2 Chip embedded mobile SIM**

The second technology documented by Ernst and Young (2009) is chip embedded mobile SIM. Chip embedded mobile SIM is a service that is obtainable from a virtual account linked to the SIM card that is inserted in a mobile phone (ACP, 2014). To access the chip embedded mobile SIM technology, a customer has to have a mobile phone and then place a SIM card into the

phone. For this particular technology, the customer's virtual account is not linked to their bank accounts but to their SIM cards (ACP, 2014). Chip embedded mobile SIM can function on a phone with basic features, making it possible for anyone with a mobile phone to access M-money services (Yousif, Berthe, Maiyo & Morawczynski, 2012). This technology however, can be easily implemented by an MNO due to access and the core service of MNOs. If the M-money service is offered by any other provider besides an MNO, the provider needs to collaborate with an MNO if its service offering is based on the SIM method (Yousif et al, 2012).

#### **2.3.4.3 Mobile network technologies**

According to Mtaho (2015), mobile network technologies used to deliver M-money services are the Unstructured Supplementary Service Data (USSD) and Short Message Service (SMS). USSD is a technology that supports linkages and communication between mobile phones and service providers' computer (Mtaho, 2015). With USSD, immediate information initiated through a mobile phone can be processed immediately by the USSD technology. Real-time back and forth communication between the mobile phone and the service provider is permitted by the USSD technology until the service is completed (Sanganagouda, 2011). Once the service is completed an SMS will be sent. SMS is a short message that will be sent by the service provider in order to notify the customer of the state of their M-money account (Mtaho, 2015).

The main advantage with USSD is that it does not require advanced phone features, as even phones with the most basic features can use USSD technology (Yousif et al., 2012). USSD can, therefore, cater for vast segments of users with all types of phones. The downside, however, is that transactions can only be conducted between customers of one bank, as USSD does not allow for interbank transactions (Yousif et al., 2012). In addition, USSD transaction are not encrypted, raising security concerns in the M-money arena (Yousif et al, 2012).

#### **2.3.4.4 Advances in handsets**

The advancement of the features in mobiles phones results in more efficient delivery of M-money, as applications used to access M-money services can integrate with other phone features such as contacts, calendars and maps (Ernst & Young, 2009; GSMA, 2014). M-money services can leverage the improved features in mobile phones, the diffusion of such mobile phones can bring forth several other ways through which M-money can be delivered (GSMA, 2014). Lien, Hughes, Kina and Villasenor (2015), further assert that the growth of smartphone usage in developing countries results in more prospects to offer M-money services catering to



low and limited-literacy populations. The improved functionality of smartphones results in an array of M-money applications, thereby opening channels for more business models and partakers in the industry (Donovan, 2012b). Donovan (2012b) also emphasised that service offerings for smartphone users can, therefore, be improved by using applications with better user interfaces and enriched usage.

Examples of better delivery of M-money due to improved phone features include Globe's GCash in the Philippines (GSMA, 2014). GCash is an M-money mobile phone application that allows customers to pay bills, taxes and shop online. GCash has an advanced application that helps locate stores to buy and play online games (Globe, 2017). Another example of M-money through the use of smartphones is trading platforms such as Metatrade and TradePlus, applications that are able to offer trading and investment services through the use of a mobile device (Shrier, Canale & Pentland, 2016). Previously trading currencies and shares could only be conducted on computers or through direct communication with brokers (Shrier et al., 2016). Other suggestions pertaining to how smartphone features can be incorporated for more efficient M-money services include, using voice recognition for users with literacy challenges, and using location-based services for use to perform M-money services on their smartphone (Lien et al., 2015). Voice recognition is a feature that allows transactions to take place on a mobile phone by just talking to the phone, the application only responds to the phone's owner (Brignall, 2017). Location-based services identify users' location on a map, the location information can be used to pinpoint relevant information around the same area (Ernst & Young, 2009). These advances in handsets have also created room for development of mobile agnostic M-money services (i.e. M-money service providers who do not need to partner with an MNO as their service is based in a mobile application).

#### **2.3.4.5 Enhanced security**

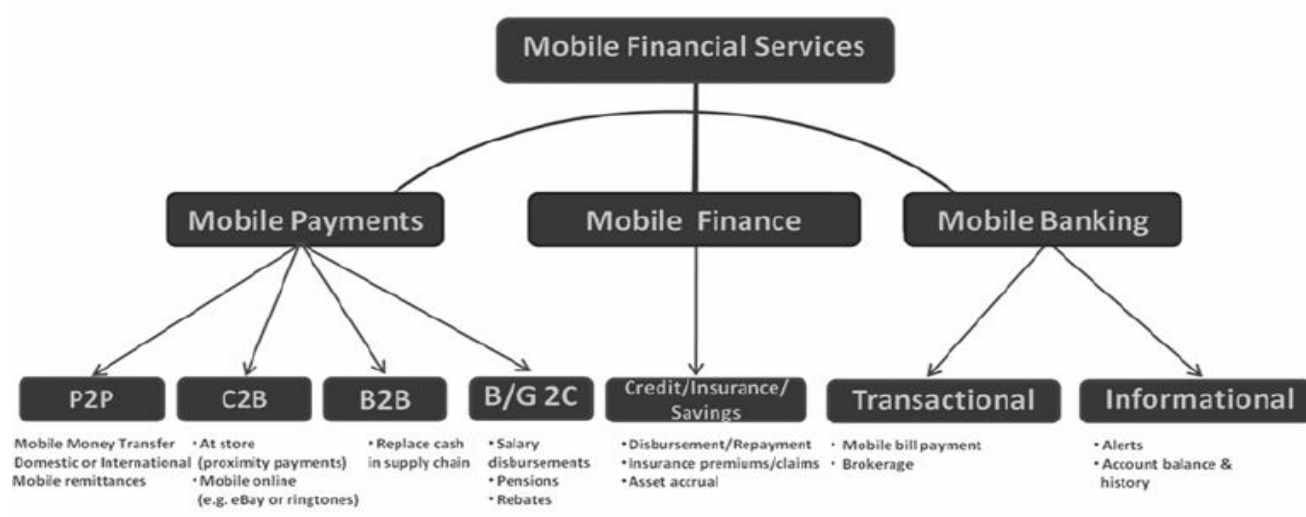
While all of these M-money service channel provide great value to customers, Mtaho (2015), asserts that security is a major influence on gaining and retaining customer trust in M-money services. Traditionally M-money services use the Personal Identification Number (PIN) or password as a validation method. However, PINs and passwords can be easily predicted, forged or copied, making them a less safe method of verification (Mtaho, 2015). Donovan (2012b), further highlights that authentication methods in the digital space can be categorised into three types: those founded on what a user knows such as passwords and PINs, those based on what the user has such as credit card and master card. The last category of authentication method is one based on who you are such as biometric authentication which includes fingerprints and iris

scans. Biometric systems are security inventions which can help in the improvement of efficient and secure deployment of M-money services (Donovan, 2012b). These improved security initiatives are in the early stages of research and development which still have a lot of challenges facing them (Donovan, 2012b).

In the United Kingdom, banks such as HSBC and Barclays use voice biometrics to verify the identity of customers as they call the bank (Bringhall, 2017). Santander Bank has also developed a voice payment application for iPhone users (Android users soon to follow), the application allows users to speak directly at the mobile phone and instruct the phone to perform a particular transaction (Bringhall, 2017). Examples of operational cases of enhanced security in Africa include an application by Guaranty Trust Bank in Kenya, the application permits customer to log in using fingerprints (Guguyu, 2016). In Nigeria, Teasy Mobile and VeriFone incorporated biometric authentication since 2012 (Counter, 2014).

### 2.3.5 M-money Service Offerings

According to ITU (2013), the main service offerings by M-money service providers in developing countries are money transfers, payment of bills, banking services and purchasing of airtime. Gencer (2011) presents the service offerings into financial categories including mobile payments, mobile finance and mobile banking. Figure 2.7 below shows the services for each of the categories.



**Figure 2.7: M-money service offerings**

**Source: Gencer (2011).**



### **2.3.5.1 Mobile payments**

Within mobile payments, P2P or person-to-person denotes the transfer of money between individuals either domestically or internationally (ITU, 2013). C2B or customer-to-business, signifies a direct connection between a customer's virtual wallet and the service provider's account management system. Some service providers will seek the service of a third party to enable the customer to pay their bills using M-money services (McGrath & Lonie, 2014). "B2B or business-to-business comprises payments between businesses to decrease cash in the supply chain upon inventory delivery" (Gencer, 2011: 5). B/G2C indicates business or government salary payments to its employees, as well as government benefits and pension payments to people (Gencer, 2011).

### **2.3.5.2 Mobile finance**

Mobile finance consists of saving, credit or insurance services offered through mobile devices. The service offering of mobile finance involves payment of insurance and investment payments as well as making claims. Customers can also use M-money as a saving tool and for accessing credit from financial institutions (Gencer, 2011). Saving services offered through the mobile phone allows subscribers to save money in an account that can provide long or short-term savings (GSMA, 2014). More customers are using M-money as a saving tool because it is free as opposed to saving using traditional bank account. However, some M-money deployments put a limit on the amount that can be saved at a time (Ryder, 2014). Ryder (2014), further states that trust in the M-money service provider is essential for customers to freely save using their M-money account.

In the credit category of mobile finance, service providers give out loans to customers to be repaid within a certain time limit (GSMA, 2014). An example of such loans can be the distribution of small emergency loans (usually less than \$50), given to customers with a good credit record. Loans are usually to be paid in short time periods of about 48 hours to a week (Yousif et al., 2012). The challenge most service providers face is regulation. In many countries a license is required to be able to offer credit (Yousif et al., 2012). Due to the growing phenomena of insurance payment and registrations through the use of mobile phones, the term mobile insurance (MI) has been coined. MI is insurance sold through or with some level of assistance by MNOs, with payments either made using mobile phones or registration of the insurance is through a mobile phone or an M-money agent (GIZ, 2015). According to GSMA

(2014), it is vital for the insurance service to enable customers to manage risks by offering surety for certain unforeseen dangers such as loss of possessions, accidents or death.

### **2.3.5.3 Mobile banking**

Mobile banking is a delivery channel offered to existing bank customers that allows them to use their mobile phones to access their banking services (ITU, 2013). Mobile banking services can either be transactional or informational. Transactional services are those in which a customer performs a particular transaction such as bill payments and money transfers, while informational services include viewing of statements and balance inquiries (Gencer, 2011; ITU, 2013). Traditional banking needs major infrastructural investment which, therefore, limits the amount of people that can be serviced. As such, mobile banking solves the limitation in customer reach, because there is no requirement to physically go to a branch (Baptista & Oliveira, 2015). With mobile banking, customers can get instant banking services regardless of location and time. This instant banking is a great value added advantage for customers (Aboelmaged & Gebba, 2013).

Cheney (2008), mentions that financial institutions depend on one or a combination of three approaches or technologies to offer mobile banking services to customers. The technologies that can be used by banks are SMS or USSD text messaging, browser-based programs or downloadable mobile applications. For SMS or USSD text messaging, the financial institution usually has to partner with an MNO. The mobile banking service is dependent on a customer-bank relationship. Thus only a bank can act as a service provider. Regardless of the benefits of mobile banking, there are some limitations. One major limitation is that customers are limited to the bank's existing customers, the unbanked population cannot form part of the clientele list (Cheney, 2008). With many M-money deployments and cheaper methods of accessing financial services, banks and other financial institutions suffer. According to Severino, Tonderai and Life (2015), banks need to find new business models and ways to successfully collaborate with other stakeholders within the M-money arena in order to retain and gain customers.

## **2.4 Benefits of M-money**

M-money has many benefits, especially to the unbanked population. These benefits are documented below.

### **2.4.1 Cost benefit**

It is advantageous for both banks and customers to use M-money services as an alternative to traditional banking such as finding the closest ATM. M-money allows banks to reduce their transaction cost which is to the benefit of customers and banks alike (Ibrahim, 2015). Looking at the customer side, there is an opportunity for more accessible financial services among inhabitants that have been left out by traditional banking services. Financial service providers like banks also have ample possibilities due to M-money to offer a variety of services at low cost to a large customer base of the deprived sections of society and people living in rural areas (Diniz et al., 2011).

### **2.4.2 Improves financial inclusion**

M-money holds great potential as a policy strategy for stimulating financial inclusion since it offers a hands-on and cost-effective way to spread financial services to many currently unbanked people (Jack & Suri, 2014). Winn and de Koker (2013: 159), state that M-money will aid in the reduction of cash dependency, which is the main cause of financial exclusion and financial integrity. Moreover, M-money accelerates the development of accounts, which are the pillar of financial inclusion and financial integrity. The attribute of safe storage promotes household and individual savings, which directly reduces the gap of financial inclusion (Jack & Suri, 2014). Users can also send money to their relatives and loved ones in the rural areas or remit money to their countries of origin. The ability for users to send remittances decreases travelling for long distances or relying on go-betweens to get money to their family (Alleman & Rappoport, 2010).

### **2.4.3 Growth of small and medium businesses**

M-money is also beneficial to the growth of small and medium enterprises (SMEs), as these businesses are able to diversify payment methods. M-money enhances commercial services because it makes it easy to engage in commercial transactions. Sales transactions, reception payment, purchasing of goods and services, investments and easy money transfer have been found to stimulate business growth (Chale & Mbamba, 2014; Yakub, Bello & Adenuga, 2013). In their study, Chale and Mbamba (2014) recommended that it is essential for SMEs to use M-money in order to improve their business and decrease expenses such as the cost of travelling,

money transfer as well as time for processing payments. By facilitating financial transactions, M-money services have enabled SMEs to overcome the key challenges of limited access to low-cost financial services, liquidity and cash flow management. SMEs use M-money services to make and receive payments, pay taxes, make loan repayments and pay various bills. This saves both time and money and contributes to the growth of SMEs in terms of market share, revenue and profitability (Chale & Mbamba, 2014).

#### **2.4.4 Safety**

Safety is one of the most notable benefits of M-money services (Maitrot & Foster, 2012). Moving around with hefty sums of money had been a huge challenge, but with the introduction of M-money services, disbursement of money has become a cashless activity (Maitrot & Foster, 2012). By moving money through agents, money distribution becomes increasingly transparent and traceable. This in turn moderates the dangers of losses as the only go-between of cash delivery becomes the cash agent (Maitrot & Foster, 2012).

#### **2.4.5 Empowerment of the previously disadvantaged**

According to Morawczynski (2009), M-money promotes empowerment of the traditionally lower class that has been side-lined by formal financial institutions. M-money benefits rural customers to lessen risk and expand resources which lead to more empowerment to customers in the rural areas. Reduced cost of getting financial services and increased safety through M-money services enables individuals to make more empowered decisions concerning money (Aker, Boumnijel, McClelland & Tierney, 2011).

#### **2.4.6 Saving**

Morawczynski (2009) found that M-money is now considered a private savings method that offers women financial independence, thereby enabling women to make financial choices without permission of their husbands. By using M-money services, women are able to save in order to buy groceries, to pay for unforeseen circumstances and pay school fees. Also, by saving with M-money, women are able to engage in income generating activities, thereby empowering them (Morawczynski, 2009).

### **2.5 Factors affecting adoption and use of M-money**

With the research that has been conducted worldwide on the adoption of M-money, different factors have been found to influence customers' adoption of M-money. Different regions show differences in the factors that affect M-money adoption. Pattern similarities exist in areas that

have comparable characteristics. The discussion regarding factors affecting adoption patterns is done and comparisons between developed and developing countries drawn.

### **2.5.1. Developed World**

According to Visa's 2016 Digital Payments Study, developed markets are creating and embracing new technologies and newer payment methods (Visa Europe, 2016). Table 2.3 highlights some studies that have been conducted regarding M-money services in developed markets. From Table 2.3, it is evident that the IDT has been used a lot regarding adoption of mobile payment systems in developed economies. Other studies do not follow an existing model, instead, different aspects from various studies that apply in the context of each study are taken into consideration. Factors that seem to be dominantly significant in developed countries are relative advantage, risk and trust. Studies such as de Kerviler, Demoulin and Zidda (2016), Mallat (2007) and Zhao and Kurnia (2014) found a variety of factors to be significant. Among these, social benefits, hedonic factors, quality, users' satisfaction, network externalities, costs, value added tools, perceived usefulness and image. Complexity, compatibility and costs are factors that were found to have mixed outcomes (i.e. significant in some instances and insignificant in others).

Mallat (2007) and Shi (2011) in their studies conducted in Finland and China respectively found compatibility to be insignificant. On the other hand, Koenig-Lewis et al. (2010) and Lu et al. (2011), found compatibility significant. With respect to complexity, prior studies have shown mixed findings. For example, while Mallat (2007), showed that complexity was an important factor in predicting M-money acceptance Shi (2011), on the other hand, found compatibility to be inconsequential. Cost was found to be an important factor by Mallat (2007) in Finland, while in Germany and China cost proved to be unimportant (Koenig-Lewis et al., 2010; Zhao & Kurnia, 2014). Other factors that were found insignificant are contextual factors, infrastructure, customer knowledge and utilitarian/ usefulness.

**Table 2.3 M-money adoption studies in developed countries**

<b>Study</b>	<b>Model used</b>	<b>Factors examined</b>	<b>Significant factors</b>
de Kerviler, Demoulin & Zidda (2016)	Value-based approach	utilitarian, hedonic, social benefits, financial risks and privacy risks	Financial and privacy risks, social benefits and hedonic factors.
Zhao & Kurnia (2014)	None	users' characteristics, system, service quality, cost, usefulness, social influence, trust and users' satisfaction	Service quality, trust, users' satisfaction
Mallat (2007)	Diffusion of innovations theory	Relative advantages, compatibility, complexity, network externalities, costs and security and trust	Relative advantages, complexity, network externalities, costs and security and trust
Accenture (2015)	None	mobile payment infrastructure, value-added tools, customer knowledge, security	Security, value added tools
Shi (2011)	Diffusion of innovations theory	Comparative advantages, compatibility, complexity, contextual factors, trust and perceived usefulness.	Comparative advantage, trust and perceived usefulness
Lu, Yang, Chau & Cao (2011)	Innovation diffusion theory	Relative advantage, compatibility, image, perceived risk, perceived cost and trust.	Relative advantage, compatibility, image, perceived risk, perceived cost and trust.
Koenig-Lewis, Palmer & Moll (2010)	TAM and IDT	perceived usefulness, easy-of-use compatibility, perceived costs, risk, credibility and trust	perceived usefulness, compatibility, and risk
Slade, Williams, Dwivedi & Piercy, (2015)	UTAUT2	Performance expectancy, effort expectancy, social influence, facilitating conditions, habit, price value, hedonic motivation, perceived trust and perceived	Performance expectancy, habit, hedonic motivation, social influence, perceived trust and perceived risk

### **2.5.2 Developing world**

Access to finance is vital for economic development and poverty reduction (Ammar & Ahmed, 2016). M-money brings forth opportunities for financial inclusion and the much needed prospect of business growth in developing countries (Asongu, 2015). There has been a rise of studies pertaining to M-money in developing countries. Presented in Table 2.4 below are the studies about M-money adoption or determining factors in developing countries.

There has been a variety of models used to study acceptance of M-money in developing countries. The TAM is one of the widely used models, however, models like UTAUT and DOI have also been used. Perceived ease of use, perceived usefulness, trust and risk have emerged as factors that seem to affect M-money acceptance across a number of developing countries. Additionally, there are factors that proved significant in some areas and contrary in others. Cost is one variable that was found to be important in some places, yet it has an insignificant influence in other areas. For example, Ammar and Ahmed (2016) as well as Mahfuz et al. (2015) found transactional costs insignificant while Unyolo (2012) found cost implications to be significant. Relative advantage was also found significant in some areas and insignificant in others (Mahfuz et al., 2015; Osei-Assibey, 2014). There are no factors that were found to have no impact across the board, indicating the uniqueness of each area. Some factors that were found irrelevant include trialability, complexity and infrastructure reliability.

**Table 2.4 M-money adoption studies in developing countries**

Study	Model used	Factors examined	Significant factors
Sayid et al. (2012)	TAM	Perceived ease of use, Security, Perceived risk, Perceived usefulness, Social influence, Attitude	Security, perceived usefulness, social
Osei-Assibey (2014)	IDT and TAM	compatibility, complexity, relative advantage, trialability and observability, perceived usefulness and perceived ease of use, perceived trust, transactional cost and perceived risk	perceived risk, relative advantage, trialability, observability,
Unyolo (2012)	UTAUT 2	performance expectancy, effort expectancy, social influence, facilitating conditions, price value, infrastructure reliability and trust	performance expectancy, effort expectancy, facilitating conditions,
Ammar & Ahmed (2016)	UTAUT and TOE	performance expectancy, effort expectancy, social influence, perceived self-efficacy, perceived credibility, perceived financial cost, previous experience, awareness, ICT infrastructure, ICT expertise, micro finance service providers' size, top management support, financial resources, perceived benefits, governmental support, market and products, business model, regulations and stakeholders' collaboration	performance expectancy, effort expectancy and perceived credibility, ICT infrastructure and perceived benefits
Ibrahim (2015)	None	Usage (safety and technology improvement), customer characteristics (age and family location), risk (financial risk and time risk) and ease to use (easy to learn and language)	Ease of use and financial risk
Mahfuz, Saha & Fahim (2015)	TAM and DOI	Perceived usefulness, perceived ease of use, trialability and relative advantage, perceived risk, transactional cost and perceived trust.	Perceived trust, perceived ease of use
Mahfuz, Saha & Fahim (2015)	TAM	Perceived ease of use, perceived usefulness	Perceived ease of use, perceived usefulness.
Baptista & Oliveira (2015)	UTAUT 2	Performance expectancy, effort expectancy, social influence, facilitating conditions, price value, hedonic motivation and habit	performance expectation, hedonic motivation and habit



### **2.5.3. Summary of factors affecting M-money adoption**

A comparison of the developed and developing world presented above considered studies conducted across the world regarding M-money. From this review, there are some similarities and differences in the factors affecting adoption of M-money in developed and developing countries. Risk and trust have been identified by various studies to be prevalent in both the developed and developing world. An unforeseen similarity is that cost is not an important factor in both emerging and advanced economies. However, a few studies found cost to be important to customers in both worlds. Relative advantage seems to be more significant in the developed world than it is in the developing world. Perceived ease of use and perceived usefulness have been identified as key factors in the developing world but not in advanced economies.

## **2.6 Drivers, Barriers and Models**

### **2.6.1 Drivers of M-money**

#### **2.6.1.1 Perceived trust**

A review of studies on the adoption of M-money services shows some common underlying factors. Perceived trust has been found to be significant in determining whether customers adopt or reject M-money (Baptista & Vicente, 2013; Tobbin, 2010; Unyolo, 2012). Trust is defined as the confidence one has about reliability and trustworthiness of a person, object or process (Shuhaiber, 2016). Shuhaiber (2016), further states the requirements for trustworthy financial transactions are competence, predictability, benevolence and integrity. Additionally, anonymity and privacy regarding personal information and purchase records are considered to be major trust issues (Mallat, 2007). Customers are concerned about trust and need to feel secure especially if there is need to provide sensitive information (Warrington, Abgrab & Caldwell, 2000). Baptista and Vicente (2013) in their study on M-money in Mozambique found that trust in local agents motivates people to participate in M-money. Another study done in Ghana by Tobbin (2010) reinforces that trust has a significant effect on customers' intentions to use M-money.

#### **2.6.1.2 User-friendliness**

According to Marumbwa and Mutsikiwa (2013), customers' inclination is to weigh the user-friendliness of a technology before making the decision regarding that particular technology. User friendliness refers to the sense of ease attached to using and understanding an innovation (Marumbwa & Mutsikiwa, 2013). User-friendliness has been termed complexity in Rogers (1995) IDT and perceived ease of use in TAM. All the different terms suggest that complex

procedures in M-money can dissuade customers (Marumbwa & Mutsikiwa, 2013). Easy usage, easy to learn and the use of the native language all contribute toward user friendliness and are essential factors that drive M-money adoption (Ibrahim, 2015).

### **2.6.1.3 Relative advantage**

Relative advantage is the degree to which an invention has an added advantage over others (Marumbwa & Mutsikiwa, 2013). A technology can have many advantages, but if it is not perceived as advantageous by users it will not be accepted and used (Torbiornsson & Persson, 2013). Rumanyika (2015), states that in the M-money setting, examples of advantages can be accessibility, speed, low costs and increased social standing. Numerous studies have found relative advantage to positively influence adoption of a new technology (Marumbwa & Mutsikiwa, 2013).

## **2.6.2 Barriers of M-money**

### **2.6.2.1 Perceived risk**

Perceived Risk can be defined as the customer's perception that detrimental outcomes would arise from usage of M-money. Perceived risk was found to be a barrier to M-money because it negatively affects customer's behavioural intention (Tobbin, 2010). In order to improve chances of M-money adoption, many countries are working at decreasing the risks involved in financial services by improving transparency and enhancing the detection of potential risk, as well as providing a regulated environment (Meritt, 2011). Types of risks involved in financial transactions can be privacy risk, time risk and regulatory risk (GSMA, 2010). Privacy risk pertains to personal details not being secure enough. Transactions can be linked to a traceable mobile number, identity number and individuals' address. Time risk involves the swiftness of transactions, as the amount of time it takes to perform a transaction can be risky. In the case where there are no programmed internal controls, the quickness can provide efficient means for criminals to take the advantage and launder money. The last type of risk is regulatory risk. Regulatory risk is caused by a lack of oversight within the M-money space due to the rapidness with which M-money grew (GSMA, 2010). Methods of mitigating risk that have been documented by GSMA (2010) are in use in some countries to date. Firstly, service providers can put limits on accounts, transaction frequencies, volumes and amounts transferred within a certain time period. Another way to mitigate risk is to monitor transaction flows so that it alerts service provider about suspicious transaction patterns (GSMA, 2010).

### **2.6.2.2 Infrastructure**

The M-money platform can be considered a network infrastructure used for storing and moving money that simplifies access to finance (Kendall et al., 2012). In developing countries one of the main challenges to adoption of mobile related services is infrastructure in the form of poor network, lack of coverage and lack of telecommunication equipment (Rumanyika, 2015). Improvement in infrastructure is vital for economic activity because proper infrastructure minimises costs of doing business and improves competitiveness among businesses (Ncube, 2013). Technically accomplished networks are essential for M-money adoption hence telecommunication infrastructure is found to be a significant determinant (Abu & Tsuji, 2010). According to Torbionsson and Persson (2013), a strong mobile services market coupled with high levels of mobile penetration and connectivity are needed for the spread of M-money.

Lesotho is characterised by difficult terrain and a dispersed population. The challenge in Lesotho regarding infrastructure is the mountainous terrain as Lesotho is the only country in the world to lie entirely above 1,000m altitude, resulting in scarcity of basic infrastructure such as roads and electricity (GSMA, 2015b). Universal Service Fund (USF) funded Lesotho in 2009 to bring access to voice telephony, internet, broadcasting and postal services throughout the country. However due to country's limited infrastructure, 25% of the USF budget is spent on developing the necessary roads and electrical infrastructure (GSMA, 2015b). Regardless of the USF funding, Lesotho is still struggling to maintain country wide coverage (GSMA, 2015b). This therefore poses a challenge in mobile devices access.

### **2.6.2.3 Regulation**

The regulatory framework is the degree to which regulations either confine or encourage stakeholders to operate or partake in M-money services (Evans & Pirchio, 2015). Evans and Pirchio (2015), assert that rigorous regulation towards M-money services is a barrier to the adoption of these services. Regulator's task is to provide an enabling environment as well as to safeguard against risk as a way to maintain financial stability (Torbionsson & Persson, 2013). In countries with light regulation, M-money has been found to be accepted more easily than in places with heavy regulations (Evans & Pirchio, 2015). M-money services overlaps between two industries (the finance industry and the telecommunications industry), and in many African countries both industries have a regulatory body legislated by the government (Tsemane, 2016).

In Lesotho, the financial industry is regulated by the CBL and the telecommunications industry is regulated by Lesotho Communications Authority (LCA) (Tsemane, 2016). The CBL (2013) has stated that “no person other than an MNO or a bank shall conduct the business of providing M-money services unless authorisation to do so has been granted”. The process of authorisation begins with submitting a written application to the bank for authorisation. When operational requirements set out have been met authorisation can be given (CBL, 2013).

### 2.6.3 M-money business models

Numerous M-money business models have been discovered since the phenomenon of M-money emerged. Yakub et al. (2013), have documented the most common models as operator-centric and bank-driven models. However with the growing trend of M-money services more models are continuously emerging. Figure 2.9 below summarises the key business models as presented by BearingPoint (2012).

	Bank-centric Model	Collaborative Model	Disintermediation Model	Operator-centric Model
Who holds accounts deposits?	Bank	Bank	Independent Service Provider or MNO	MNO, Intermediaries
Whose brand is dominant?	Bank	Joint-Non Bank Or MNO	Usually non Bank Or Telco dominant	MNO
Where can cash be accessed?	Bank	Bank+ Intermediaries	Intermediaries (Aggregator)	Telco network + Other
Who carries the payment instruction?	MNO	Usually Specific to one MNO	Usually many MNO	MNO

**Figure 2.8: M-money business models**

**Source: BearingPoint (2012)**

#### 2.6.3.1 Operator-Centric Model

Operator-centric model is one where the MNO is in charge of the whole process, controls dealings and sustains the system (Lüchinger, 2013). The service provider is at an advantage because it already has a customer base and existing relationships with potential users of the system. M-money in this type of model is considered as a value-added service to the customer

of the MNO as it permits customers to conduct financial transactions which in turn lead to better customer loyalty, higher returns, and retention of customers. Nevertheless, as much as M-money has many benefits for the service provider, solid partnerships with merchants are crucial for this model to function successfully (Yakub et al., 2013). Operator-centric model is more popular in developing markets, where financial services are still scarce (ITU, 2013).

In Lesotho, an example of the operator-centric model is seen by services such as M-Pesa by Vodacom Lesotho and Eco-cash (Spache-fono in Sesotho) by Econet Telecom Lesotho. Advantages of the operator-centric model as stated by BearingPoint (2012) and Smart Card Alliance (2008) are:

- MNOs have “existing infrastructure and expertise in billing customers and paying merchants”.
- MNOs can also control mainstream revenue stream and improve their image which results in high customer loyalty.
- MNOs have sole control over the revenue stream.
- Increased brand recognition for MNOs.

BearingPoint (2012), highlight that the operator-centric model also has downsides. Increased organisational and management tasks which can lead to deviated focus from their core service offering is a major disadvantage (BearingPoint, 2012). The smart card alliance (2008:10), further state the disadvantages of operator-centric model as:

- Concerns of risk, privacy, and fraud.
- Deployment of additional point-of-sale equipment at merchants.
- Billing and customer service requirements challenge to MNOs.
- Lack of business relationships between merchants and operators.

#### **2.6.3.2 Bank-Centric Model**

Bank-centric model is driven by the bank, the progression of the credit-card snowballed the bank-centric model. Customers maintain existing relations with their bank because of the advantage of convenience by using mobile phones (Yakub et al., 2013). Bank-centric model involves one or more banks that create a mobile banking service grounded on existing financial procedures. Banks will need to reassure customers and merchants to use the service (Lüchinger, 2013). Bank-centric models are probable to be widespread in developed countries due to advanced financial system and speedy progression of regulation (ITU, 2013).

Banks such as FNB and Standard Lesotho Bank offer the M-money service to their customers in Lesotho. On their website, FNB Lesotho encourage customers to check their balance, statements and pay their bills by simply dialling \*120\*321# from their mobile device (FNB, 2017). Below is a list of advantages and disadvantages of bank-centric model as presented by BearingPoint (2012).

Advantages:

- Revenue stream capture for micro-payments.
- Reduced cash/check handling.
- Potential to include value-added advertising to retailers for a fee.
- Potential for new customer acquisition (including unbanked).
- Enhanced security features.
- Increased value of customer relationships and retention.

Disadvantages:

- Limited experience in application distribution or phone accessories.
- Added cost of installation and maintenance of mobile applications for multiple operators, each with unique platforms.
- Potential for paying “rental” fees to operators. Operators can block usage.
- Cannibalizing their card-based products.

### **2.6.3.3 Collaboration Model**

This model is a partnership among banks, MNOs and other stake-holders in the M-money service value chain. With this model, an MNO can partner with one bank to offer the service. Another setting could be one where associations representing service providers and financial institutions negotiate and agree on the terms (Lüchinger, 2013). Usually, fees are shared between banks, mobile phone service providers and any other stakeholder involved. Collaboration model encourages each stakeholder to put emphasis on their fundamental competencies (Yakub et al., 2013).

Jimenez and Vanguri (2010), have shown that the collaboration models has the following advantages:

- Focus on core business activities.
- Avoid additional risks from performing new business functions.

- Enter the mobile money space even if regulatory environment restricts business activities performed by participants.
- Leverage of skill sharing.

There are also disadvantages to the collaboration model:

- Less need for customers to withdraw cash from automated teller machines (ATMs) resulting in lowered ATM revenue.
- Investments is huge (creating applications, setting standards).
- Complex implementation as it requires agreement on revenue-sharing models.

#### **2.6.3.4 Peer-to-Peer Model/ Independent model**

This model was created by industry newcomers as a way to bypass the payment process by excluding banks. The Internet has made it more convenient to transfer money across great distances, therefore independent businesses have taken advantage (Yakub et al., 2013). The Peer-to-Peer model is different from the above-mentioned models, other models offer M-money as an additional service either to retain or get new customers. Peer-to-Peer model has no existing customers, it utilises methods that evade existing payments systems such as point of sales terminals. With this model the value chain is drastically lessened. Peer-to-Peer model can make an income from transaction fees, licensing fees from merchants or end-users (Yakub et al., 2013).

Obopay and PayPal Mobile are some of the peer-to-peer providers that are well known worldwide (Smart Card Alliance, 2008). Below is a list of advantages and disadvantages according to BearingPoint (2012):

Advantages:

- Revenue capture from transaction fees and potential commissions.
- Marketing revenues.
- Cross-sell opportunities for other offerings or products.

Disadvantages:

- Significant entry costs to gain wide acceptance by merchants and customers.
- Assumption of risk for theft/ fraud.
- Need for new competency for marketing/loyalty.

## 2.7 M-money in Lesotho

### 2.7.1 State of M-money in Lesotho

Lesotho is a relatively small country with a population of slightly over 2 million people. The country's landscape is largely mountainous which is a challenge as it poses significant difficulties in transportation and communications (United Nations Development Programme, 2016). Many Basotho live in remote areas which are difficult to access. There is, however, a far-reaching access of mobile phones, with mobile subscription rate of 86.3 cellular subscriptions per 100 inhabitants in 2013 (World Bank, 2014). The formal financial sector in Lesotho is mainly dominated by commercial banks. At present, there are four commercial banks in Lesotho, three of them are subsidiaries of South African banks (Nedbank, FNB and Standard Bank), while the other one (Lesotho Postbank) is a government owned bank. At the end of 2013, 38 percent of the adult population was being served through forty-four branches (CBL, 2014). However, 2015 saw a slight increase in the number of branches. Nedbank has ten branches in Lesotho, four of which are in the capital city, FNB Lesotho has eight branches with three of them in Maseru. Postbank now has thirteen branches and most of them are in remote areas (FNB Lesotho, 2016; Lesotho Postbank, 2016; Nedbank Lesotho, 2016).

**Table 2.5 List of Lesotho Commercial Banks and Branch Network**

Name of Institution	Number of Branches	Ownership
Standard Lesotho Bank	15 in 2014	Foreign
Nedbank (Lesotho)	10	Foreign
First National Bank	8	Foreign
Lesotho Postbank	13	Domestic

Source: CBL, 2009; FNB Lesotho, 2016; Lesotho Postbank, 2016; Nedbank Lesotho, 2016

According to MAP Lesotho (2014), below is a list of reasons why most Basotho do not have access to financial services.

- Fear of credit
- Lack of payslips and proof of income and Lack of excess income
- Products do not cater for irregular incomes
- Basotho do not regard themselves as a target market for formal financial institutions
- Proximity. As physical infrastructure is situated in urban centres, many clients have to travel to interact with the banks



- Expense / cost of bank accounts
- Lack of mobile money awareness and education
- Customer protection concerns

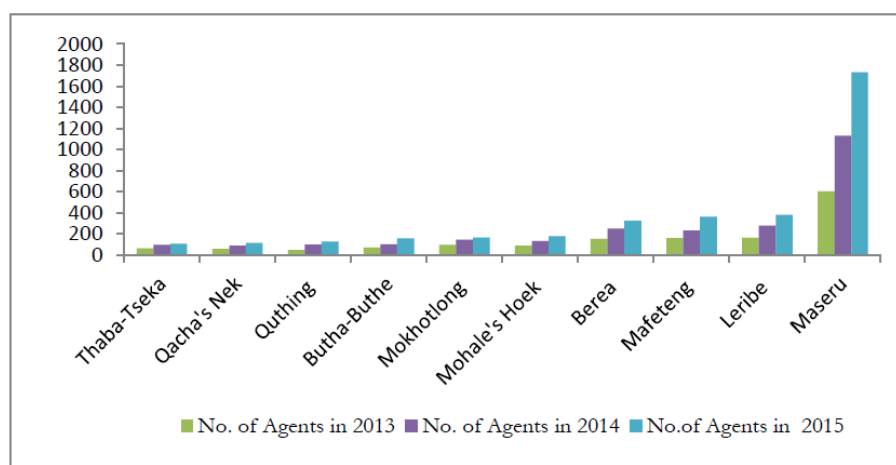
In Lesotho, there are over one and a half million subscribers of mobile phone services, which is just over eighty percent of the entire population (World Bank, 2014). Mobile phone service operators' market is composed of two companies that are foreign owned. VCL is a subsidiary of the Vodacom group with twenty percent owned by a local company. The network has been in operation in the country since 1996, with services ranging from voice to data solutions to both individuals and businesses (VCL, 2016). The M-money service offered by VCL is called M-Pesa. VCL adopted the exact model of Safaricom's M-Pesa in Kenya (VCL, 2016). This is because VCL and Safaricom (Kenya) stem from the same parent company named Vodafone (VCL, 2016). Another mobile phone service provider in Lesotho is ETL. ETL is a merger between the government of Lesotho and Econet Wireless Global, the network began operations in the country in 2008. The M-money service offered by ETL is called EcoCash, which is a replica of EcoCash in Zimbabwe (ETL, 2016).

M-money as a way to lessen the financial inclusion gap was introduced in Lesotho in 2012 by ETL. A year later VCL introduced its M-Pesa service. Within a year of its introduction, VCL had registered thirteen percent (13%) of the overall population which is a quarter of VCL's customers (The Economist, 2013). As a way to overcome the challenge of lack of awareness of M-money services, the CBL ran a campaign in May 2016 which entailed using the media for awareness as well as going on roadshows (Mpaki, 2016). Lesotho has seen a circulation M 67 948 397.00 (\$ 5 300 186.97) with M 221 257.00 (\$ 17 258.74) just for bill payments from December 2015 to May 2016. This circulation amount shows growth in the usage of M-money service (Mpaki, 2016).

### **2.7.2 Challenges of M-money**

With the notable headway M-money has made in Lesotho, there are still prevalent challenges. The governor of the CBL stated that challenges facing M-money included a low level of financial literacy and poor liquidity management by agents. Poor liquidity is detrimental to M-money adoption because it causes customers to lose trust in the service (Mpaki, 2016). Another M-money challenge is that agents are mostly in urban areas. Lack of agents in rural areas is caused by failure to access rural areas due to the mountainous terrain, ignorance of rural

dwellers and financial illiteracy (Sekantsi & Motelle, 2016). Figure 2.9 below depicts that urban areas such as Maseru and Berea have more agents than rural areas.



**Figure 2.9 Number of Agents per district**

**Source: Sekantsi and Motelle (2016).**

Lack of interoperability between M-money operators is another challenge faced by M-money customers in Lesotho. Customers struggle to transfer or receive services to or from someone on a different service provider. Technical failures have also emerged as a major problem regarding M-money. Technical failures impacts on the trust customers have regarding M-money (Mpaki, 2016). Due to various business models arising, legal and regulatory framework is still a challenge. The governor of CBL stated at an M-money media briefing in 2016 that CBL will work tirelessly to regulate M-money services (Mpaki, 2016).

## 2.8 Chapter Summary

The chapter began with a description of what M-money entails, as a means to better understand the concept being studied. The definition of M-money used in this study is that by Jenkins (2008). The definition was selected because of its inclusiveness of all categories of M-money. Next, the chapter presented the growth of M-money, with a close look at the pre M-money era and the M-money era. The chapter then proceeded to examine the M-money ecosystem, how M-money works, as well as the different stakeholders involved in M-money. Additionally, benefits of M-money documented in prior literature were highlighted. Afterwards, a succinct review of M-money adoption studies in both the developed and developing world were presented. Next, the drivers, barriers and the overall factors affecting M-money were also discussed. The chapter then culminated with an analysis of M-money in Lesotho by highlighting when it began, the key players, the current state and the challenges faced. The next

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chapter will focus on the developing the hypotheses on factors that influence M-money adoption in Lesotho based on a modified version of the UTAUT2.

## CHAPTER 3

### Hypotheses Development

#### 3.1 Introduction

While the preceding chapter focused on a discussion of the concept of M-money as a whole, this chapter explores the model used in this study to assess the adoption of M-money in Lesotho. The basis and foundation of the UTAUT2 model is presented by examining the origins of technology adoption models. Then a brief description of the key constructs of the UTAUT2 is made. Finally, the hypotheses used to guide and achieve objectives of the study at hand are presented.

#### 3.2 Theoretical framework foundations

Technology adoption is a process of determining whether to accept or reject a technology (Straub, 2009). As a means to understand technology adoption, there are numerous models and theories that have been developed, with most of these models displaying a degree of commonality (Straub, 2009). A theoretical framework can guide a study using a visual representation of theoretic constructs. The guide is done by identifying relationships between constructs based on investigated concepts (Creswell, 2009). According to Pagani (2004), most technology adoption models have their foundations in the IDT. Specifically, concerning mobile technology, more than 50% of studies relating to mobile payments adoption have used TAM as a basis model (Slade et al., 2015). Venkatesh and Davis (2000) recommended an extension of the original TAM, resulting in the development of the TAM2. TAM and TAM2, however, do not fully predict the intention and usage of a technology, as these two models were originally developed for the organisational context. As such, they tend to generally provide limited information on individual consumption of a technology (Slade et al., 2015).

##### 3.2.1 UTAUT

In response to the criticism on TAM and as a means to improve the model, the UTAUT was developed (Venkatesh et al., 2003). In order to ensure the robustness of the UTAUT the authors based their conceptualisation of the model on eight prior models of behavioural intention. These eight models are summarised in Table 3.1 below.

**Table 3.1 Models that UTAUT is conceptualised from**

Model	Year Developed	Author/s
TRA	1975	Fishbein and Ajzen
TAM	1989	Davis, Bagozzi and Warshaw
Motivational model	1992	Davis, Bagozzi and Warshaw
TPB	1985	Ajzen
Combined TAM and TPB	1995	Taylor and Todd
Model of PC utilisation	1991	Thompson, Higgins and Howell
IDT	1983	Rogers
Social cognitive theory	1986	Bandura

UTAUT proposes that there are three key antecedents of the behavioural intention to use a technology. These three variables are performance expectancy, effort expectancy and social influence (Venkatesh et al., 2003). The model further states that facilitating conditions and behavioural intention influences the usage behaviour of a technology. Table 3.2 below describes the variables of the UTAUT and shows the models they are derived from.

Behavioural intention refers to the attitude toward technology acceptance and use (Venkatesh et al., 2003). UTAUT also theorises that gender, age, experience and voluntariness of use are moderators of the four variables that lead to behavioural intention and use behaviour (Venkatesh et al., 2003). Originally, UTAUT was established to test technology adoption within an organisational context with the goal of studying technology acceptance by employees (Venkatesh et al., 2012). However, with the growing need for understanding technology acceptance in a customer context, the UTAUT was then extended to create the UTAUT2 which is specifically inclined towards studying technology acceptance in a customer context (Slade et al., 2015; Venkatesh et al., 2012).

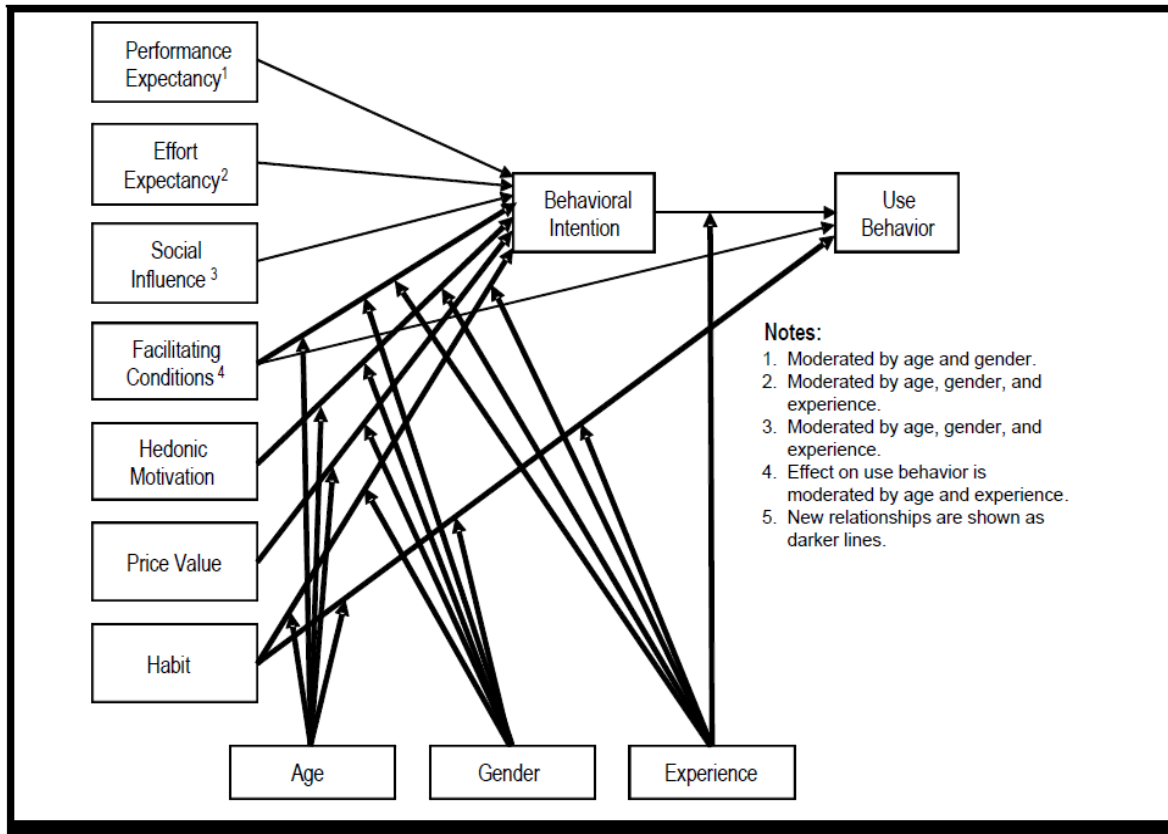
**Table 3.2 Description of UTAUT variables and models derived from them**

<b>Construct</b>	<b>Description of Perception</b>	<b>Similar Construct and Corresponding Models</b>
Performance expectancy	The degree to which an individual believes that using the system will help him or her to perform their daily activities.	Perceived usefulness (TAM/TAM2 and C-TAMTPB); Extrinsic motivation (MM); Relative advantage (IDT); Job-fit (MPCU); Outcome expectations (SCT).
Effort expectancy	The degree of ease associated with the use of the system.	Perceived ease of use (TAM/TAM2); Complexity (MPCU); Ease of use (IDT).
Social influence	The degree to which an individual perceives that important others believe he or she should use the new systems.	Subjective norms (TRA, TAM2, TPB/DTPB and C-TAM-TPB); Social factors (MPCU); Image (IDT).
Facilitating Conditions	Customers' perceptions of the resources and support available to perform a behaviour	Facilitating conditions (MPCU); Compatibility (IDT).

Source: Attuquayefio and Addo (2014)

### 3.2.2 UTAUT2

The UTAUT2 was presented in Chapter 1 (Figure 1.1) and is represented here for the convenience of the reader.



**Figure 3.1: Representation of the UTAUT2**

UTAUT2 was developed by Venkatesh et al. (2012) as an extension of the UTAUT with relevant variables that could enhance its applicability in the customer technology use context. The authors identified three key customer factors and included them to the UTAUT. The three new variables integrated into the UTAUT model by Venkatesh et al. (2012) are hedonic motivation, price value and habit. Hedonic motivation is described as the enjoyment that arises from technology usage (Chang, 2012). The reason for the inclusion of hedonic motivation in UTAUT2 was based on prior studies such as Thong, Hong and Tam (2006) and van der Heijden (2004). Hedonic motivation has also been labelled perceived enjoyment in other studies (Zhang et al., 2012).

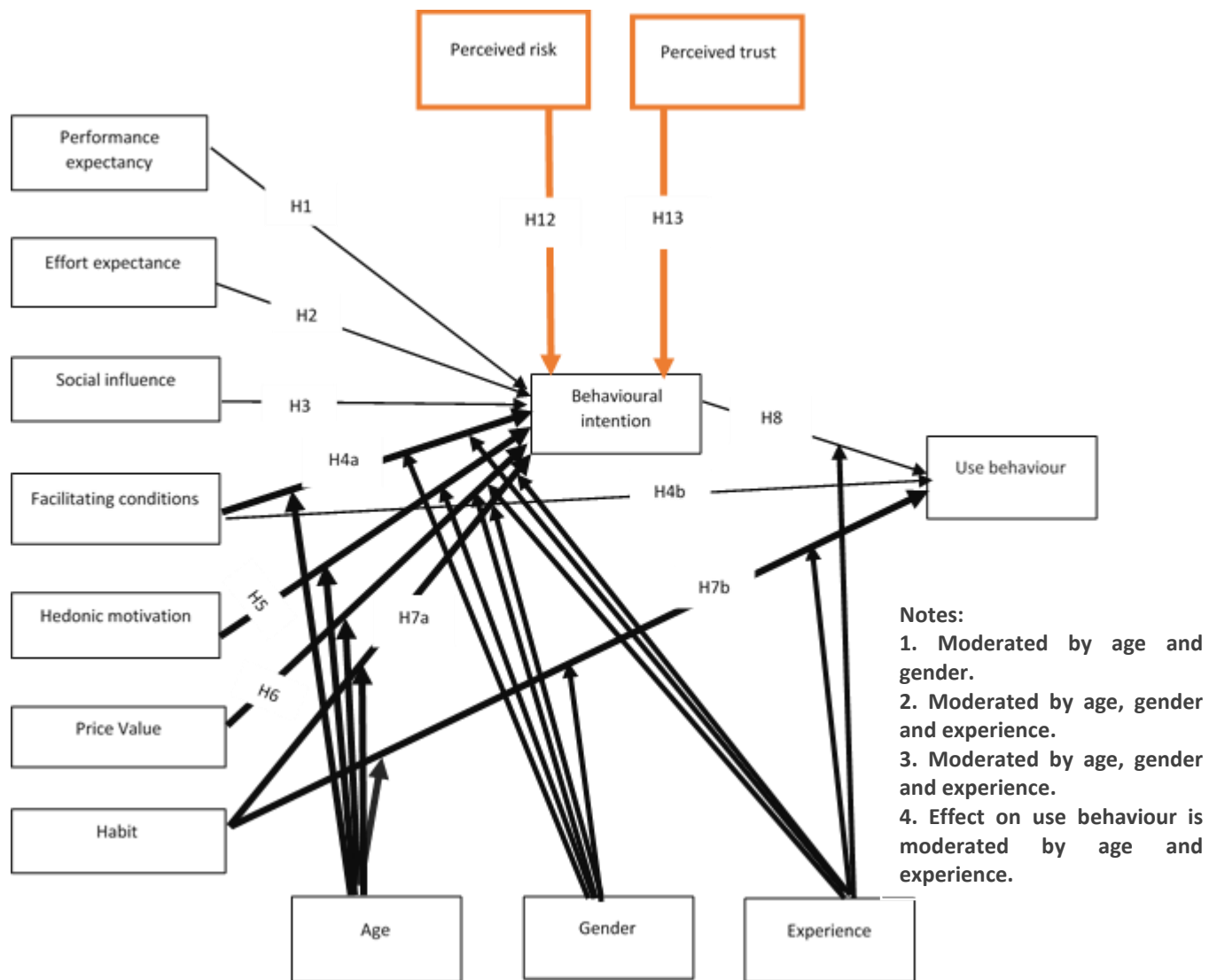
Price value is the extent to which the benefits of using a technology outweigh the financial cost of the technology (Yu, 2012). Venkatesh et al. (2012), included price value in the model on the basis that monetary cost/ price is customarily studied in conjunction with quality. Price value is a construct borrowed from marketing research that posits that before customers can buy or use a product or service, the price-quality trade-off is scrutinised (Venkatesh et al., 2012).

Habit is the level at which people are inclined to perform certain actions spontaneously due to repeated behaviour (Chang, 2012). Habit is derived from repeated performance in the instant activation perspective (IAP) and the TPB (Venkatesh et al., 2012).

In the UTAUT2, Venkatesh et al. (2012) also presented three moderating factors namely age, gender, and experience. Voluntariness which is part of the moderators in the original UTAUT was dropped in the extended model (Venkatesh et al., 2012).

While the UTAUT2 is a valuable model for evaluating technology adoption, researchers have increasingly shown that it is imperative to extend the UATUT2 and adapt it accordingly to fit a given context. As such, following the review of prior studies presented in chapter two, two factors (trust and risk) emerged as vital factors affecting M-money acceptance in both developing and developed countries. These factors are particularly important to consider given the sensitivity around trusting an MNO as the custodian of one's cash. As such, the current study will modify UTAUT2 to include both perceived trust and perceived risk. The inclusion is done in order to improve the assessment of behavioural intention and usage behaviour in Lesotho. As presented in Chapter 2 (Section 2.6.2) this addition of constructs is consistent with prior studies that have found that perceived trust and perceived risk affect customers' intention on using mobile money in the context of a developing country. The modified model is presented in Figure 3.2.





**Figure 3.2: Conceptual framework**

The moderating effect hypotheses are not indicated in the diagram. This is due to the available space to present all the hypotheses. H9, H10 and H11 are not labelled in the diagram Figure 3.2 but more clarity is shown in sections 3.3.9 through to 3.3.11.

### 3.3 Hypothesis based on the Main Constructs of the UTAUT2

#### 3.3.1 Performance expectancy (PE)

As mentioned earlier, performance expectancy is related to completing tasks better due to the technology. Performance expectancy was developed from a combination of constructs from other models such as perceived usefulness from TAM/TAM2, extrinsic motivation from motivational model, job-fit from model of personal computer utilisation (MPCU), relative advantage from IDT and outcome expectation from social cognitive theory (SCT) models (Venkatesh et al., 2003). In both the development of the UTAUT and the UTAUT2,

performance expectancy was shown to impact the intention to use a technology (Venkatesh et al., 2003; Venkatesh et al., 2012). In her study about the adoption of E-commerce in Lesotho, Mapeshoane (2015) found performance expectancy to be a significant factor. Studies in both developing (Naiwumbwe, 2012; Sayid et al., 2012) and developed (Koenig-Lewis et al., 2010; Shi, 2011) countries have shown that perceived usefulness (an equivalence of performance expectancy) has a significant influence on adoption of different types of M-money services.

Similarly, other researchers have shown that performance expectancy was a significant factor that influenced the adoption of M-money services (Unyolo, 2012) and different variants of it, such as M-payments and M-banking (Alalwan, Dwivedi & Rana, 2017; Arenas-Gaitán et al., 2015; Morosan & DeFranco, 2016; Oliveira et al., 2016). This suggests that when customers believe that M-money can assist in the completion of their daily activities, their intention to use the M-money service will increase (Tobbin, 2010). Hence, this study holds the hypothesis that:

**H1:** Performance expectancy has a positive influence on intention to use M-money services.

### **3.3.2 Effort expectancy (EE)**

Effort expectancy involves the level of ease of using a technology. The concept of effort expectancy was captured from three different constructs namely: perceived ease of use (TAM/TAM2), complexity from MPCU and ease of use from IDT (Venkatesh et al., 2003). Since effort expectancy relates to the amount of effort needed to use a particular technology, some of the key aspects of M-money that encompass a user's effort include the registration procedures, how effortless the payment procedure is, easy access to customer services and minimal steps required to make a transaction (Tobbin, 2010). In addition, the availability of M-money agents and if the service is accessible on mobile phones with the most basic features are also regarded a service that is free of effort (Tobbin, 2010). Effort expectancy was found to be an influencing factor in Lesotho regarding E-commerce adoption (Mapeshoane, 2015). Based on the comparison of developing and developed world done in chapter two of this study, effort expectancy seems to be more significant in emerging markets than in advanced markets.

Concerning M-money services in developing countries, Ammar and Ahmed (2016), Ibrahim (2015) and Unyolo (2016) found effort expectancy as an important factor that positively impacts the adoption of M-money. Similarly, other researchers from around the world have shown that effort expectancy influences variants of M-money such as M-banking and M-payments (Alalwan et al., 2017; Oliveira et al., 2016). Based on prior research, the following hypothesis is made:

**H2:** Effort expectancy has a positive influence on intention to use M-money services.

### **3.3.3 Social influence (SI)**

Social influence is the validation that customers seek from those important to them with regards to using a given technology (Venkatesh et al., 2012). Social influence is similar to subjective norm in TRA, TAM2, TPB and combined TAM and TPB, social factors in MPCU and image in IDT (Venkatesh et al., 2003). Customers tend to check their social network to avoid the uneasiness that results from uncertainty of a new technology. Non-users of M-money have a habit of seeking assurance from important others (Slade et al., 2015). In Lesotho, social influence was found significant in the adoption of E-commerce (Mapeshoane, 2015). A study in the United Kingdom found social influence to impact M-money services (Slade et al., 2015). There are inconsistencies, however, as some studies (Arenas-Gaitán et al., 2015; Carlsson et al., 2006) found no significance of social influence on technology acceptance.

Regarding M-money in developing countries, Riquelme and Rios (2010) and Sayid et al. (2012) found social influence to be a major contributing factor towards acceptance. As such, this study hypothesise that:

**H3:** Social Influence has a positive influence on intention to use M-money services.

### **3.3.4 Facilitating conditions (FC)**

Facilitating conditions speak about the support and technical infrastructures that enable people to use the system (Venkatesh et al., 2003). Facilitating conditions is derived from different constructs such as, facilitating conditions from MPCU and compatibility from the IDT (Venkatesh et al., 2003). Potential customers that have facilitating conditions will have a greater intention to adopt and use a new technology as postulated by Baptista and Oliveira (2015). However, other researchers such as Carlsson et al. (2006) found facilitating conditions to be an insignificant factor in the adoption of mobile devices and services.

Looking specifically at the developing world, Afshan and Sharif (2015); Foon and Fah (2011); Unyolo (2012); Yu (2012) proved that facilitating conditions affects adoption and use behaviour of M-money services (including M-payments and M-banking). Based on the above, the following hypotheses are made:

**H4a:** Facilitating conditions (FC) has a positive influence on behavioural intention to use M-money services.

**H4b:** Facilitating conditions (FC) has a positive influence on use behaviour of M-money services.

### **3.3.5 Hedonic motivation (HM)**

Hedonic motivation is the pleasure resulting from using a given technology. Hedonic motivation has been found to be an important determinant of technology adoption and use (Venkatesh et al., 2012). Hedonic motivation is termed perceived enjoyment in other studies (Zhang et al., 2012). Slade et al. (2015), put forth that hedonic motivation was found to be a strong predictor of behavioural intention in UTAUT2. In the context of M-money, hedonic motivation results from customers' creativity and appreciation of the innovativeness of such services (Slade et al., 2015). Several researchers (de Kerviler, Demoulin & Zidda, 2016; Slade et al., 2015) found hedonic motivation to be an influencing factor regarding M-money in the developed world. Also, researchers have further reinforced the significance of hedonic motivation in the developing world. For example, In Mozambique, Baptista and Oliveira (2015) showed that hedonic motivation is a vital factor in the adoption of mobile banking services. Thus, this study hypothesises that:

**H5:** Hedonic motivation has a positive influence on intention to use M-money services.

### **3.3.6 Price value (PV)**

Price value involves the balance between quality and price or the compromise between the perceived benefits of the technology and the cost. The perception that the cost of a technology is worth the quality leads to acceptance of a technology (Venkatesh et al., 2012). In the context of M-money, cost includes transaction price, registration fee, or cost of a mobile device. Cost can influence behavioural intention to use the M-money services (Tobbin, 2010). Price value, therefore, is the view that the advantage of using a technology is better than the financial cost (Venkatesh et al., 2012). In developed countries, cost has been proven to be a significant factor in technology adoption (de Kerviler et al., 2016; Mallat, 2007). Some studies, however, found no proof that price value is vital for M-money adoption (Slade et al., 2015).

In developing countries, Arenas-Gaitán et al. (2015) and Unyolo (2012) found results that are consistent with Venkatesh et al. (2012) supporting the significant role of price value in adoption of mobile services including M-money. Consequently, this study put forth the hypothesis that:

**H6:** Price value has a positive influence on intention to use M-money services.

### **3.3.7 Habit (H)**

Habit refers to the spontaneous action of using a technology as a consequence of repeated behaviour. The spontaneous action comes with previous use of a technology or one similar to it (Venkatesh et al., 2012). Habit is termed repeated performance in TPB and IAP and has been found to have an influence on both intention and use behaviour (Venkatesh et al., 2012). Other studies such as Arenas-Gaitán et al. (2015) and Slade et al. (2015) also found habit to be a significant factor.

Moreover, Baptista and Oliveira (2015) in their study about understanding M-banking in Mozambique found that habit is a major contributor in accepting the technology. To further emphasise the importance of habit, Kit, Ni, Badri and Yee (2014) found that habit does indeed influence adoption of mobile applications. Hence the following hypotheses:

**H7a:** Habit (H) has a positive influence on behavioural intention to use M-money services.

**H7b:** Habit (H) has a positive influence on use behaviour of M-money services.

### **3.3.8 Behavioural intention**

Behavioural intention in the context of M-money is defined as the subjective probability of using an M-money service. Research has shown that there is a strong positive association between behavioural intention to use a given technology and the actual usage of a technology, therefore the stronger an individual's behavioural intention to use M-money services, the more likely s/he is to perform that behaviour. Khan and Ahmad (2015), while studying the adoption of mobile-web applications in Pakistan found that behavioural intention positively affects usage behaviour. Also, Alalwan et al. (2017) showed that the behavioural intention to adopt M-banking among Jordanian bank customers had a significant positive association with the actual use of M-banking applications. Consequently, this study hypothesises that:

**H8:** Behavioural intention has a positive influence on usage behaviour.

### **3.3.9 Moderating role of age**

The general argument from studies regarding age and technology acceptance is that older customers find it more difficult to understand new or complex technologies, this difficulty affects their learning and, therefore, makes it harder to adopt technologies (Venkatesh et al., 2012). Liébana-Cabanillas, Sánchez-Fernández and Muñoz-Leiva (2014), also indicated that younger users are more likely to adopt new technologies than older people. Research found that older customers place more importance on the availability of sufficient support, while

younger customers are inclined to seek uniqueness and innovativeness (Venkatesh et al., 2012). Habit in older customers is developed by repetitive utilisation of a particular technology. It, therefore, becomes difficult for old people to change their habit which has, in essence, become a tradition (Yu, 2012). Older users have been found to prefer simple and easy-to-use tools than young users (Liébana-Cabanillas et al., 2014).

Ney (2013) as well as Oliveira, Faria, Thomas and Popovic (2014), could not significantly prove that age indeed moderates adoption of M-banking in Netherlands and Portugal respectively. However, Oliveira et al. (2014), indicates that age might not be a significant moderator in Portugal because the old and young alike are accustomed to using mobile phones and advanced technology while the same is not true in developing countries. Accordingly, age does affect behaviour towards technology. Thus these hypotheses are made:

**H9a:** Age moderates the effect of performance expectancy on behavioural intention, such that the effect will be stronger for younger persons.

**H9b:** Age moderates the effect of effort expectancy on behavioural intention, such that the effect will be stronger for younger persons.

**H9c:** Age moderates the effect of social influence on behavioural intention, such that the effect will be stronger for older persons.

**H9d:** Age moderates the effect of facilitating conditions on behavioural intention, such that the effect will be stronger for older persons.

**H9e:** Age moderates the effect of price value on behavioural intention, such that the effect will be stronger for older persons.

**H9f:** Age moderates the effect of hedonic motivation on behavioural intention, such that the effect will be stronger for younger persons.

**H9g:** Age moderates the effect of habit on behavioural intention, such that the effect will be stronger for older persons.

**H9h:** Age moderates the effect of habit on use behaviour, such that the effect will be stronger for older persons.

### **3.3.10 Moderating role of gender**

Gender plays a role in intentions as men and women have different ways of processing information (Laukkanen & Pasanen, 2008). Men generally do not rely on facilitating conditions when considering the use of a new technology, while women place importance on external supporting factors. This can be explained by the gender roles in society where men tend to be more task-oriented (Venkatesh et al., 2012). Venkatesh et al. (2012), further state that women put more thought to the prices of products and services than men do; men seek benefits over price. Furthermore, decisions by friends have much more of an impact on a woman's decision pertaining to mobile services (Ibrahim, 2015).

Yu (2012) found that effort expectancy and social influence were not significantly moderated by gender in adopting M-banking. Laukkanen and Pasanen (2008), however, established that gender does affect the financial technology adoption. Therefore the following hypotheses are made:

**H10a:** Gender moderates the effect of performance expectancy on behavioural intention, such that the effect will be stronger for men.

**H10b:** Gender moderates the effect of effort expectancy on behavioural intention, such that the effect will be stronger for women.

**H10c:** Gender moderates the effect of social influence on behavioural intention, such that the effect will be stronger for women.

**H10d:** Gender moderates the effect of facilitating conditions on behavioural intention, such that the effect will be stronger for women.

**H10e:** Gender moderates the effect of price value on behavioural intention, such that the effect will be stronger for women.

**H10f:** Gender moderates the effect of hedonic motivation on behavioural intention, such that the effect will be stronger for men.

**H10g:** Gender moderates the effect of habit on behavioural intention, such that the effect will be stronger for men.

**H10h:** Gender moderates the effect of habit on use behaviour, such that the effect will be stronger for men.

### **3.3.11 Moderating role of experience**

Experience with a technology plays a role in using a technology, as users with less experience or familiarity will depend more on facilitating conditions (Venkatesh et al., 2012). Greater experience can lead to greater familiarity with the technology and better knowledge structures to facilitate user learning, thus reducing user dependence on external support (Venkatesh et al., 2012). With more experience using a given technology, enjoyment that comes from using that particular technology decreases, while more practical uses become important. The link between experience and habit strengthens a behaviour that is repeated over time, making experience with a technology a vital confounding factor in the role that habit plays in technology use behaviour (Venkatesh et al., 2012).

Venkatesh and Davis (2000), confirmed that experience moderates relationships between perceived usefulness, perceived ease of use and social influence on behavioural intention. Thus the following hypotheses are made:

**H11a:** Experience moderates the effect of effort expectancy on behavioural intention, such that the effect will be stronger for people with more experience.

**H11b:** Experience moderates the effect of social influence on behavioural intention, such that the effect will be stronger for people with lesser experience.

**H11c:** Experience moderates the effect of facilitating conditions on behavioural intention, such that the effect will be stronger for people with lesser experience

**H11d:** Experience moderates the effect of hedonic motivation on behavioural intention, such that the effect will be stronger for people with lesser experience.

**H11e:** Experience moderates the effect of habit on behavioural intention, such that the effect will be stronger for people with more experience.

**H11f:** Experience moderates the effect of habit on usage behaviour, such that the effect will be stronger for people with more experience.

**H11g:** Experience moderates the effect of perceived risk on behavioural intention, such that the effect will be stronger for people with lesser experience.



### **3.4 Hypothesis based on the extended factors**

#### **3.4.1 Perceived risk (PR)**

Perceived Risk is a customer's view regarding the undesirable results from using the M-money service (Tobbin, 2010). Tobbin (2010), further indicates that reducing uncertainty has a positive effect on customers' intention to adopt a technology. Risk can be in the form of money laundering, discretion, security, fraud and credit risks (Meritt, 2011). It is vital to deal with risk issues in order to uphold confidence in M-money (Meritt, 2011). Perceived risk was found to be the second strongest predictor of behavioural intention among customers in the United Kingdom (Slade et al., 2015). Other studies (de Kerviler et al., 2016; Koenig-Lewis et al., 2010; Lu et al., 2011) in developed countries, all concurred that perceived risk is a significant factor in the behavioural intention to adopt different variants of M-money services.

Similarly, the significant role of perceived risk on M-money adoption has also been established in the developing world context. For example, Tobbin (2010) studied M-payments in Ghana and found perceived risk as a significant factor. Likewise, Ibrahim (2015) also found that risk is a major concern in the adoption of Kenyan M-money services. When the risk of using an M-money service is high, customers are less likely to use such a system (de Kerviler et al., 2016; Lu et al., 2011; Slade et al., 2015). Thus, this study hypothesises that:

**H12:** Perceived risk has a negative influence on intention to use M-money services.

#### **3.4.2 Perceived trust (PT)**

Trust means that "customers believe that there is a high likelihood that the brand will produce favourable outcomes for them as customers, it is based on the customer's belief that the brand has qualities that make it reliable, capable, honest and responsible" (Delgado-Ballester & Munuera-Aleman, 2005: 188). Past experiences are usually used to decide if it is safe to use a service in future, making it important to have a great deal of positive experiences with a service provider (Slade et al., 2015). In the context of M-money services, trust can be attained by the existence of trusted local agents as customers would expect some level of privacy from these agents (Tobbin, 2010). Tobbin (2010) further states that mobile network stability and service reliability affect customer's perceived trust in the service.

In their study, Baptista and Vicente (2013) found that trust was a contributing factor towards the adoption of M-money services in rural Mozambique. In addition, other researchers (Foon & Fah, 2011; Tobbin, 2010; Unyolo, 2012; Zhang et al., 2012) have all validated trust as a vital

antecedent of the behavioural intention to adopt different types of mobile services, including M-money (Unyolo, 2012). Consequently, this study hypothesises that:

**H13:** Perceived Trust has a positive influence on intention to use M-money service.

### **3.5 Chapter Summary**

The chapter began by highlighting the foundations of the hypotheses used in this study. It further discussed the UTAUT and the UTAUT2 models as well as the additional constructs added in for the context of this study. Lastly, the different constructs are discussed in terms of the context of this study and the different hypotheses are made. The next chapter examines the research methodology used to achieve the objectives of this study.

# **Chapter 4**

## **Methodology**

### **4.1 Introduction**

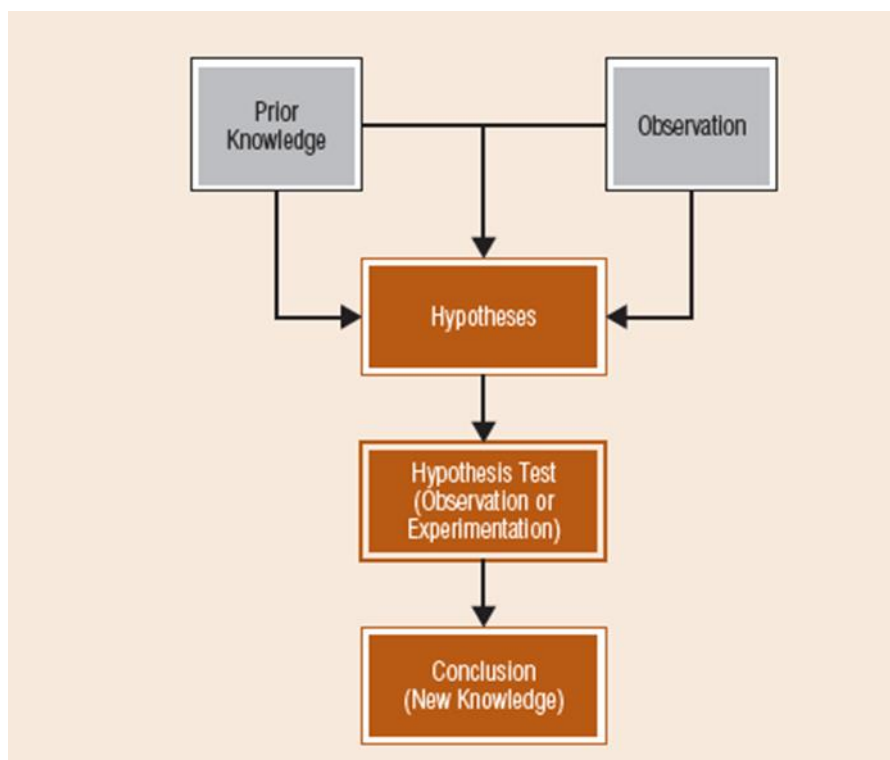
Chapter 3 detailed the foundations of the model used to test the adoption and use of M-money services by discussing the basis of the hypotheses used. This chapter provides an outline of the method that is used to achieve the objectives of this study as shown in Chapter 1. The chapter begins by presenting the research methodology, followed by the research design. Also, the different approaches that a researcher can use are explicitly explained. Furthermore, different sampling techniques from which appropriate techniques for the present study are chosen. Finally, the chapter presents the different data collection and data analysis methods with the aim of selecting the most suitable methods.

### **4.2 Research methodology**

Research methodology refers to the broad technique used to conduct the research project (Leedy & Ormrod, 2010). Babbie and Mouton (2008:75) define research methodology as, “the methods, techniques, and procedures used to implement a research design”. Prior to entirely grasping the research process, it is vital to explicitly understand what is considered as research. Walliman (2011), states that research is an organised way of investigating a phenomenon that is previously unknown. Academically, research is about enhancing knowledge about a certain phenomenon (Walliman, 2011). The core objective of research is to get answers and discover the truth which has not been revealed, therefore, ultimately contributing to the body of science (Bhattacharjee, 2012; Pandey & Pandey, 2015). The truth under investigation in the current study is finding out the determinants of M-money acceptance and use in the Lesotho context. Due to the nature of the present study, it falls under social sciences. Social science is the study of human behaviours either individual people or people as a collective (Bhattacharjee, 2012). The study focuses on the behaviour of consumers in regards to M-money adoption. Social sciences can further be categorised into different fields such as psychology, sociology, and economics. The science of economics can further be broken down into the behaviour of firms/businesses, markets, and economies (Bhattacharjee, 2012). The study at hand can be categorised under the social sciences, specifically economic sciences. In social sciences, there are four prevalent research paradigms, namely: Positivism, Realism, Interpretivism, and Pragmatism. Saunders, Lewis and Thornhill (2009) describe a research paradigm as a means of examining a social phenomenon with the goal of understanding the phenomenon through

gaining new knowledge and providing possible explanations of the phenomenon. The present study follows the positivist paradigm. This is because the study employs properly tested, measured and confirmable variables. As presented in chapter 3, a set of proven hypotheses will be tested and validated in the context of Lesotho (Saunders et al., 2011).

Zikmund, Babin, Carr and Griffin (2010), suggest that, research in all disciplines employs the scientific method. To achieve the objectives of the study, a scientific method of research was used. The scientific research process began by setting a foundation of the entire research by going through prior knowledge to understand the phenomena under study, this process is conducted in chapter 2 of this study. After the foundation was set, the hypothesis stage was also depicted in chapter 3 and testing was conducted. After testing, conclusions were reached and presented in chapter 6 of this study. From the outcomes and conclusions, new knowledge is generated, this signifies the scientific method of research outlined by Zikmund et al. (2010). Figure 4.1 below illustrates the scientific method process as presented by Zikmund et al. (2010).



**Figure 4.1: Summary of the Scientific Method**

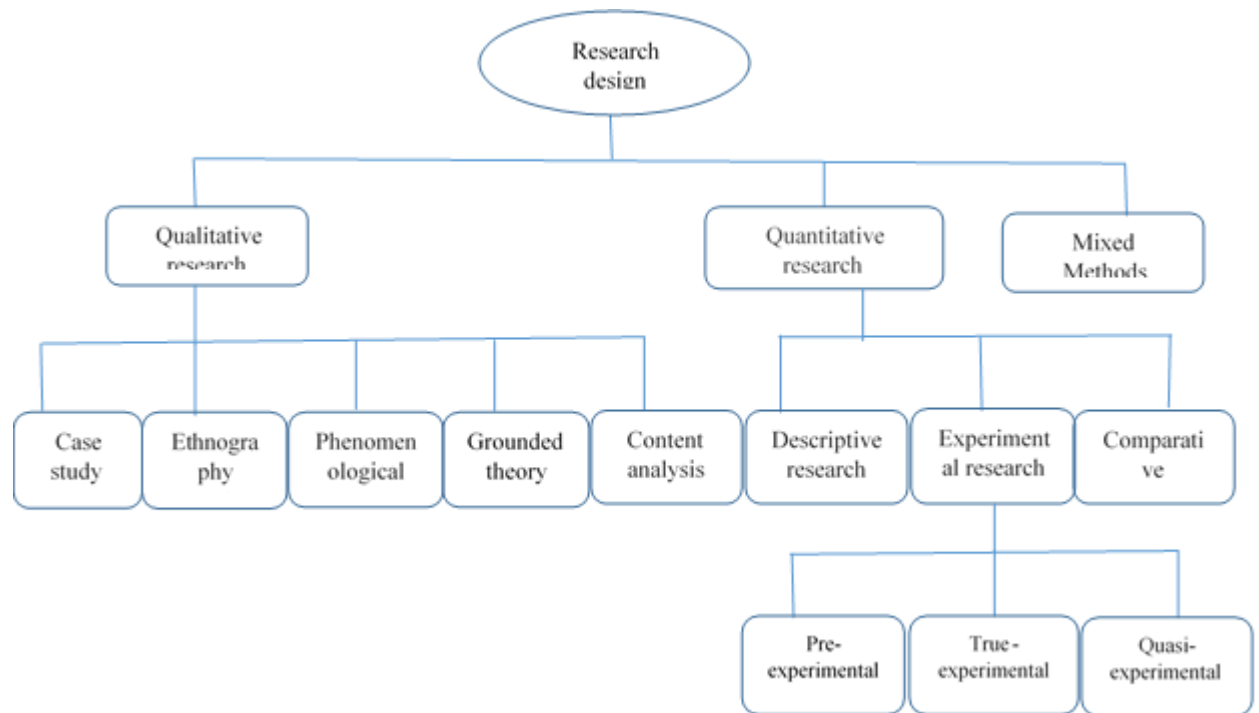
**Source: Zikmund et al. (2010)**

### 4.3 Research design

“Research design is the framework or work plan for a study that is used as a guide in collecting and analysing data. It is an outline that is followed in completing a study” (Pandey & Pandey, 2015:18). Pandey and Pandey (2015:18), further state that the purpose of research design includes:

- (i) Minimising research expenditure: planning makes the research effective through enabling getting information with minimum spending of resources such as money and time by preparing the advance plan of all about the research.
- (ii) Facilitating the smooth scaling: Research design is needed because it simplifies implementation of research process hence making research well-organised.
- (iii) Collecting the relevant data and deciding on the technique: planning in advance helps select proper methods to be used for data collection and data analysis.
- (iv) Providing blue print for plans: Research design is helpful in assisting the researcher to know exactly what needs to be done at any given time during the process of research.
- (v) Providing an overview to other experts. With the help of the research design, the researcher can organise ideas from other experts and therefore identify and fix mistakes.
- (vi) Providing a direction: provides a proper direction to others who are helping in the process.

According to Creswell (2014), there are three approaches of research design that can be used. These are: qualitative research approach, quantitative research approach and mixed methods research approach. These approaches can further be classified into more sub-categories. Figure 4.2 below shows the classifications of research approaches.



**Figure 4.2: Classifications of Research Approaches**

**Source: Adapted from Bhattacharjee (2012); Creswell (2014); Williams (2007)**

#### **4.3.1. Research Design Adopted in the present study**

This study adopted a quantitative research design, specifically the comparative research design because it aimed at evaluating hypotheses to establishing associations between variables. The study is considered quantitative research because it employs concept analysis through exploring relationships between notions. These notions can be measured and data can be analysed using statistical procedures (Creswell, 2014). However, it is imperative to note that the comparative research design is a broad term under quantitative designs that does not specifically detail the exact steps followed in the study. As such, it is important to expand on the specific methods adopted under the comparative design for the purpose of this study.

To be more specific, the comparative research design adopted in this study was the model-testing design with a cross-sectional survey. A model-testing design is defined as a research method that examines or pilot test proposed associations hypothesised in a model or theory (Schmidt & Brown, 2015). Researchers use model-testing designs to test theoretically hypothesised models, causal models or path analysis (Schmidt & Brown, 2015). Within this method, the variables are described as either predictor variables (independent) or outcome variables (dependent). The key difference between a model-testing approach and an experimental approach is the fact that the variables occur naturally in their social context and

are not manipulated by experiments. However, there are two pertinent approaches to gather information on the variables which could either be cross-sectional (i.e. data gathered at a single point in time) or longitudinal (i.e. data gathered over several points in time). In this study, the cross-section survey approach was used because data was gathered at the same time and not in intervals.

## **4.4 Sampling**

### **4.4.1 Population and sample**

“A population is a unit of analysis with the features that the researcher wants to study. Unit of analysis may be a people, group, organisation, country or any object the researcher wants to draw scientific inferences about” (Bhattacharjee, 2012: 66). Sampling saves time as it would take too much time and cost a lot of money to study the entire population (Pandey & Pandey, 2015). The target population for this study is made up of Lesotho residents that own a mobile phone. This is in line with a study conducted in Malawi in which the target population was users and non-users of M-money making it all mobile phone users (Unyolo, 2012). Mobile phone owners are potential M-money users, the inclusion of all mobile phone owners is to get perspective from those that have adopted M-money and those that have not. Lesotho has two MNOs (i.e. Vodacom and Econet) and each of these MNOs offer M-money services. Therefore, a customer of any of these networks will be a potential M-money user.

### **4.4.2 Sample size**

Sample size is the number of people or units within a group that has a related characteristic (MacDonald & Headlam, 2009). Okororie and Otuonyea (2015), state that there is a formula that can be used to estimate the sample size when a certain level of accuracy is desired.

$$n = \frac{N}{1 + N(e)^2}$$

Where n is the sample size, N is the population size and e is the level of accuracy (%) desired. The confidence level is the extent of the certainty the researcher can have about the results of the study. The general norm in social science research is 95% confidence level, some researchers use 99% confidence level (MacDonald & Headlam, 2009). According to TeleGeography (2016), there are 1 911 000 mobile phone users in Lesotho. Out of those users, 1 399 000 (73.2%) are subscribed to Vodacom Lesotho while the remaining 512 000 (26.8%) is Econet Telecom Lesotho users.

The sample size at 95% confidence level was therefore calculated as such:

$$n = 1\,911\,000 / (1 + 1\,911\,000(0.05)^2)$$

$$n = 400$$

From the above calculations, it shows that the sample size required for this study to maintain a 95% confidence level is 400. For the study at hand, the sample size was increased to 600 to factor in cases of nonresponse or incorrect filling of questionnaires.

#### **4.4.3 Sampling techniques**

As mentioned in the first chapter of this study, the target population is made of Lesotho residents who have access to a mobile device. The sampling method used in this study was the probability sampling, more specifically stratified random sampling. The main reason for using probability sampling is because of its ability to generalise the results. Stratified random sampling was used because it allows every group/stratum to have representation in the sample.

### **4.5 Data collection**

#### **4.5.1 Types of data**

Access to adequate and satisfactory data is of vital importance as it enables the researcher to answer the research problem (Harzing, Reiche & Pudelko, 2012). According to Walliman (2011), there are two main categories of data: primary data and secondary data. Data are categorised depending on the closeness to the event recorded (Bhattacharjee, 2012). Primary data refers to data that has been observed, experienced or collected by the individual recording it. It is usually close and nearest to the event making it a more reliable way one can get to the truth (Walliman, 2011). On the other hand, secondary data is deduced from previously recorded data. Secondary data comes in different forms such as reports, magazines, journals, newspapers and documentaries (Bhattacharjee, 2012).

#### **4.5.2 Data collection techniques**

“Techniques that can be used for data collection include questionnaires, interviews, schedules, observation techniques and rating scales” (Pandey & Pandey, 2015:57). Primary data was collected by using of questionnaires. After questionnaires were printed they were distributed to respondents to answer and send back to the researcher after answering. A questionnaire is a tool made of questions given to respondents to get answers in a consistent manner (Bhattacharjee, 2012). The type of questions used in this study is closed format questions, closed format questions require respondents to select from predetermined answers (Walliman,



2011). These types of questions are found in structured questionnaires. In a structured questionnaire, participants respond to prompts by selecting from prearranged answers by marking the answer closest to their answer (Harris & Brown, 2010). Closed format questions are quick and easy to answer because they do not need writing skills and thinking of answers from the respondent, they do however minimise the variety of answers from respondents (Walliman, 2011).

#### **4.5.3 Questionnaire design and content**

As shown in section 4.4.2 above, questionnaires can be in the form of closed or open-ended questions. The current study used question because of their nature of being quick and easy to answer. The questionnaire in this particular study was designed as outlined below:

##### **4.5.3.1 Section A: Demographics**

The demographics section is included to understand the general profile of the respondent. The questions asked are basic demographic elements such as age, gender, occupation, and level of education. Age and gender will also be used as official moderators in the model used as explained in Chapter 3.

##### **4.5.3.2 Section B: Cell phone user profile**

Section B of the questionnaire seeks to understand the cell phone usage behaviour and the MNO used by respondents. In addition, this section asks the users if they have heard about M-money and how they learned about M-money.

##### **4.5.3.3 Section C: Mobile money**

Section C of the questionnaire asks about M-money usage. The section begins by enquiring about the frequency of use and the service that customers use the most. The section then ends with testing the hypotheses outlined in chapter 3 of the study at hand. The measurement techniques are shown in Appendix 5.

##### **4.5.3.4 Section D: Benefits of mobile money**

In the benefits of M-money section, respondents were asked about the documented benefits of M-money services. This section aims to clarify if respondents agree that the known benefits are definitely benefits to them. The option was given to respondents to add benefits that are not listed in the questionnaire.

#### **4.5.3.5 Section E: Future demand**

This section aims to find out from respondents the M-money services they would like to see in the future. Options available in the questionnaire are services that have previously been documented as desired by users. Respondents were further given the option to add the services they desire to see in the future.

#### **4.5.3.6 Section F: M-money channels**

Section F of the questionnaire asks respondents about the improvements and different ways they would like to see M-money services offered to users. This section mainly highlights the M-money advancements customers would prefer to realise.

### **4.6 Data Analysis**

Data analysis is the process of studying previously collected data to uncover practicalities about a certain area of interest, the data are examined cautiously to reveal new truths based on evidence presented (Pandey & Pandey, 2015). Data analysis is either qualitative or quantitative. In qualitative data analysis, raw field notes, tapes of interviews or trial results are processed in an orderly manner to derive understanding (Pandey & Pandey, 2015; Walliman, 2011). Organisation of data leads to developing a coding system by assigning codes to organised data, codes are identifiers used for assigning meaning to data (Walliman, 2011). Computer programs to analyse qualitative data is available, programs can file and recover coded material (Walliman, 2011).

Quantitative analysis examines data that is in the form of numbers, it uses statistical measures to make inferences concerning links between variables (Walliman, 2011; Bhattacharjee, 2012). There are many statistical programs that support various statistical procedures meant to analyse data (Bhattacharjee, 2012). One such computer program is the statistical software for structural equation modelling (SMRTPLS). SMRTPLS was developed for partial least square structural equation modeling (PLS-SEM), it is the most competent software for structural equation modelling and has practical graphical depiction (Mohamad, Bin & Afthanorhan, 2013).

The purpose of statistical techniques is to approximate the likelihood that certain behaviours of data collected happen by chance or that those behaviours are a result of the variables being tested (Lowry & Gaskin, 2014). Lowry and Gaskin, (2014:123), state that, “techniques should be cautiously chosen based on the type of data collected and should be carried out in the context of theory using measures derived from a theory”. The study at hand uses the Structural Equation

Modeling (SEM). SEM uses numerous models to illustrate relationships between variables as a way to test the theoretical model hypothesised by the researcher, different theoretical hypotheses about how variables define concepts and how concepts are connected (Schumacker & Lomax, 2010). The reason for using SEM is that it is able to deal with the complicated hypotheses and the UTAUT2 model used in this study is complex.

#### **4.6.1 Descriptive statistics**

Descriptive statistics can be described as statistical synopses of what was observed in a particular sample (MacDonald & Headlam, 2009). Descriptive statistics are for purposes of understanding data characteristics and not to make conclusions on the hypotheses (Laerd Statistics, 2016). For the purpose of this study, descriptive statistics is in the form of measures of central tendency such as mean and mode. The mean and mode will be used especially to observe the demographic nature of respondents in the form of age, gender, occupation, income and residence of respondents.

#### **4.6.2 Inferential statistics**

According to Bhattacharjee (2012), inferential statistics are calculations used to measure the extent and nature of associations and relationships between variables and constructs. In this study, PLS-SEM is used. SmartPLS version 3.0 was used as the analysis tool for analysing the associations in the theorised model.

##### **4.6.2.1 Structural equation modelling (SEM)**

SEM is a statistical modelling method that combines factor analysis and regression or path analysis, in order to determine the degree to which the sample data supports the hypothesised model (Schumacker, & Lomax, 2010; Wong, 2013). SEM's core advantage lies in its capability of working with manifold relationships concurrently by working with multifaceted interactions that are presented in a convenient way. SEM can also detect unobservable dormant variables, making it suitable for analysing business research problems (Monecke & Leisch, 2012; Schumacker, & Lomax, 2010; Wong, 2013). With respect to the SmartPLS, validity and path testing will be conducted by running a bootstrap of the model through performing a confirmatory factor analysis (CFA). Furthermore, reliability will be tested by calculating a composite reliability score.

#### **4.6.2.1.1 Confirmatory factor analysis (CFA)**

According to Schumacker and Lomax (2010), CFA is a method that tests if variables in a construct indeed measure what is intended. Marsh, Morin, Parker and Kaur, (2014:87) highlight that “CFA specifies the quantity, implication, and relationships in the measurement factors by loading and observing interconnections of factors before a researcher analyses the data”. These authors further theorise that variables have zero factor loadings on all constructs except the one they are intended to measure. The main aim of CFA is to statistically assess the significance of a theorised model by testing if the sample data is able to confirm the model (Schumacker & Lomax, 2010; Prudon, 2014).

##### **4.6.2.1.1.1 Reliability evaluation**

Reliability is the extent to which a construct is consistent (Bhattacharjee, 2012). Types of reliability according to Bhattacharjee (2012:57), include:

- Inter-rater reliability (inter-observer reliability), which measures uniformity between independent observers of the same construct. This type of reliability test works best for constructs that are divided into constructs.
- Test-retest reliability, measures reliability between two assessments of the same construct conducted using the same sample at different times. If the observations have not changed substantially between the two tests, then the measure is reliable.
- Split-half reliability, measures of consistency between two halves of a construct.
- Internal consistency reliability, measures regularity and consistency between different items of the same construct.

To test for reliability with CFA, this study used Cronbach’s Alpha and composite reliability. Each of these is presented below.

##### **• Cronbach’s Alpha**

Cronbach’s Alpha is used to measure internal consistency reliability (Tavakol & Dennick, 2011). Cronbach’s Alpha is a statistical test that examines the multiple items in a construct and determines how well the items relate with each other (Taber, 2016). An acceptable value for Cronbach’s Alpha is any value greater than 0.7. For values greater than 0.7, it can be confirmed that the computed variable has an acceptable level of internal consistency (Tavakol & Dennick, 2011). Cronbach’s Alpha is regularly used as a measure of internal consistency, nevertheless,

it is a limited measure. This limitation makes composite reliability a more suitable to use in PLS-SEM (Hair, Sarstedt, Ringle & Mena, 2012; Lowry & Gaskin, 2014).

- **Composite Reliability (CR)**

Aguirre-Urreta, Marakas and Ellis (2013), state that composite reliability is a measure of the reliability of a group of unrelated but comparable items. Composite reliability can be obtained by adding all the variance scores and covariance scores of the indicators of the variables measuring the then dividing that sum with the total variance in the composite (Aguirre-Urreta et al., 2013). Composite reliability is mainly used because of its capabilities in drawing on the regression weights and correlation errors of each item (Shook, Ketchen, Hult & Kacmar, 2004). Just like with Cronbach's Alpha the composite reliability measures should be greater than 0.7 for a construct to be considered reliable (Lowry & Gaskin, 2014).

#### **4.6.2.1.1.2 Validity evaluation**

Validity is the extent to which a construct adequately represents the core concept being measured (Bhattacharjee, 2012). Therefore, an assessing tool is valid if it measures exactly what it is expected to measure (Pandey & Pandey, 2015). Validity can either take the form of content validity, predictive (concurrent) validity, or construct validity (Creswell, 2014). The different forms are described below:

- Content validity considers if the items measure the content they were intended to measure.
- Predictive or concurrent validity considers if the responses predict a benchmark measure and if results compare with results from other studies.
- Construct validity considers whether questions capably measure hypothetical constructs (Creswell, 2014).

To test for validity with CFA, this study used the Average Variance Extracted (AVE) and Fornell-Larcker criterion. Each of these is presented below.

- **Average Variance Extracted (AVE) for Convergent Validity**

Bhattacharjee (2012) posited that convergent validity is a measure of accuracy with which items really measure the intended. In order to show that the latent variable explains at least 50% of the variance, the indicator has to be explained for by the first factor extracted; this is indicated by an AVE of 0.5 or more (Henseler, Hubona & Ray, 2016).

- **Fornell-Larcker criterion for discriminant validity**

Discriminant validity observes correlations between measures of constructs using the same method (Schumacker & Lomax, 2010). Discriminant validity can be assessed by using the Fornell-Larcker criterion proposed by Fornell and Larcker (1981). Fornell-Larcker criterion compares the averages of the construct's variance extracted with its squared construct correlations (Henseler et al., 2016). The Fornell-Larcker criterion states that if the square root of AVE is greater than the paired correlations of the constructs, then the model meets the standards for appropriate discriminant validity (Lowry & Gaskin, 2014).

#### **4.6.2.1.2 Path Analysis**

Path analysis is the process of examining regression equations and nature of associations between variables in a path model (Schumacker & Lomax, 2010). Path analysis is usually graphically depicted, based on particular drawing principles used in SEM models (Schumacker & Lomax, 2010; Bhattacharjee, 2012). With path analysis, complex models in which the dependent variable can also be an independent variable can be assessed (Bhattacharjee, 2012). Schumacker and Lomax (2010), further state that boxes, circles, and lines have specific meaning according to the different software used. The associations between constructs are specified by the structural model through path analysis, lines directed from one construct to another signify hypothesised relationships (Henseler et al., 2016).

### **4.7 Ethical considerations**

Ethics help regulate the research project by protecting the rights of respondents, while also guiding the researcher on ways to behave when in contact with respondents and how to manage user data (de Leeuw et al., 2008). The present study made use of the ethical guidelines by the faculty of Economic and Management Sciences at the University of the Free State. Ethical clearance was obtained from faculty's ethics board before questionnaires were handed out to respondents. The main ethical issues that were considered are voluntary participation of respondents and data confidentiality. Respondents had to understand what their participation in the study entailed, before they could willingly agree to partake. Moreover, they could withdraw from taking part in the study at any time with no consequences. The management of the confidentiality of responses was communicated with respondents. Completed questionnaires are kept in a safe place to maintain the previously communicated confidentiality. The ethical clearance letter granting approval of this study is presented in Appendix 4.

## **4.8 Chapter Summary**

The discussion in this chapter begins by introducing the research methodology through looking closely at what research is. Moreover, the different types of science, scientific methods, and research paradigms are expounded on. Then the chapter proceeds with an emphasis on research designs by presenting the purpose of a research design. The research design approaches and the broad types of quantitative research are highlighted. In addition, sampling was looked at, specifically target population, sample size, and different sampling techniques. Next, the chapter presents data collection and data analysis modes. Among the various computer programs available to analyse data, this study utilises the SMRTPLS software due to its competency in dealing with the method of statistical method employed. The chapter ends by presenting the ethical considerations of the study. The next chapter will present the results of the data analysis process.

## CHAPTER 5

### Results and Discussion

#### 5.1 Introduction

The previous chapter focussed on the methodology used in this study, this chapter will therefore present the outcomes from the data analysis process. As previously mentioned, questionnaires were administered to a sample of 600 people. The chapter begins by presenting the number of questionnaires administered versus the number collected and usable for the data analysis process. Thereafter, the personal characteristics of respondents are discussed, particularly regarding age, gender, residence, education level and occupation. Following which, the cell phone user profile of respondents is presented, with a close look at the network provider used and cell phone ownership. The results of M-money usage are also presented, indicating the number of registered users, the type of M-money used as well as the services most used. The chapter further showcases what the public considers as benefits of M-money and the services that should be considered going forward. The chapter ends by performing different assessments to test the hypotheses discussed in Chapter 3, the tests include reliability and validity tests as well as the path analysis.

#### 5.2 Response rate

A total number of 600 questionnaires were issued, out of which 539 questionnaires were returned. A total of 61 respondents did not return questionnaires despite several calls and visits by the researcher to collect them. In addition to missing questionnaires, there were some questionnaires that were not correctly filled. Some had missing information while others had multiple selections in one question. These questionnaires that were wrongly filled were put aside, which, therefore, reduced the number of usable questionnaires. After the elimination of improper questionnaires, a total of 488 useful questionnaires was available for data analysis in this study. As such, the study had a valid response rate of 81.3% ( $488/600 = 81.3\%$ ). Following from other applications of the UTAUT2 (Oliveira et al., 2016) this response rate and sample is quite satisfactory for a study of this scale. Also, the minimum required sample to obtain a 95% confidence level for a population of 1 911 000 as shown in chapter 4 is 400, therefore a sample of 488 is an acceptable sample size. Table 5.1 below summarises the distribution and collection of questionnaires.



**Table 5.1 Usable questionnaires**

		Questionnaires issued	Questionnaires not returned	Questionnaires collected	Questionnaires with missing information	Usable questionnaires	Response rate
<b>Strata 1</b>	<b>18- 25</b>	191	5	186	26	160	83.8%
<b>Strata 2</b>	<b>26-35</b>	159	31	128	11	117	73.6%
<b>Strata 3</b>	<b>36-45</b>	103	14	89	6	83	80.6%
<b>Strata 4</b>	<b>46-55</b>	81	8	73	8	65	80.2%
<b>Strata 5</b>	<b>Above 55</b>	66	3	63	0	63	95.5%
<b>Total</b>		600	61	539	51	488	<b>81.3%</b>

## 5.3 Study findings

### 5.3.1 Demographic information

The demographic section of the questionnaire highlights the personal characteristics of the respondents. Personal characteristics used in the questionnaires requested respondents' gender, age, residence, level of education, occupation and monthly salary.

#### 5.3.1.1 Gender, Age and Residence

The questionnaire began by requesting the gender, age, and residential area of respondents. The results are displayed in Table 5.2 below.

**Table 5.2 Summary of the gender, age and residence of respondents**

Age	Gender		Residence			TOTAL
	Female	Male	Maseru city	Maseru outskirts	Mafeteng rural	
18-25	78	82	138	16	6	160(32.79%)
26-35	64	53	41	41	35	117(23.98%)
36-45	47	36	39	26	18	83(17%)
46-55	32	33	8	29	28	65(13.32%)
Above 55	30	33	1	14	48	63(12.91%)
TOTAL	251(51.64%)	237(48.57%)	227(46.52%)	126(25.82%)	135(27.66%)	<b>488</b>

## **Gender**

Table 5.2 above shows that there were more female respondents than there were male. A total of 251 females (51.4%) and 237 (48.6%) males formed the sample.

## **Age**

Majority of respondents were between the ages of 18-26, there were 160 respondents between the ages 18-26, constituting 32.8% of the sample. The second largest age group was 26-35 which made of 117 (24%) of the sample population. Respondents between the ages of 36-45 were 83 which makes 17% of the sample, while respondents between the ages of 46-55 were 65, constituting 13.3% of the sample. The age group in the minority was respondents above 55, there were 63 respondents in this age group making 12.9% of the respondents.

## **Residence**

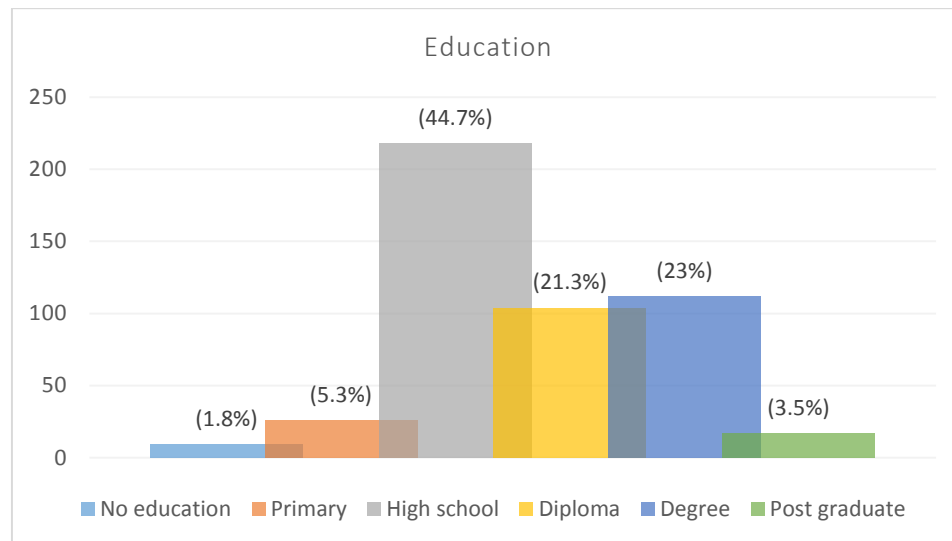
Respondents were further asked to indicate their area of residence, whether it's in Maseru city, the outskirts of Maseru or a rural area. Most of the respondents come from Maseru city, 227 (46.5%). There were 135 respondents that live in rural areas, making 27.7% of the sample. Peri-urban area which is made up of respondents living in the outskirts of Maseru has the least number of respondents at 126 which constitutes only 25.8% of the respondents.

The above results are contradictory with other studies that found that more men formed part of the respondents (Makongoro, 2014; Osei-Assibey, 2014; Sayid et al., 2012; Tobbin, 2010; Unyolo, 2012). There are, however, other studies that are in line with the study at hand in which there are more women than men that participated in the study (Naiwumbwe, 2008). Regarding age, the results are consistent with other studies that showed that the age group of 18-25 year olds form a larger part of respondents (Naiwumbwe 2008; Osei-Assibey, 2014). In contrast, the respondents in the study by Makongoro (2014) were fewest in the age group between 18 and 23 years.

### **5.3.1.2 Education**

The results in Figure 5.1 show that 44.7% of the respondents have high school as their highest level of education. 21.3% of respondents are diploma holders, while 23% are degree holders. 5.3% of respondents have primary school as their highest educational whereas 3.5% have a post graduate qualification. Results further showed that only 1.8% of respondents have no education. From these results, it shows that more than 90% of respondents have at least primary level education demonstrating that respondents are literate. The findings regarding education

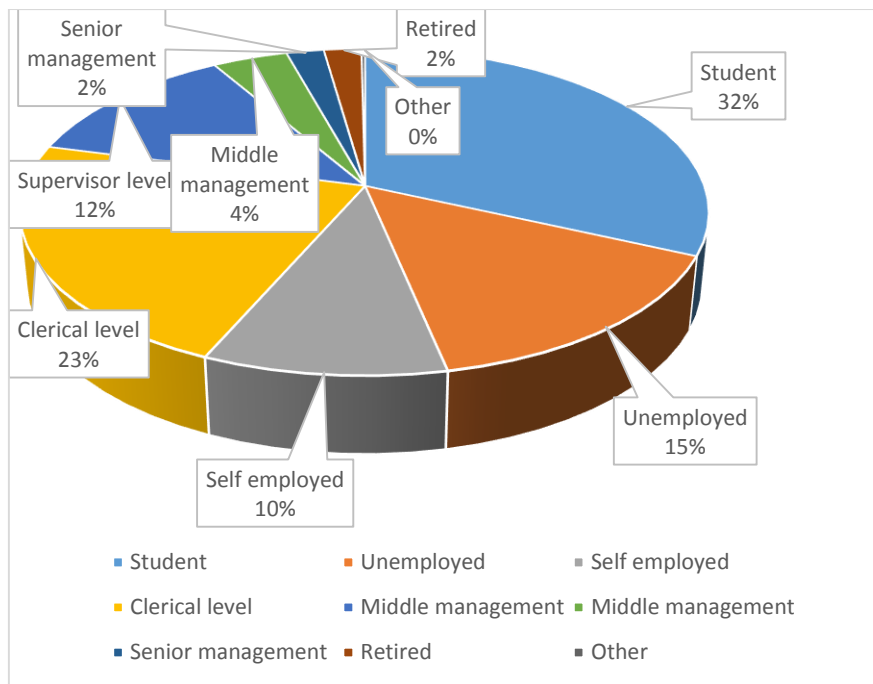
are similar with other studies (Osei-Assibey, 2014; Unyolo, 2012), which had a high school diploma. However, in other studies (Makongoro, 2014; Sayid et al., 2012; Tobbin, 2010) the majority of the respondents were bachelor degree holders.



**Figure 5.1 Level of education**

### 5.3.1.3 Occupation

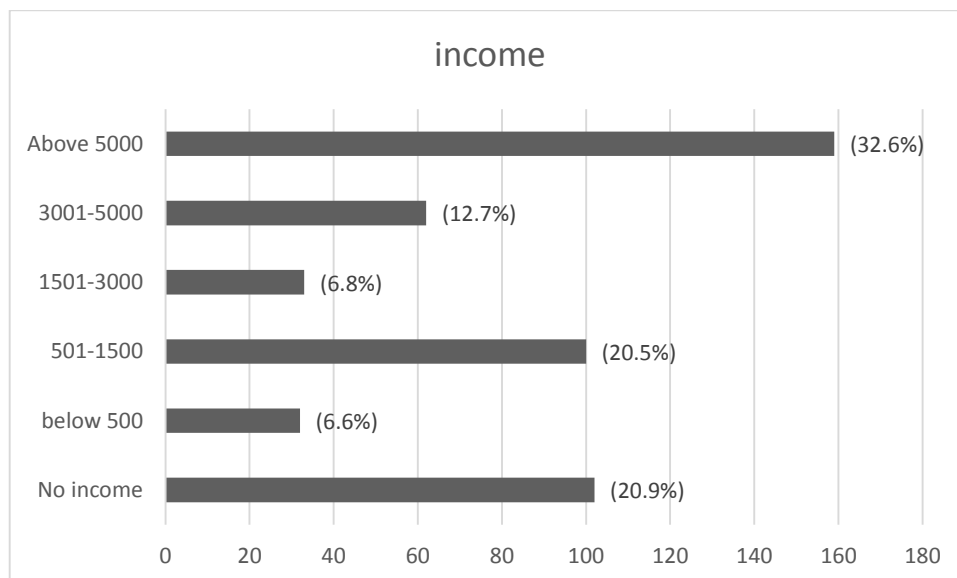
Regarding occupation, the outcomes (Figure 5.2) show that most respondents are students, making up 32% of the sample population as students. Also, 23% of respondents are employed at clerical level, while 15% of respondents were unemployed. The results further show that 12% of the respondents were employed at supervisor level. Middle management, senior management, and retired respondents formed 4%, 2%, and 2% respectively. Figure 5.2 is a graphical view of the occupation levels of the respondents in this study. While a significant number of the respondents in this study were students, other M-money studies (Sayid et al., 2012; Unyolo, 2012; Tobbin, 2010) had a majority of respondents that were non-students when compared with other groups.



**Figure 5.2 Occupation of the participants**

#### 5.3.1.4 Average monthly income

Figure 5.3 depicts the average monthly incomes of the respondents.



**Figure 5.3 Average monthly incomes**

From Figure 5.3, it is seen that the bulk of respondents have an income of more than M5000.00 as 32% of respondents make more than M5000.00 a month. A considerable number of respondents have no income or earn between M501.00- M1500.00 constituting 20.9% and

20.5% respectively. About 12.7% of respondents earn between M3001.00- M5000.00. Respondents earning between M1501.00- M3000.00 and below M500.00 make 6.8% and 6.6% of the sample respectively. At the time of writing this section, M1.00 was equivalent to \$0.078, therefore more respondents earn more than \$390 (i.e. M5000). In Somalia, Sayid et al. (2012) found that majority of respondents earned between \$200 and \$400, while Tobbin (2010) found that more respondents earn more than \$300 per month.

#### 5.3.1.5 Summary of demographic frequencies

An over-all number of 488 responses were used in this analysis. The findings show that the sample was made up of 51.4% of female and 48.6% male. The majority age group was 18-26 at 32.8% while the minority was above 55 with 12.9%. Most respondents, 46.5% came from Maseru city followed by rural area and peri-urban area. With regards to education, the majority of respondents had at least a high school education, while only a very small percentage (1.8%) had no education. Many respondents were students (32%) followed by clerical level employment (23%). The results also indicated that 32% of respondents earn more than M 5000.00 while only 6.6% earn below M500.00.

#### 5.3.2 Cell phone user profile

Based on the results, all respondents own a cell phone. Out of the 488 respondents, 408 (83.6%) use VCL while 80 (16.4%) use ETL. This result is expected as VCL has the biggest market share.

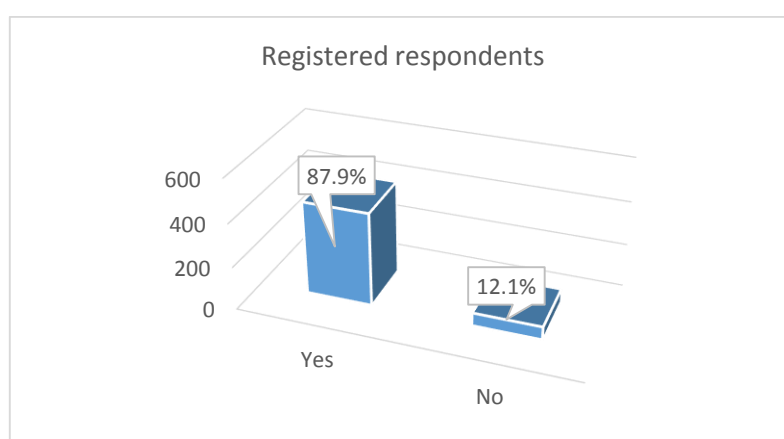
**Table 5.3 Network used**

		Frequency	Percent
Valid	VCL	408	83.6
	ETL	80	16.4
	Total	488	100.0

When asked if they have heard about M-money, only 2 people said they had never heard of it. This number shows that there is a general awareness of M-money as 99.6% of the sampled population knew about the existence of M-money services in Lesotho. The bulk of respondents (78.8%) heard about M-money from the mass media which includes television, radio newspapers. 13.3% of respondents were sensitised about M-money by a short message from the MNOs. Friends and family, agents and the banks are other sources that informed respondents about M-money, at 10.7%, 1.2%, and 0.8% respectively. These findings are in line

with previous research in which awareness is generally high. Naiwumbwe (2008) found that in Kampala Uganda there was only 2.7% of respondents that had not heard about M-money, mass media being the number one platform informing the public. Tobbin (2010) also found that awareness about M-money is high with majority having heard about M-money from the media.

Regarding respondents that have registered for M-money, Figure 5.4 shows that 87.9% actually have an M-money account. This finding is consistent with prior research, Makongoro (2014) in Tanzania and Naiwumbwe (2008) in Uganda also found that more respondents have registered for M-money services. In contrast, Tobbin (2010) found that only 10% of respondents had registered for M-money. Below is a depiction of registration status on each network.



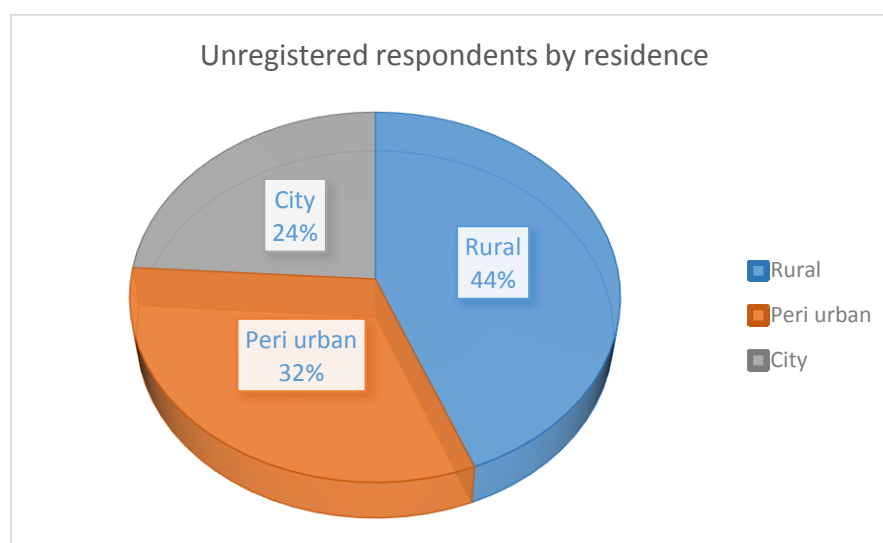
**Figure 5.4 Registered respondents**

Table 5.4 below shows that the number of registered respondents generally does not depend on the network used. Within VCL there are 12.3% unregistered respondents while 11.3% unregistered respondents using ETL. 83.4% of the registered users use VCL M-Money services while 16.6% use ETL.

**Table 5.4 Registration by Network**

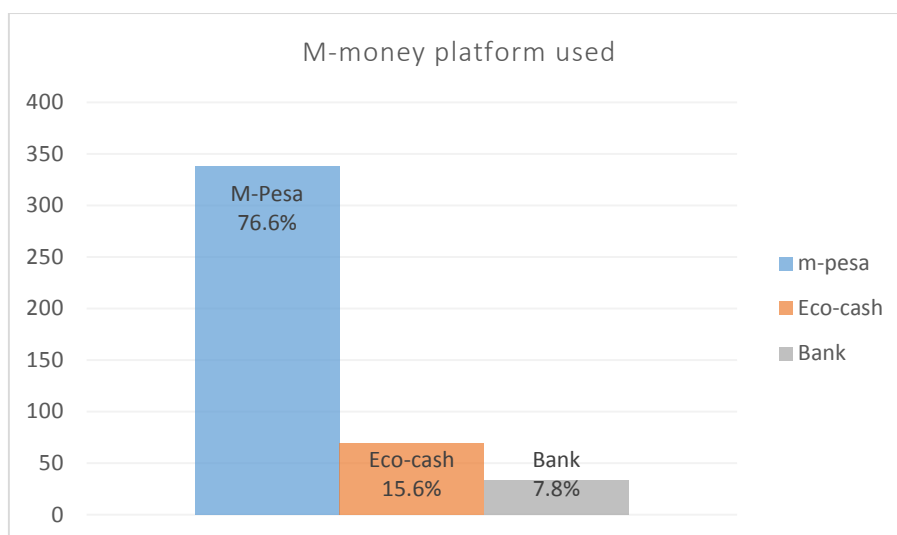
			Yes	No	Total
Network	VCL	Count	358	50	408
		% within Network	87.7%	12.3%	100.0%
		% within Registered	83.4%	84.7%	83.6%
	ETL	Count	71	9	80
		% within Network	88.8%	11.3%	100.0%
		% within Registered	16.6%	15.3%	16.4%
Total		Count	429	59	488
		% within Network	87.9%	12.1%	100.0%
		% within Registered	100.0%	100.0%	100.0%

Figure 5.5 shows that most of the unregistered respondents live in rural areas at 44%. Peri-urban and the city have 32% and 24% unregistered respondents respectively.

**Figure 5.5 Unregistered respondents by residence**

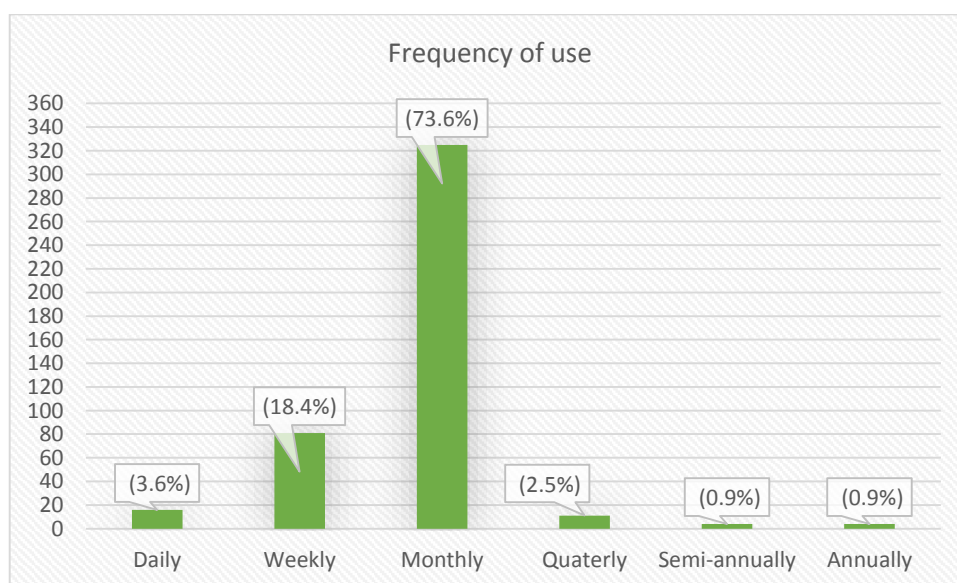
### 5.3.3 M-money usage

A considerable number of registered customers, 338 (76.6%) use M-Pesa while 15.6% use Eco-cash. Respondents that use M-banking are in the minority at only 7.8%. Of the people using M-banking, 65% use FNB while 30% use Standard Lesotho Bank. Nedbank M-banking is used by only 5% of respondents. These results are graphically shown in Figure 5.6 below.



**Figure 5.6 M-money platform used**

Figure 5.7 below graphically presents the frequency with which respondents use M-money. A substantial amount of 73.6% use M-money on a monthly basis. From the results, it is evident that users use M-money on a regular basis because less 2% use M-money semi-annually and annually at 0.9% each.



**Figure 5.7 Frequency of use**

The results concerning service mostly used by respondents are shown in Table 5.4. Most of the respondents (35.4%) use their M-money accounts to receive money, followed by purchasing airtime (23.4). This is not surprising given that a significant portion of the respondents were students who likely receive money from their sponsors. A further 19.7% of respondents use M-money for paying their bills, which is closely followed by 16.7% who mainly use M-money to



send money. Bank related services and payment of goods at retailers are generally not used as much with 3.2% and 1.6% respectively. Similar to this study, Unyolo (2012), found that airtime purchases, receiving and sending funds are services that are used often. In addition, Makongoro (2014) found that transferring funds and bill payments are common services.

**Table 5.5 M-money services used**

Service used	Frequency	Percent
Sending money	74	16.7
Receiving money	156	35.4
Purchases at a retailer	7	1.6
Bill payments	87	19.7
Airtime purchases	103	23.4
Bank related service	14	3.2
Total	441	100.0

### 5.3.3.1 Summary of cell phone user profile and M-money usage analysis

All respondents in this study own a cell phone and most (83.6%) of those respondents use VCL. Only 2 people had never heard about M-money. The media was the biggest channel that people learn about M-money with 78.8% having heard about M-money from the mass media. Majority of respondents 87.9% had an M-money account. Many unregistered respondents were from rural areas at 44%. A substantial number of respondents (76.6%) use M-Pesa which is offered by the leading MNO VCL. M-banking is used by a small percentage (7.8%) of respondents. Receiving money was found to be the leading service used by respondents in this study. This could be attributed to the reality that students, unemployed and the retired together form a huge part of the population (49%). This group of people receive money rather than give it.

### 5.3.4 Descriptive Statistics of variables used in the study

Questions that measure the model used in this study were grouped together and frequency analysis conducted. As tabulated in Table 5.6, majority of respondents believe that M-money improves their productivity through the ability to transact at any place. The results therefore show that M-money has and can help people to complete their financial tasks easier. The mean is 4, indicating that respondents' responses lean more towards strongly agree. In all the questions measuring the effort expectancy construct, the mean is above 4, averaging at 4.5, this shows that the average responses are between agree and strongly agree.

The average mean of responses in the social influence is 3.75 indicating that on average respondents agree that social influence is important. A small number of respondents disagreed with the statements measuring facilitating conditions. On the other hand, respondents generally agree that facilitating conditions are important.

The mean among questions relating to habit is 2.56, indicative that respondents are leaning towards disagree. There is a small number of respondents that are neutral regarding habit, hence the mean is slightly leaning towards 3. The mean of price value is 3.9, signifying inclination towards agree. More respondents agree that M-money services are value for money. The mean is 2.01, signifying that the most frequent response is strongly disagree. Majority of respondents showed that M-money is not an enjoyable activity. It is not fun, enjoyable or entertaining to use M-money. This could be because finances are a serious issue conducted out of necessity and not necessarily for enjoyment.

Based on the results tabulated in Table 5.6, respondents generally agree that there is financial risk associated. There is however a sizable amount of respondents that indicated they feel secure using M-money. The mean is leaning towards 4 signifying that respondents generally agree that they do not feel entirely secure. From the results, it is evident that the respondents regard trust as an important component for mobile money with a mean of 3.81, and the most frequent answer as agree. The most positive finding being that they believe M-money service providers are trustworthy followed by M-money service providers keep their promise.

**Table 5.6 Descriptive statistics of the variables**

	Mean	Std. Deviation
PE1	4.24	1.033
PE2	4.15	1.119
PE3	3.74	1.251
EE1	4.54	.804
EE2	4.52	.833
EE3	4.49	.902
EE4	4.48	.886
SI1	4.27	2.120
SI2	3.25	1.460
SI3	3.98	1.297
SI4	2.99	1.518

FC1	4.37	.959
FC2	4.31	.993
FC3	4.28	1.075
FC4	4.33	1.031
H1	3.16	1.588
H2	2.04	1.267
H3	2.48	1.443
PV1	3.96	1.299
PV2	3.96	1.265
PV3	3.95	1.282
HM1	2.02	1.212
HM2	2.03	1.230
HM3	2.01	1.220
PR1	3.36	1.597
PR2	3.28	1.578
PR3	3.34	1.569
PR4	3.28	1.565
PR5	3.28	1.582
PR6	3.33	1.611
PT1	3.89	1.259
PT2	3.82	1.284
PT3	3.92	1.232
PT4	3.72	1.349
BI1	4.59	.644
BI2	4.05	1.253
BI3	4.20	1.138

#### 5.3.4.1 Summary of measurement model frequency tests

The constructs that test the overall model used in this study were run through frequency tests. Majority of the constructs lean more towards agree with the exception of a few constructs. Performance expectancy, effort expectancy, facilitating conditions, price value, perceived risk and perceived trust all have responses that skewed towards agree and strongly agree. In contrast, habit and hedonic motivation show that more respondents disagree with the variables.

### 5.3.5 Benefits of M-money

Respondents were given a list of documented benefit to verify if they are indeed perceived as benefits. The results showed that generally the public agrees that M-money has benefits.

**Table 5.7 Descriptive statistics of benefits of M-money**

	Mean	Mode	Std. Deviation	Variance
Cost saving	4.14	5	1.314	1.726
Timesaving	4.57	5	.848	.718
@24houraccess	4.12	5	1.260	1.587
security	4.19	5	1.261	1.589

Table 5.7 shows that most respondents strongly agree and agree to the listed benefits of M-money. The overall mean in all benefits range from 4.12 and 4.57, suggesting that at least half of the sample strongly agreed with the fact that the benefits of M-money. From the benefits provided, it can be observed from Table 5.7 that time saving (mean = 4.57), physical security (4.19), cost savings (mean = 4.14) and around the clock access (mean = 4.12) were the respective order of importance placed on the M-money benefits. Respondents were given an opportunity to add other benefits not listed in the questionnaire. Benefits respondents mentioned are accessibility, secure transactions, no geographic barrier, convenience, provides a storage place for money, ability to monitor transactions and reliability.

### 5.3.6 Future demand of M-money services

Regarding the M-money services customers would like to see in the future, majority of responses were leaning towards agree and strongly agree. Options with the highest are savings and more bill payments. Loans as an M-money service however received mixed responses from respondents with a mean is 3.07. More people generally agree that salaries should be dispersed through M-money. In the other category, respondents showed that they would also like to add foreign exchange, check statements, all M-money accounts should connect to bank and add financial advice.

**Table 5.8 Descriptive statistics of future demand of M-money services**

	Mean	Median	Mode	Std. Deviation	Variance
savings	4.63	5.00	5	.776	.603
withdrawal	4.60	5.00	5	.752	.565
Bill payments	4.69	5.00	5	.646	.418
Salary deposit	3.89	5.00	5	1.498	2.243
purchases	4.52	5.00	5	.920	.846
pension	3.86	5.00	5	1.424	2.028
investment	3.86	5.00	5	1.429	2.042
loans	3.07	3.50	1 <sup>a</sup>	1.674	2.802

### 5.3.7 Mobile money channels

Respondents were further asked about the channels or features that should be incorporated with M-money. Table 16 below displays the results.

**Table 5.9 Descriptive statistics of M-money channels**

	Mean	Mode	Std. Deviation	Variance
Phone	4.81	5	.503	.253
ATM	4.27	5	1.240	1.537
POS	4.33	5	1.097	1.204
Internet	4.05	5	1.421	2.020
Prepaid card	4.07	5	1.359	1.848
Tap and go	4.43	5	1.068	1.141
Fingerprint	4.58	5	1.030	1.061

Table 5.9 above shows the responses on the service channels respondents prefer. The median in all options is 5 while the mean is between 4.05 and 4.81. This result implies that respondents prefer all of the service channels listed.

### **5.3.8 Summary of benefits, future service demand and channels analysis**

Outcomes of the analysis showed that documented benefits cost saving, around the clock access, time saving and physical security are indeed regarded as benefits by respondents. Respondents further showed that there are more benefits, indicating that M-money is beneficial. Respondents also indicated that the services listed are relevant, more services were added for future considerations. Respondents showed that they would also like to add foreign exchange, check statements, all M-money accounts should connect to bank and add financial advice. The available channels were generally appreciated by respondents as they agreed that those channels should be used.

### **5.3.9 SEM Results**

#### **5.3.9.1 Construct validity of Main UTAUT2 Factors**

Before testing the model, validity analysis was conducted through the reflective measurement model assessment. Reflective measurement model assessment tests reliability and validity between variables (Bagozzi, 2011). Following for the general recommendations in prior literature, the indicator reliability was assessed using the criteria that acceptable loadings should be above 0.70, while all loadings below 0.50 are removed (Bagozzi, 2011; Oliveira et al., 2016). Bagozzi (2011), further states that even though factor loadings greater than 0.7 are preferred, factor loadings less than 0.70 but above 0.6 are still acceptable.

Table 5.10 shows that all items for all the constructs except habit loaded above the required level of 0.70. Out of the three items for habit, two loaded poorly, with loadings of -0.109 and 0.478 for items H2 and H3 respectively. Consequently, following from the indicator reliability criteria above, these two items for habit were removed.

**Table 5.10 Factor loadings**

	BI	EE	FC	H	HM	PV	PE	SI	UB
BI1	0.812								
BI2	0.794								
BI3	0.793								
EE1		0.946							
EE2		0.954							
EE3		0.921							
EE4		0.927							
FC1			0.954						
FC2			0.931						
FC3			0.873						
FC4			0.875						
H1				0.805					
H2				-0.109					
H3				0.478					
HM1					0.975				
HM2					0.986				
HM3					0.969				
PE1							0.937		
PE2							0.933		
PE3							0.824		
PV1						0.974			
PV2						0.989			
PV3						0.986			
SI1								0.747	
SI2								0.791	
SI3								0.876	
SI4								0.722	
UB1									0.784
UB2									0.897
UB3									0.781
UB4									0.811

Results for convergent validity, composite reliability and internal consistency are tabulated in Table 5.11 below. Internal consistency measures uniformity between items in the same construct (Bhattacharjee, 2012). Cronbach's Alpha is the most popular measure of internal consistency, however, it has been said to provide a conservative measurement in PLS-SEM. Composite reliability is more appropriate to use in PLS-SEM (Hair et al., 2012). The general rule with Cronbach's Alpha is that if a value is greater than 0.7 it can be confirmed that the computed variable has an acceptable level of internal consistency, otherwise, the internal consistency of the variable is considered to be poor (Tavakol & Dennick, 2011). Composite reliability has to be greater than 0.70 in order for a construct to be accepted (Lowry & Gaskin, 2014).

**Table 5.11 Construct Reliability and Validity**

	<b>Cronbach's Alpha</b>	<b>Composite Reliability</b>	<b>Average Variance Extracted (AVE)</b>
<b>Behavioural Intention</b>	<b>0.741</b>	<b>0.842</b>	<b>0.640</b>
<b>Effort Expectancy</b>	<b>0.955</b>	<b>0.966</b>	<b>0.878</b>
<b>Facilitating Conditions</b>	<b>0.930</b>	<b>0.950</b>	<b>0.826</b>
<b>Habit</b>	<b>0.789</b>	<b>0.395</b>	<b>0.296</b>
<b>Hedonic motivation</b>	<b>0.976</b>	<b>0.984</b>	<b>0.954</b>
<b>Price value</b>	<b>0.983</b>	<b>0.989</b>	<b>0.966</b>
<b>Performance Expectancy</b>	<b>0.886</b>	<b>0.927</b>	<b>0.809</b>
<b>Social Influence</b>	<b>0.768</b>	<b>0.847</b>	<b>0.583</b>
<b>Use Behaviour</b>	<b>0.805</b>	<b>0.873</b>	<b>0.635</b>

From Table 5.11 above, all constructs are seen to have an acceptable level of internal consistency because they attained a Cronbach's Alpha above 0.7. The lowest result is behavioural intention at 0.741 while the highest is price value at 0.983. However, as already mentioned, composite reliability is more appropriate in PLS-SEM. Table 5.11 shows that composite reliability of habit is unacceptable at 0.395, meanwhile, all other constructs have acceptable levels of composite reliability because they meet the required 0.7 cut of point.

To measure convergent validity the average variance extracted (AVE) is used. Convergent validity measures the accuracy with which items really measure what they are supposed to measure (Bhattacharjee, 2012). AVE should be 0.5 or more, indicating that the latent variable



explains at least 50% of its variance of the indicator has to be explained for by the first factor extracted (Henseler et al., 2016). Table 5.11 above shows that the AVE of all constructs is greater than 0.5, except that of habit with an AVE of 0.296.

Following from the results in Table 5.10 and Table 5.11, it was observed that habit lost 2 items due to poor loading. Moreover, the composite reliability and AVE for habit in Table 7.18 were very unsatisfactory. Since only one item for habit was left (i.e H1) after dropping the other two items, habit was completely dropped from the analysis as the single item could not sufficiently capture user habit given the fact that habit is cultivated over time. Dropping habit from the UTAUT2 is however not surprising as Habit has also been excluded from several studies (Alalwan et al., 2017; Oliveira et al., 2016). Some previous studies (Alalwan et al., 2017; Oliveira et al., 2016), also excluded the habit construct because M-money is a fairly new technology, customers have not yet formed routine usage of the technology. Therefore, the newness of M-money could be the possible reason that habit failed to meet reliability and validity tests in this study. The testing of the UTAUT2 model follows next.

### 5.3.9.2 Section 1: Initial Model

Section 1 of the SEM analysis test the original UTAUT2 Model before adapting it to the context of Lesotho. Reliability and validity tests are conducted again without Habit.

**Table 5.12 Construct Reliability and Validity without Habit**

	<b>Cronbach's Alpha</b>	<b>Composite Reliability</b>	<b>Average Variance Extracted (AVE)</b>
Behavioural Intention	0.741	0.842	0.640
Effort Expectancy	0.955	0.966	0.878
Facilitating Conditions	0.930	0.950	0.827
Hedonic motivation	0.976	0.984	0.954
Price value	0.983	0.989	0.966
Performance Expectancy	0.886	0.927	0.809
Social Influence	0.768	0.847	0.583
Use Behaviour	0.805	0.873	0.635

Table 5.12 above shows that all the constructs depict acceptable levels of reliability, as Cronbach's Alpha values range from 0.741 to 0.983 while Composite Reliability values range

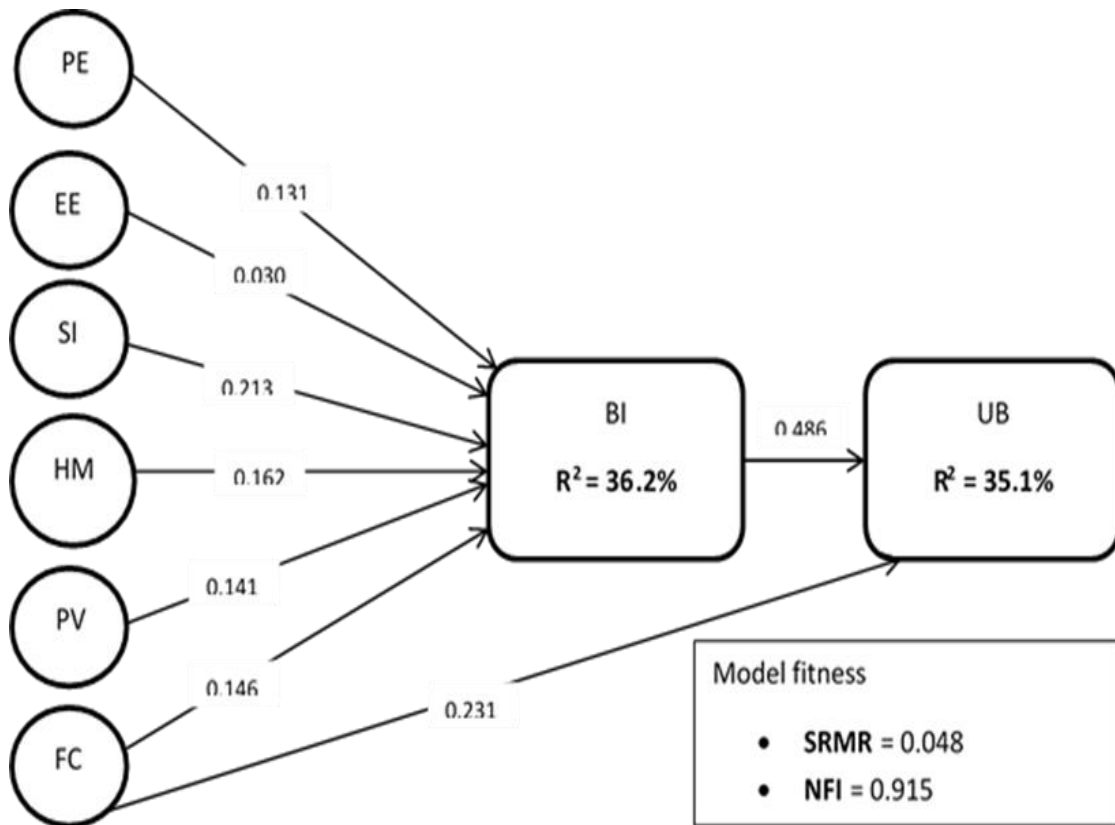
from 0.847 to 0.989, all greater than the requisite 0.70 cut of point. As mentioned in the previous section, AVE has to be 0.5 or greater for construct validity to be acceptable. Table 5.12 above shows that the AVE values of all the constructs are greater than 0.5 as AVE values range from 0.583 to 0.966. Next, the results of the discriminant validity.

**Table 5.13 Fornell-Lacker Criterion: Matrix of correlation constructs and the square root of AVE (in bold)**

	BI	EE	FC	HM	PV	PE	SI	UB
Behavioural Intention	<b>0.800</b>							
Effort Expectancy	0.182	<b>0.937</b>						
Facilitating Conditions	0.356	0.654	<b>0.909</b>					
Hedonic motivation	0.119	0.064	0.058	<b>0.977</b>				
Price value	0.228	0.420	0.424	0.029	<b>0.983</b>			
Performance Expectancy	0.184	0.387	0.425	0.015	0.336	<b>0.899</b>		
Social Influence	0.390	0.309	0.377	0.126	0.384	0.368	<b>0.764</b>	
Use Behaviour	0.545	0.239	0.356	0.185	0.208	0.163	0.233	<b>0.797</b>

The discriminant validity was measured using the Fornell-Larcker criterion. The Fornell-Larcker criterion states that a “factor’s AVE should be higher than its squared correlations with all other factors in the model” (Henseler et al., 2016: 11). According to Lowry and Gaskin (2014), if the square root of AVE is greater than the correlations, the model meets the standards for appropriate discriminant validity. However if any of the correlations is greater than the square root of AVE then the model will need to be reconsidered. In Table 5.13, the diagonal values in bold are the square roots of the AVE while the off-diagonal values are the inter-correlations between the constructs. The results in Table 5.13 above show that the model meets the criteria for discriminant validity because the square root of AVE is greater than the corresponding correlations in all instances.

In order to test the model, path coefficients, path significance (T-statistic) and variance explain are used. The T statistic has to be greater than 1.96 at the level of significance less than 0.05 (Schumacker & Lomax, 2010). Figure 5.8 graphically depicts the results, with a summary in Table 5.14.



**Figure 5.8 Initial model Path Coefficients**

To test for model fit the standardised root mean square residual (SRMR) and the normed fit index (NFI) are used. SRMR is the square root of the sum of the squared differences between the model-implied and the empirical correlation matrix. A value of below 0.08 for SRMR is acceptable, anything above that indicates the model is not fit to be tested (Henseler et al., 2016). NFI value greater than 0.90 is satisfactory (Henseler et al., 2016). Both the SRMR and NFI shown in Figure 5.8 are acceptable at 0.048 and 0.915 respectively.

**Table 5.14 Initial model Path Coefficients**

	Beta	T Statistics	P Values
Behavioural Intention -> Use Behaviour	0.486	9.887	0.000**
Effort Expectancy -> Behavioural Intention	0.030	0.448	0.654
Facilitating Conditions -> Behavioural Intention	0.146	2.118	0.034*
Facilitating Conditions -> Use Behaviour	0.231	5.836	0.000**
Hedonic motivation -> Behavioural Intention	0.162	2.209	0.028*
Price value -> Behavioural Intention	0.141	2.019	0.044*
Performance Expectancy -> Behavioural Intention	0.131	1.988	0.047*
Social Influence -> Behavioural Intention	0.213	3.225	0.001**

From Table 5.14 it is observed that the strongest predictor of behavioural intention is social influence ( $\beta=.213$ ,  $p=0.001$ ), followed by hedonic motivation ( $\beta=.162$ ,  $p=0.028$ ), facilitating conditions ( $\beta=.146$ ,  $p=0.034$ ), price value ( $\beta=.141$ ,  $p=0.044$ ) and performance expectancy ( $\beta=.131$ ,  $p=0.000$ ) respectively. Effort expectancy was the only variable with an insignificant path in the model ( $\beta=.030$ ,  $p < 0.05$ ), showing no significant association with behavioural intentions as expected. With regards to prediction of use behaviour, the results showed that, behavioural intention was the strongest predictor of use behaviour ( $\beta=.486$ ,  $p=0.000$ ) followed by facilitating conditions ( $\beta=.231$ ,  $p=0.000$ ). Generally, the model explains 36.2% of behavioural intention and 35.1% of usage behaviour.

### 5.3.9.3 Section 2: Modified Model with Perceived Risk and perceived Trust

The initial UTAUT2 model was adapted for use in the context of Lesotho by including perceived risk and perceived trust which have been shown to be vital constructs in mobile money adoption in developing countries. The modified model was tested for validity and reliability and the results are presented below.

**Table 5.15 Construct Reliability and Validity for the modified model**

	<b>Cronbach's Alpha</b>	<b>Composite Reliability</b>	<b>Average Variance Extracted (AVE)</b>
Behavioral Intention	<b>0.741</b>	<b>0.846</b>	<b>0.647</b>
Effort Expectancy	<b>0.955</b>	<b>0.967</b>	<b>0.878</b>
Facilitating Conditions	<b>0.930</b>	<b>0.950</b>	<b>0.827</b>
Hedonic motivation	<b>0.976</b>	<b>0.984</b>	<b>0.954</b>
Perceived Risk	<b>0.979</b>	<b>0.983</b>	<b>0.904</b>
Perceived Trust	<b>0.943</b>	<b>0.959</b>	<b>0.855</b>
Price value	<b>0.983</b>	<b>0.989</b>	<b>0.966</b>
Performance Expectancy	<b>0.886</b>	<b>0.927</b>	<b>0.809</b>
Social Influence	<b>0.768</b>	<b>0.847</b>	<b>0.584</b>
Use Behaviour	<b>0.805</b>	<b>0.873</b>	<b>0.635</b>

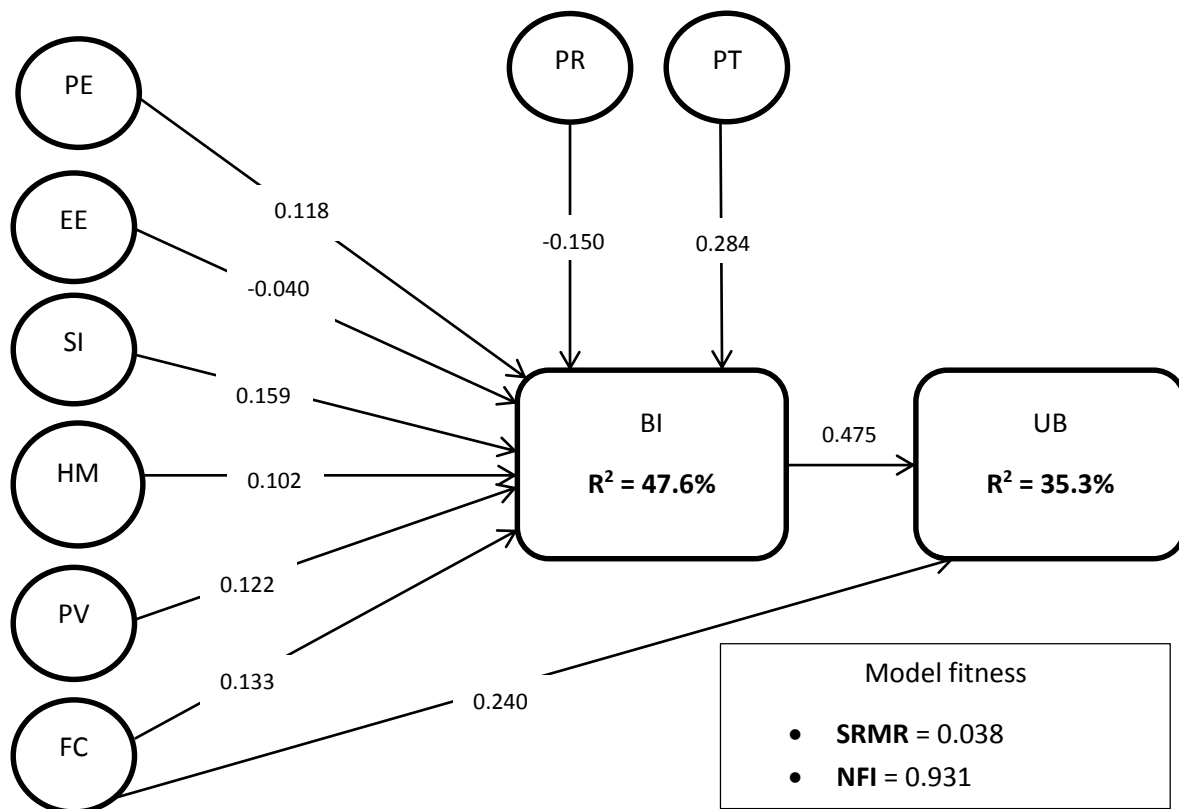
According to the results presented in Table 5.15, all constructs are reliable because Cronbach's Alpha and composite reliability are all greater than 0.7. Cronbach's Alpha values range from 0.741 to 0.983 while composite reliability values range from 0.846 to 0.989. Looking at the

AVE, all constructs are valid because the extracted AVE values are greater than the required cut of point of 0.50.

**Table 5.16 Fornell-Lacker Criterion: Matrix of correlation constructs and the square root of AVE (in bold) for the modified model**

	BI	EE	FC	HM	PR	PT	PV	PE	SI	UB
Behavioural Intention	<b>0.804</b>									
Effort Expectancy	0.181	<b>0.937</b>								
Facilitating Conditions	0.255	0.654	<b>0.909</b>							
Hedonic motivation	0.117	0.063	0.058	<b>0.977</b>						
Perceived Risk	-0.204	0.084	-0.077	-0.052	<b>0.951</b>					
Perceived Trust	0.370	0.177	0.233	-0.053	0.114	<b>0.925</b>				
Price value	0.229	0.420	0.424	-0.029	0.001	0.184	<b>0.983</b>			
Performance Expectancy	0.186	0.387	0.425	-0.015	0.088	0.200	0.336	<b>0.899</b>		
Social Influence	0.291	0.308	0.377	-0.127	0.087	0.204	0.384	0.368	<b>0.764</b>	
Use Behaviour	0.535	0.239	0.356	-0.185	0.074	0.220	0.208	0.163	0.233	<b>0.797</b>

The results in Table 5.16 indicate that the discriminant validity of all the constructs are acceptable because the Square Root of AVE is greater than the corresponding correlations in all cases. The path diagram is presented below.



**Figure 5.9: UTAUT2 Model adapted with Perceived Risk and Perceived trust**

Model fitness displayed in Figure 5.9 above shows that the model is fit to be tested further. The SRMR value (0.038) is acceptable as the value is less than the cut of point of 0.8. The NFI value is also acceptable because 0.931 is greater than the required value of 0.9. The modified model explains behavioural intention and use behaviour better than the initial model with increased  $R^2$  values. The model explains 47.6% of behavioural intention which is 11.4% better than the initial UTAUT2 model (Figure 5.8). The impact on use behaviour was 35.3% which is quite similar with the initial model's  $R^2$  value of 35.1%. This is, however, understandable as perceived risk and perceived trust were used to predict behavioural intention with no direct link to use behaviour. The significance of the different paths in the model are presented.

**Table 5.17 Modified model Path Coefficients for model adapted with Perceived Risk and Perceived trust**

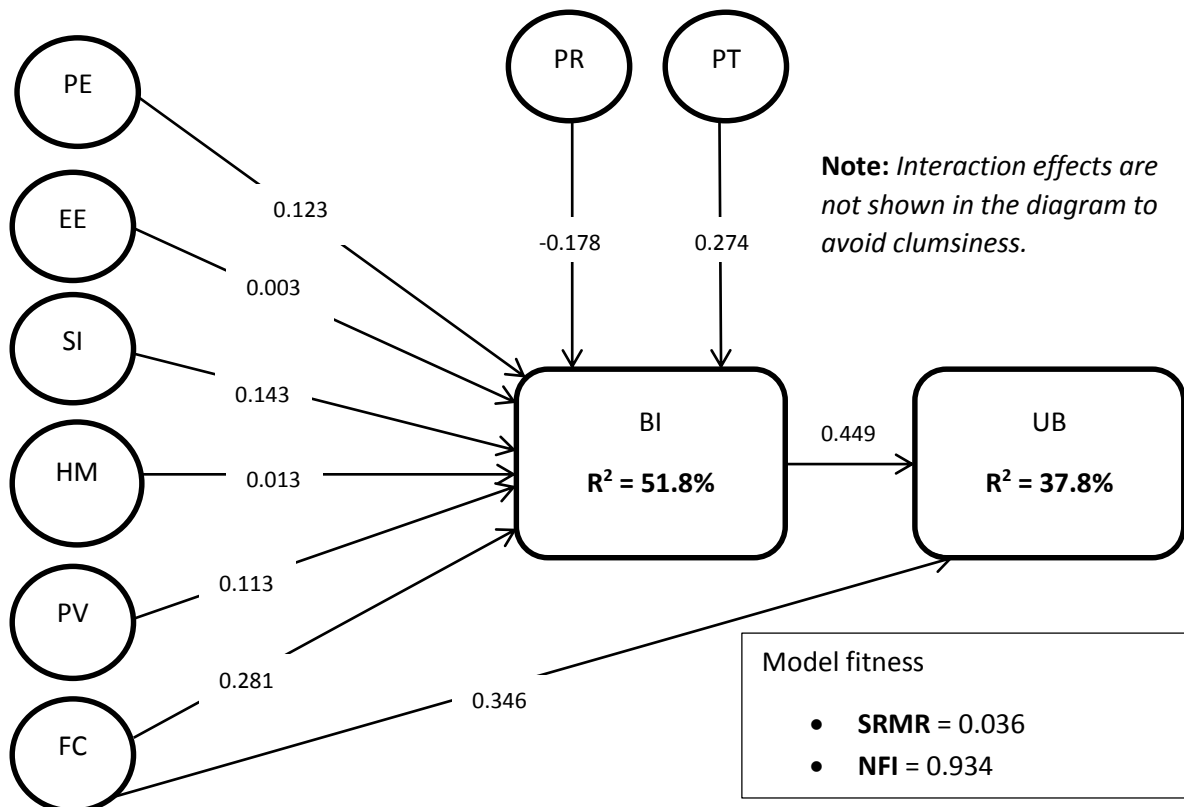
	Beta	T Statistics	P Values
Behavioral Intention -> Use Behaviour	0.475	10.364	0.000**
Effort Expectancy -> Behavioural Intention	-0.040	0.606	0.545
Facilitating Conditions -> Behavioural Intention	0.133	2.089	0.037*
Facilitating Conditions -> Use Behaviour	0.240	6.093	0.000**
Hedonic motivation -> Behavioural Intention	0.104	1.529	0.127
Perceived Risk -> Behavioural Intention	-0.150	3.433	0.001**
Perceived Trust -> Behavioural Intention	0.284	6.457	0.000**
Price value -> Behavioural Intention	0.122	2.024	0.044*
Performance Expectancy -> Behavioural Intention	0.118	1.987	0.047*
Social Influence -> Behavioural Intention	0.159	2.760	0.006**

From Table 5.17, it is observed that performance expectancy, social influence, price value, facilitating conditions, perceived risk, and perceived trust all affect behavioural intention positively. The strongest predictor of behavioural intention is perceived trust ( $\beta=.284$ ,  $p=0.000$ ) followed by social influence ( $\beta=.159$ ,  $p=0.006$ ), perceived risk ( $\beta=-.150$ ,  $p=0.006$ ), facilitating conditions ( $\beta=.133$ ,  $p=0.037$ ) and price value ( $\beta=.122$ ,  $p=0.044$ ). The least predictor of behavioural intention is performance expectancy ( $\beta=.118$ ,  $p=0.047$ ). Effort expectancy ( $\beta=-.040$ ,  $p>0.05$ ), and hedonic motivation ( $\beta=.104$ ,  $p>0.05$ ), on the other hand failed to show any significant influence on behavioural intention. The outcome of effort expectancy is consistent with the first model. However, it was observed that the significant effect of hedonic motivation on behavioural intention became insignificant after the inclusion of perceived risk and perceived trust. With regards to use behaviour, it was observed that the highest predictor is behavioural intention ( $\beta=.475$ ,  $p=0.000$ ) followed by facilitating conditions ( $\beta=.240$ ,  $p=0.000$ ).

Even though the modified model showed significant improvements, Venkatesh et al. (2012) suggest that the moderating factors of age, gender and experience played a vital role in influencing behavioural intention. As such, the next section examined the moderated version of the modified model to determine if it provides a better explanation of behavioural intention and use behaviour based on the gains in total variance explained by the model ( $R^2$ ).

### 5.3.9.4 Section 3: Moderated Model

Section 3 adds moderators to the modified model, the moderators are age, gender and experience. However, only age and gender were used as moderating factors because the experience construct failed to load with item loadings below 0.4 and so the construct was removed. The moderated model is presented below (Figure 5.10).



**Figure 5.10: Moderated model with moderators Path Coefficients**

Due to the complexity of the model, the moderating relationships and factors are eliminated from Figure 5.10 to ensure visual simplicity. However, all associations are shown below in Table 5.18. When moderators (age and gender) are added, the model explains behavioural intention by 51.8% and use behaviour by 37.8%. This resulted in a positive change in  $R^2$  for both behavioural intention (4.2% gain) and use behaviour (2.5% gain). Other researchers like Oliveira et al. (2016) had dropped using moderators in the UTAUT2 model because the moderators only increased the  $R^2$  in their study by 2%. As such, the researchers argued that the complexity of the moderated model exceeded the minimal gain in  $R^2$ . However in the case of this study, these gains especially for behavioural intention are significant enough to warrant using the moderated model as the most suitable model for examining the adoption of mobile



money in Lesotho. The path coefficients and significance of this model are presented below (Table 5.18)

**Table 5.18 Moderated model with moderators Path Coefficients**

	Beta	T Statistics	P Values
Age -> Behavioural Intention	0.074	1.718	0.086
Age -> Use Behaviour	0.053	1.258	0.209
Age*EE -> Behavioural Intention	-0.089	1.237	0.217
Age*FC -> Behavioural Intention	-0.061	0.803	0.422
Age*HM -> Behavioural Intention	-0.013	0.280	0.780
Age*PE -> Behavioural Intention	-0.029	0.532	0.595
Age*SI -> Behavioural Intention	0.125	2.227	0.026
Behavioural Intention -> Use Behaviour	0.449	8.485	0.000
Effort Expectancy -> Behavioural Intention	0.003	0.033	0.974
Facilitating Conditions -> Behavioural Intention	0.281	3.077	0.002
Facilitating Conditions -> Use Behaviour	0.346	4.919	0.000
Gender -> Behavioural Intention	0.012	0.290	0.772
Gender*EE -> Behavioural Intention	-0.048	0.641	0.522
Gender*FC -> Behavioural Intention	-0.048	0.641	0.522
Gender*HM -> Behavioural Intention	-0.006	0.158	0.874
Gender*PE -> Behavioural Intention	-0.127	2.258	0.024
Gender*PV -> Behavioural Intention	0.018	0.377	0.706
Gender*SI -> Behavioural Intention	-0.111	1.985	0.048
Hedonic motivation -> Behavioural Intention	0.013	0.325	0.745
Age* PV -> Behavioural Intention	-0.056	0.915	0.361
Age*FC -> Use Behaviour	-0.118	2.281	0.023
Perceived Risk -> Behavioural Intention	-0.178	3.433	0.001
Perceived Trust -> Behavioural Intention	0.274	6.201	0.000
Price value -> Behavioural Intention	0.113	1.993	0.047
Performance Expectancy -> Behavioural Intention	0.123	2.205	0.028
Social Influence -> Behavioural Intention	0.143	2.411	0.016

The strongest predictor of behavioural intention is facilitating conditions ( $\beta=.281$ ,  $\rho=0.002$ ) followed by perceived trust ( $\beta=.274$ ,  $\rho=0.000$ ) and social influence ( $\beta=.143$ ,  $\rho=0.016$ ) respectively. Performance expectancy ( $\beta=.123$ ,  $\rho=0.028$ ) is the fourth strongest predictor of

behavioural intention followed by price value ( $\beta=.113$ ,  $p=0.047$ ) and perceived risk ( $\beta=-.178$ ,  $p=0.001$ ) respectively. The strongest predictor of use behaviour is behavioural intention ( $\beta=.449$ ,  $p=0.000$ ) followed by facilitating conditions ( $\beta=.346$ ,  $p=0.000$ ).

Looking at the p values in Table 5.18, the only significant age moderated relationships are age moderating facilitating conditions, therefore, impacting behavioural intention and age moderating social influence therefore impacting behavioural intention. Regarding gender as a moderator, the significant relationships are gender moderating performance expectancy, therefore, impacting behavioural intention and gender moderating social influence impacting behavioural intention.

#### **5.3.9.5 Section 4: Outcome of hypothesis**

The evaluation of hypotheses is based on the moderated model (Figure 5.10) as it was found to be the model that explained the highest variance and had a better fitness than the other two models. Outcomes of hypotheses are presented in Table 5.19 below. After dropping 1 hypothesis, a total of 10 hypotheses were tested. The structural model confirmed 6 of the 10 tested hypotheses. Each of the tested hypotheses is discussed in the following section.

**Table 5.19 Outcome of hypotheses**

No	Hypothesis	Path	T-value	P-value	Supported
H1	PE → BI	0.123	2.205	0.028*	Yes
H2	EE → BI	0.003	0.033	0.974	No
H3	SI → BI	0.143	2.411	0.016*	Yes
H4a	FC → BI	0.281	3.077	0.002**	Yes
H4b	FC → UB	0.346	4.919	0.000**	Yes
H5	HM → BI	0.013	0.325	0.745	No
H6	PV → BI	0.113	1.993	0.047*	Yes
H7a	H → BI	Dropped	-	-	No
H7b	H → UB	Dropped	-	-	No
H8	BI → UB	0.449	8.485	0.000**	Yes
H9a	Age*PE → BI	-0.029	0.532	0.595	No
H9b	Age*EE → BI	-0.089	1.237	0.217	No
H9c	Age*SI → BI	0.125	2.227	0.026	Yes
H9d	Age*FC → BI	-0.061	0.803	0.422	No
H9e	Age*FC → UB	-0.118	2.281	0.023	Yes
H9f	Age*PV → BI	-0.056	0.915	0.361	No
H9g	Age*HM → BI	-0.013	0.280	0.780	No
H9h	Age*H → BI	Dropped	-	-	No
H9i	Age*H → UB	Dropped	-	-	No
H10a	Gender*PE → BI	-0.127	2.258	0.024	Yes
H10b	Gender*EE → BI	-0.048	0.641	0.522	No
H10c	Gender*SI → BI	-0.111	1.985	0.048	Yes
H10d	Gender*FC → BI	0.137	2.318	0.021	Yes
H10e	Gender*PV → BI	0.018	0.377	0.706	No
H10f	Gender*HM → BI	-0.006	0.158	0.874	No
H10g	Gender*H → BI	Dropped	-	-	No
H10h	Gender*H → UB	Dropped	-	-	No
H11a	Exp*EE → BI	Dropped	-	-	No
H11b	Exp*SI → BI	Dropped	-	-	No
H11c	Exp*FC → BI	Dropped	-	-	No
H11d	Exp*FC → UB	Dropped	-	-	No
H11e	Exp*HM → BI	Dropped	-	-	No
H11f	Exp*H → BI	Dropped	-	-	No

H11g	Exp*H → UB	Dropped	-	-	No
H11h	Exp*BI → UB	Dropped	-	-	No
H12	PR → BI	-0.178	3.433	0.001**	Yes
H13	PT → BI	0.274	6.201	0.000**	Yes

#### 5.3.9.5.1 Supported hypotheses:

**H1:** Performance expectancy has a positive influence on intention to use M-money services.

The findings showed that performance expectancy was a significant predictor of behavioural intention to adopt M-money in Lesotho thus confirming the first hypothesis. The findings are consistent with past studies that have also confirmed the significant role of performance expectancy in predicting the intention to use M-money in general (Unyolo, 2012) and M-payment services in particular (Morosan & DeFranco, 2016; Oliveitra et al., 2016). Venkatesh et al. (2012) highlights that individuals are likely to adopt a new technology if it significantly benefits them in completing a given task. M-money definitely brings several benefits to users as shown in Table 5.14. With M-payment systems for example, users can pay bills from their mobile phone without having to stand in long queues in banks. Similarly, parents can use M-money to send remittances to their children at university while working adults can use it to send remittances to their relatives in rural areas. The outcome of performance expectancy is, however, not surprising as researchers have widely argued that performance expectancy is amongst the top factors that play a critical role in determining whether or not users adopt a given technology (Macedo, 2017; Morosan & DeFranco, 2016; Oliveitra et al., 2016; Unyolo, 2012; Venkatesh et al., 2012). This study therefore consolidates the growing literature on the role of performance expectancy in technology adoption in general and M-money adoption in particular, especially from a developing world context.

**H3:** Social Influence has a positive influence on intention to use M-money services.

The third hypothesis was confirmed as results revealed that social influence significantly impacts behavioural intention to use M-money. The observation is in line with prior studies of this nature (Amin, Rahim, Sondoh, & Ang, 2008; Carlsson, et al., 2006; Oliveira et al., 2016; Riquelme & Rios, 2010; Sayid et al., 2012). This means that people will be more willing to use M-money if it is used by those important to them. In the context of M-money, examples of social influence can be the knowledge that ones' family and peers use the service. This

knowledge can encourage an individual to use the service in order to either conform, adapt, interpersonal word-of-mouth as well as fit in. Also, since a key M-money service used by customers in Lesotho is peer-to-peer money transfers (i.e. receiving money -Table 5.5), working class can influence their family members and friends to open M-money accounts so they easily send remittances to them, especially for those living in the rural areas. This observation is an expected one because the impact of social influence has been proven in many different settings of technology acceptance (Mapeshoane, 2015; Sripalawat, Thongmak & Ngramyarn, 2011; Yu, Singh, Srivastava & Srivastava, 2010). The role of social influence in M-money adoption is therefore validated through this study.

**H4a:** Facilitating conditions (FC) has a positive influence on behavioural intention to use M-money services.

**H4b:** Facilitating conditions (FC) has a positive influence on use behaviour (UB).

The results revealed that facilitating conditions positively affect both intention to use and use behaviour. In the setting of M-money, examples of facilitating conditions are in the form of availability of the agents, knowledge of how M-money works, network coverage, reliable customer care and support services and availability of services all the time (Unyolo, 2012). Just like in this study, Baptista and Oliveira (2015), proved that facilitating conditions affects both intention and use behaviour. This observation means that when there is support and enabling circumstances concerning M-money, people will be more inclined to adopt and use M-money. The results are consistent with prior studies (Afshan & Sharif, 2015; Baptista & Oliveira, 2015; Foon & Fah, 2011; Unyolo, 2012; Yu, 2012).

**H6:** Price value has a positive influence on intention to use M-money services.

The findings showed that price value is a predictor of behavioural intention. Tobbin and Kuwornu (2011), put forward that cost can take the form of registration costs, transaction prices or cost of a device. However, price value matches the cost with perceived benefits (Venkatesh et al., 2012). The result, therefore, means that by increasing the level of the perceived benefits and advantages in using M-money in relation to the financial burden experienced when using M-money, the intention to adopt and use M-money increases. This finding is in line with other studies in the area of M-money (Alalwan et al., 2017; Arenas-Gaitán et al., 2015; Unyolo, 2012). The observation regarding price value supplements the growing literature on the role of price value in M-money adoption and usage in developing countries.

**H8:** Behavioural intention has a positive influence on usage behaviour.

The analysis proved that behavioural intention positively affects use behaviour ( $\beta=0.449$ ,  $p=.000$ ). This means that when the intent to use M-money increases, the actual usage will also increase. This result was expected and is in line with previous research (Baptista & Oliveira, 2015; Yu, 2012; Zhou et al., 2010).

**H12:** Perceived risk has a negative influence on intention to use M-money services.

The results showed that perceived risk has a significant negative influence on the behavioural intention to adopt M-money services in Lesotho. The findings suggest that customers who believe that there are risks associated with M-money will be less likely to use M-money services. Even though the results of this study indicated that majority of the customers believed that there is financial risk associated with M-money, there is however a substantial number that feel safe using M-money. The findings are in line with previous studies that have also shown that perceived risk has a significant negative association with the intention to use different types of M-money services (Slade et al., 2015).

**H13:** Perceived trust has a positive influence on intention to use M-money services.

The results showed that perceived trust was a significant notable predictor of the behavioural intention to adopt M-money in Lesotho, therefore confirming ninth hypothesis. Trust in the M-money domain indicates availability of systems that conduct financial transactions competently, securely and timely (Alalwan et al., 2017). Tobbin and Kuwornu (2011) also state that trust can be attributed to the accessibility of a network of local agents that are assimilated into the communities. The result, therefore, infers that when people trust the service provider and other visible stakeholders they will be more inclined to use M-money services. These findings are also coherent with other on M-money, which showed that trust is an important factor in M-money (Mahfuz et al., 2015; Marumbwa & Mutsikiwa, 2013; Tobbin & Kuwornu, 2011; Unyolo, 2012).

#### **5.3.9.5.2 Hypotheses with no statistical significance**

**H2:** Effort expectancy has a positive influence on intention to use M-money services.

Effort expectancy passed all the reliability and validity tests conducted, however, when the initial model was tested it appeared to be insignificant. The same results were found in the

modified and moderated models. Effort expectancy, therefore, could not be proven to have a positive impact on behavioural intention. The results indicate that in Lesotho, the degree of ease associated with M-money does not affect intention and usage of M-money. Tobbin (2010), posits that effort expectancy in M-money deals with the ease of registration, payment procedure, easy access and availability of agents. The reasoning behind the result could be due to the fact that customers are willing to endure the systematic procedures in order to have access to financial services. One other possible reason for this result could be the high level of mobile phone usage in Lesotho, users perceive M-money easy to use and get familiar with it very quickly. Although this result is contradictory to other studies conducted in developing countries like Lesotho (Ammar & Ahmed, 2016; Ibrahim, 2015; Mahfuz et al., 2015; Naiwumbwe, 2012; Unyolo, 2012), it is in line with other studies that have also failed to support the positive influence of effort expectancy on behavioural intention (Baptista & Oliveira, 2015; Oliveira et al., 2016; Sayid et al., 2012; Yu, 2012). This observation contributes towards literature concerning effort expectancy in the M-money area in developing countries.

**H5:** Hedonic motivation has a positive influence on intention to use M-money services.

Results showed that hedonic motivation is insignificant and does not affect the intention to use M-money in Lesotho. There are conflicting views on the significance of hedonic motivation, on behavioural intention. For example, some researchers (Alalwan et al., 2017; Baptista & Oliveira, 2015; Morosan & DeFranco, 2016) found hedonic motivation to be a significant antecedent of behavioural intention to use M-payments. However, the observation in the present study is in line with the findings by Oliveira et al. (2016) who failed to find support for the significant influence of hedonic motivation in the behavioural intention to use mobile payments. Moreover, in the context of M-money in the developing world, Unyolo (2012) argues that it was not necessary to include hedonic motivation when evaluating M-money adoption because financial transactions are not intended for pleasure or enjoyment but are conducted out of necessity. This could possibly explain why hedonic motivation does not apply in the case of Lesotho, people do not view M-money as a fun activity but more of a dutiful activity. This could especially relate to the majority of M-money customers who simply use the service to receive money sent to them by others.

#### **5.3.9.5.3 Hypotheses dropped due to reliability and validity**

**H7a:** Habit (H) has a positive influence on behavioural intention to use M-money services

**H7b:** Habit (H) has a positive influence on use behaviour of M-money services

Analysis showed that the most frequent answer is disagree, customers therefore disagree that the use of M-money is a routine practice for them. Habit, however, did not form part of the model tested in this study because it was dropped at the reliability and validity measurement stage. The results presented in table 5.17 indicate that habit did not meet the required 0.7 of the factor loadings. Table 5.18 further showed that habit did not meet reliability and validity with composite reliability of 0.395 and AVE of 0.296. The fact that habit failed to load was however not surprising as earlier studies have suggested that when a given technology such as M-money has not been used for long, it is difficult for survey respondents to have already developed the habit associated with its use (Alalwan et al., 2017; Oliveira et al., 2016).

#### **5.3.9.5.4 Hypotheses based on Moderator effects**

Since habit was dropped, consequently, all other hypotheses that were based on habit were automatically dropped. This included the following moderating effect hypotheses: H9h, H9i, H10g, H10h, H11f, and H11g.

Similar to habit, experienced failed the reliability and validity test and was dropped as a moderating factor. Consequently, all the hypotheses that were associated with experience were dropped. This included hypotheses H11a to H11h.

For all the 13 other moderator-based hypotheses that were tested only 5 were significant while the other 8 were not supported. With respect to age as a moderator factor, only two relationships are supported, which are the moderating role of age on the association between social influence and behavioural intention (Hypothesis H9c) and that for facilitating conditions and use behaviour (Hypothesis H9e). Results further indicate that the age did not moderate the effect of performance expectancy (Hypothesis H9a), effort expectancy (Hypothesis H9b) facilitating conditions (Hypothesis H9d), price value (Hypothesis H9f) and hedonic motivation (Hypothesis H9g) on behavioural intention. Age moderated the effect of social influence on behavioural intention such that intention is more for older respondents as expected (Venkatesh et al., 2003). However, age moderated the relationship between facilitating conditions and use behaviour such that effect was more noticeable on younger respondents, which is contrary to suggestions by Venkatesh et al. (2012). This could be possibly explained by the fact that younger M-money users in Lesotho might use the service for a wider number of applications



while the older generation simply uses it mostly for money transfers and making payments. As such, facilitating conditions might be more of a concern for the younger generation.

Concerning the hypothesised gender-based relationships, only three relationships were significantly moderated by gender. The associations between price value (Hypothesis H10e), hedonic motivation (Hypothesis H110f) and effort expectancy (Hypothesis H10b) and behavioural intention were not significantly moderated by gender. However, gender significantly moderated the effects of performance expectancy (Hypothesis H10a), social influence (Hypothesis H10c), and facilitating conditions (Hypothesis H10d) to behavioural intention. The influence of both performance expectancy and social influence on behavioural intention is more pronounced for men than it is for women. The outcome for performance expectancy is in line with the theoretical postulations expressed in prior literature that performance expectancy will have a stronger effect for men (Hobololo & Mawela, 2017; Venkatesh et al., 2012). However, the findings for social influence is contrary to prior studies which instead showed the association between social influence and behavioural intention will be stronger for women (Hobololo & Mawela, 2017; Venkatesh et al., 2003). This difference could be explained by the fact that social influence tends to be more pronounced for women mostly in mandatory settings (Venkatesh et al., 2003), meanwhile M-money adoption and use is a voluntary decision. Lastly, the outcome with respect to facilitating conditions showed that its influence on behavioural intention was more pronounced for women than for men. This is in line with the expectations postulated in the UTAUT2 (Venkatesh et al., 2012). Culturally in Lesotho, women tend to be the ones that perform financial duties in families. This could explain why women in Lesotho tend to be more inclined to use financial solutions that are conducive to use due to the available facilitating conditions.

### **5.3.10 Summary of the SEM results**

This section of the analysis was aimed to testing the hypotheses presented in Chapter 3. The analysis began by testing the reliability and validity of the proposed model. Through reliability and validity tests, habit could not meet the requirements and was dropped from the model. The initial model, modified model and moderated models were tested for model fitness. The best model was the moderated model as it explained most of the variance in behavioural intention. Consequently, the final results used to test the hypotheses were based on the moderated model. Results show that effort expectancy and hedonic motivation were not statistically significant. Performance expectation, social influence, facilitating conditions, price value, perceived trust and perceived risk were proven to significantly influence behavioural intention, while

behavioural intention and facilitating conditions significantly influenced use behaviour. Moderators used in this study were age and gender. It was proven that age moderates the relationship between social influence and behavioural intention. In addition, age moderated the relationship between facilitating conditions and use behaviour. Moreover, gender moderated the relationships between performance expectancy and behavioural intention, social influence and behavioural intention and facilitating conditions and behavioural intention.

## **5.4 Chapter Summary**

Chapter five presented the outcomes of the analysis of data that was collected based on the methods delineated in Chapter 4. Firstly, the response rate from the data collection process was outlined. Out of the 600 questionnaires distributed, only 539 came back and a further 61 questionnaires had missing information or multiple selections on one question. Final analysis was therefore based on 588 usable questionnaires. This, therefore, puts the response rate in this study at 81.3%. Then the results from the basic descriptive information were presented. Descriptive statistics were used to analyse certain sections of the questionnaire such as demographics, cell phone user profile and M-money usage behaviour. The results showed that 51.4% of the respondents were female and 48.6% were male. Most respondents are students between the ages of 18-25. It was also established that 83.6% of customers use VCL while 16.4% use ETL. The type of M-money used by most customers is M-Pesa, only 7.8% of M-money users use M-banking. The findings also indicated the service that is mostly used by customers is receiving money followed by airtime purchases and bill payments.

The chapter further presented results from benefits of M-money, the demand for future services and channels. It was found that benefits acknowledged by customers are cost saving, time saving, around the clock access, physical security, accessibility, secure transactions, no geographic barrier, convenience, saving platform, ability to monitor transactions and reliability. It was also established that more customers would like to see the option to save and more bill payments added into service offerings. Other services respondents would like to see on M-money platforms are foreign exchange, statements checks, connectivity to a bank and financial advice. The use of fingerprints, NFC, POS and ATM machine have been found to be among the top features that should be incorporated into M-money.

The chapter ends by presenting the SEM results. Findings showed that habit could not be validated and, therefore, had to be dropped from the model. The original UTAUT2 model was tested first, following which the modified UTAUT2 was tested. Lastly, moderators (age and

gender) were added to the model. The moderated model had the best fit out of all the models. It was found that in Lesotho, the factors determining the adoption and usage of M-money were performance expectancy, social influence, facilitating conditions, price value, perceived trust and perceived risk. The moderators, in this context were age and gender, age moderated the relationship between facilitating conditions and use behaviour. Age also moderated the relationship between social influence and behavioural intention. Gender moderated the relationships between performance expectancy, social influence, and facilitating conditions with behavioural intention. The next chapter will present the conclusion of the study and give recommendations based on the findings.

## **CHAPTER 6**

### **Conclusions and Recommendations**

#### **6.1 Introduction**

Chapter 5 presented the findings of the study, the purpose of this chapter is to present the conclusions that were brought forth by the results presented in chapter 5 of this study. The goal of this study was to examine factors that determine adoption and use behaviour of M-money in Lesotho. The chapter begins by presenting a summary and conclusions from each chapter. The chapter then proceeds to provide the recommendations which are based on the gaps observed after analysis. The chapter will further discuss the limitations of the study and move on to make recommendations for future research. This is the last chapter of this study and it addresses the last objective of the study which is “to make recommendations based on the findings with regards to the improvement of M-money services adoption”.

#### **6.2 Conclusions**

##### **6.2.1 Descriptive statistics results**

Six hundred questionnaires were distributed in way that covers all areas, genders, age groups and location. However, majority of respondents were from Maseru city, followed by rural areas and peri-urban area respectively. More respondents were between the ages of 18-25 and there were more female respondents than male. Concerning cell phone usage, all respondents own a cell phone and majority of respondents use VCL as their network of choice. A lot of people have heard about M-money, only 0.4% had not heard about M-money. Majority of people heard about M-money from the mass media. The analysis also showed that only 12% had not registered for M-money services. Majority of those not registered (44%) is from rural areas. The results further revealed that majority of users use M-Pesa which is offered by VCL. M-banking is the least used M-money service, this result could be due to the fact that more than 60% of Basotho are unbanked. Majority of respondents use M-money once monthly with the most used service as receiving of money, purchasing airtime and payment of bills respectively.

Outcomes of the analysis further showed that benefits such as cost saving, around the clock access, time saving, physical security, accessibility, secure transactions, no geographic barrier, convenience, storage place for money, ability to monitor transactions and reliability are viewed as benefits. Results further showed savings, more agents for cash withdrawal, more bill payments, salary deposit, purchasing, pension fund management, commodity dealing/

investment, loans, foreign exchange, check statements, association with bank and financial advice are services required by the public.

### **6.2.2 Hypothesis testing**

There were three models that were tested, firstly the original UTAUT2 model was tested, followed by the modified UTAUT2. Lastly, the moderated model was tested. The observations of the first model included all the UTAUT2 constructs that were hypothesised by Venkatesh et al. (2012), except habit which had to be dropped in this study. The first model that comprised of 7 constructs with only 6 being used in the analysis (PE, EE, SI, HM, PV and FC) explains 36.2% of behavioural intention and 35.1% of use behaviour. All constructs with the exception of effort expectancy were concluded to affect behavioural intention. Facilitating conditions and behavioural intention were further found to predict use behaviour.

The second model, included perceived risk and perceived trust as predictors for behavioural intention. Outcomes showed that, the model explains behavioural intention and use behaviour better than the previous model. The 8 constructs combined explained 47.6% of behavioural intention and 35.3% of use behaviour. Both perceived risk and perceived trust add an extra 11.4% predictive power on behavioural intention and an extra 0.2% predictive power on use behaviour, indicating that both factors play a vital role in the adoption and usage of M-money in Lesotho.

The third and final model added moderators which are age and gender. Analysis proved that the third model was the best model as it explains 51.8% of behavioural intention, 4.2% better than the second model. The moderated model explains 37.8% of use behaviour which is 2.5% higher than the second model. In the moderated model, there were 9 (PE, EE, SI, FC, PV, HM, PR, PT and BI) constructs that were tested, habit did not form part of the model because of the failure to produce acceptable factor loadings. The third model was therefore used for further analysis and its results make up the outcomes of the entire study.

The conclusion is that performance expectancy has a significant and positive ( $\beta=.123$ ,  $p=0.028$ ) impact on behavioural intention to use M-money in Lesotho. This result can be attributed to the coefficient and significance levels as well as the descriptive statistics observed.

From the analysis, there was no statistical proof ( $\beta=.003$ ,  $p=0.974$ ) that effort expectancy has a positive impact on behavioural intention to use M-money. The conclusion, therefore, is that, in Lesotho, effort expectancy does not impact intention to use M-money services.

It was observed that social influence has a significant positive impact on intention to use M-money ( $\beta=.143$ ,  $p=0.016$ ). This conclusion means that peoples' decisions concerning whether to use M-money or not are affected by opinions of others.

From the analysis it was observed that facilitating conditions has a positive impact on behaviour intention ( $\beta=.281$ ,  $p=0.002$ ) and a positive effect on use behaviour ( $\beta=.346$ ,  $p=0.000$ ). Facilitating conditions was proved to be the strongest predictor of behavioural intention.

SEM results indicated that there is no statistical evidence that hedonic motivation affects behavioural intention ( $\beta=.013$ ,  $p=0.74$ ). This study therefore concludes that in Lesotho, hedonic motivation does not affect intention to use M-money.

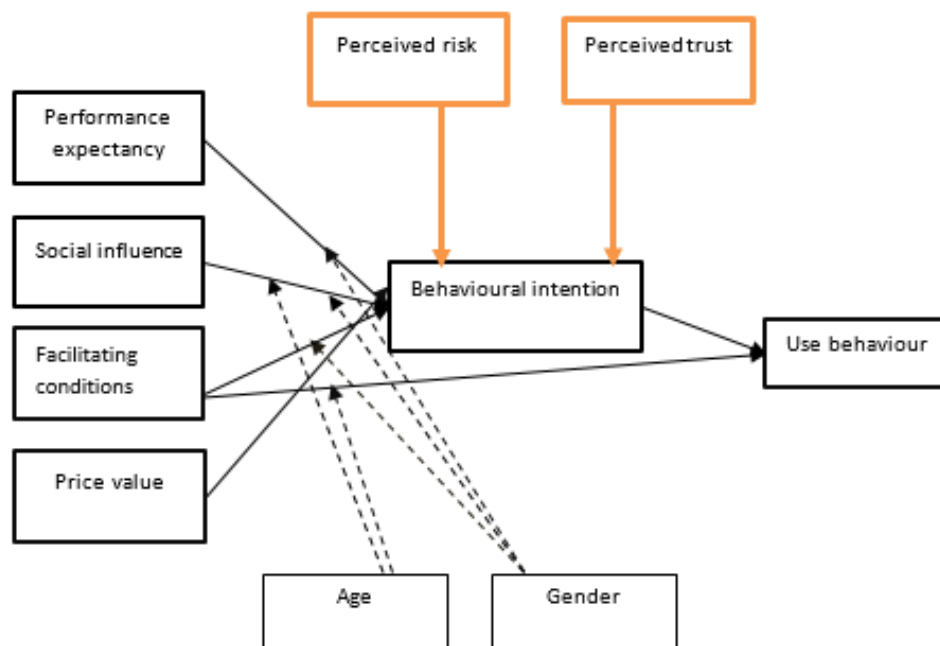
The results presented in chapter 5 showed that price value is positively associated with behavioural intention ( $\beta=.113$ ,  $p=0.047$ ). Therefore, in Lesotho, price value positively affects intention to use M-money.

Perceived risk was found to have a significant negative influence on behavioural intention ( $\beta=.178$ ,  $p=0.001$ ). This is an expected result as it was hypothesised and anticipated that perceived risk negatively impact behavioural intention.

The results proved that perceived trust is positively associated with behavioural intention ( $\beta=0.274$ ,  $p=.000$ ). Perceived trust was found to be the second highest predictor of behavioural intention. This result means that if the public trust the systems, processes and procedures of the service provider, their intention to use the service increases.

The study revealed that behavioural intention positively affects use behaviour ( $\beta=0.449$ ,  $p=.000$ ). This means that when the intent to use M-money increases, the actual usage will also increase.

Overall the highest predictor of behavioural intention is facilitating conditions, followed by perceived trust, perceived risk, social influence, performance expectancy and price value respectively. Figure 6.1 below shows the proven model in Lesotho.



**Figure 6.1 Proven model**

### 6.3 Achievement of objectives

The broad objective of this study as presented in Chapter 1 was to assess the main determinants of M-money adoption and usage in Lesotho. This objective was achieved by having the following secondary objectives:

- To review the literature on the concept of M-money services.
- To identify the various factors influencing M-money adoption and usage based primarily on the UTAUT2 model.
- To examine the direct effects of the determinants of M-money adoption and usage in Lesotho.
- To examine the moderating effects on the behavioural intention to adopt and use M-money in Lesotho using age, gender and experience as the key moderators.
- To make recommendations based on the findings with regards to the improvement of M-money services adoption.

### **6.3.1 Achievement of primary objective**

The primary objective of the study was to assess the main determinants of M-money adoption and usage in Lesotho.

To achieve this objective, the study adopted the UTAUT2 as the fundamental model to determine factors influencing the behavioural intention and the use behaviour of M-money in Lesotho. The model was reviewed and extended with two important factors that were considered relevant in M-money adoption in the context of Lesotho. These two factors were perceived risk and perceived trust. The extended model was validated in Chapter 5. This resulted in the development of 37 hypotheses that were later tested to determine factors influencing M-money acceptance in Lesotho. These hypotheses were evaluated in Chapter 5, with the outcome clearly showing the factors that influenced M-money adoption in Lesotho. These factors are discussed under the achievement of the secondary objectives.

### **6.3.2 Achievement of secondary objectives**

A total of five secondary objectives were presented to help in the achievement of the primary objective. The first secondary objective was *“to review the literature on the literature on the concept of M-money services.”* This secondary objective was achieved in Chapter 2. The chapter reviewed several aspects on the concept of M-money starting with an overview of M-money, its evolution, the M-money ecosystem, the benefits of M-money and the enabling factors and barriers that affect the implementation of M-money services.

The second secondary objective was *“to identify the various factors influencing M-money adoption and usage based primarily on the UTAUT2 model.”* This objective was achieved in Chapter 2 and Chapter three. A review of factors affecting M-money services in developed and developing countries was presented in Chapter 2 (Section 2.6 and Section 2.7). From these factors, perceived risk and perceived trust were identified as pertinent factors of M-money adoption. In Chapter 3, the UTAUT2 was discussed as a valuable model for M-money adoption. The UTAUT2 was then extended with perceived risk and perceived trust to present the conceptual framework for this study.

The third secondary objective was *“to examine the direct effects of the determinants of M-money adoption and usage in Lesotho”*. This objective was addressed in Chapter 5 (section 5.3.9). Analysis revealed that there are six direct drivers of intention to use M-money namely: performance expectancy, social influence, facilitating conditions, price value, perceived risk and perceived trust.



The fourth secondary objective was “to *examine the moderating effects on the behavioural intention to adopt and use M-money in Lesotho using age, gender and experience as the key moderators*”. Section 5.3.9 of Chapter 5 answered the fourth objective showing that not all relationships are moderated. Performance expectancy and behavioural intention is moderated by gender, when men believe M-money helps them perform tasks more efficiently they adopt more than women. The relationship between social influence and behavioural intention is moderated by age and gender. Men and older people are more inclined to use M-money because their loved ones use it. Furthermore, the relationship between facilitating conditions and behavioural intention is moderated by gender. Women lean more towards adopting if there is an enabling and supporting environment. Lastly, facilitating conditions and use behaviour are moderated by age. Usage behaviour is more pronounced for younger people than older people. The last secondary objective was “to *make recommendations based on the findings with regards to the improvement of M-money services adoption*”. The next section will address the last objective. Recommendations are made based on the results of the data analysis process.

## **6.4 Recommendations**

- The first recommendation is that service providers should inform and educate the public about benefits derived from using M-money. Customers should be made aware of and made to understand that M-money will help them to be more effective. M-money service providers in Lesotho need to focus on implementing marketing campaigns that focus on the usefulness of M-money, this is because it was proven that performance expectancy has a positive and significant influence on the intention to adopt M-money. This awareness can include focusing on aspects like anywhere anytime availability, easy shopping using M-money, faster means to pay bills, faster shopping and faster and easy way to send money without the long queues. Information about how M-money can help customers perform their tasks better should be especially tailored to men because the results showed performance expectancy affects intention of men more than it does women. A good example can be the Eco Cash video advertisement where a man lost all his money because he saved it inside an old mattress that his wife later burnt, instead of it being in more secure options like M-money (Econet Wireless, 2013).
- Service providers can give the person that recommends the use of M-money to others an incentive. Examples of incentives can be reduced cost for M-money usage for a particular period or free airtime. Service providers should specify in their marketing campaign that people who recommend use of M-money will get such incentives, this will therefore boost

usage of M-money. Service providers should have an option that asks new people registering to identify the person that recommended the use M-money. This will encourage more people to recommend M-money to their family members and friends thus helping the M-money service provider to leverage the power of social influence. This is because social influence positively influences the behavioural intention to adopt M-money. Also with the growth in social media, research has shown that service providers can use the power of social media to enable their users to recommend their service to their social network (Morosan & DeFranco, 2016; Oliveira et al., 2016). A similar incentive can also be applied whereby M-money users who share the M-money Facebook page get some rewards such as an airtime rewards as this can also harness the power of social influence to increase adoption of M-money in Lesotho.

- The findings also showed that facilitating conditions were important for M-money adoption in Lesotho. Consequently, M-money service providers in the country should intensify information going to the public about how to use M-money, and adequately up-skill their agents so that they are able to meet the publics' expectations regarding M-money service delivery. A free operational call centre should be available to help people that need help while using M-money. Furthermore the technology used to deliver M-money and the network connection have to be stable. All these facilitating conditions lead to intention to adopt and use M-money.
- Another important factor to consider is price value as it significantly influences the adoption of M-money in Lesotho. Service providers in the country should price the products in a reasonable manner. To encourage regular use of M-money, service providers can put forth that if customers use M-money more than four time in one month, the fifth transaction is free. This can be supported by the theory of penetration pricing which suggest that companies should set a low price when trying to penetrate the market and gain market share, and only after they have a significant share of the market should they now increase the prices to maximise value (Kotler & Ruth, 2014). Furthermore, service providers should maintain a particular level of quality to ensure customers perceive services to be of value. This is because even when prices are low, quality needs to remain high to retain the customers. This has been evident in Uganda with the M-Sente and M-money product where the price was quite lower than the competition, yet customers continuously left the company because of poor quality service (Waiswa, Nduhura, Mugerwa, Settumba, Wanume & Businge, 2016).

- Service providers should invest in research to always be up-to-date about security measures in the financial sector. This research should be implemented to limit financial risk. This is because customers in Lesotho will be more willing to adopt and use M-money when they perceive the risk to be low. Slade et al. (2015) suggested that if companies promote the safety of their M-payment solutions, this will reduce perceptions of risk that customers might have gotten from media hype or stories of system vulnerabilities. As such, M-money service providers in Lesotho can benefit from a general campaign that emphasises the safety of using M-money and depicting it as a more secure means of saving and transferring money. The CBL can also play a vital role in this domain as reducing risk perceptions will increase M-money adoption and consequently improve financial inclusion in the country. The CBL can let the customers know the measures that are being taken at the regulatory level to ensure that money saved with M-money providers is safe.
- Service providers should associate themselves with trusted brands that are already in existence and have a good reputation. This study also showed that trust had the highest influence on the adoption of M-money in Lesotho. Trust is a major issue in the adoption of M-money. This could explain why Vodacom Lesotho has the highest market share of M-money with their M-Pesa product as Vodacom Lesotho is a trusted brand with the biggest share of the telecom market in the Country. The other current or future M-money providers in Lesotho need to find effective ways to gain the trust of the customers. Agents need to be properly trained in customer service, business management skills and the importance of reputation. Service providers themselves should maintain and uphold a great image and move away from scandals.
- M-money service providers should implement an aggressive educational campaign focused on rural areas. Chiefs of villages, trusted business people in villages as well as influential figures such as school principals should be facilitated and incentivised to educate and even offer M-money service in rural areas. This is because the descriptive information in this study showed that M-money adoption was still a major challenge in rural areas.
- Section 5.3.6 of the results chapter revealed that Basotho would love to see more service offerings on M-money platforms. Services such as salary deposits, buying in more stores, pension fund management, commodity dealing / investment, loans, foreign exchange and financial advice were found to be required. Therefore, service providers should incorporate into their offerings the option of small loans to those that have a history of healthy inflows and outflows of money. There should also be an option to fix money for a certain period to

enable and encourage saving. Financial advice and budgeting tools should also be available for those that need them. Service providers should also partner with financial entities so that information about different investment options can be shared with users on a regular basis and incorporate within the M-money platform a way to pay for such services. An example of pension funds offered through M-money is one initiated by MTN M-money in Uganda through their partnership with Social Assistance Grants for Empowerment (SAGE), pension payments are distributed directly to citizens M-money account and customers can also make payments through their mobile devices (GSMA, 2011).

- Findings further showed (section 5.3.7) that there are other platforms the public would like to see be used in connection with M-money. Such platforms are ATM, the internet, a prepaid card, tap and go and fingerprint. Service providers should have a prepaid card that is in connection with a customers' M-money account. The prepaid card should be enabled to perform tap and go payment methods to make it easy to pay in shops, restaurants, and other forms of businesses. In addition, service providers should collaborate with relevant stakeholders to enable withdrawal at ATMs.

## **6.5 Implications for theory**

This study contributes to the body of knowledge by developing a conceptual model of customer adoption and usage of M-money and empirically validating it. The results of the study revealed the determining factors of M-money adoption and usage in Lesotho. All that has been suggested in literature has either been supported through analysis or dropped. Literature mainly used for this study was based on other geographic areas, it was then adapted to Lesotho based on patterns observed in developing countries. The theory of customer drivers of M-money adoption and usage presented in this study offers stakeholders a better understanding of how to develop strategies with regards to customer adoption. This study provides confirmation on the legitimacy of the UTAUT2 in evaluating technology adoption from a customer perspective in developing countries, more specifically in Lesotho.

## **6.6 Future research**

- The research focussed on the demand side of M-money, a different perspective could be uncovered if the supply side is studied. Future research should, therefore, focus on adoption of M-money from the perspective of suppliers.
- This study only focused on use behaviour as the post adoption behaviour. However, another important post adoption behaviour that can be studied in future studies is the

intention to recommend M-money as suggested by Oliveira et al. (2016). This can be particularly important in Lesotho given the significant role of social influence in M-money adoption.

- Findings showed that most respondents either earn below M500.00 or have no income. Future studies can look at the impact of poverty and lack of resources on adoption and usage of M-money.

## **6.7 Chapter summary**

Chapter 6 presented the conclusions, recommendation and implications of the study at hand. Recommendations were made based on the observed outcomes of the study. The chapter ended by presenting the directions for future research. The study, therefore, concluded that the UTAUT2 was a valid technology acceptance model to use in Lesotho, especially when extended with perceived risk and perceived trust.

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## Appendices

### Appendix 1: Questionnaire

#### SECTION A: DEMOGRAPHICS

1. Please indicate your sex:

Male ☐ Female ☐

2. Please indicate your age:

18-25 ☐ 26-35 ☐ 36-45 ☐ 46-55 ☐  
Above 55 ☐

3. What is your place of residence?

Maseru city ☐ Maseru outskirts ☐ Rural ☐

4. What is your highest level of education?

No Education	<input type="checkbox"/>
Primary	<input type="checkbox"/>
High School	<input type="checkbox"/>
Diploma	<input type="checkbox"/>
Degree	<input type="checkbox"/>
Post graduate	<input type="checkbox"/>
Other (Please specify here) _____	<input type="checkbox"/>

5. What is your occupation?

Student	<input type="checkbox"/>
Unemployed	<input type="checkbox"/>
Self Employed	<input type="checkbox"/>
Employed : Clerical Level	<input type="checkbox"/>
Employed : Supervisor Level	<input type="checkbox"/>
Employed : Middle Management	<input type="checkbox"/>
Employed : Senior Management	<input type="checkbox"/>
Retired	<input type="checkbox"/>
Other (Please specify here)_____	<input type="checkbox"/>

6. What is your average monthly income?

No income	
500 and below	
501-1500	
1501-3000	
3000-5000	
Above 5000	

## SECTION B: CELL PHONE USER PROFILE

7. Please indicate cell phone use status:

Own a phone ☐

Share a phone ☐

8. Please indicate which network you are on: if you use both mark one that is mostly used.

VCL ☐

Econet Telecom Lesotho ☐

9. Have you heard about mobile money?

Yes ☐ No ☐

10. If yes, where did you first hear about mobile money services?

Mass media (television, radio, newspaper)	
An Agent	
Banks	
SMS from Mobile Operator	
Friends or Family	

11. Are you currently registered on any mobile money service?

Yes ☐ No ☐

12. If yes, which one? If more than one tick one used most often.

M-Pesa ☐ Eco-Cash ☐ Mobile banking ☐

13. If mobile banking, which bank are you using?

FNB ☐ Standard Lesotho ☐ Nedbank ☐ Postbank ☐

#### SECTION D: MOBILE MONEY

14. Besides registering, have you used mobile money?

Yes ☐ No ☐

15. Frequency of use.

Daily	<input type="checkbox"/>
Weekly	<input type="checkbox"/>
Monthly	<input type="checkbox"/>
Quarterly	<input type="checkbox"/>
Semi-annually	<input type="checkbox"/>
Annually	<input type="checkbox"/>

16. Which of the following services on mobile money do you use often?

Sending cash ☐

Receiving cash ☐

Purchases at retailer ☐

Bill payments (utilities) ☐

Airtime purchases ☐

Bank related service ☐

Please read the following statements and rate accordingly based on the given options which range from strongly disagree to strongly agree.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
<b>Performance expectancy</b>					
17. M-money can/is useful in my daily life					
18. M-money can/helps me accomplish things more quickly					
19. M-money can/increases my productivity					
<b>Effort expectancy</b>					
20. Learning how to use M-money would be easy for me					
21. I would find M-money easy to use					
22. It would be easy for me to become skilful at using M-money					
23. My interaction with M-money would be clear and understandable					
<b>Social influence</b>					
24. People who are important to me think that I should use M-money					
25. I use M-money because of my peers and friends					
26. M-money is important because my family use it					
27. I use/would use M-money to conform to what everyone is doing					
<b>Facilitating conditions</b>					
28. I have the resources necessary to use M-money					
29. I have the knowledge necessary to use M-money					
30. M-money is compatible with other technologies I use					
31. I can get help from others when I have difficulties using M-money					
<b>Habit</b>					
32. The use of M-money has become a					

habit for me					
33. I am addicted to using M-money					
34. I must use M-money					
<b>Price value</b>					
35. M-money services are reasonably priced					
36. M-money services are good value for money					
37. At the current price, M-money provides good value					
<b>Hedonic motivation</b>					
38. Using M-money would be fun					
39. Using M-money would be enjoyable					
40. Using M-money would be very entertaining.					
<b>Perceived risk</b>					
41. I do not feel totally safe providing personal private information over M-money					
42. I am worried about using M-money services because other people may be able to access my account					
43. I do not feel secure sending sensitive information across M-money					
44. I believe that overall riskiness of M-money services is high					
45. The security measures built into M-money services are not strong enough to protect my finances					
46. Using M-money services has a lot of financial risk					
<b>Perceived trust</b>					
47. I believe M-money service providers keep their promise					
48. I believe M-money service providers keep customers' interests in mind					
49. I believe M-money service providers are trustworthy					
50. I believe M-money service providers will do everything to secure the transactions for users					



<b>Behavioural intention</b>					
51. I intend to use M-money in the future					
52. I will always try to use M-money in my daily life					
53. I plan to use M-money frequently					
<b>Experience</b>					
54. I have used my mobile phone for at least a year					
55. I am very skilled at using my mobile phone					
56. I know less about using mobile phones than most users					
<b>Use behaviour</b>					
57. I use M-money to transfer money					
58. I use M-money to pay my bills					
59. I use M-money to do my banking					
60. I use M-money to purchase airtime					

## SECTION E: BENEFITS OF MOBILE MONEY

Please read the following statements and rate accordingly based on the given options which range from strongly disagree to strongly agree.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
61. Cost saving (Lower rates, transaction fees)					
62. Time saving (no need to go to bank or ATM)					
63. 24 hour access (can make transaction any time)					
64. Physical security (no need to go out with cash)					
65. Other (Specify).....					

## SECTION F: FUTURE DEMAND

What kind of financial services do you want to see being offered via your cell phone?

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
66. Savings					
67. Cash withdrawal at mobile money agents					
68. More bill payments					
69. Salary deposit					
70. Purchasing					
71. Pension fund management					
72. Commodity dealing / investment					
73. Loans					
74. Other (Specify) .....					

## SECTION G: MOBILE MONEY CHANNELS

Which channels would you like to use for mobile money transaction?

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
75. Mobile Phone					
76. ATM Machine					
77. Point of Sale terminal (POS)					
78. Internet					
79. Debit or Prepaid Card					
80. Near field communication card (e.g. Tap and go)					
81. Fingerprint					

**Thank you for completing this questionnaire.**

## Appendix 2: Informed consent

### INFORMED CONSENT

**Project Title: The determinants of Mobile money adoption and usage: the case of Lesotho**

**Principal Investigator: Mamotseli Ntlatlapa**

*Phone number:* +266 59051633

*Email address:* tselintlatlapa@yahoo.com

**Supervisor: Dr. Brownhilder Neneh**

*Phone number:* +27 51-401-2156

*Email address:* [NenehBN@ufs.ac.za](mailto:NenehBN@ufs.ac.za)

Dear Participant

I am ‘Mamotse’li Ntlatlapa, a Master’s student at the Department of Business Management, University of the Free State. I am conducting a research titled “**The determinants of Mobile money adoption and usage: the case of Lesotho**”. I am kindly requesting for your participation in this research. The study aims to investigate the determinants of M-money adoption and usage specifically in Lesotho.

As a person who lives in Lesotho and has a mobile device you match the type of respondent the study requires. Your input will be very helpful to deduce conclusions with regards to the study.

The information collected will be confidential and will be used by the researcher only for the purpose of the study. No personal identification details such as name and passport number will be required and only the researcher, supervisor and statistician will have access to the information collected. Questionnaires will be stored in a locked area until they can be shredded after a minimum of five years. The questionnaires will only be taken out when recording the data or for verification purposes. Codes will be used to record data on a computer as a way to strengthen anonymity. Therefore, all information will be anonymous as codes will be used to identify questions and questionnaires.

Your participation is voluntary and can be withdrawn at any time. There is no incentive for participating in the study. The questionnaire will take between 20-30 minutes.

- I understand what the study entails and what my participation involves.
- I am under no obligation to take part in the study.
- I give the researcher authorisation to make use of the data gathered from participation of the student.

Signature of Participant: \_\_\_\_\_ Date: \_\_\_\_\_

### Appendix 3: Information Letter for authorities

#### Information Letter for authorities

Dear Sir/Madam

The study is titled “**The determinants of Mobile money adoption and usage: the case of Lesotho**”. The aim of the study is to investigate the determinants of M-money adoption and usage specifically in Lesotho. The type of respondent required is a Lesotho residence with a cell phone.

The information collected will be confidential and will be used by the researcher only for the purpose of the study. No personal identification details such as name and passport number will be required and only the researcher, supervisor and statistician will have access to the information collected. All the completed questionnaires will be scanned into an electronic format and the electronic version will be encrypted, while the paper version will be shredded. Questionnaires will be stored in a locked area until they can be shredded after a minimum of five years.

Participation in the study is voluntary and can be withdrawn at any time. There is no incentive for participating in the study. The questionnaire will take between 20-30 minutes. Your cooperation will be highly appreciated. Results of the study will be available on a request basis.

For any queries regarding the study and for request of the results you may contact the following:

**Researcher:** Mamots’eli Ntlatlapa

Telephone number: +266 59051633

**Supervisor:** Dr. Neneh Brownhilder

Telephone Number: +27 51-401-2156

With regards

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Mamotseli Ntlatlapa

## Appendix 4: Ethical clearance



Faculty of Economic and Management Sciences

16-May-2017

Dear Miss Mamotseli Ntlatlapa

**Ethics Clearance: The determinants of mobile money adoption and usage: the case of Lesotho**

**Principal Investigator: Miss Mamotseli Ntlatlapa**

**Department: Business Management (Bloemfontein Campus)**

### APPLICATION APPROVED

With reference to your application for ethical clearance with the Faculty of Economic & Management Sciences, I am pleased to inform you on behalf of the Ethics Committee of the faculty that you have been granted ethical clearance for your research.

Your ethical clearance number, to be used in all correspondence is: **UFS-HSD2017/0122**

This ethical clearance number is valid from **16-May-2017** to **17-May-2020**. Should you require more time to complete this research, please apply for an extension.

We request that any changes that may take place during the course of your research project be submitted to the ethics office to ensure we are kept up to date with your progress and any ethical implications that may arise.

Thank you for submitting this proposal for ethical clearance and we wish you every success with your research.

Yours Sincerely

Dr. Petrus Nel

Chairperson: Ethics Committee Faculty of Economic & Management Sciences

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**Economics Ethics Committee**

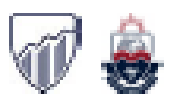
**Office of the Dean: Economic and Management Sciences**

T: +27 (0)51 401 2310 | T: +27(0)51 401 9111 | F: +27(0)51 444 5465

205 Nelson Mandela Drive/Rylaan, Park West/Parkweg, Bloemfontein 9301, South Africa/Suid Afrika

P.O. Box/Postbus 339, Bloemfontein 9300, South Africa/Suid Afrika

[www.ufs.ac.za](http://www.ufs.ac.za)



## Appendix 5: Measurement techniques

Construct	Item	Statement Wording	Source adapted from
Performance expectancy	PE1	M-money is useful in my daily life	Venkatesh et al. (2012)
	PE2	M-money helps me accomplish things more quickly	
	PE3	M-money increases my productivity	
Effort expectancy	EE1	Learning how to use M-money would be easy for me	Venkatesh et al. (2012)
	EE2	I would find M-money easy to use	
	EE3	It is easy for me to become skilful at using M-money	
	EE4	My interaction with M-money would be clear and understandable	
Social influence	SI1	People who are important to me think that I should use M-money	Venkatesh et al. (2012)
	SI2	I use M-money because of my peers and friends	
	SI3	M-money is important because my family use it	
	SI4	I use M-money to conform to what everyone is doing	
Facilitating conditions	FC1	I have the resources necessary to use M-money	Venkatesh et al. (2012)
	FC2	I have the knowledge necessary to use M-money	
	FC3	M-money is compatible with other technologies I use	
	FC4	I can get help from others when I have difficulties using M-money	
Habit	H1	The use of M-money has become a habit for me	Venkatesh et al. (2012)
	H2	I am addicted to using M-money	
	H3	I must use M-money	

Price value	PV1	M-money services are reasonably priced	
	PV2	M-money services are good value for money	
	PV3	At the current price, M-money provides good value	
Hedonic motivation	HM1	Using M-money would be fun	Venkatesh et al. (2012)
	HM2	Using M-money would be enjoyable	
	HM3	Using M-money would be very entertaining.	
Perceived risk	PR1	I do not feel totally safe providing personal private information over M-money	Slade et al. (2015)
	PR2	I am worried about using M-money services because other people may be able to access my account	
	PR3	I do not feel secure sending sensitive information across M-money	
	PR4	I believe that overall riskiness of M-money services is high	
	PR5	The security measures built into M-money services are not strong enough to protect my finances	
	PR6	Using M-money services has a lot of financial risk	
Perceived trust	PT1	I believe M-money service providers keep their promise	Slade et al. (2015)
	PT2	I believe M-money service providers keep customers' interests in mind	
	PT3	I believe M-money service providers are trustworthy	
	PT4	I believe M-money service providers will do everything to secure the transactions for users	
Behavioural intention	BI1	I intend to use M-money in the future	Venkatesh et al. (2012)
	BI2	I will always try to use M-money in my daily life	
	BI3	I plan to use M-money frequently	
Experience	E1	I have used my mobile phone for at least a year	Venkatesh et al. (2012)



	E2	I am very skilled at using my mobile phone	
	E3	I know less about using mobile phones than most users	