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WITS
SCHOOL OF ECONOMIC
& BUSINESS SCIENCES

USING EXTENDED VALENCE FRAMEWORK TO EXAMINE FACTORS THAT INFLUENCE THE USAGE OF MOBILE MONEY IN SOUTH AFRICA

DISSERTATION SUBMITTED IN FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

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IN

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28 FEBRUARY 2020

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DECLARATION

I declare that this research report is my own work, except as acknowledged in the text. It has not been submitted before for any other degree or examination in this or any other university.

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ABSTRACT

Purpose – The purpose of this study is to examine factors that influence usage of mobile money in South Africa applying Extended Valence Framework as the underpinning model.

Design/methodology/approach – A survey was conducted using a validated questionnaire. Data was collected from 279 respondents using both probability and non-probability sampling. This study used structural equation model (SEM) (using SmartPLS 2.0 M3) to test the proposed model and the hypotheses.

Findings – The model explains 50.8% of the variance in the actual use of mobile money. Trust and utilitarian value were found to have significant positive effect on behavioural intention to use mobile money. In addition, personal innovativeness in information technology (PIIT) was found to have a significant positive effect on both trust and perceived risk. However, perceived risk was found to have a significant negative effect on behavioural intention to use mobile money. Furthermore, hedonic value and social influence were found to have no effect in the actual use of mobile money.

Research limitations/implications – The study developed and tested a research model underpinned by Extended Valence Framework. The extension of the model using PIIT and utilitarian value further enriches the Extended Valence Framework. In addition, this study contributes to the literature regarding factors influencing usage of mobile money. Lastly, while previous studies used students as proxy for the population of study, the actual users of mobile money were used for data collection in this study.

Practical implications – This study helps mobile money practitioners and service providers, especially banks, to better understand the effect of trust, risk, utilitarian value and PIIT on consumers' perception about usage of mobile money. In addition, practitioners and service providers can use this knowledge to mitigate risk perceptions that consumers may have about mobile money.

Originality/value – This study extends Extended Valence Framework using hedonic value, utilitarian value, PIIT and SI.

Key words

Mobile money, Mobile payments, Extended Valence Framework, Trust, Risk Hedonic value, Utilitarian value

1. CHAPTER ONE - INTRODUCTION

1.1. Introduction

This chapter introduces the study. It covers the background, problem statement, purpose of the study, research question, contribution of the study and delimitations of the study.

1.2. Background

The rapid penetration of mobile phones over the last few decades has resulted in the proliferation of mobile payments. Mobile payments include, among others, short message service (SMS) based transactional payments, wireless application protocol (WAP) enabled payments, mobile web, credit cards at the point of sale and quick response code (QR) payments (Nseir, Hirzallah and Aqel, 2013). It also includes contactless or tap-and-go near field communication (NFC) technology, cloud based mobile payment and audio signal mobile payments (PYMNTS, 2017). In addition to these payment methods, there is the concept of mobile money, which is also known as electronic wallet or eWallet or mobile wallet attached to the mobile phone number of a customer (Russel, 2012). Mobile money provides many functions of a traditional bank account (Economides and Jeziorski, 2017). Typically, mobile money uses SMS or Unstructured Supplementary Service Data (USSD) technology or subscriber identity module (SIM) Toolkit (SKT) (Russell, 2012).

Mobile money is used in many countries. It is one of the most preferred payment services for many people across various parts of the developing world (GSMA, 2019). It is for this reason that mobile money is heralded as the best vehicle to provide access to banking services to more than half of the unbanked or underbanked adult population in the world (Ramos, Solana, Buckley, and Greenacre, 2016). Mobile money allows consumers to buy airtime, pay taxi fares, make loan repayments (Robb, 2015), send money to friends and

relatives, pay bills for goods and services in a relatively safe and inexpensive way (Economides and Jeziorski, 2017).

Furthermore, mobile money is easy to use, cheap, safe, efficient and ubiquitous (Robb, 2015). For example, cost, safety and convenience are highlighted as some of the top three reasons for households' use or non-use of M-Pesa in Kenya (Jack and Suri, 2011). In addition, unlike brick and motor, mobile money breaks time and geographical barriers providing ease of access anytime and anywhere (Heyer and Mas, 2011). Furthermore, mobile money does not attract monthly service fees compared to traditional bank accounts (Jack and Suri, 2011). The mentioned instrumentality may be the reason why many people use mobile money.

Despite all these benefits, there are inherent risks and trust issues associated with the use of mobile money. Some researchers suggest that using mobile money may result in identity theft, phishing and promotional scams (Buku, 2017). A whitepaper on mobile money by SUBEX suggests that users of mobile money are subjecting themselves to vulnerabilities such as theft of customer data, account hijack through SIM swaps and denial of service attacks (SUBEX, 2019). In addition, there are other vulnerabilities associated with mobile money such as fraudsters targeting innocent customers through phone calls or SMSs or emails to gain sensitive information such as PINs and passwords (Deloitte, 2015). Over and above these, consumers also worry about mobile money user support, safety of their money, unfriendly user interface designs, transactional costs (Koloseni and Mandari, 2017), poor network coverage, slow service response during peak periods, inadequate number of mobile money agents and systems failures (Ngugi, Pelowski and Ogembo, 2010). These vulnerabilities, and many others, are concerning to consumers.

Notwithstanding all these risks, vulnerabilities and concerns, the use of mobile money keeps growing in popularity across the globe. For example, the Mobile Economy 2019 Report indicates that there were 866 million registered mobile money accounts globally as at the end of 2018, which is a 20% increase compared to the year before (GSMA, 2019). The report also predicts that there will be 710 million new users worldwide over the next seven years, with just under a quarter of these coming from Sub-Saharan Africa. This prediction is based on unprecedented adoption rates and use of mobile money in

the region in the last few years, especially in the Eastern, Western and Southern parts of Sub-Saharan Africa.

It is considering these varied levels of growth that studies are trying to establish factors that drive or hinder use of mobile money in different countries. For example, a study examining continuance usage of mobile money in Tanzania established that perceived trust, attitude and perceived behavioural control influenced continuance usage (Koloseni and Mandari, 2017). In addition, the study also found that perceived trust, satisfaction and behavioural intention have significant influence on continuance usage. In a different context in Somalia, another study found that perceived ease of use influenced perceived usefulness of mobile money (Sayid, Echchabi and Echchabi, 2012). The same study found that security and perceived usefulness have a significant positive influence on social influence and attitude. In addition, the study found that perceived usefulness has significant positive influence on the Somali consumers' intention to use mobile money. Another study, which focused on acceptance of mobile money by poor citizens in India concluded that trust, perceived usefulness and attitude towards usage influence the intention to accept mobile money (Chauhan, 2015).

Past studies have also suggested that high mobile phone penetration positively influences the rapid usage of mobile money (Koloseni and Mandari, 2017; Mpogole, Tweve, Mwakatobe, Mlasu, and Sabokwigina, 2016; Ngugi, Pelowski and Ogembo, 2010). It is the alluded influence of high mobile phone penetration on the rapid usage of mobile money that is interesting when considering the case of South Africa. Despite high mobile phone penetration in the country, there is still low usage of mobile money. The country has the lowest adoption rates of mobile money in Southern Africa, estimated at 15% out of the 89% adult population that has access to mobile phones (Chigada and Hirschfelder, 2017). This has left the academic and industry professionals with more questions unanswered regarding the factors that influence the adoption and use of mobile money. Although there has been focus on the factors that influence the adoption, past research has predominantly focused on the benefits (e.g. financial inclusion and poverty alleviation) of mobile money (Ahmad, Green and Jiang, 2020; Asamoah, Takieddine and Amedofu, 2020; Edo, Okodua and Odebiyi, 2019; Mas and Morawczynski, 2009; Mbiti and Weil, 2015: Mutsonziwa and Maposa, 2016; Nan, 2019; Safari and Chanceline, 2019; Senou, Ouattara and Acclassato Houensou, 2019). However, that approach has not

given a comprehensive explanation about the factors that drive or hinder the use of mobile money. Hence, there is a need to continue focusing on this area.

In seeking this view though, it is worthwhile to consider other factors that have received little attention from previous studies. It is also equally important to use different models and theories to explain this phenomenon. Many studies in the past have predominantly used technology adoption models such as technology adoption model (TAM) (Davis, 1989), unified theory of acceptance and use of technology (UTAUT) and theory of planned behaviour (TPB) (Ajzen, 1991) (Venkatesh, Morris, Davis and Davis, 2003). In the process, the studies do not adequately address individuals' subjective believes such as trust, perceived risk, perceived benefit (conceptualized as hedonic value and utilitarian value in this paper) as well as personal traits and social factors. For instance, behavioural sciences and Psychology literature suggest that the personal traits and social factors are important to consider in studying adoption and use of technology (Yang, Lu, Gupta, Cao and Zhang, 2012). In addition, consumer behaviour literature suggests that hedonic and utilitarian motivations also play a vital role in driving usage of information systems (Thongpapanl, Ashraf, Lapa and Venkatesh, 2018). Therefore, there is a need to further enrich models and theories explaining consumers' adoption and use of mobile money by incorporating these factors.

1.3. Problem Statement

As stated above, mobile money is gaining ground in different parts of the world. However, despite the high mobile phone penetration in South Africa the adoption rate and use of mobile money is still below expectation. In other countries, the high mobile phone penetration has been associated with the growing adoption rate and use of mobile money (GSMA, 2019). In order to understand this phenomenon, several studies have examined the role that various factors play, such as, attitude, perceived ease of use, perceived usefulness, perceived cost and security (Alhassan, Li, Reddy and Duppati, 2020; Koloseni and Mandari, 2017; Sayid, Echchabi and Echchabi, 2012). Drawing on past studies (most of them were focused on some but not all these factors), perceived benefits (benefits), trust, perceived risk (risk), social influence (SI) and individual characteristics (i.e. PIIT) have been found to play a role in the adoption and use of information systems

(Abdul-Hamid, Shaikh, Boateng and Hinson, 2019; David-West, Iheanachor and Umukoro, 2019; Odoom and Kosiba, 2020; Sulieman and Salleh, 2020). However, in the context of mobile money, limited studies have comprehensively examined these factors. Hence, there is a need to understand the effect of trust, perceived risk, perceived benefits, social factors, and individual characteristics on the use of mobile money. By focusing on these factors, this study may yield new insights regarding the use of mobile money in South Africa.

1.4. Research Question

Following from the problem statement above, this study seeks to answer the following research question:

What is the effect of trust, risk, hedonic value, utilitarian value, SI and PIIT on the actual usage of mobile money by individuals in South Africa?

1.5. Purpose

Deriving from the research question above, the purpose of the study is to examine the effects of trust, risk, benefit (i.e. hedonic value and utilitarian value), social factors (i.e. social influence) and individual characteristics (i.e. personal innovativeness in information technology) on actual usage of mobile money. Furthermore, the study examines the tension between perceived risk and perceived benefit.

1.6. Research Objective

Based on the above purpose statement, the theoretical and empirical objectives of this study is to examine the effect of trust, risk, benefit (i.e. hedonic value and utilitarian value), social factors (i.e. social influence) and individual characteristics (i.e. personal innovativeness in information technology) on actual use of mobile money. This will be achieved by:

1) Reviewing literature on mobile money

2) Reviewing literature on theories and models explaining adoption, acceptance or use of mobile money
3) Developing and empirically testing a research model using Extended Valence Framework. Specifically, the study will test the following relationships:
    a. Effect of PIIT on perceived risk and trust
    b. Effect of SI on perceived risk and trust
    c. Effect of trust on perceived risk, perceived benefit (i.e. hedonic value and utilitarian value) and intention to use mobile money
    d. Effect of perceived risk on intention to use mobile money
    e. Effect of perceived benefit (hedonic value and utilitarian value) on intention to use mobile money
    f. Effect of intention to use mobile money on the actual use of mobile money
4) Examining the tension between trust and perceived risk.

1.7. Intended Contribution of the Study

The study has both theoretical and practical implications. The next two subsections will discuss these, starting with contribution to theory followed by contribution to practice.

1.7.1. Contribution to Theory

From the theoretical perspective, the study develops and tests a research model that is underpinned by Extended Valence Framework. This advances the understanding of factors that influence use of mobile money and bridges the gap in research. By examining the effects of trust, perceived risk and perceived benefit (i.e. all subjective believes) on consumers' intention to use mobile money, this study further builds on existing literature.

Furthermore, the study extends Extended Valence Framework with hedonic value and utilitarian value. The inclusion of hedonic value and utilitarian value is based on consumer behaviour research, which suggests that perceived value motivates and directs consumers' behaviour and decision-making (Gutman,1982). Although previous research has explored hedonic value and utilitarian value (Li, Dong and Chen, 2012; O'Brien,

2010), there were no studies found that researched these factors in conjunction with Extended Valence Framework to examine use of mobile money. Thus, this study closes this gap in the literature.

Furthermore, the study extends the framework with PIIT and SI. Past studies have shown that SI influences adoption of technology, such as mobile payment services (Lu, Yao and Yu, 2005; Yang et al., 2012). In addition, there is overwhelming evidence in the literature that PIIT plays a role in adoption and use of technology (Rogers, 1983). Although SI and PIIT have been widely studied in different contexts, they have not yet received commensurate attention by scholars in the context of mobile money.

1.7.2. Contribution to Practice

The findings of this study will also provide practical insights to mobile money practitioners, especially banks. Since mobile transactions are perceived riskier and more uncertain than traditional methods (Yang et al., 2012), this study provides mobile money providers with insights on the role that trust, risk, benefit play in consumers' perception of mobile money. In addition, the findings of this research will help mobile money professionals and organisations that are contemplating introducing or reintroducing mobile money in South Africa to better understand factors that influence its use. Equipped with this knowledge, companies can focus their marketing initiatives more on those aspects that will increase prospects of better usage, which in turn will help maximize shareholders' return on investments.

1.8. Delimitations of the Study

The unit of analysis for this study is an individual. Therefore, organisations and any other entities were excluded. The study only focused on mobile money offered by the five major banks in South Africa, that is, Standard Bank's Instant Money, FNB's eWallet, Nedbank's MobiMoney, ABSA's cash send (Finmark Trust, 2017) and Capitec (send cash). The reason to focus only on bank centric mobile money is because South Africa is dominated by bank led mobile money (Evans and Pirchio, 2014).

1.9. Structure of the Report

Chapter One: Introduced the problem statement, purpose, research objective, intended contributions and delimitations of the study.

Chapter Two: The literature review defines the concept of mobile money, synthesizes past research and identifies gaps in the literature. These gaps then form the basis of this study.

Chapter Three: Provides the theoretical background to the study and presents the research model, which is underpinned by Extended Valence Framework. The chapter also provides the rationale behind stated hypotheses.

Chapter Four: States the research methodology. The chapter discusses the research paradigm and data collection method. The chapter also operationalizes the constructs, discusses the sampling method, data analysis method, ethical considerations, limitations, threats to internal and external validity.

Chapter Five: Presents data analysis. The chapter covers data preparation process, descriptive statistics and the results of principal components analysis, measurement model, structural model and hypotheses testing.

Chapter Six: Discusses the results and draws conclusions based on the results of hypotheses testing.

Chapter Seven: Is the conclusion to the study. The chapter provides the summary, implications, limitations and recommendations for future research.

The next chapter presents the literature review.

2. CHAPTER TWO - LITERATURE REVIEW

2.1. Introduction

This chapter covers the literature review. It defines the concept of mobile money and summarizes the past studies. The chapter then covers the models/theories used by previous studies to investigate mobile money. Next, the constructs used in this study, that is, trust, perceived risk (risk), perceived benefit (benefit), social influence (SI) and personal innovativeness in information technology (PIIT) are discussed.

2.2. Mobile Money

The adoption of mobile devices has given rise to various mobile based financial services, including mobile money. Mobile money was first introduced in 2001 in the Philippines (Bruggink and Reeve, 2017). Mobile money, which is also known as eWallet or mobile wallet, is a subset of mobile payments (Donovan, 2012; Gencer, 2011; Russel, 2012). Mobile payments refer to payment of bills, goods and services using mobile devices such as mobile phones (Dahlberg, Mallat, Ondrus and Zmijewska, 2008).

According to the literature, there are various definitions of mobile money. For example, mobile money is defined as a tool that allows consumers to make various financial transactions via cell phone technology (Jack and Suri, 2011). It is also defined as a generic term referring to the ability to deliver different financial services to consumers using mobile device (Bruggink and Reeve, 2017). Aron (2017) defines mobile money as the ability to use electronic money via a cell phone to conduct a financial transaction. Based on these definitions, mobile money in this study refers to the use of mobile phone integrated technologies of SMS, Unstructured Supplementary Service Data (USSD) technology or SIM Toolkit (SKT) to do funds transfers and bill payments (Russell, 2012).

In South Africa, mobile money operators adopt a bank centric model (Evans and Pirchio, 2014). One of the main reasons is due to regulations in South Africa, which require that mobile money services providers need a banking license (Kersop and du Toit, 2015). Examples of bank-led mobile money in South Africa include Capitec' send cash,

Nedbank's MobiMoney, Standard Bank's Instant Money, FNB's eWallet and ABSA's cash send (Finmark Trust, 2017).

Other examples of mobile money outside of South Africa include EcoCash (Zimbabwe), Tigo Cash (Rwanda and Tanzania), Orange money (Cote D'Ivoire, Kenya and Uganda), bKash (Bangladesh) and MTN mobile money (Cote D'Ivoire, Rwanda and Uganda) (Evans and Pirchio, 2014). Arguably the most common example of mobile money is M-Pesa (meaning mobile money in Kiswahili), which started in Kenya but now operational in many other countries (Donovan, 2012).

According to the GSMA report, the adoption rate of mobile money has been on the rise globally, especially in the developing world. The report indicates that there were 866 million registered mobile money accounts globally as at the end of 2018, which represented a 20% increase compared to 2017 (GSMA, 2019). Regionally, the report indicates that Asia Pacific will have 359 million new registered mobile money users by 2025, Sub-Saharan Africa will have 165 million, North America and Europe will have 22 and 14 million respectively. These high adoption rates are attributed to the rapid adoption of mobile phones.

Despite high mobile phone adoption, the penetration of mobile money in South Africa (SA) is low. It is estimated that 15%, out of 89% of adult population that have access to mobile phones, use mobile money (Chigada and Hirschfelder, 2017). The relatively low penetration rate has been attributed to stringent regulations and advanced banking systems in the country (Bereket and Hwang, 2020; Kiconco, Rooks and Snijders, 2020; Robb, 2015). The regulations by South African Reserve Bank (SARB) only allow SA banks to issue electronic money (i.e. e-money) (SARB, 2009). This regulation prohibits any other player to participate in mobile money if they are not in a partnership with a licensed banking institution (Evans and Pirchio, 2014).

However, this study has not found empirical evidence linking stringent regulations and advanced banking systems to the low penetration of mobile money. At the same time, there was no past research found that linked SA mobile money usage rate to factors such as trust, risk, hedonic value, utilitarian value, social influence and PIIT. This is despite several studies, which were carried out elsewhere, indicating that these factors play a

significant role in the usage of mobile commerce services (Lu, Yang, Chau and Cao, 2011; Yang, Cao, Mao, Zhang and Luo, 2011; Yang et al., 2012). Furthermore, no academic research was found where all these factors were comprehensively examined under one study as evident in the summary of the literature review in Table 1. Hence a need to investigate the role of these factors in seeking new insights regarding the use of mobile money.

2.3. Past studies on Mobile Money

The following electronic databases were used to find past studies that are relevant for this literature review: EBSCOhost, ProQuest, ScienceDirect, IEEE Xplore and Google scholar. Table 1 is a summary of these studies and their findings.

TABLE 1: Past Studies

Author	TYPE	Theory/ Model used	Factors Considered	Country	Conclusion
Lu, Yao and Yu (2005)	Wireless Internet mobile technology (WIMT)	TAM	Social influence (SI) (subjective norms and image), Personal innovativeness in information technology (PIIT), Perceived usefulness, Perceived ease of use, Intention to adopt WIMT	USA	SI and PIIT do not influence Intention to adopt WIMT
Yang, Cao, Mao, Zhang and Luo (2011)	Mobile money	Valence Framework and Innovation Diffusion Theory (DOI)	Perceived risk, Perceived fee, Relative benefit, Compatibility, Image, Behavioural intention	China	Perceived risk has negative influence on behavioural intention
Yang et al. (2012)	Mobile payments	Valence Framework and DOI	Social influences (Subjective Norms and Image), Personal traits (PIIT) behavioural beliefs (Perceived risk, perceived fee, relative advantage and compatibility), intention to adopt mobile payment services.	China	SI and PIIT positively influence intention to adopt mobile payment services.
Lu, Yang, Chau and Cao (2011)	Mobile money	Valence framework, Trust transfer theory and DOI	Internet payment trust, Initial mobile payment trust (Trust), Perceived risk (Risk), Perceived cost, Image, Relative advantage, Compatibility, Behavioural intention	China	Trust positively influences Behavioural intention and negatively influences Risk. Risk negatively influences Behavioural intention
Lu, Liu, Yu and Wang (2008)	Wireless mobile data services (WMDS)		Perceived usefulness, Perceived ease of use, WMDS technology, PIIT, Facilitating conditions, Social influences, Mobile trust, Intention to accept WMDS	China	PIIT and Mobile trust positively influence Intention to accept WMDS. Social influences negatively influence Intention to accept WMDS
Agarwal and Karahanna (2000)	Technology	TAM	Personal innovativeness of IT (PIIT), Playfulness, Cognitive absorption, Self-Efficacy, Perceived usefulness, Perceived ease of use, Behavioural intention	USA	PIIT positively influences Cognitive absorption

Sayid, Echchabi and Echchabi (2012)	Mobile money	TAM	Perceived ease of use, Perceived usefulness, Security, Attitude, Social influence (SI), adoption Intention	Somalia	SI has positive influence on adoption intention
Tobbin (2010)	Mobile money	TAM and DoI	Perceived Usefulness, Perceived Ease of Use, Trialability, Relative Advantage, Transactional Cost, Perceived Risk (Risk), Reliability, Perceived Privacy, Perceived Trust (Trust)	Ghana	Trust and Risk influence adoption of mobile money
Masinge (2010)	Mobile banking	TAM2	Perceived risk (Performance risk, Security/Privacy Risk, Time Risk, Social Risk, Financial Risk), Trust, Perceived cost Perceived ease of use, Perceived usefulness, Adoption of mobile banking Actual usage	South Africa	Trust influence adoption of mobile banking. Perceived risk does not influence adoption of mobile banking.
Joubert and Belle (2009)	Mobile Commerce	Expanded Model of Trust	Trust, Perceived Risk, Adoption enablers Perceived trustworthiness (Vendor trust, Systems trust, Institutional based trust) Disposition of trust, Intention to participate	South Africa	Trust and risk influence Intention to participate.
Jenkins and Ophoff (2016)	Mobile payments (NFC)	TAM	Perceived Risk (Security concerns, Privacy concerns, Trust concerns), Social influence (SI), Perceived value, Perceived ease of use, Perceived financial resources, Intention to adopt NFC mobile payments	South Africa	Security and trust do not influence intention to adopt NFC mobile payments
Makokha, Ramachandran and Karthikeya (2014)	Mobile money	Decomposed TPB and TAM	Trust, Perceived ease of use, Perceived usefulness, Attitude, Subjective norms, Perceived behavioural control, Intention	India and Kenya	Trust influences intention to use mobile money

Correia, Ngare, Sindiga and Otwoma (2017)	Mobile money	TAM	Perceived usefulness, Perceived ease of use, Perceived financial cost, Attractiveness of alternatives, Perceived Risk	East Africa	Perceived risk negatively influences use
Koloseni and Mandari (2017)	Mobile money	TPB	Perceived Trust (Trust) and Perceived cost	Tanzania	Trust influence continuance behavioural intention and continuance usage behaviour
Lin, Wang, Wang and Lu (2014)	Mobile banking	Extended Valence Framework, IS expectation confirmation theory and Self-perception Theory	Perceived risk (Risk), Perceived usefulness, Pre-use trust (Trust), Usage, Satisfaction, Post-use trust, Perceived benefit, Confirmation	China	Trust influences mobile banking usage behaviour and future usage behaviour.
Omigie (2017)	Mobile financial services	Means-end theory	MFS Utilitarian Value (Excellence, Monetary, Transaction, Safety), MFS Hedonic Value (Aesthetic, Symbolic, Experiential), MFS Personal, Values (Social, Affiliation, Self-Actualization) Continuance Intention, Customer Satisfaction	None country specific	The model is a proposal for a research in progress
Li, Dong and Chen (2012)	Mobile commerce	Stimulus-organism-response (S-O-R) based model	Convenience, Media richness, Subjective norms, Self-efficacy, Emotion, Consumption experience	China	Hedonic factors positively effect consumption experience. Utilitarian factors negative effect media richness, subjective norms, convenience and self-efficacy
Thongpapanl, Ashraf, Lapa and Venkatesh (2018)	Mobile commerce	Motivation based model	Perceived Benefit, Trust, Utilitarian Motivation, Hedonic Motivation, Regulatory Orientation (promotion vs. prevention), Perceived value, M-commerce usage, Control variables (Uncertainty avoidance, Individualism/collectivism, Age, Gender, Internet Plan)	USA, Australia, Bangladesh, Vietnam, India and Pakistan	Hedonic motivation influences customers' value perceptions and trust. Utilitarian motivation influences customers' value perceptions. Hedonic and utilitarian motivations influence

					customers' value perceptions and trust
Megadewandanu (2016)	Mobile wallet	UTAUT2	Performance expectancy, Effort expectancy Social influence (SI), Facilitating conditions, Hedonic motivation, Price value, Habit Behavioural intention	Indonesia	SI and hedonic motivation influence individual behavioural intention

It is evident based on Table 1 that past studies have mainly used TAM, TPB, DOI, UTAUT and Valence Framework to examine factors influencing adoption and usage of mobile money. The findings suggest that TAM has been used most frequently, which is consistent with the findings of the literature review by Dahlberg, Mallat, Ondrus and Zmijewska (2008). As a result, majority of these past studies focus mainly on factors such as perceived ease of use, perceived usefulness and intention (Alhassan, Li, Reddy and Duppati, 2020; Koloseni and Mandari, 2017; Sayid, Echchabi and Echchabi, 2012). However, research on mobile commerce suggests that factors such as PIIT, SI, trust, perceived risk, utilitarian value and hedonic value need to be considered in order to fully understand usage of mobile money (Lu, Yao and Yu, 2005; Yu, Zo, Kee Choi and Ciganek, 2013).

Firstly, there is inconsistent results between different studies regarding the influence of PIIT and SI on usage of mobile money. For example, Yang et al. (2012) found that SI and PIIT positively influence adoption of mobile commerce. Similarly, Sayid, Echchabi and Echchabi (2012) found that SI positively influences adoption of mobile money. On the other hand, Lu, Yao and Yu (2005) found that SI and PIIT have no influence on the Intention to adopt WIMT.

Secondly, some studies considered either hedonic value or utilitarian value in isolation and yet consumer behaviour literature suggests that consumers utilize products and services basically for their instrumental value (i.e. utilitarian) and experiential value (i.e. hedonic) (Batra and Ahtola, 1991). For example, Megadewandanu (2016) examines hedonic motivation only in the adoption of mobile wallet. According to Holbrook (1986), both hedonic value and utilitarian value need to be considered in order to better understand consumers' behaviour. Therefore, in line with this argument, it is important to consider these two aspects and not treat them in isolation of each other.

Moreover, the summary of the literature review (Table 1) also reveals some gaps in research relating to usage of mobile money. Firstly, limited research was based on the Extended Valence Framework as the underpinning foundation. For example, only Lin, Wang, Wang and Lu (2014) used Extended Valence Framework in investigating mobile banking.

Secondly, some of these studies used student population as proxy for the target population (Lu, Yao and Yu, 2005). However, this approach has been highlighted as a weakness by other studies (Kim, Ferrin and Rao, 2009; Lu, Yang, Chau and Cao, 2011). Therefore, this study will address this limitation by using a wider community of mobile money users including students.

Lastly, there were no studies focused on mobile money in South African context. For example, studies investigated mobile banking (Masinge, 2010), mobile commerce (Joubert and Belle, 2009), mobile payments (Jenkins and Ophoff, 2016). Therefore, this study is also addressing this limitation.

The next sections will discuss the factors considered under this study, starting with trust. This will be followed by discussions on perceived risk, utilitarian value, hedonic value, SI and PIIT.

2.4. Trust

There are various definitions of trust in the literature. For example, trust is defined as a subjective belief that the other party will fulfil their obligation as expected (Kim, Ferrin and Rao, 2009; Comer, Plank, Reid and Pullins, 1999). Trust is also defined as an individual's perception of another party's ability, benevolence and integrity (Bhatnagar, Misra and Rao, 2000; Chen, Chen and Meindl, 1998; Mayer, Davis and Schoorman,1995). According to Gefen (2000), trust is reliance on others despite having no control over them. Gao and Waechter (2017) define trust as a subjective belief whereby the trusting party believes that the other party will fulfil his or her obligations as expected. Based on these definitions, trust in this study refers to a subjective belief that a mobile money provider will fulfil its obligations according to the expectations of a mobile money user.

The different definitions of trust emanate from various fields where trust has been researched. These disciplines include Economics, Behavioural Psychological (Dirks and Ferrin, 2001), Marketing (Peter and Tarpey, 1975) and Information Systems (Yang, Chen, and Wei, 2015). For example, in Information Systems, trust has been examined in

different contexts such as in virtual teams (Jarvenpaa, Knoll and Leidner, 1998), mobile payments (Yang et al., 2011) and electronic commerce (Czepiel, 1990; Hoffman, Novak and Peralta, 1999; McKnight and Chervany, 2001).

Despite the various definitions, there is consensus in the literature that trust is important in any relationship. Trust has been viewed as a key determinant in any relational commitment (Garbarino and Johnson, 1999; Tax, Brown and Chandrashekaran, 1998). In addition, trust is considered more important in those relationships that involve monetary transactions (Kim, Ferrin and Rao, 2003). Several studies also allude to the importance of trust in these relationships (Hoffman, Novak and Peralta, 1999; Jarvenpaa, Knoll and Leidner, 1998; McKnight, Choudhury and Kacmar, 2002b).

Previous studies examining relationship of trust and behaviour have concluded that there is a positive relationship between trust and use of mobile based financial services (Lu, Yang, Chau and Cao, 2011; Yang et al., 2012). For example, Yang et al. (2012) concluded that there is a positive relationship between trust and usage of mobile payments. Similar positive relationships between trust and mobile payments have also been established by several researchers as well (Joubert and Belle, 2009; Koloseni and Mandari, 2017; Masinge, 2010; Wentzel, Diatha and Yadavalli, 2013).

Furthermore, researchers have concluded that consumer trust in mobile commerce (e.g. mobile money) is dynamic and difficult to establish (Lin, Wang, Wang, Lu, 2014). This is mainly to the uncertainly involved with mobile commerce. Past research has also established that trust is required especially where there is risk or consumer uncertainty involved (Pavlou, 2003). Hence it is important to understand this relationship.

2.5. Perceived Risk

There are different definitions of perceived risk (risk) in the literature. For example, Harris, Brookshire and Chin (2016) define risk as a belief pertaining to expectation of a loss in pursuit of achieving a goal. According to Bhatnagar, Misra and Rao (2000), risk is a subjective expectation of loss. Kim, Ferrin and Rao (2008) define risk as a subjective

belief about a possible negative outcome. Following these definitions, perceived risk in this study refers to a subjective belief of suffering a loss whilst using mobile money. Hence, it is important to understand perceived risk in the context of mobile money if one were to counter it (Dasgupta, 2000).

Due to the inherent risks and uncertainty of mobile based transactions, consumers may feel more vulnerable using mobile money compared to a traditional setting of bricks and motor (Lu, Yao and Yu, 2005). This is due to the impersonal nature and the implicit uncertainty of mobile commerce environment (Yang, Chen and Wei, 2015). Several researchers have indicated that perceived risk is one of the main barriers to use technology (Chiu, Wang, Fang, and Huang, 2014; Kim, Ferrin and Rao, 2008; Lee, 2009; Yang, Cao, Mao, Zhang and Luo, 2011; Yang et al., 2012; Yeh, Hsiao and Yang, 2012). For example, perceived risk has been found to discourage use of technology in different contexts, such as in mobile financial services (Chen, 2008; Mallat, 2007), mobile payment services (Luo, Li, Zhang and Shim, 2010) and mobile banking services (Yang, Lu, Gupta, Cao and Zhang, 2012)

Although traditionally considered as a unidimensional construct, a growing number of researches recognize risk as a multidimensional construct (Lee, 2009; Forsythe and Shi, 2003). Table 2 is a summary of different risk dimensions and their descriptions according to Lee (2009).

TABLE 2: Dimensions of Risk

Dimension	Definition
Performance risk	The possibility of the product malfunctioning and not performing as it was designed and advertised and therefore failing to deliver the desired benefits
Social risk	Potential loss of status in one's social group as a result of adopting a product or service, looking foolish or untrendy
Financial risk	The probability that a purchase results in loss of money as well as the subsequent maintenance cost of the product
Privacy risk	Potential loss of control over personal information, such as when information about you is used without your knowledge or permission. The extreme case is where a consumer is "spoofed" meaning a criminal uses their identity to perform fraudulent transactions
Time risk	Consumers may lose time when making a bad purchasing decision by wasting time researching and making the purchase, learning how to use a product or service only to have to replace it if it does not perform to expectations
Physical risk	The probability that a purchased product results in a threat to human life

Adapted from: Lee (2009)

Based on Lee (2009), this study will firstly examine if consumers worry about fraud and hacker intrusion. Secondly, the study will investigate if consumers worry about not being able to be compensated in the event of a loss. Thirdly, the study will explore if consumers worry about mobile money failing to deliver what it promises. Lastly, the study will find out if consumers worry that using mobile money may waste their time.

The next section will discuss perceived benefit, which unlike risk, incentivise users to adopt and use technology.

2.6. Perceived Benefit

Consumer behaviour research suggests that consumers use services primarily for both hedonic (e.g. gratification) and utilitarian (e.g. instrumental) outcomes (Babin, Darden and Griffin, 1994; Batra and Ahtola, 1991; Fischer and Arnold 1990; Holbrook and Hirschman,1982). As a result, perceived benefit in this study is conceptualized as utilitarian value and hedonic value.

Venkatesh and Brown (2001) suggest that utilitarian and hedonic values cover a broad set of factors that individuals consider important in the discipline of Information System. For this reason, it is necessary to assess consumers' perceptions of these values. For example, some consumers perceive consumption of a service as work and do not consider the entertainment aspect of it. While on the other hand, other consumers view consumption of services as fun (Babin, Darden and Griffin, 1994). These consumers use the service mainly because they enjoy the activity (Özen and Kodaz, 2016). The two perspectives of consuming service as work versus consuming services as fun indicates utilitarianism and hedonism respectively. This study, will therefore, attempt to understand the effect that utilitarian value and hedonic value have on the use of mobile money. These two values are discussed next.

2.6.1. Utilitarian Value

Utilitarian value reflects efficiency and effectiveness that results from the use of a service (Venkatesh and Brown, 2001). Based on this, utilitarian value in this study refers to the extent of effectiveness and efficiency that is perceived by consumers when using mobile money. That is, utilitarian views the use of a service as a means of accomplishing some task-related goal, efficient or economical aspects of a service (Babin, Darden and Griffin, 1994; Holbrook and Batra, 1987; Van der Heijden, 2004; Yu, Zo, Kee Choi and Ciganek, 2013). From a utilitarian perspective, the focus is on a mission or a task. Thus, the perceived benefits will depend on whether the mission is realized or not, or whether the mission is completed efficiently (Gupta and Harris, 2010). As far as a utilitarian is concerned, value is derived from instrumental and functional benefits (Holbrook and

Hirschman,1982; Van der Heijden, 2004). Table 3 presents examples of four utilitarian benefits according to Chiu, Wang, Fang and Huang (2014).

TABLE 3: Definitions of Utilitarian Benefits

Construct	Definition
Product offerings	The total set of items offered by a retailer, reflecting both the breadth and depth of the offered products.
Product information	The quality of information about a product carried by a retailer.
Monetary savings	Spending less and saving money.
Convenience	The time and effort saved by shopping online and the less restricted store hours or locations.

Adapted from: Chiu, Wang, Fang and Huang (2014)

Based on Chiu, Wang, Fang and Huang (2014), this study will firstly examine if using mobile money would enhance chances of achieving things that are important from utilitarian's perspective. Secondly, this study will investigate if, based on effort and time, mobile money would be beneficial and worthwhile to consumers. Thirdly, this study will explore if mobile money will help consumers accomplish things more quickly. Lastly, this study will find out if mobile money would be useful in consumers' everyday lives.

2.6.2. Hedonic Value

In contrast to utilitarian aspects of IS, hedonic value is more subjective and personal (Ladeira, Nique, Pinto and Borges, 2016). Hedonic value results from the fun derived from consumption of a service rather than from completion of a task (Holbrook and Batra, 1987; Van der Heijden, 2004). In other words, hedonic value relates to consumers' emotional response derived from intrinsic feelings such as fun, enjoyment and pleasure (Babin, Darden and Griffin, 1994). Thus, hedonic value refers to a pleasant experience as perceived by the consumers (Kim, Ferrin and Rao, 2008). In other words, hedonic

value explains customers' behaviour when seeking happiness, fantasy and enjoyment (Gupta and Harris, 2010).

Furthermore, the underlying reason for hedonic consumption of a service is not about gaining the physical product or completion of the task, it is the enjoyment and fun acquired from the experience (Gupta and Harris, 2010; Özen and Kodaz, 2016). Other researchers suggest that hedonic value can represent increased arousal, heightened involvement, experiential, perceived freedom or fantasy fulfilment (Sánchez-Fernández and Iniesta-Bonillo, 2007). For example, these may pertain to sensory pleasure, epistemic needs and emotional needs (Keller, 1993). Based on these assertions, hedonic value in this study refers to the level of pleasure and joy users experience when using mobile money.

Table 4 is an example of six hedonic motivations and definitions, which include the notion of gratification, fun and enjoyment in a shopping context (Arnold and Reynolds, 2003).

TABLE 4: Definitions of Hedonic Motivations

Components	Definitions
Adventure	Shopping for stimulation, adventure, and the feeling of being in another world.
Social	The enjoyment of shopping with friends and family, socialising while shopping and bonding with others while shopping.
Gratification	Shopping for stress relief, shopping to alleviate a negative mood and shopping as a special treat for oneself.
Idea	Shopping to keep up with the trends and new fashions and to see new products and innovations.
Role	The enjoyment that shoppers derive from shopping for others, the influence that this activity has on the shoppers' feelings and moods and the excitement and intrinsic joy felt by shoppers when finding the perfect gift for others.
Value	Shopping for sale items, looking for discounts and hunting for bargains.

Adapted from: Chiu, Wang, Fang and Huang (2014)

Based on Chiu, Wang, Fang and Huang (2014), this study will examine if using mobile money would be fun, enjoyable, make consumers feel good and relaxed about using the service.

Previous studies have concluded that both hedonic and utilitarian factors have influence on usage of mobile banking (O'Brien, 2010), mobile data services (Kim and Oh, 2011), e-commerce (Chiu, Wang, Fang and Huang, 2014) and mobile devices (Kim, Kim, and Wachter, 2013). Therefore, based on these views and observations, it is necessary to assess the effect of hedonic and utilitarian values on usage of mobile money.

The next two sections discuss SI and PIIT respectively. Past studies have found these two factors important in examining adoption and use of technology.

2.7. Social Influence

Social influence (SI), in the form of subjective norm, is regarded by the theory of planned behaviour (TPB) as an important element in studying adoption, acceptance or use of technology (Ajzen, 1991). For that reason, many researchers have used SI as one of the constructs in their studies (Jenkins and Ophoff, 2016; Megadewandanu, 2016; Sayid, Echchabi and Echchabi, 2012; Karahanna, Straub and Chervany, 1999). Consequently, there are varying definitions of SI in the literature. Researchers define SI in terms of subjective norm (Ajzen, 1991), image (Moore and Benbasat, 1991), voluntariness (Venkatesh and Davis, 2000; Karahanna, Straub and Chervany, 1999) and as pressure from peers (Venkatesh, Morris, Davis and Davis, 2003). This study refers to social influence as pressure from social networks, friends and relatives to use or not to use mobile money.

Based on the summary in Table 1, there is empirical evidence regarding the influence that SI plays in adoption and usage on technology. For example, SI was found to be an important determinant in adoption of mobile payment services in China (Yang et al., 2012). Similarly, SI was found to influence the intention to adopt mobile payments in India (Shankar and Datta, 2018).

Based on conclusions drawn from some of these studies, individuals will often make their decision based on approval from social networks peers, friends, relatives or social network (Venkatesh, Morris, Davis and Davis, 2003). As a result, social networks play an important role in consumer decision-making because individuals' behaviours are influenced by their social context (Salancik and Pfeffer, 1978). Therefore, it will be important to establish whether this relationship still holds in the context of mobile money.

2.8. Personal Innovativeness in Information Technology

In this study, personal innovativeness in information technology (PIIT) refers to willingness of an individual to try out mobile money. According to several researchers, PIIT is an important factor to consider in the study of individuals' behaviour towards adoption and use of technology (Agarwal and Karahanna, 2000; Lewis, Agarwal and Sambamurthy, 2003; Yang et al., 2012). The concept of personal innovativeness (PI) has its roots in Marketing (Midgley and Dowling, 1978) and innovation diffusion research in general (Rogers,1983).

However, researchers have criticised the original construct of PI as being hypothetical and difficult to measure (Midgley and Dowling, 1978; Flynn and Goldsmith, 1993). Based on the criticism of global based PI, the new domain-based construct of personal innovativeness in Information Technology (PIIT) was theorized (Agarwal and Prasad, 1998). PIIT was included PIIT into Davis' original TAM model (Agarwal and Prasad, 1998). It was found that consumers exhibiting higher levels of PIIT tend to form more positive perceptions about the target technology. It was then concluded that individuals do this in terms of relative advantage, compatibility, ease of use and that these individuals tend to have more positive intentions toward the use of the new technology (Rogers, 1983).

Past studies have also established that there is a positive relationship between PIIT and the intention to use technology (Yiu, Grant and Edgar, 2007; Hwang, 2011). As summarised in Table 1, a study has established that there is a positive relationship between PIIT and adoption of mobile financial services (Yang et al., 2012). Another study

established that PIIT has positive effect on adoption and use of mobile payment services (Yang, Lu, Gupta, Cao and Zhang, 2012). In another study, PIIT was found to have a positive influence on adoption of wireless mobile data services (WMDS) in China (Lu, Liu, Yu and Wang, 2008).

However, based on Table 1, there are limited studies investigating this relationship in the context of mobile money. Therefore, this study will seek to close this gap.

2.9. Conclusion

This chapter defined and discussed the concept of mobile money. The chapter then presented the summary of past studies. Following this, the chapter discussed the constructs used in this study, starting with trust, then risk, benefit (i.e. hedonic value and utilitarian value), social influence (SI) and lastly personal innovativeness in information technology (PIIT). Gaps in the body of knowledge were identified, which this study seeks to address.

The next chapter presents the theoretical background and the research model.

3. CHAPTER THREE - THEORETICAL BACKGROUND AND RESEARCH MODEL

3.1. Introduction

This chapter provides the theoretical background to the study. Firstly, the Extended Valence Framework and its components (i.e. trust, perceived risk and perceived benefit) are discussed. Secondly, the chapter discusses hedonic value and utilitarian value. Lastly, the chapter presents the research model followed by the accompanying hypotheses.

3.2. Extended Valence Framework

The Extended Valence Framework provides an underpinning theoretical foundation for this study. Extended Valence Framework integrates the Valence Framework and TRA-based Web Trust Model (McKnight, Choudhury and Kacmar, 2002a; Kim, Ferrin and Rao, 2009).

The one component, Valence Framework, is founded upon valence theory. In turn, valence theory is based on cognitive rationale of consumer decision making behaviour (Yang et al., 2012). The Valence Framework first emerged from Psychology and Economics literature (Goodwin,1996). However, it was later used in Marketing to study the relationship between consumer behaviour and concepts of risk and benefit (Peter and Tarpey,1975).

The valence theory posits that consumers associate both the negative valence (i.e. perceived risk) and the positive valence (i.e. perceived benefit) when they use a service with the intention to acquire value out of that service (Ozturk, Bilgihan, Salehi-Esfahani and Hua, 2017). A study by Peter and Tarpey argued that consumers have three strategies that they use to make brand preference decision (Peter and Tarpey,1975). The three strategies are: minimizing of perceived risk/expected loss, maximizing expected gain/perceived return and maximizing net perceived return. The results of the study indicated that the model representative of maximizing net perceived return was found to explain the variance in the choice of automobile brand more than the other two models

(Lin, Wang, Wang and Lu, 2014). The study then concluded that both perceived risk and perceived benefit are two fundamental determinants of consumer decision-making (Peter and Tarpey, 1975).

Following from Peter and Tarpey's work and subsequent studies, Kim, Ferrin and Rao argued that consumers perceive products as having both positive (i.e. perceived benefit) and negative attributes (i.e. perceived risk) (Kim, Ferrin and Rao, 2009). In addition, having identified trust as a key factor in several e-commerce studies, the authors added trust to Valence Framework (Gefen, 2000; McKnight and Chervany, 2002). Kim, Ferrin and Rao' (2009) Extended Valence Framework posits that trust directly influences behavioural intention to purchase and indirectly influences behavioural intention via perceived risk and perceived benefit. The framework also postulates that trust negatively influences perceived risk while it positively influences perceived benefit.

The other component of Extended Valence Framework, TRA based Web Trust Model of belief, was proposed by McKnight, Choudhury and Kacmar (2002a). The model suggests that behavioural intention is the outcome of trusting beliefs and trust intention, which together constitute trust (McKnight, Choudhury and Kacmar, 2002a). Consistent with TRA (Ajzen and Fishbein 1980), Kim, Ferrin and Rao (2009) proposed that the behavioural intention to purchase is the immediate determinant for the actual purchase behaviour. Figure 1 below depicts Kim, Ferrin and Rao' (2009) Extended Valence Framework.

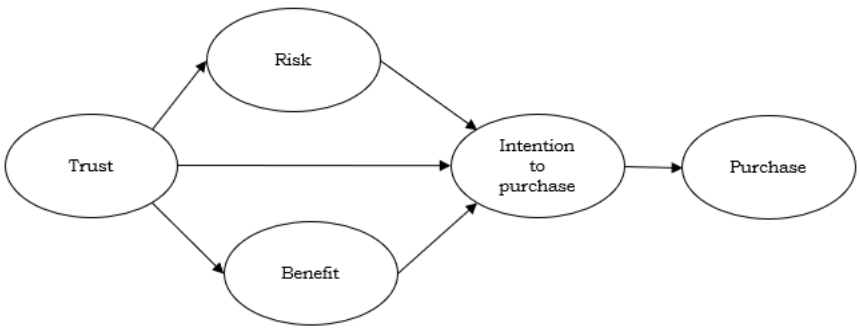


***FIGURE 1**: Extended Valence Framework (**Source**:* Kim, Ferrin and Rao, 2009)

Building on Kim, Ferrin and Rao's (2009) work, different studies have applied the framework in health (Mou, Shin and Cohen, 2016), mobile banking (Lin, Wang, Wang and Lu, 2014), e-commerce (Kim, Ferrin and Rao, 2009) and mobile payment services (Lu, Yang, Chau and Cao, 2011). As suggested by previous studies, the extension of the framework is required in the context of mobile environment (Lu, Yang, Chau and Cao, 2011; Yang et al., 2012). In line with these assertions, this study extended the model using hedonic and utilitarian values as components of perceived benefit. This is because both values have been proven to play a vital role in consumer decision-making to determine the benefit of technology or services in various settings (Ahtola, 1985; Omigie, 2017).

The next sections discuss the concept of trust, risk and perceived benefit as well as its two underlying components of hedonic value and utilitarian value.

3.3. Trust

Various types and definitions of trust have been proposed in academic research (Pavlou, 2003). However, there is still no common definition for trust in the literature. Drawing from the literature review, researchers refer to trust as a subjective belief that the other party will fulfil his or her obligations as expected (Gao and Waechter, 2017), individual's perception of another party's ability, benevolence and integrity (Chen, Chen and Meindl, 1998; Mayer, Davis and Schoorman,1995) and reliance on others despite having no control over them (Gefen, 2000). In this study, trust refers to subjective belief that a mobile money provider will fulfil its obligations according to the expectations of a mobile money user.

According to the theory of reasoned action (TRA), beliefs influence behavioural intentions, which in turn influence the actual behaviour (Ajzen and Fishbein, 1973). Consequently, previous studies have concluded that trust is an important determinant for acceptance, adoption and use of technology (Lin, Wang, Wang and Lu, 2014; Lu, Yang, Chau and Cao, 2011). For example, trust has been found to influence adoption of internet banking (Susanto, Lee, Zo and Ciganek, 2013) and e-commerce (Kim, Ferrin and Rao, 2009).

Trust has been found to be of vital importance in environments where there is great uncertainty such as internet-based or mobile-based commerce (Pavlou, 2003). According to the Extended Valence Framework, trust influences behavioural intention directly and indirectly through both perceived benefit and perceived risk (Kim, Ferrin and Rao, 2009). It posits that trust exerts a negative effect on risk. The negative relationship between trust and risk has been corroborated by several studies (Harris, Brookshire and Chin, 2016; Yang, Chen, and Wei, 2015).

The next section discusses perceived risk, which is a component of Extended Valence Framework that reflects negative utility.

3.4. Perceived Risk

Since it is difficult to measure risk as an objective reality, it is referred to as perceived risk in the literature (Pavlou, 2003). That is, perceived risk (risk) is a subjective belief by a consumer that there is a potential negative value from the online transaction with a selling party (Kim, Ferrin and Rao, 2009). Consequently, perceived risk in this study refers to a subjective belief of suffering a loss whilst using mobile money.

A growing body of literature defines risk as a multidimensional construct. The different dimensions of risk discourage consumers' usage of technology (Kim, Ferrin and Rao, 2008). For example, some of these dimensions include performance risk, social risk, financial risk, privacy risk, time risk and physical risk (Lee, 2009). The dimensions are defined in Table 2.

The Extended Valence Framework posits that risk negatively influences behavioural intention. This is in line with theory of reasoned action (TRA), which posits that beliefs influence behavioural intentions, which in turn influence the actual behaviour (Ajzen and Fishbein, 1973). Consequently, risk has been found as a barrier in the adoption and use of technology in different contexts. For example, it has been found to discourage adoption of mobile financial services (Chen, 2008; Mallat, 2007), mobile payment services (Luo, Li, Zhang and Shim, 2010) and mobile banking services (Yang et al., 2012).

The next section discusses perceived benefit, which reflects the positive utility of the Extended Valence Framework.

3.5. Perceived Benefit

This study conceptualized perceived benefit as utilitarian value and hedonic value. While utilitarian value is derived from the instrumentation of mobile money, hedonic value is derived from consumer's feelings that mobile money generates. The two dimensions are discussed next.

3.5.1. Utilitarian Value and Hedonic Value

Most of researchers in consumer behaviour traditionally focused on utilitarian aspects of shopping experience (Babin, Darden and Griffin, 1994). This approach paid attention mainly on instrumental outcomes and ignored the experiential aspects of shopping activity. However, recognizing this trend, Holbrook (1986) argued that in order to understand this activity fully, other intangible and emotive aspects ought to be given same attention as instrumental aspects. Often consumers purchase goods and services for utilitarian and/or hedonic value (Batra and Ahtola, 1991). The former pertains to achievement of a specific goal while the latter relates to pleasure derived from a specific behaviour (Vallerand, 1997; Van der Heijden, 2004). The concept of utilitarian value and hedonic value is also supported by motivation theory (Venkatesh and Brown, 2001).

Several studies acknowledge that shopping experiences produce both utilitarian value and hedonic value (Babin, Darden and Griffin, 1994). Studies have established that perceived value is an important concept for understanding consumer behaviours (Yu, Zo, Kee Choi and Ciganek, 2013). As a result, this study will examine this phenomenon in the context of mobile money. In this study perceived value is conceptualized as hedonic value and utilitarian value. Hedonic value in this context refers to the pleasure users experience when using mobile money. Utilitarian value, on the other hand, refers to the instrumentation of mobile money as perceived by consumers.

Previous studies have concluded that both hedonic and utilitarian value have influence on usage of mobile banking (O'Brien, 2010), mobile data services (Kim and Oh, 2011) and e-commerce (Chiu, Wang, Fang and Huang, 2014). Therefore, it is against this background that this study expects that both hedonic and utilitarian values will influence usage of mobile money. The study will achieve this by using both hedonic value and utilitarian value as the positive valence of the research model.

The study will also extend the model further using SI and PIIT. These two dimensions are discussed next.

3.6. Social Influence

In this study, social influence (SI) refers to individual's perception created by pressure from social networks, friends and relatives to use or not to use mobile money. Drawing from the literature review, the theory of planned behaviour (TPB) defines SI in the form of subjective norm (Ajzen, 1991). The theory posits that behavioural intentions are influenced by an individual's attitude toward the behaviour, the subjective norm and behavioural control. Subjective norm refers to an individual's perception of whether people important to the individual think the individual should perform the behaviour (Ajzen, 1991).

Subjective norm is an important element in studying adoption and usage of technology. There is empirical evidence regarding the influence that SI plays in usage of technology as seen in Table 1. For example, relationship between SI and technology adoption has been corroborated by studies examining Internet services via mobile technology (WIMT) (Lu, Yao and Yu, 2005), mobile payment services in China (Yang et al., 2012) and mobile payments in India (Shankar and Datta, 2018).

3.7. Personal Innovativeness in Information Technology

In this study, personal innovativeness in information technology (PIIT) is defined as the willingness of an individual to try out mobile money. PIIT characterizes an individual's propensity to take risk in trying any new technology (Agarwal and Prasad,1998). Other

researchers define innovativeness as an individual's willingness to change (Hurt, Joseph and Cook, 1977) or willingness to try new information technology (Agarwal and Karahanna, 2000; Midgley and Dowling, 1978).

Agarwal and Prasad (1998) included PIIT into Davis' original TAM model. They concluded that PIIT influences individuals' positive perceptions about the target technology. As summarised in Table 1, past research that has investigated the influence of PIIT on usage of mobile financial services indicate that there is a positive relationship between PIIT and usage of these services. In addition, studies have established that PIIT has positive effect on adoption and use of mobile payment services (Yang, Lu, Gupta, Cao and Zhang, 2012) and adoption of wireless mobile data services (WMDS) in China (Lu, Liu, Yu and Wang, 2008).

This study develops and tests a research model to examine the influence of trust, risk, hedonic value, utilitarian value, PIIT and SI on the use of mobile money. The next section presents the research model and the accompanying research hypotheses.

3.8. Research Model and Research Hypotheses

This study uses the Extended Valence Framework as an underpinning model to understand the effect of trust, risk, benefit (i.e. hedonic and utilitarian values) on usage of mobile money. In addition, the study examines the influence of SI and PIIT on trust and risk. The proposed model and hypotheses are depicted graphically in Figure 2. This is followed by the theoretical justification of the hypotheses.

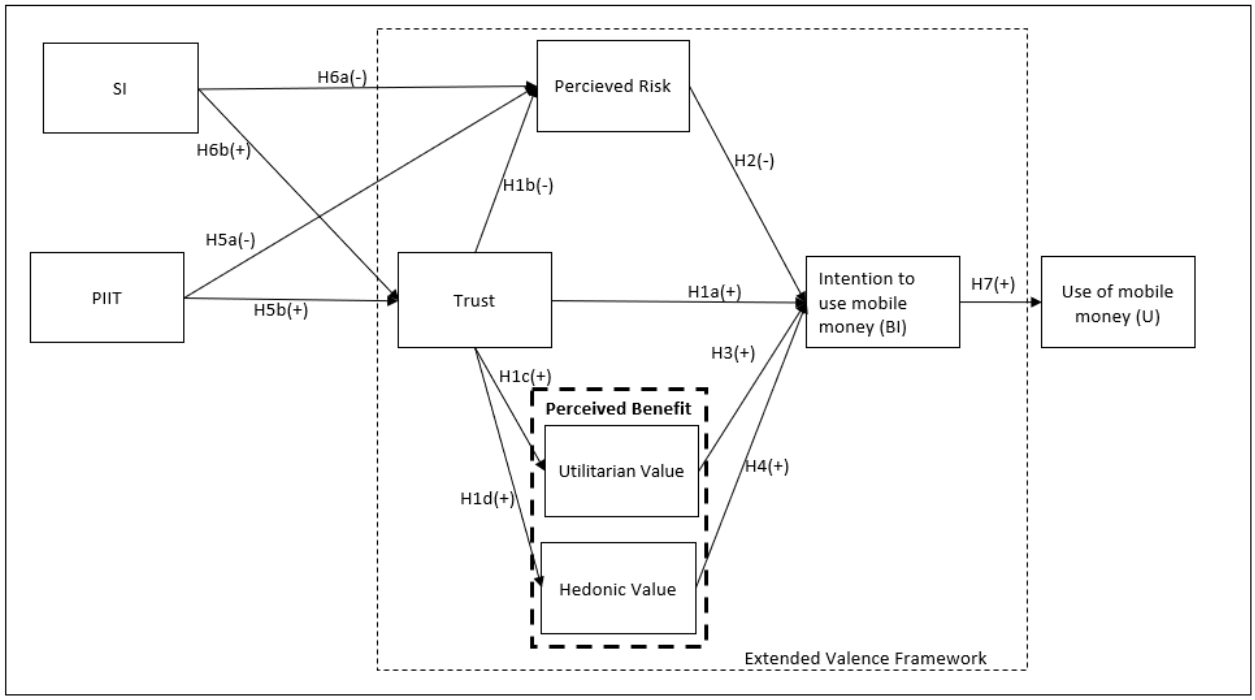


FIGURE 2: *Proposed Research Model*

3.8.1. Trust

According to the Extended Valence Framework, trust has a direct positive effect on behavioural intention. This relationship is derived from TRA based Web Trust Model of belief (Kim, Ferrin and Rao, 2009). The model posits that behavioural intention is an outcome of trust, which is constituted by trust beliefs and trust intention (McKnight, Choudhury and Kacmar, 2002a). As stated earlier, trust is customers' subjective belief that the service provider will fulfil his or her obligations as expected (Gao and Waechter, 2017).

Several researchers have found trust to be one of the vital determinants of technology usage (Kim, Ferrin and Rao, 2009; Lu, Yang, Chau and Cao, 2011; Pavlou, 2003). In mobile money, trust is vital due to the uncertainty and vulnerabilities that characterize mobile based transactions (Lu, Yang, Chau and Cao, 2011). Since trust is a consumer's belief in the ability, benevolence, integrity and predictability of a service provider (Gefen, Karahanna and Straub, 2003), consumer believes that the service provider will fulfil their

obligation despite the consumer's vulnerability. Thus, despite the vulnerabilities, trust reduces the uncertainty and promotes the intention to use a service.

Past studies have also concluded that trust reduces uncertainty and it is important to understand its influence on usage of mobile based services. For example, trust has been found to be one of the factors that influence online behaviour (Pavlou and Gefen, 2002). In addition, trust has been found to promote usage of mobile based transactions (Lu, Yang, Chau and Cao, 2011). Thus, it can be argued that trust will be important in promoting usage of mobile money. Therefore, the following hypothesis is drawn:

Hypothesis 1a: Trust positively influences the intention to use mobile money.

Trust precedes risk perceptions (Pavlou, 2003). In the context of mobile money, it can be argued that trust will precede perceived risk arising from the uncertainty and the vulnerability of mobile based transactions (Lu, Yang, Chau and Cao, 2011). Perceived risk is the component of the Valence Framework that reflects negative utility (Peter and Tarpey, 1975). Since trust comes to the fore when consumers are faced with a situation of risk, trust will alleviate the effects of this negative utility (Kim, Ferrin and Rao, 2009). This is consistent with Pavlou's findings that trust exerts negative effect on perceived risk (Pavlou, 2003). In a study of mobile banking, it was concluded that trust has a negative influence on perceived risk (Lin, Wang, Wang and Lu, 2014). Thus, following this rationale, it can be reasonably expected that trust will have a negative effect on perceived risk in the context of mobile money. Hence, it can be hypothesised that:

Hypothesis 1b: Trust negatively influences perceived risk.

Consumer behaviour literature recognizes hedonic value and utilitarian value as two of the benefits consumers derive from utilizing services (Batra and Ahtola, 1991). In this study, perceived benefit is conceptualized as hedonic value and utilitarian value. As a result, hedonic value and utilitarian value represent a positive valence of the Extended Valence Framework. According to the Extended Valence Framework, trust positively influences perceived benefit (Kim, Ferrin and Rao, 2009). The concept of perceived value

is important for understanding consumer behaviour such as acceptance or use of services (Susanto, Lee, Zo and Ciganek, 2013).

Positive relationship between trust and perceived benefit has been validated by past studies. For example, trust has been found to exert a positive effect on perceived benefit in web shopping (Kim, Ferrin and Rao, 2009) and mobile payments (Lu, Yang, Chau and Cao, 2011). Furthermore, studies have also established that trust has a positive effect on perceived benefit derived from enjoyment (i.e. hedonic value) and economic reward (i.e. utilitarian value) (Lee, Chan, Balaji and Chong, 2018).

Thus, against foregoing background, if a consumer trusts a mobile based service, they are likely to believe that the service will help them to effectively perform their task and enhance their performance (Batra and Ahtola, 1991). While this view does not preclude those that participate for experiential value, it does suggest that consumers may utilize a service for utilitarian value (Babin, Darden and Griffin, 1994). Based on this rationale, it can be reasonably expected that trust will have a positive effect on utilitarian value in the context of mobile money. Thus, it can be hypothesised that:

Hypothesis 1c: Trust positively influences utilitarian value

Furthermore, if a consumer trusts a mobile based service, they are likely to believe that the service will help them to gain an emotional reward derived from pleasure of using the service (Deci, Betley, Kahle, Abrams and Porac, 1981). Although this view does not exclude those that participate for instrumental value, it suggests that consumers may utilize a service for hedonic value (Babin, Darden and Griffin, 1994). Following this rationale, it can be expected that trust will have a positive effect on hedonic value in the context of mobile money. Therefore, the following hypothesis is drawn:

Hypothesis 1d: Trust positively influences hedonic value

3.8.2. Perceived Risk

Consumers worry about undesirable consequences (for example, fear of monetary loss) when they are faced with perceived risk. The Extended Valence Framework suggests

that consumers are likely to avoid behaviours associated with the risk if the risk is considered high. This is consistent with both theory of reasoned action (TRA) and theory of planned behaviour (TPB). Both theories posit that beliefs influence behavioural intention (Ajzen and Fishbein, 1973). In line with these theories, perceived risk has been found by researchers to be among key barriers of technology usage (Mallat, 2007; Yang, Lu, Gupta, Cao and Zhang, 2012).

For example, risk has been found as a barrier to use mobile payment services (Lu, Yang, Chau and Cao, 2011) and mobile transactions (Gao and Waechter, 2017). In addition, risk has also been found to discourage consumers from using mobile financial services (Chen, 2008; Mallat, 2007), mobile payment services (Luo, Li, Zhang and Shim, 2010) and mobile banking services (Yang, Lu, Gupta, Cao and Zhang, 2012). Therefore, in line with the Extended Valence Framework and the findings of these previous studies, it can be expected that perceived risk will play an important role in explaining consumers' decision-making regarding usage of a specific mobile based service (Yang, Chen, and Wei, 2015). Therefore, it is hypothesised that:

***Hypothesis 2*:** Perceived risk negatively influences the intention to use mobile money.

3.8.3. Hedonic and Utilitarian Values

As stated previously, perceived benefit is conceptualized in terms of hedonic value and utilitarian value in this study. Perceived benefit has been found by past studies as a promoter of consumer's usage of mobile commerce (Kim, Shin and Lee, 2009). Previous studies have also found that hedonic and utilitarian values have positive influence on the intention to use mobile based financial services (Ahtola,1985; O'Brien, 2010; Omigie, 2017; Smith and Colgate, 2007).

3.8.3.1. Utilitarian Value

Consumer behaviour literature suggests that consumers utilize products and services primarily for their instrumental value (i.e. utilitarian) and experiential value (i.e. hedonic)

(Batra and Ahtola, 1991). The literature also suggests that utilitarian consumer behaviour is rational and task-related. That is, consumers that focus on utilitarian value are goal or task oriented (Gupta and Harris, 2010). In other words, utilitarian value pertains to achievement of a specific goal (Vallerand, 1997; Van der Heijden, 2004).

Previous studies have shown that utilitarian value is a vital predictor of behavioural intention to use technology (Omigie, 2017; Venkatesh, Morris, Davis and Davis, 2003). For example, studies concluded that there is a positive and significant influence by utilitarian value on intention to use mobile data services (MDS) (Heijden and Ogertschnig, 2005). In addition, utilitarian value has been found to have positive effect on usage intention of mobile financial transactions (Omigie, 2017). Extending this to the context of this study, it can be inferred that utilitarian value will have positive effect on intention to use mobile money. Therefore, it is hypothesised that:

***Hypothesis 3*:** Utilitarian value positively influences the intention to use mobile money.

3.8.3.2. Hedonic Value

In comparison with utilitarian value, hedonic value is subjective and personal (Holbrook and Hirschman, 1982). Hedonic value relates to pleasure and satisfaction derived from a specific behaviour (Vallerand, 1997; Van der Heijden, 2004). In other words, hedonic value relates to the degree of enjoyment/fun that consumers derive from the usage of a technology (Venkatesh, Thong and Xu, 2012).

Hedonic value has also been found to be a significant predictor of consumers' technology acceptance in different contexts. For example, hedonic value has been found to predict acceptance of mobile payments (Koenig-Lewis, Marquet, Palmer and Zhao, 2015), online browsing (Cox, Cox and Anderson, 2005) and Internet usage (Teo, Lim and Lai, 1999). In addition, hedonic value has been found to have positive effect on usage intention of MDS (Kim and Han, 2009). Based on this and previous studies that have found that hedonic value has positive effect on usage intention of technology (Babin, Darden and Griffin, 1994; Ladeira, Nique, Pinto and Borges, 2016), it can be hypothesised that:

***Hypothesis 4*:** Hedonic value positively influences the intention to use mobile money.

3.8.4. Personal Innovativeness in Information Technology

Innovators are active information seekers and individuals that are willing to take risk and try new information technology ahead of others (Rogers, 1983). Based on this, individuals with higher levels of PIIT draw from this information beliefs about new technologies. Often these individuals use this information to form more positive perceptions about the target technology (Agarwal and Prasad, 1998). As a result, these individuals tend to have higher propensity to take risks and try new technologies (Lewis, Agarwal and Sambamurthy, 2003; Kirton, 1976).

Agarwal and Prasad (1998) argued that personal innovativeness is the risk-taking propensity that exists in some individuals and lacks in others. They then referred to this personal trait as PIIT. PIIT has been found to influence adoption and usage of different technologies by previous studies (Agarwal and Prasad, 1998; Yang et al., 2012). For example, PIIT has been found to have positive effect on adoption and use of mobile payment services (Yang, Lu, Gupta, Cao and Zhang, 2012) and wireless mobile data services (WMDS) (Lu, Liu, Yu and Wang, 2008).

Based on risk-taking propensity of individuals that possess PIIT, it can be reasonably expected that these individuals will also take a risk and try mobile money. Therefore, the following hypothesis is drawn:

Hypothesis 5a: Personal innovativeness in information technology (PIIT) negatively influences perceived risk.

Mobile based transactions (e.g. mobile money) are associated with perceived risk, which is due to their uncertainty and vulnerability (Lu, Yang, Chau and Cao, 2011). Despite this, it can be argued that innovative people are likely to use mobile based transactions. This is because innovative individuals exhibit high propensity to take risk and they cope well with high levels of uncertainty (Rogers, 1983). That is, these individuals form more positive intentions towards usage of technology and are likely to trust new technology

compared to the other users (Agarwal and Prasad, 1998). Therefore, the following hypothesis is made:

Hypothesis 5b: Personal innovativeness in information technology (PIIT) positively influences trust.

3.8.5. Social Influence

Social influence (SI) is an important construct in examining consumer's decision-making about usage of technology (Venkatesh and Morris, 2000). Taylor and Todd's (1995) model equated SI to theory of reasoned action's (TRA) subjective norms and defined SI as peers' opinions and influence on an individual. In line with this definition, Davis, Bagozzi and Warshaw (1989) suggest that people sometimes use technology not out of their own accord but due to the influence from others. Drawing from Taylor and Todd (1995) and Davis, Bagozzi and Warshaw (1989), SI in this context refers to perceived pressure to use or not use mobile money from social network of friends, relatives and peers. This is because people's opinion about technology can be swayed by social influences (Al-Debei and Al-Lozi, 2014).

Often people interact and consult with social networks to get their opinion whether to use a technology or not (Karahanna, Straub and Chervany, 1999). In addition, mobile phones are generally used in public where the behaviour is easily noticeable. In social context, this could easily influence those around that consider the person using mobile money as important to them (Davis, Bagozzi and Warshaw,1989). As a result, social networks play an important role in the decision that an individual take because individuals adapt their behaviours to the social context (Salancik and Pfeffer, 1978).

Consequently, SI reduces perceived risk because social influences increase legitimacy and increase ease of justification to use a technology (Karahanna, Straub and Chervany, 1999). For example, previous studies have found that SI negatively influences the effects of perceived risk (Yang et al., 2012). Therefore, drawing from these studies and the foregoing background, the following hypothesis is drawn:

Hypothesis 6a: Social influence (SI) negatively influences perceived risk.

In the contrary, SI has also been found to have a positive effect on trust. For example, in their study on mobile banking, Malaquias and Hwang (2017) established that SI positively influences trust. Previous studies have also validated the positive relationship in mobile banking services (Gu, Lee, and Suh, 2009) and mobile data services (Hong and Tam, 2006). Thus, it can be reasonably expected that the same positive relationship will hold in the context of mobile money. Therefore, the following hypothesis is made:

Hypothesis 6b: Social influence (SI) positively influences trust.

3.8.6. Behavioural Intention to Use and Actual Usage of Mobile Money

The theory of reasoned action (TRA) (Ajzen and Fishbein, 1973) and theory of planned behaviour (TPB) (Ajzen, 1991) provide the rationale for understanding the relationship between behavioural intentions and the actual behaviours. The theories posit that behaviour is a direct consequence of behavioural intention (Ajzen, 1991; Ajzen and Fishbein, 1973). Several studies have arrived at the same conclusion that behavioural intention influence the actual behaviour (Ajzen and Fishbein, 1973; Featherman and Pavlou, 2003; Venkatesh, Morris, Davis and Davis, 2003). For example, behavioural intention has been found to have direct influence on behaviour in different contexts such as in electronic commerce (Kim, Ferrin and Rao, 2008) and mobile payments (Koenig-Lewis, Marquet, Palmer and Zhao, 2015). Borrowing from TRA, TPB and findings of past studies that have consistently demonstrated influence of behavioural intention on the actual behaviour, it can reasonably be argued that the behavioural intention to use mobile money will influence the actual use of mobile money. Therefore, the following hypothesis is drawn:

Hypothesis 7: Behavioural intention (BI) to use mobile money positively influences actual usage (U) of mobile money.

3.9. Conclusion

This chapter provided the theoretical underpinnings for the study. The background to Extended Valence Framework was discussed. The proposed research model was also presented. This was followed by a discussion of the different components of the model. Specifically, the chapter discussed trust, perceived risk and perceived benefit (which is conceptualized as hedonic value and utilitarian value). The chapter also discussed SI and PIIT. Lastly, the chapter presented the accompanying hypotheses.

The next chapter discusses the research methodology.

4. CHAPTER FOUR - RESEARCH METHODOLOGY

4.1. Introduction

This chapter introduces the research methodology of the study. The chapter discusses research paradigms and the approach of the study. Then the chapter discusses research design, methodology, operationalization and measurement of constructs, data collection method, data analysis methods, reliability and validity, hypotheses testing, ethical considerations, limitations and threats to internal and external validity.

4.2. Research Paradigm and Approach

Based on Saunders (2006) research onion (Figure 3), positivism and interpretivism are two key research paradigms (Saunders, 2006; Venkatesh, Brown and Bala, 2013). These two research paradigms are the main research paradigms used in Information Systems (IS) research (Walsham, 1995).

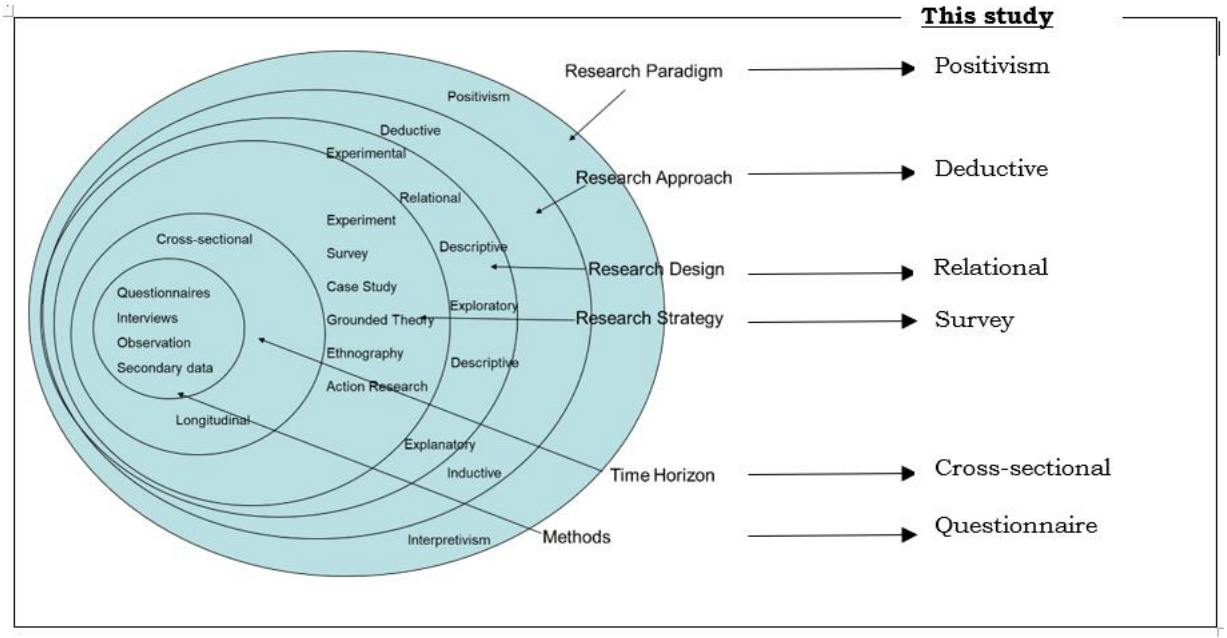


FIGURE 3: *Saunders Research Onion* (Adapted from Saunders (2006))

Positivist research is deductive in nature (Cavaye, 1996). In other words, positivist research tests a theory (Hoepfl, 1997; Walsham, 1995). The findings of positivist research are replicable by other researchers (De Villiers, 2005). In contrast, interpretivist research is inductive in nature (Cavaye, 1996). That is, interpretivist research builds theory based on observations supported by data in a natural environment of the participant, at a specific time and context (De Villiers, 2005). As opposed to positivist research where findings of research can be generalized to the target population, interpretivist research cannot be generalised because it is time and context specific (De Villiers, 2005).

While both paradigms can use either quantitative or qualitative approach, positivist research mostly uses quantitative method whereas interpretivist research often uses qualitative method (Cavaye, 1996). As a result, it is important to note that positivist paradigm does not equate to quantitative research (Oates, 2006). Similarly, interpretivist does not equate to qualitative research. While both paradigms can be used in the same study (Rivard and Lapointe, 2012), this study will use positivist paradigm and a quantitative approach.

As stated previously, positivist research typically uses empirical data to test hypothetical generalisations. Positivists draw relationships or correlations between independent and dependent variables through analysis of numeric data using statistical tools (Hoepfl, 1997).

Academic research has different research designs, which are discussed next.

4.3. Research Design and Methodology

The different academic research designs include exploratory, descriptive, relational, experimental and explanatory research designs (De Villiers, 2005; Hoepfl, 1997). In conjunction with deductive approach, this study will use a relational design. Relational design helps to investigate relationships between two or more variables, which this study

seeks to achieve. While experimental approach could have provided a stronger causation relationship, it is not suitable for this study. This is because experimental designs are typically used under controlled conditions (Bhattacherjee, 2012).

Following a relational design, it is important to operationalize the theoretical constructs.

4.4. Operationalization and Measurement of Constructs

Operationalization is a process of defining the exact measures of a theoretical construct (Bhattacherjee, 2012). This study has eight constructs. Each of the definitions and measurements of the constructs were adapted from previous studies and modified to suit the mobile money context. The operational definitions of these constructs and their measurements are in Table 5.

TABLE 5: Definition and measurement of constructs

Construct (Abbreviation)	Definition	Construct Measurement	Construct Measurement Adapted From
1. Trust (TR)	A subjective belief that a mobile money provider will fulfil its obligations according to the expectations of a mobile money user	TR1. My mobile money provider always provides accurate financial services. TR2. My mobile money provider always provides reliable financial services. TR3. My mobile money provider always provides safe financial services. TR4. My mobile money provider is trustworthy	Kim, Ferrin and Rao (2009); Kim, Shin and Lee (2009)
2. Perceived Risk (PR)	The subjective belief of suffering a loss whilst using mobile money	PR1. I worry about the occurrence of fraud and hacker intrusion whilst using mobile money. PR2. If mobile money errors were to occur, I worry that I would be unable to get compensated. PR3. Mobile money is risky, because it may fail to deliver what it promises PR4. Using the mobile money may waste my time	Featherman and Pavlou (2003); Lee (2009); Sun (2014).
3. Social influence (SI)	The pressure from social networks, friends and relatives to use or not to use mobile money	SI1. People who influence my behaviour think that I should use mobile money. SI2. My friends think that I should use mobile money. SI3. Using mobile money is considered a status symbol among my friends. SI4. People who use mobile money have a high profile.	Yang et al. (2012)
4. Personal innovativeness in information	The willingness of an individual to try out mobile money	PIIT1. If I heard about a new information technology, I would look for ways to experiment with it. PIIT2. Among my peers, I am usually the first to explore new information technologies. PIIT3. I like to experiment with new information technologies.	Yang et al. (2012)

	technology (PIIT)		PIIT4. In general, I am hesitant to try out new information technologies.	
5.	**Intention to use mobile money (BI)**	The intention to use mobile money	BI1. Assuming I have access to the mobile money, I predict that I would use it. BI2. I plan to use mobile money in the future BI3. I expect that I would use mobile money in the future BI4. I intend to use mobile money in the future	Al-Debei and Al-Lozi (2014); Lu, Yang, Chau and Cao (2011)
6.	**Utilitarian value (UV)**	The extent of effectiveness and efficiency that is perceived by consumers when using mobile money	UV1. Using mobile money would increase my chances of achieving things that are important to me UV2. Compared to the effort and time I need to put in and spend, the use of mobile money would be beneficial and worthwhile to me UV3. Using mobile money would help me accomplish things more quickly UV4. Mobile money would be useful in my daily life	Al-Debei and Al-Lozi (2014); Sirdeshmukh, Singh and Sabol (2002)
7.	**Hedonic value (HV)**	The level of pleasure and joy users experience when using mobile money	HV1. I expect that using mobile money would be enjoyable HV2. I expect to have fun using mobile money HV3. Using mobile money would make me feel good HV4. Mobile money would be the services that I feel relaxed about using	Al-Debei and Al-Lozi (2014); Sweeney and Soutar (2001)
8.	**Use of mobile money (U)**	Actual use of mobile money	U1. I currently use mobile money U2. I will continue to use mobile money U3. I frequently use mobile money	Davis (1989); Peslak, Ceccucci and Sendall (2010)

4.5. Data Collection Method

4.5.1. Cross-sectional

This study is cross-sectional (refer to Figure 3). A cross-sectional study collects data for both independent and dependent variables at the same time. This is different from longitudinal study where data is collected at different time intervals (Kothari, 2004). Given the time and cost constraints, collecting data at different time intervals would not be feasible in this study.

This cross-sectional study used a survey to collect data.

4.5.2. Survey

Surveys are best suited for studies such as this one, which uses an individual as a unit of analysis (Bhattacherjee, 2012). This is despite surveys having inherent systematic weaknesses such as sampling bias and low response rates (Johnson and Christensen, 2008).

Surveys can be done using different methods such as interviews and questionnaires. For the purposes of this study, questionnaires were used.

4.5.3. Instrument Construction

A validated questionnaire was used in this study. This approach ensured that the study is based on tested and validated questionnaire items (Kaiser, Lakshmanan, Arthur, O'sullivan and Lamont, 2003). Following similar studies looking into e-commerce (Kim, Ferrin and Rao, 2009) and mobile payments (Yang et al., 2012), the questionnaire used a seven-point Likert Scale. On the scale, anchors range from Strongly Disagree to Strongly Agree where 1 represents Strongly Disagree and 7 represents Strongly Agree. Respondents were asked to rate the extent to which they agreed or disagreed with statements in the questionnaire (the questionnaire is found in Appendix 6).

Respondents were selected using both probability and non-probability sampling techniques.

4.5.4. Sampling Method

There are two types of sampling methods, that is, probability and non-probability sampling. Probability sampling comprises of simple random sampling, systematic sampling, cluster sampling and stratified sampling whereas non-probability sampling comprises of snowball sampling, convenience sampling, quota sampling (Kothari, 2004) and purposive or judgement sampling (Etikan, Musa and Alkassim, 2016). Due to limitations of nonprobability sampling, it is better, where possible, to use probability sampling than nonprobability sampling. For example, while probability sampling gives all members of the population equal opportunity to be selected in a sample, non-probability sampling does not (Bhattacherjee, 2012). For this reason, the results of such a study may not be generalizable to the wider population (Griffiths, Gossop, Powis and Strang, 1993). However, following similar studies looking at mobile money (Koloseni and Mandari, 2017), this study used both probability and non-probability sampling approach.

This study used non-probability sampling (i.e. snowball sampling) using online survey, created using eSurveyCreator.com as explained in Section 4.5.6.1. Borrowing from previous studies, this sampling method was used here because the population of bank account holders in South Africa is difficult to access and there is no readily available database of bank account holders (Etikan, Musa and Alkassim, 2016).

At the same time, the study used probability sampling (i.e. random sampling) to supplement the online survey and to achieve a higher response rate. Other similar studies have also followed a similar approach to maximize response rate (Koloseni and Mandari, 2017). The sampling procedure is described in Section 4.5.6.2.

The population of the study is adults living in South Africa that are 18 years and older.

4.5.5. Population and Sampling

As previously stated, South Africa is dominated by bank-led mobile money. As a result, potential respondents were individuals that are either considering using or already using mobile money offered by any of the major five major banks in the country. These individuals were deemed eligible to take part in the survey provided they had not already taken part in the paper-based survey already. It is believed that this group of users would offer valuable contribution to the study, especially those that intended to use or were already using mobile money.

The study targeted a combined minimum sample size of 310 respondents. This sample size meets a generally accepted Chin's rule of thumb that defines the minimum sample size as 10 times the number of items (Chin, 1998).

Both online and paper-based questionnaires were used to collect the data from respondents.

4.5.6. Administration of the Questionnaire

The study was conducted over 8 weeks between Aug and Oct 2019 using both online and paper-based questionnaires. For both methods, participants were required to sign or agree to a consent clause before taking part in the survey (refer to Appendix 3 and Appendix 4 respectively). That is, participants were advised that they have the option to agree to participate in the research process voluntarily. No incentive was provided to the participants. Participants took part out of their own free will and were not threatened to take part in the study. In addition, participants were advised that they could withdraw at any point if they wished to do so. Furthermore, participants were advised that they would remain anonymous throughout the study and any details that could be used to identify them (e.g. names, contact details) would not be required on the questionnaire.

4.5.6.1. Online Administration

Using snowball sampling method, the initial target audience was my phone book and e-mail contacts. A link to the online survey was sent either via *WhatsApp* or e-mailed to all these contacts. In line with snowball sampling, these respondents were asked to forward the invitation or the link to other people living in South Africa they thought would be eligible and likely to want to take part in the survey (Atkinson and Flint, 2001). Furthermore, they were also asked to extend the invitation to other people living in South Africa they thought would be eligible and likely to want to take part in the survey.

4.5.6.2. Physical Administration

Data was also collected using a paper-based self-administered questionnaire in Johannesburg CBD in the streets adjacent to the major taxi rank (i.e. Noord) as well as the streets adjacent to the bus terminal at Gandhi Square. Targeting these places, with high concentration of people, increased chances of finding participants from various fields including students.

The sample was based on densely populated public facilities. The classification of public facilities was adopted from CSIR (2003). CSIR classifies public facilities according to the needs of the community they serve such as police stations (safety and security), schools (education), hospitals (health), churches (religion), taxi ranks, bus terminals (transport), parks (recreation) and malls (shopping) (CSIR, 2003). Two public facilities were randomly selected from these groups as illustrated in Figure 4. The two are taxi ranks and bus terminals. Following this, a taxi rank (i.e. Noord street taxi rank) was then randomly selected from a list of taxi ranks. Similarly, a bus terminal (i.e. Ghandi Square) was randomly chosen from a list of bus terminals. All these selections were based on randomly generated numbers.

A Microsoft Excel random number generator was used to assign random numbers to these public facilities (Bhattacherjee, 2012). The lists were then ordered in descending order using the random numbers. The first two facilities (i.e. taxi ranks

and bus terminals) were chosen. The same procedure of assigning randomly generated numbers to each taxi rank, ordering them in descending order and choosing the first taxi rank was used to choose Noord street taxi rank. Ghandi Square bus terminal was also chosen using the same approach from the list of bus terminals. The last step involved choosing respondents by randomly intercepting every third person coming into Noord taxi rank or Ghandi bus terminal.

Many students and workers use public transport every day of the week at these locations (CSIR, 2003). Students and workers are deemed a good sample because they are likely to use mobile banking facilities (Lu, Yang, Chau and Cao, 2011). Eligibility was confirmed if a respondent was of the right age, used mobile money offered by one of the five major banks and had not already taken part in the survey.

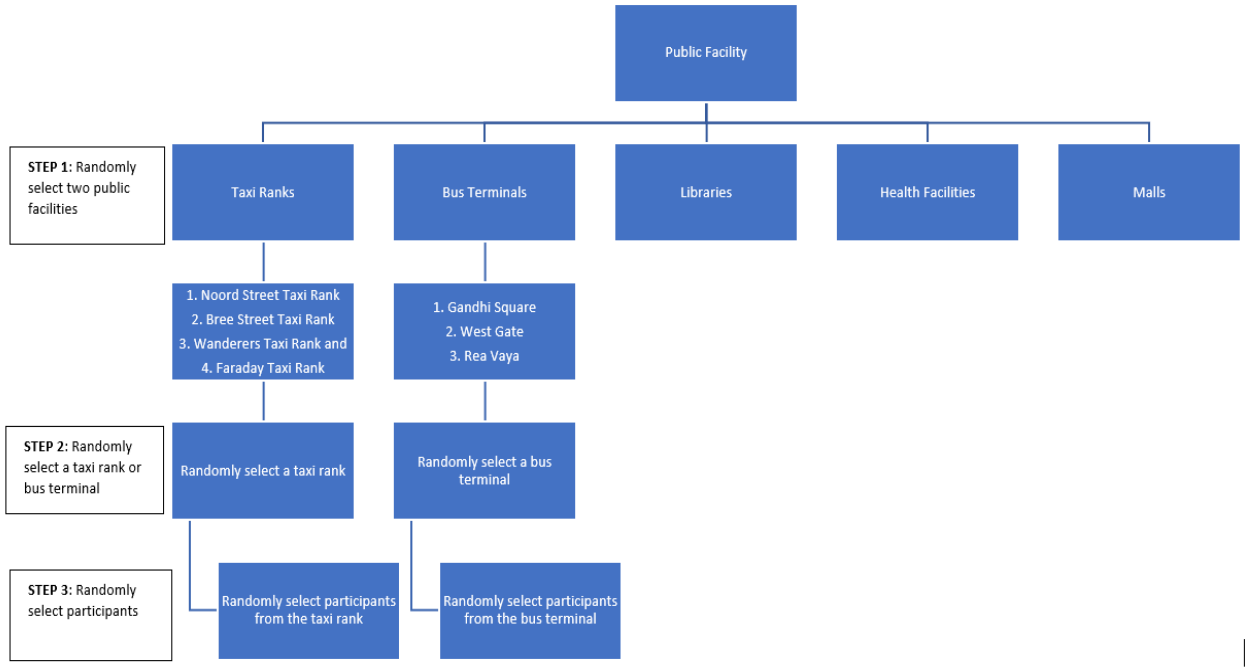


FIGURE 4: *Random Sampling Procedure*

Before commencing with administration of the questionnaire, the instrument was pre-tested and piloted.

4.5.7. Pre- and Pilot Testing

Pre-testing the instrument by experts helps with face validity and content validity (Bhattacherjee, 2012). The instrument was pre-tested using one staff member from the department of Information Systems at Wits University. The choice of this staff member was influenced by his expertise and availability. The input provided an opportunity to make changes to the instrument before piloting it.

Piloting the instrument validated if the respondents understood the questions as well as provided an opportunity for further refinement of the questions (Kothari, 2004). A total of 20 respondents (that is, ordinary members of the public) were used to pilot the instrument. This was in line with Blair and Conrad' recommendation that a small sample of 20 respondents can identify potential problems with draft questions of a survey (Blair and Conrad, 2011). These respondents were chosen using convenience sampling method. The participants were asked to fill the questionnaire and provide feedback if they experienced any challenges understanding any questions or following instructions provided. The feedback provided was then used to make the necessary chances to the instrument. The participants of the pilot were excluded from the final survey.

This study used SPSS and SmartPLS to analyse the data.

4.6. Data Analysis Methods

Firstly, SPSS was used for data preparation, that is, handling of missing values, outliers, skewness and kurtosis. SPSS was also used for common method bias, descriptive statistics, demographics of the respondents, Pearson Chi-Square analysis as well as principal components analysis (PCA). The PCA was used to determine reliability, convergent validity and discriminant validity of the multi-item measures

(Sledgianowski and Kulviwat, 2008). Secondly, SmartPLS was used for the measurement model, structural model and hypotheses testing.

SPSS and SmartPLS were used to assess reliability and validity.

4.6.1. Reliability and Validity

The concepts of reliability and validity are common in positivist research (Golafshani, 2003). Quantitative research relies on internal consistence to ensure reliability (Hoepfl, 1997). Reliability is the extent to which the items measure what they are set out to measure (Kimberlin and Winterstein, 2008). This study used multiple items to minimize measurement error. The research instrument was tested for reliability. This was evaluated using Cronbach Alpha (Fornell and Larcker, 1981). Cronbach Alpha equal and above 0.70 indicates acceptable reliability or internal consistency (Drost, 2011).

Similarly, the research instrument was assessed for internal validity. Internal validity is evaluated using content, convergent and discriminant validity (Drost, 2011). Firstly, content validity ensures that the variables being used correspond to the theoretical construct being measured (Kimberlin and Winterstein, 2008). However, there is no statistical tool to evaluate content validity, it is based on adherence to literature and theory.

Secondly, convergent validity is a measure of how the items measuring the same construct are closely related. All items with loadings greater than 0.50 and an eigenvalue greater than 1.0 will indicate acceptable convergent validity (Kim, Ferrin and Rao, 2009).

Lastly, discriminant validity is the measure of how distant the items measuring one construct are in relation to the items measuring another construct. The square root of the average variance extracted (AVE) was used to verify discriminant validity of the constructs (Fornell and Larcker, 1981). Discriminant validity was confirmed if the

square root of the AVE of any construct was greater than the inter-construct correlations (Mou, Shin and Cohen, 2016).

Having confirmed both reliability and validity, the study conducted hypothesis testing.

4.6.2. Hypothesis Testing

Confirmatory factor analysis (CFA) was conducted. This involved a two-step structural equation modelling (SEM) approach using SmartPLS 2.0 M3. The reason for choosing SEM is because it is a powerful statistical technique that makes it easy to simultaneously assess the measurement model and structural model (Hoe, 2008). Firstly, the measurement model was cleaned by dropping items that did not pass the PCA. Secondly, the structural model was assessed, the prediction power (R^2) determined and the hypotheses tested.

While conducting academic research, there are several ethical considerations which researchers need to guard against.

4.7. Ethical Considerations

Researchers need to safeguard against any unethical behaviour (Bhattacherjee, 2012:137). In order to safeguarded against unethical behaviour, this study was conducted in line with the following principles;

1. Disclosure: under no circumstances would confidential information of respondents be disclosed.
2. Confidentiality: confidential information of respondents will be kept as such throughout the study and beyond.
3. Privacy: privacy of respondents was maintained.
4. Anonymity: personal information of respondents shall remain anonymous throughout the study and beyond.

5. Volunteer: respondents were not forced to participated but did so on voluntary basis.

Data collection was undertaken after ethical clearance was obtained from the University's ethical committee (refer to Appendix 2 for ethics clearance certificate).

Although all efforts were made to maintain the necessary academic research rigor, this study has some limitations.

4.8. Limitations and Threats to Internal and External Validity

One of the sampling methods that this study deployed is non-probability sampling. This sampling method may have affected external validity of the study. This is because non-probability sampling does not give respondents equal opportunity to take part in the study (Kothari, 2004). In addition, focusing on the bank-led mobile money may have excluded more people from participating. These factors may have introduced bias, which may affect external validity of the study. This could have been mitigated by using probability sampling.

Cross-sectional survey means dependent and independent variables were measured at the same time, which may have led to common method bias (Kothari, 2004). This could have been mitigated by using longitudinal survey method, which measures dependent and independent variables at different time intervals.

Lastly, since the study is quantitative, the questions on the questionnaire were close ended. This means that there was no flexibility to probe in need and for respondents to provide clarity where required.

4.9. Conclusion

This chapter discussed research paradigms and the approach of the study. Then the chapter discussed research design and methodology. In addition, the chapter discussed operationalization and measurement of constructs and data collection

method. Furthermore, data analysis methods, reliability and validity, hypothesis testing were presented. Lastly, ethical considerations, limitations and threats to internal and external validity were discussed.

The next chapter covers data analysis.

5. CHAPTER FIVE - DATA ANALYSIS

5.1. Introduction

This chapter covers analysis of the results. The first part of this chapter focuses on data preparation, handling of missing values, outliers, skewness, kurtosis, common method bias, descriptive statistics, demographics of the respondents and Pearson Chi-Square analysis. The chapter then presents principal components analysis (PCA) results. The second part of the chapter focuses on results of the measurement model, structural model and hypotheses testing.

5.2. Data Preparation and Missing Values

Data was collected using online/web-based questionnaire as well as paper-based questionnaire. The link to the online questionnaire was sent to respondents electronically. At the same time, data was collected in Johannesburg CBD using paper-based questionnaires. A combined total of 279 questionnaires were returned, with 209 done online and 70 using paper based. A total of 26 questionnaires were dropped from the study because more than 10% of the questions were incomplete. However, for questionnaires that had 10% or less of the questions incomplete, mean replacement strategy was used to impute the missing values. In total, there were 19 missing values that were replaced following this method. None of the items had more than two missing values. Thus, 253 questionnaires were then used for statistical analysis. The summary of missing values is shown in Table 6.

TABLE 6: Missing Values

Item	Number of Replaced Missing Values
Trust1	1
Trust2	1
Trust3	1
Trust4	1
Risk1	1
Risk2	2
Risk3	0
Risk4	1
BI1	1
BI2	1
BI3	1
BI4	1
UV1	1
UV2	0
UV3	0
UV4	2
HV1	0
HV2	0
HV3	1
HV4	0
SI1	0
SI2	1
SI3	0
SI4	0
PIIT1	0
PIIT2	0
PIIT3	0
PIIT4	0
Use1	1
Use2	0
Use3	1
Total Missing Values	19

5.2.1. Outliers

Data was checked for outliers, only figures between 1 to 7 were expected for the Likert Scale. All items were within these expected values.

5.2.2. Kurtosis and Skewness

This study employed Skewness-Kurtosis test for normal distribution of data. Skewness-Kurtosis thresholds suggested by scholars (e.g. Tabachnick and Fidell, 2007) include Skewness of ± 1 and Kurtosis of ± 3, or Skewness and Kurtosis of between ± (2 x its std. error). In addition, scholars have also suggested that absolute values of Skewness and Kurtosis indices greater than 3 and 8 respectively are extreme cases of violation of normality assumption (Lu, Yao and Yu, 2005). Table 7 shows that almost all constructs (except for Kurtosis of trust and behavioural intention) are within recommended thresholds, which suggests that normality as a precondition of data analysis is assured in this study (Al-Debei and Al-Lozi, 2014).

TABLE 7: Normality Test

Construct	Skewness	Kurtosis
Risk	.610	-.216
Trust	-1.997	5.802
BI	-1.836	4.034
UV	-1.069	.594
HV	-.922	.403
SI	-.422	-.381
PIIT	-.393	.894
Use	-1.195	.844

5.2.3. Common Method Bias

Harman's one factor test was performed to check that common method bias did not pose a threat to this study (Podsakoff and Organ, 1986). The method indicates presence of common method variance if one factor accounts for majority of the covariance in independent and dependent variables. The results of the test presented in Table 8 show that the largest variance explained by the individual factor is 42.1%.

This indicates that it is unlikely that common method bias posed a threat to this study (Yang, Chen, and Wei, 2015).

TABLE 8: Harman's one factor test results

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Factor	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	13.529	43.643	43.643	13.058	42.122	42.122
2	2.779	8.963	52.606			
3	2.047	6.603	59.209			
4	1.947	6.282	65.490			
5	1.326	4.277	69.767			
6	1.226	3.955	73.722			
7	.996	3.212	76.934			
8	.880	2.837	79.771			
9	.737	2.378	82.149			
10	.612	1.976	84.125			
11	.543	1.751	85.875			
12	.486	1.566	87.442			
13	.428	1.380	88.822			
14	.367	1.185	90.007			
15	.339	1.092	91.099			
16	.319	1.028	92.127			
17	.289	.933	93.060			
18	.276	.890	93.949			
19	.249	.803	94.752			
20	.220	.709	95.462			
21	.208	.671	96.133			
22	.190	.612	96.745			
23	.178	.573	97.318			
24	.168	.542	97.860			
25	.139	.449	98.309			
26	.118	.381	98.691			
27	.108	.349	99.040			
28	.100	.322	99.362			
29	.083	.266	99.628			
30	.061	.196	99.824			
31	.054	.176	100.000			

Extraction Method: Principal Axis Factoring.

5.3. Descriptive Statistics

Table 9 shows the mean, overall mean, median and standard deviation of each item used in the questionnaire.

TABLE 9: Measurement Items

Construct	Item (31)	Mean	Overall Mean	Median	Std. Deviation
Trust					
My mobile money provider always provides accurate financial services.	Trust1	6.079	6.139	6.000	1.209
My mobile money provider always provides safe financial services.	Trust2	6.155		6.000	1.006
My mobile money provider always provides reliable financial services.	Trust3	6.099		6.000	1.074
My mobile money provider is trustworthy	Trust4	6.222		6.000	1.050
Risk					
I worry about the occurrence of fraud and hacker intrusion whilst using mobile money.	Risk1	4.329	3.186	5.000	1.821
If mobile money errors were to occur, I worry that I would be unable to get compensated.	Risk2	3.745		3.000	1.956
Mobile money is risky, because it may fail to deliver what it promises.	Risk3	2.708		2.000	1.582
*Using mobile money may waste my time.	Risk4	1.960		2.000	1.259
Intention to use Mobile Money					
Assuming I have access to mobile money, I predict that I would use it.	BI1	6.151	6.186	6.000	1.047
I plan to use mobile money in the future.	BI2	6.175		6.000	1.020
I expect that I would use mobile money in the future.	BI3	6.218		6.000	1.029
I intend to use mobile money in the future.	BI4	6.198		6.000	1.058
Utilitarian					
Using mobile money would increase my chances of achieving things that are important to me.	UV1	5.532	5.777	6.000	1.508
Compared to the effort and time I need to put in and spend, the use of mobile money would be beneficial and worthwhile to me.	UV2	5.842		6.000	1.195
Using mobile money would help me accomplish things more quickly.	UV3	5.826		6.000	1.340
Mobile money would be useful in my daily life.	UV4	5.908		6.000	1.213
Hedonic Value					
I expect that using mobile money would be enjoyable.	HV1	5.711	5.608	6.000	1.285
I expect to have fun using mobile money.	HV2	5.498		6.000	1.460

Construct	Item (31)	Mean	Overall Mean	Median	Std. Deviation
Using mobile money would make me feel good.	HV3	5.476		6.000	1.435
Mobile money would be a service that I feel relaxed about using.	HV4	5.747		6.000	1.278
SI					
*People who influence my behaviour think that I should use mobile money.	SI1	4.877		5.000	1.637
*My friends think that I should use mobile money.	SI2	4.849	4.247	5.000	1.561
Using mobile money is considered a status symbol among my friends.	SI3	3.771		4.000	1.698
People who use mobile money have a high profile.	SI4	3.490		3.000	1.637
PIIT					
If I heard about a new information technology, I would look for ways to experiment with it.	PIIT1	5.755		6.000	1.128
Among my peers, I am usually the first to explore new information technologies.	PIIT2	4.996	4.848	5.000	1.562
I like to experiment with new information technologies.	PIIT3	5.613		6.000	1.312
*In general, I am hesitant to try out new information technologies.	PIIT4	3.028		2.000	1.774
Use					
I currently use mobile money.	Use1	5.734		6.000	1.474
I will continue to use mobile money.	Use2	5.937	5.593	6.000	1.150
I frequently use mobile money.	Use3	5.107		6.000	1.650

* Dropped following PCA

Having completed data preparation, the next section focuses on demographics of the respondents.

5.4. Demographics of Respondents

Table 10 summarizes demographics of the respondents. The results indicate that 51,4% of the respondents were males while 44,7% were females and 4% of corresponds preferred not to state their gender. The results also show that 17,4% of respondents were between ages 31 and 35 years old. In addition, the results show that 28,1% of the respondents have Post Matric qualification. Furthermore, the

results show that 48,2% of the respondents work for Corporates. Lastly, 33,6% of the respondents use FNB's eWallet.

TABLE 10: Demographics

		FREQUENCY	PERCENT	CUMULATIVE PERCENT
Gender	Male	130	51.4	51.4
	Female	113	44.7	96.0
	Prefer not to say	10	4.0	100.0
Age	18 – 24	36	14.2	14.2
	25 – 30	38	15.0	29.2
	31 – 35	44	17.4	46.6
	36 – 40	37	14.6	61.3
	41 – 45	41	16.2	77.5
	46 – 50	38	15.0	92.5
	50 and above	19	7.5	100.0
Education	Pre-Matric	8	3.2	3.2
	Matric	46	18.2	21.3
	Post Matric (Certificate/Diploma)	71	28.1	49.4
	Undergraduate Degree	70	27.7	77.1
	Postgraduate	58	22.9	100.0
Occupation	Corporate	122	48.2	48.2
	Government	44	17.4	65.6
	Non-Governmental Organisation (NGO)	24	9.5	75.1
	Student	32	12.6	87.7
	Self-employed	17	6.7	94.5
	Unemployed	14	5.5	100.0
Mobile Money	Absa (Cash Send)	22	8.7	8.7
	Capitec (send cash)	28	11.1	19.8
	FNB (eWallet)	85	33.6	53.4
	Nedbank (MobiMoney)	26	10.3	63.6
	Standard Bank (Instant Money)	78	30.8	94.5
	Other	14	5.5	100.0

The graphs in this section present graphical representation of the data. Figure 5 shows the number of respondents per gender. The graph shows that majority of the respondents of this survey were males (130) versus females (113). Ten responds preferred not to state their gender.

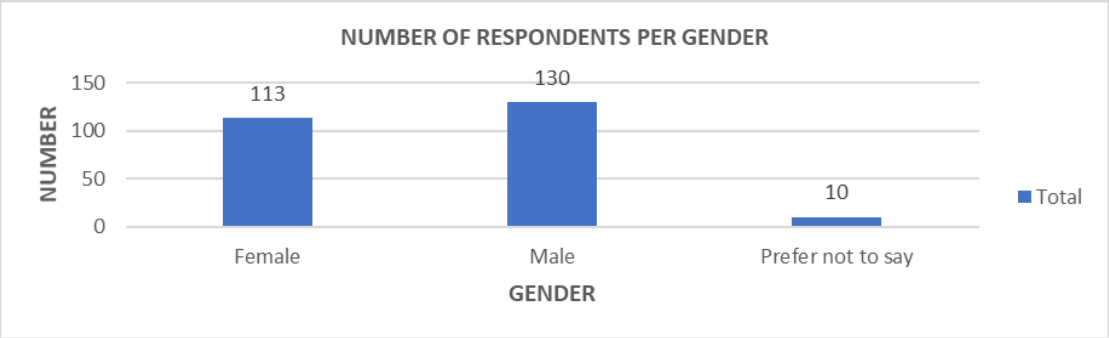


***FIGURE 5**: Number of Respondents Per Gender*

Figure 6 gives a breakdown of respondents per age group. The graph shows that 44 respondents (i.e. highest number of respondents) are between 31 – 35 years old. The graph also shows that 41 respondents are between 41 – 45 years old. There are 19 respondents (i.e. lowest number of respondents) aged 50 and above years old.

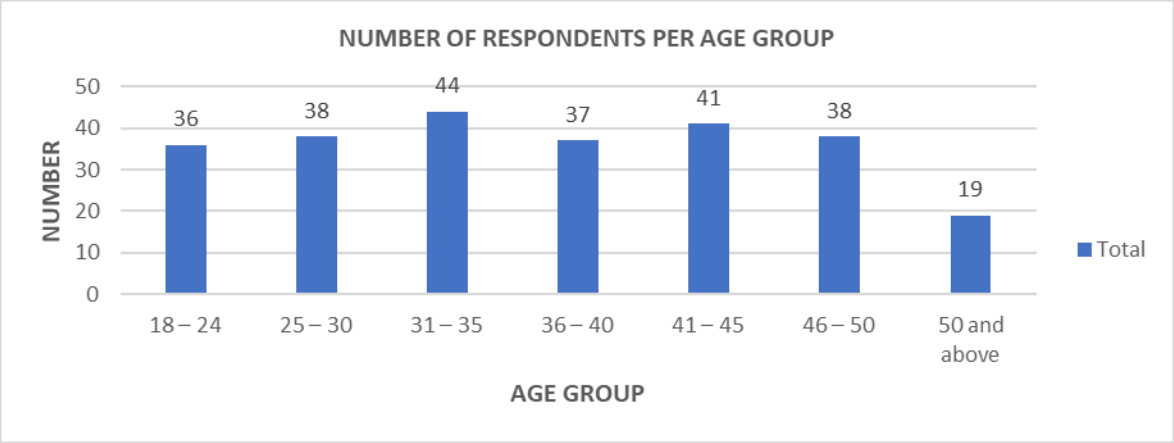


***FIGURE 6**: Number of Respondents Per Age Group*

Figure 7 gives a breakdown of respondents per qualification. The graph shows that there are 71 and 70 respondents with Post Matric and Undergraduate qualifications respectively. The graph also shows that there are 8 respondents with Pre-Matric qualification.

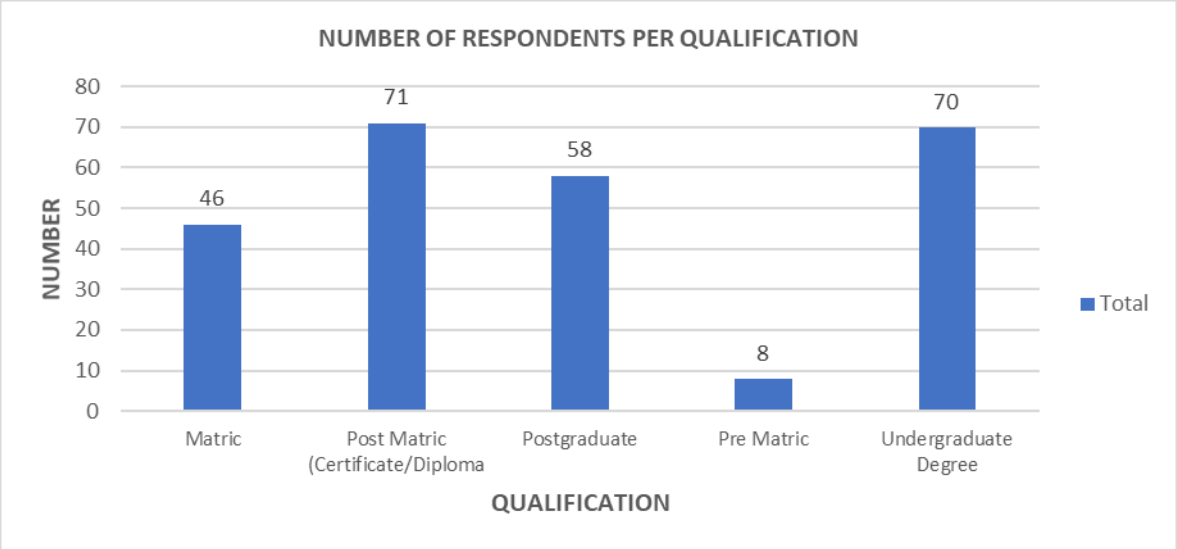


***FIGURE 7**: Number of Respondents Per Qualification*

Figure 8 is a breakdown of respondents per occupation. The graph shows that majority of respondents (122) work for corporates. The graph also shows that there are 44 government employees and 32 students that took part in this study. Furthermore, there are 14 respondents that were unemployed.

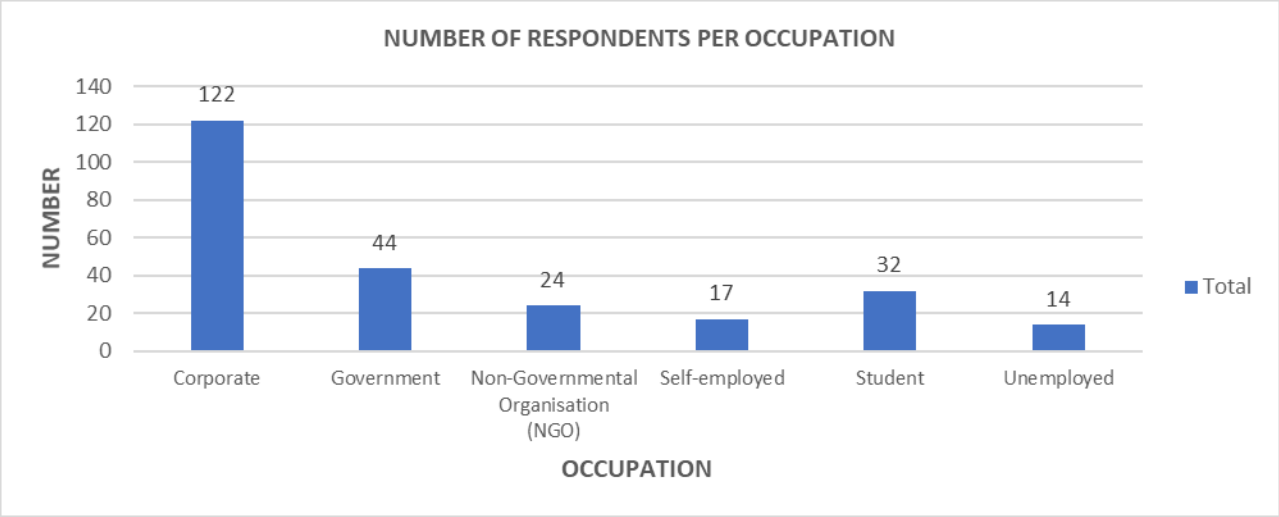


FIGURE 8: *Number of Respondents Per Occupation*

Figure 9 indicates that majority of respondents in this study used FNB's eWallet (85) followed by Standard Bank's Instant Money with 79. In addition, there are 14 respondents not using any of the big five banks mobile money, which represents the least number of respondents.

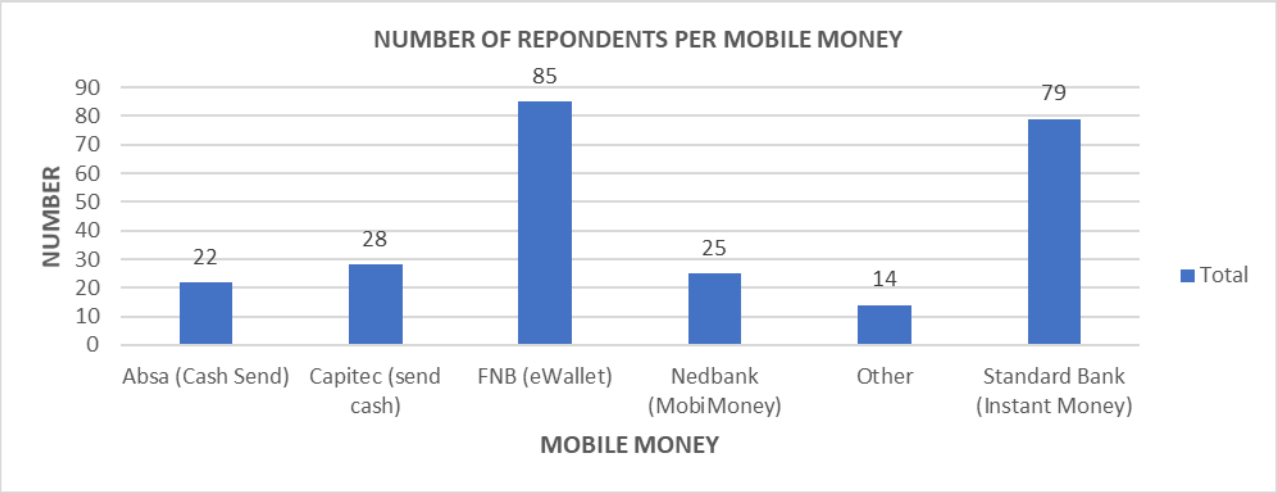


FIGURE 9*: Number of Respondents Per Mobile Money*

Having concluded the section on descriptive statistics, the next sections focus on further tests conducted using SPSS.

5.5. Demographics and Mobile Money

Further analysis of the data using Pearson Chi-Square revealed that the choice to use mobile money is not related or influenced by gender (χ^2 = 10.085, p>0.05) nor education level (χ^2 = 27.506, p>0.05). On the other hand, the choice to use mobile money is related or influenced by age (χ^2 = 68.417, p < 0.001) and occupation (χ^2 = 72.834, p < 0.001). Table 11 shows a summary of Pearson Chi-Square test results.

TABLE 11: Pearson Chi-Square

Variables	Pearson Chi-Square	Significance (2-sided)
Gender * Mobile Money	10.085	.433
Age * Mobile Money	68.417	.000
Education * Mobile Money	27.506	.122
Occupation * Mobile Money	72.834	.000

Following Pearson Chi-Square testing, the study then focused on principal component analysis (PCA).

5.6. Principal Components Analysis (PCA)

Firstly, the Kaiser-Meyer-Olkin (KMO) analysis was conducted to assess if the data is suitable for principal components analysis (PCA). The Kaiser-Meyer-Olkin (KMO) value of sample data used was 0.917 and Bartlett's Test of Sphericity was found to be significant at 0.001, which suggest that the data is suitable for PCA (Yang, Cao, Mao, Zhang and Luo, 2011). The results in Table 12a indicate that the factors account for 83.34% of the variance.

Secondly, the PCA was conducted using Varimax Rotation. This was done to confirm if the measures were unidimensional as well as to assess preliminary convergent and discriminant validity (Pavlou, 2003). A few iterations of PCA were carried out. During the first iteration, utilitarian value (UV) and hedonic value (HV) loaded on one construct. Similarly, intention to use mobile money and use of mobile money also loaded on one construct. In addition, Risk4, SI1, SI2 and PIIT4 cross loaded with other items and had loadings below 0.6. It is necessary to have loadings of 0.6 or above in order to establish convergent validity (Chin, Gopal and Salisbury, 1997).

As a result, in pursuit of a better PCA, the following steps were taken during subsequent iterations. Firstly, Risk4 was dropped because it was cross loading. Following this, PCA was ran again. Secondly, PIIT4 was also dropped due to cross loading. PCA was then reran. Thirdly, SI1 was dropped due to a loading less than 0.6 and PCA was ran again. Lastly, SI2 was dropped due to a loading less than 0.6.

After having dropped all these items, PCA reflected only seven constructs instead of the expected eight. However, the PCA was finally stable. The resulting PCA, with 27 items, is shown in Table 13a, which shows that both UV and HV still loaded on one construct.

TABLE 12a: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	12.472	46.191	46.191	12.472	46.191	46.191	5.788	21.437	21.437
2	2.438	9.030	55.222	2.438	9.030	55.222	3.544	13.125	34.562
3	1.897	7.024	62.246	1.897	7.024	62.246	3.238	11.993	46.555
4	1.842	6.822	69.068	1.842	6.822	69.068	2.792	10.340	56.895
5	1.299	4.811	73.879	1.299	4.811	73.879	2.473	9.161	66.056
6	1.124	4.164	78.043	1.124	4.164	78.043	2.148	7.955	74.011
7	.830	3.073	81.116	.830	3.073	81.116	1.885	6.981	80.993
8	.601	2.224	83.340	.601	2.224	83.340	.634	2.347	83.340
9	.559	2.072	85.411						
10	.483	1.789	87.200						
11	.381	1.413	88.613						
12	.359	1.330	89.943						
13	.335	1.241	91.184						
14	.286	1.058	92.242						
15	.277	1.024	93.266						
16	.251	.929	94.194						
17	.247	.914	95.108						
18	.219	.812	95.920						
19	.190	.703	96.623						
20	.177	.655	97.278						
21	.169	.626	97.904						
22	.140	.520	98.423						
23	.116	.430	98.853						
24	.106	.393	99.246						
25	.084	.313	99.558						
26	.064	.238	99.797						
27	.055	.203	100.000						

Extraction Method: Principal Component Analysis

TABLE 13a: Rotated Component Matrix

Items (27)	Component							
	1	2	3	4	5	6	7	8
UV1	.741							
UV2	.699							
UV3	.764							
UV4	.701							
HV1	.786							
HV2	.814							
HV3	.844							
HV4	.682							
Trust1		.827						
Trust2		.843						
Trust3		.856						
Trust4		.817						
BI1			.778					
BI2			.753					
BI3			.754					
BI4			.674					
Use1				.821				
Use2				.734				
Use3				.839				
PIIT1					.766			
PIIT2					.759			
PIIT3					.798			
Risk1						.798		
Risk2						.820		
Risk3						.783		
SI3							.881	
SI4							.915	

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 7 iterations.

Following these results, it was necessary to determine whether hedonic value and utilitarian value are distinct. Therefore, a second PCA was ran. However, this time involving only hedonic value and utilitarian value.

The Kaiser-Meyer-Olkin (KMO) value of sample data used was 0.923 and Bartlett's Test of Sphericity was found to be significant at 0.001, which suggest that the data

is suitable for PCA (Yang, Cao, Mao, Zhang and Luo, 2011). The results in Table 12b indicate that the factors account for 84.09% of the variance.

Moreover, the results in Table 13b show that, despite the two being measures of one construct, hedonic value and utilitarian value are distinct measures. Furthermore, the results show that all items loaded only on a factor that they were meant to measure. Lastly, all loadings exceeded 0.7, which are good loadings for convergent validity.

TABLE 12b: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.113	76.408	76.408	6.113	76.408	76.408	3.453	43.162	43.162
2	.614	7.679	84.086	.614	7.679	84.086	3.274	40.924	84.086
3	.307	3.838	87.925						
4	.279	3.488	91.412						
5	.226	2.830	94.242						
6	.202	2.521	96.763						
7	.154	1.922	98.684						
8	.105	1.316	100.000						

Extraction Method: Principal Component Analysis.

TABLE 13b: Rotated Component Matrix

Item	**Component**	
	1	2
HV1	.796	
HV2	.870	
HV3	.829	
HV4	.804	
UV1		.749
UV2		.778
UV3		.810
UV4		.852

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Following the PCA, the next step involved assessing reliability of the items.

5.6.1. Reliability

Table 14 shows Cronbach's alpha figures of each variable. All the α-values are above the threshold of 0.7 indicating good reliability of the items (Gefen, Straub and Boudreau, 2000).

TABLE 14: Reliability (Cronbach's Alphas)

Factor	Cronbach's Alpha
Trust	0.907
Risk	0.758
Behavioural Intention (BI)	0.947
Utilitarian Value (UV)	0.921
Hedonic Value (HV)	0.946
Social Influence (SI)	0.871
PIIT	0.827
Use	0.901

No further analysis was conducted using SPPS. The remainder of the analysis was conducted using SmartPLS. These involved a two-step structural equation modeling (SEM) analysis as recommended by Anderson and Gerbing (1988). The first step entailed measurement model, which tested reliability and validity. The second step involved structural model, which involved testing for model fitness and the hypotheses.

The next section looks at the measurement model.

5.7. Measurement Model Assessment Using Confirmatory Factor Analysis

Assessment of the measurement model was done using SmartPLS 2.0 M3 (Hair, Ringle and Sarstedt, 2011). This step was also used to confirm reliability as well as validity (i.e. convergent and discriminant validity) of the constructs.

5.7.1. Reliability

As presented in Table 15, the values of Cronbach's alpha (α) and average variance extracted (AVE) were above 0.7 and 0.6 respectively. Based on recommended acceptable threshold values for Cronbach's α of 0.7 (Chin, 1998) and AVE of 0.5 (Fornell and Larcker, 1981), the values obtained indicate acceptable reliability. Thus, this is further evidence of good reliability (Gefen, Straub and Boudreau, 2000; Wixom and Watson, 2001).

After reliability testing, validity assessment was then conducted.

5.7.2. Convergent Validity

Since the constructs were modelled as reflective, composite reliability (CR) and average variance extracted (AVE) were used to determine convergent validity. The values of composite reliability exceeded 0.7 and the average variance extracted were above 0.6. Based on recommended acceptable threshold values for CR and AVE of 0.7 and 0.5 (Fornell and Larcker, 1981) respectively, the values obtained indicate acceptable convergent validity. Thus, the results shown in Table 15 is further evidence of good convergent validity (Gefen, Straub and Boudreau, 2000).

TABLE 15: Reliability and Convergent Validity

Factor	Item	Loading	AVE	Composite Reliability	Cronbach's Alpha
BI	BI1	0.841	0.867	0.963	0.948
	BI2	0.968			
	BI3	0.963			
	BI4	0.947			
HV	HV1	0.912	0.862	0.962	0.947
	HV2	0.949			
	HV3	0.929			
	HV4	0.925			
PIIT	PIIT1	0.897	0.758	0.904	0.841
	PIIT2	0.802			
	PIIT3	0.909			
Risk	Risk1	0.675	0.672	0.858	0.766
	Risk2	0.834			
	Risk3	0.929			
SI	SI3	0.942	0.886	0.939	0.871
	SI4	0.940			
Trust	Trust1	0.864	0.794	0.939	0.914
	Trust2	0.896			
	Trust3	0.904			
	Trust4	0.901			
UV	UV1	0.894	0.817	0.947	0.925
	UV2	0.910			
	UV3	0.895			
	UV4	0.915			
Use	Use1	0.950	0.855	0.946	0.915
	Use2	0.948			
	Use3	0.874			

5.7.3. Discriminant Validity

After confirmation of reliability and convergent validity, the next step assessed discriminant validity. The constructs have adequate discriminant validity if the square root of the AVE for a construct is higher than the inter correlations shared between the construct and other constructs in the model (Fornell and Larcker, 1981). Table 16 shows that square root values of each AVE (on the diagonal) are greater than the absolute values of any other inter construct correlation in the same row or

column. This is further evidence of adequate discriminant validity (Fornell and Larcker, 1981).

TABLE 16: Discriminant Validity

Factor	CR	AVE	BI	HV	PIIT	Risk	SI	Trust	UV	Use
BI	0.963	0.867	**0.931**							
HV	0.962	0.862	0.632	**0.929**						
PIIT	0.904	0.758	0.597	0.518	**0.871**					
Risk	0.858	0.672	0.325	0.378	0.215	**0.820**				
SI	0.939	0.886	0.209	0.420	0.209	0.082	**0.941**			
Trust	0.939	0.794	0.532	0.504	0.460	0.243	0.106	**0.891**		
UV	0.947	0.817	0.725	0.821	0.541	0.309	0.404	0.445	**0.904**	
Use	0.946	0.855	0.713	0.585	0.474	0.293	0.265	0.362	0.666	**0.925**

Square root of AVE on the diagonal

5.8. Structural Model and Hypotheses Testing

Having confirmed reliability and validity (i.e. convergent and discriminant), the next step was to examine the structural model and test the hypotheses. The results for hypotheses testing are shown in Table 17.

Firstly, all constructs were modeled as reflective (Jarvis, MacKenzie and Podsakoff, 2003). Figure 10 shows the model with the items' outer loadings.

Secondly, the coefficient of determination of dependent variables, represented as R^2, was used to assess the explanatory power of the structural model (Chiu, Wang, Fang and Huang, 2014). The R^2 figures, which are found inside each of the circles representing the constructs in Figure 10, indicate the predictive power or variance explained by the model. According to Henseler, Ringle and Sinkovics (2009), R^2 value of 67% is substantial, R^2 of 33% moderate and R^2 of 19% is weak. As shown in Figure 10, the model explains 50.8% variance in actual use of mobile money, 58.6% in behavioural intention to use mobile money, 25.4% in hedonic value, 21.2% in trust, 19.8% in utilitarian value and 7.4% in risk.

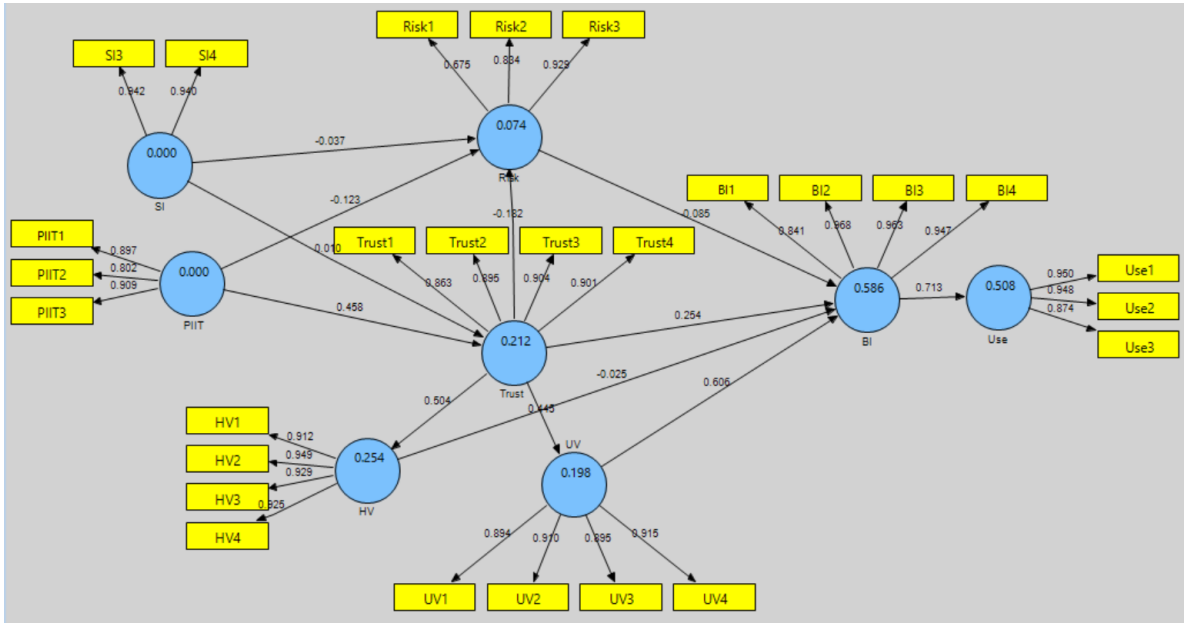


FIGURE 10: *Structural Model Analysis*

Thirdly, path coefficients (β) significance levels of the model were examined using bootstrapping technique with 1000 cases (Henseler, Ringle and Sinkovics, 2009). Figure 11 shows the t-statistics obtained through bootstrapping.

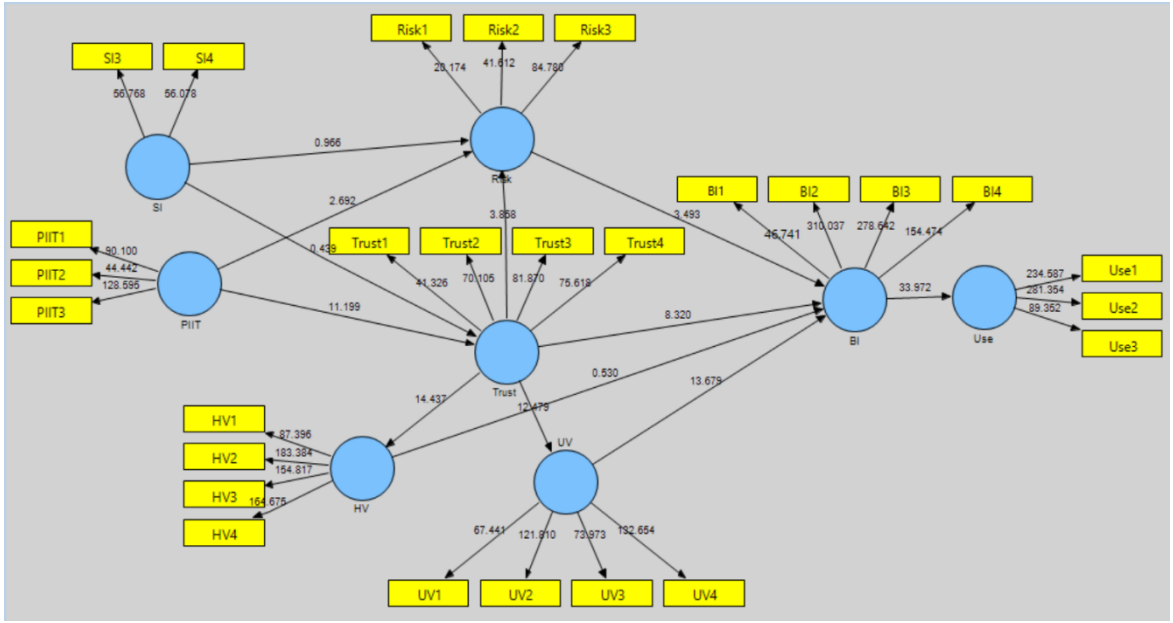


FIGURE 11: Structural Model After Bootstrap

Based on the p-values and the significance levels, hypotheses were either accepted (i.e. for $p<0.05$, $p<0.01$ or $p<0.001$) or rejected.

The results in Table 19 indicate that trust has a significant positive effect on intention to use mobile money ($\beta = 0.254$, $p<0.001$), utilitarian value ($\beta = 0.445$, $p<0.001$) and hedonic value ($\beta = 0.504$, $p<0.001$). Thus, H1a, H1c and H1d are supported. Similarly, H1b is supported because trust exerted a significant negative effect on perceived risk ($\beta = -0.182$, $p<0.001$).

Perceived risk had a significant negative effect on intention to use mobile money ($\beta = -0.085$, $p<0.001$). Thus, H2 is supported. Utilitarian value had a significant positive effect on intention to use mobile money ($\beta = 0.606$, $p<0.001$). Therefore, H3 is supported. However, H4 is rejected because hedonic value had no significant effect on intention to use mobile money ($\beta = -0.025$, $p>0.05$).

Personal innovativeness in information technology (PIIT) had a significant negative effect on perceived risk ($\beta = -0.123$, $p<0.05$) and a significant positive effect on trust ($\beta = 0.458$, $p<0.001$). Therefore, H5a and H5b are supported.

Social influence (SI) had no significant effect on perceived risk ($\beta = -0.037$, $p>0.05$) and trust ($\beta = 0.010$, $p>0.05$). Thus, H6a and H6b are rejected.

Behavioural intention (BI) to use mobile money had a significant positive effect on actual use (U) of mobile money ($\beta = 0.713$, $p<0.001$). Thus, H7 is supported.

TABLE 17: Hypotheses Testing

Hypothesized paths	β	**t-value**	**p value**	**Result**
BI -> Use	0.713	33.972	0.000***	**Accepted**
HV -> BI	-0.025	0.530	0.597	Rejected
PIIT -> Risk	-0.123	2.692	0.008**	**Accepted**
PIIT -> Trust	0.458	11.199	0.000***	**Accepted**
Risk -> BI	-0.085	3.493	0.001**	**Accepted**
SI -> Risk	-0.037	0.966	0.335	Rejected
SI -> Trust	0.010	0.439	0.661	Rejected
Trust -> BI	0.254	8.320	0.000***	**Accepted**
Trust -> HV	0.504	14.437	0.000***	**Accepted**
Trust -> Risk	-0.182	3.858	0.000***	**Accepted**
Trust -> UV	0.445	12.479	0.000***	**Accepted**
UV -> BI	0.606	13.679	0.000***	**Accepted**

**p<0.01; *** p<0.001

5.9. Conclusion

This chapter covered analysis of the results derived from SPSS and SmartPLS. The chapter showed the results of data preparation, handling of missing values, outliers, skewness, kurtosis, common method bias, descriptive statistics, demographics of the respondents and Pearson Chi-Square analysis. The chapter then tabled the results of principal components analysis (PCA). Lastly, the chapter presented results of the measurement model, structural model and hypotheses testing.

Table 18 is a summary of hypotheses testing results.

TABLE 18: Summary of Hypotheses Testing

HYPOTHESES	RESULT
Hypothesis 1a: Trust positively influences the intention to use mobile money.	**Accepted**
Hypothesis 1b: Trust negatively influences perceived risk.	**Accepted**
Hypothesis 1c: Trust positively influences utilitarian value.	**Accepted**
Hypothesis 1d: Trust positively influences hedonic value.	**Accepted**
Hypothesis 2: Perceived risk negatively influences the intention to use mobile money.	**Accepted**
Hypothesis 3: Utilitarian value positively influences the intention to use mobile money.	**Accepted**
Hypothesis 4: Hedonic value positively influences the intention to use mobile money.	Rejected
Hypothesis 5a: Personal innovativeness in information technology (PIIT) negatively influences perceived risk.	**Accepted**
Hypothesis 5b: Personal innovativeness in information technology (PIIT) positively influences trust.	**Accepted**
Hypothesis 6a: Social influence (SI) negatively influences perceived risk.	Rejected
Hypothesis 6b: Social influence (SI) positively influences trust.	Rejected
Hypothesis 7: Behavioural intention (BI) to use mobile money positively influences actual usage (U) of mobile money.	**Accepted**

The next chapter is the discussion of the results.

6. CHAPTER SIX - DISCUSSIONS

6.1. Introduction

In order to achieve the objective of this study, Extended Valence Framework was used as the underpinning theoretical framework. A total of 253 usable responses were collected through both online and paper-based questionnaire. The study made several findings stated in the preceding chapter, which are discussed next.

6.2. Demographics

This study collected 253 usable responses. Firstly, most of the respondents were males (51,4%). Females made up 44,7% of total respondents while 4% of corresponds preferred not to state their gender. However, according to Statistics South Africa (Stats SA) 2019 mid-year estimates, approximately 51,2% of the population were women (Stats SA, 2019). Based on this report, the demographics of this study are skewed towards males. Perhaps this skewness can be explained by the willingness of males to take risk versus females. Based on past research, females are more risk averse than males (Kotze, Anderson and Summerfield, 2016). Therefore, given the risk perceptions associated with mobile money, it is not surprising that there are more males using or planning to use mobile money than females. Furthermore, the findings of this study also show that PIIT (which reflects the risk propensity towards trying out new technologies) plays an important role in consumers' decision to use mobile money.

Secondly, most respondents (53,4%) were above 35 years old. Perhaps this is because there are more people that are employed who are aged 35 years and above than those that are aged between 18 and 34 years (i.e. the youth). The higher number of respondents above 35 years old is in line with the latest Stats SA report, which suggests that the youth constitutes almost a third of the population and approximately 39,5% are unemployed (Stats SA, 2019). Being employed means one is likely to use one of the bank-led mobile money, which was one of the main selection

criteria of respondents. On the other hand, being unemployed means that 39,5% of the youth are unlikely to have stable income and unlikely to have access to mobile money. Therefore, it is not surprising that there are more respondents aged 35 years old and above than there are youth.

Thirdly, the results also show that 48,2% of the respondents work for corporates. The civil servants formed the second largest group (17.4%). This is in line with Stats SA's statistics that shows that corporates are the biggest employer in South Africa (Stats SA, 2019).

Lastly, 33,6% of the respondents use FNB's eWallet. This implies that the brand resonates well with mobile money consumers. Perhaps the aggressive marketing campaigns of FNB's eWallet have made eWallet a mobile money of choice to many South Africans. According to 2018 Businesstech report, eWallet has approximately 8 million users (Staff, 2018).

6.3. Trust

Trust, as indicated earlier, is a subjective belief that a mobile money provider will fulfil its obligations according to the expectations of a mobile money user (Gao and Waechter, 2017). At the same time, beliefs influence behavioural intentions (Ajzen and Fishbein, 1973). In line with this assertion, trust was found to influence intention to adopt mobile money. In other words, users' trust belief that mobile money will perform according to their expectations may encourage its use. This is consistent with findings that trust positively influences adoption of mobile payments (Shankar and Datta, 2018). This is also corroborated by the research findings that trust positively influences adoption of mobile banking (Burucuoglu and Erdogan, 2016). This influence may be because trust plays a critical role in successful business relationships (Kim, Ferrin and Rao, 2009). It plays even a more pivotal role in transactions that involve exchange of money such as in mobile money.

6.4. Perceived Risk

Perceived risk has been found to be one of the main barriers to use technology (Yang et al., 2012). In this context perceived risk refers to a subjective belief of suffering a loss whilst using mobile money (Warkentin, Gefen, Pavlou and Rose, 2002). Users' belief (i.e. perceived risk) that using a technology may lead to a loss may discourage its use. For example, users may be discouraged to use mobile money if they believe that they may lose their money when they transfer it using the service. This is in line with Farivar, Turel and Yuan's findings that risk perception towards social commerce websites deters users' purchasing intentions (Farivar, Turel and Yuan, 2017). In addition, it is consistent with assertion that risk is a barrier to use of mobile transactions (Gao and Waechter, 2017). Furthermore, these findings have been corroborated in previous research that risk negatively influences behavioural intention to adopt mobile money in Ghana and acceptance of mobile money in Uganda (Abdul-Hamid, Shaikh, Boateng and Hinson, 2019; Baganzi and Lau, 2017; Osei-Assibey, 2015). This might be because consumers try to minimize their risk when they use a service (Lin, Wang, Wang, Lu, 2014). Therefore, perceived risk may deter such consumers from using mobile money.

6.5. Perceived Benefit

Perceived benefit (i.e. utilitarian value) has been found to be one of the promoters of consumers' adoption of smartphone technology (Chun, Lee and Kim, 2012). Likewise, utilitarian value has been found to influence use of mobile money in this study. Utilitarian value, which refers to the instrumentation of technology as perceived by consumers, has been shown by previous studies that is a vital predictor of behavioural intention to use technology (Batra and Ahtola, 1991). For example, studies concluded that utilitarian value has a positive effect on usage intention of mobile financial transactions (Omigie, 2017). Similarly, utilitarian value has been found to have a positive effect on intention to accept mobile payments (Ozturk, Bilgihan, Salehi-Esfahani and Hua, 2017). Thus, utilitarian value in using mobile money may encourage its use. This might be because consumers try to get maximum

value when they use a service (Lin, Wang, Wang, Lu, 2014). Therefore, utilitarian value may increase the use of mobile money.

6.6. Personal Innovativeness in Information Technology

Personal innovativeness information technology (PIIT) is the risk-taking propensity to try out new technologies, which exists in some individuals and lacks in others (Agarwal and Prasad, 1998). In other words, individuals that possess this trait have a willingness to try out new technologies. Hence, individuals with this personal characteristic are likely to try out mobile money while those that lack this characteristic are less likely to use mobile money. In line with the findings of this study, PIIT has been found to influence adoption and usage of different technologies by previous studies. For example, PIIT has been found to be significant in predicting intention to use social networking sites (Wijesundara and Xixiang, 2017). Another study in a different context, found PIIT to have a positive influence on students' intention toward using cloud classroom app (Taipa, 2019).

6.7. Intention to Use Mobile Money and Actual Use of Mobile Money

The findings of this study have also shown the strong positive influence of behavioural intention to use mobile money on the actual use of mobile money. The results corroborate findings of studies that have found that behavioural intention has direct influence on behaviour in different contexts, such as in mobile payments (Koenig-Lewis, Marquet, Palmer and Zhao, 2015) and mobile health (mHealth) services (Hoque and Sorwar, 2017). This is because behavioural intention is a good predictor of the actual use as theorized by theory of reasoned action (TRA) (Ajzen and Fishbein, 1973) and theory of planned behaviour (TPB) (Ajzen, 1991).

6.8. Interplay Between Trust and Risk

The findings of this study also indicate that trust has a stronger effect than risk with regards to use of mobile money. This is an important finding since users often

contend with having to trust mobile money despite the uncertainties and risks inherent with mobile commerce (Yang et al., 2012). In other words, while it is important to make efforts to mitigate risk, it is more imperative to make every effort to build trust with consumers for them to embrace mobile money. The results of this study are corroborated by findings of past studies such as in adoption of driverless cars (Kaur and Rampersad, 2018) and adoption of Internet of Things (IoT) among farmers (Jayashankar, Nilakanta, Johnston, Gill and Burres, 2018).

6.9. Conclusion

Mobile devices have brought several opportunities to consumers including access to a range of financial services. Traditionally, transfer of money and bill payments was only possible through banks and by using physical cash respectively. However, with the advent of mobile money, consumers can transfer money and pay bills electronically via mobile devices.

Nevertheless, the penetration and usage of mobile money in South Africa has not reached the same levels as that of other countries in Sub-Saharan Africa. As a result, this study aimed to investigate factors that influence usage of mobile money in South Africa. The model predicted that trust, risk, benefit (i.e. utilitarian value and hedonic value), SI and PIIT have effect on usage of mobile money.

However, the findings reveal that trust, risk and benefit (i.e. utilitarian value) and PIIT have effect on usage of mobile money. In particular, the findings show that trust and utilitarian value have positive effect on usage of mobile money. On the other hand, risk has a negative effect on usage of mobile money. Moreover, the results indicate that PIIT influence risk and trust. Lastly, SI and hedonic value were found to have no effect on usage of mobile money.

These findings suggest that service providers of mobile money need to build trust with consumers to realize better uptake of mobile money. In addition, they need to ensure that they address utilitarian aspects that consumers look for in mobile money. In addition, they need to minimise risk perceptions of consumers towards

mobile money. By undertaking these initiatives, service providers are likely to entice more consumers to use mobile money, especially those that have the willingness to try out new technologies.

The next chapter is the conclusion to this study.

7. CHAPTER SEVEN - CONCLUSIONS

7.1. Introduction

This chapter covers summary of the study, theoretical implications, practical implications, limitations of the study and future research.

7.2. Summary of the Study

In order to achieve the objective of this study, a literature review was carried out. Past studies, most of which focused on (some but not all) benefits, trust, risk, social and individual characteristics have found that these factors play a role in the adoption and use of information systems. However, in the context of mobile money, the literature review revealed that, firstly, limited studies have comprehensively examined the different factors influencing use of mobile money. Secondly, the literature showed that limited studies have used Extended Valence Framework as a lens to examine this phenomenon. Thus, by focusing on the aforementioned factors, this study yields new insights regarding the use of mobile money in South Africa.

Following the literature review, the study discussed research methodology. The study used both online and paper-based survey to collect data. All the items of the instrument were adapted from the existing literature. Before administering instrument, it was pretested and piloted then necessary changes were incorporated. A total of 279 responses were received. Out of these, 26 questionnaires had 10% or more of the questions unanswered as a result they were not considered for analysis. Thus, 253 questionnaires were used for data analysis.

Data analysis was conducted using SPSS and SmartPLS. Firstly, SPSS was used for data preparation, handling of missing values, outliers, skewness and kurtosis, principal components analysis (PCA), assessing reliability and convergent validity. Secondly, SmartPLS 2.0 M3 was used for confirmatory factor analysis. These included measurement model, which involved assessing reliability, convergent

validity and discriminant validity. This was then followed by structural model and hypotheses testing.

Trust was found to have a significant positive effect on hedonic value and intention to use mobile money. In addition, trust was found to exert a significant negative effect on perceived risk. Furthermore, perceived risk was found to have a significant negative effect on intention to use mobile money. Similarly, utilitarian value was found to have a significant positive effect on intention to use mobile money. However, hedonic value was found to have nonsignificant effect on intention to use mobile money.

Moreover, personal innovativeness in information technology (PIIT) was found to have a significant negative effect on perceived risk and a significant positive effect on trust. However, social influence (SI) was found to have no significant effect neither on perceived risk nor trust. Further results showed that behavioural intention (BI) to use mobile money has significant positive effect on actual use (U) of mobile money. Lastly, the results showed that the model has 50.8% (i.e. R^2 = 50.8%) predictive power.

The next section will discuss the implications of the study.

7.3. Implications of the Study

This study has both theoretical and practical implications. This section will firstly discuss the implications for theory and secondly implications for practice.

7.3.1. Implications for Theory

This study has the following implications for theory. Firstly, most past studies used TAM to examine adoption, use and acceptance of mobile money, as evident in the Literature Review (Chapter 2). However, this study used a different approach, it developed and tested a research model underpinned by Extended Valence Framework to examine use of mobile money. The study also extended the Extended

Valence Framework using PIIT and SI. In particular, the introduction of PIIT and utilitarian value enriches the Extended Valence Framework. Through this model, the study was able to examine the factors, which the past studies did not adequately address (e.g. Koloseni and Mandari, 2017; Sayid, Echchabi and Echchabi, 2012). The study was able to examine the effect of trust, risk and benefit (i.e. hedonic value and utilitarian value) on consumers' intention to use mobile money.

Secondly, the literature from journals in Information Systems and related disciplines (e.g. Marketing and Psychology) does not comprehensively address usage of mobile money, especially in South African context. Most of the literature discusses the benefits (e.g. financial inclusion for the poor in developing countries) and do not focus on the factors affecting usage of mobile money (Donovan, 2012; Mbiti and Weil, 2015: Mutsonziwa and Maposa, 2016; Russell, 2012). Therefore, this study contributes to the literature regarding factors influencing usage of mobile money.

Lastly, many previous studies have used student population as proxy for the target population (Pavlour, 2003; Kim, Ferrin and Rao, 2008). However, the use of university students has been highlighted as a weakness by other studies. For example, workers have more need to frequently use mobile payment services than students (Lu, Yang, Chau and Cao, 2011). Therefore, this study addressed this shortcoming by using a wider community of mobile money users from different backgrounds, age groups and qualification levels.

7.3.2. Implications for Practice

South Africa has one of the lowest usage rates of mobile money in Southern Africa. It is estimated that only 15% of adult population out of the 89% mobile phone users, use mobile money. This study has identified factors influencing this low usage of mobile money. Therefore, mobile money service providers might tap into the findings of this study to better understand usage of mobile money and promote better uptake of its usage.

Firstly, personal innovativeness in information technology (PIIT) has been found to positively influence trust. This is an important observation for mobile money practitioners, especially in relation to their marketing campaigns. For example, instead of targeting every customer in their campaigns, mobile money practitioners can now use this knowledge to better direct these campaigns to customers that are willing to try out new technologies. Targeting the right audience will increase effectiveness of mobile money operators' marketing campaigns.

Secondly, PIIT has also been found to negatively influence perceived risk. Despite concerns relating to mobile banking scams, these group of consumers are still likely to continue using mobile money. This is because their risk appetite is higher compared to that of ordinary consumers (Taipa, 2019). Mobile money practitioners could leverage this knowledge and retain this type of customers. For example, through various incentive schemes such as lucky draws for frequent mobile money users.

Thirdly, trust has been found to have a strong effect on usage of mobile money. That is, consumers are likely to use mobile money if they trust it. However, lack of trust, especially in transactions that involve exchange of money, will be counterproductive to any efforts aimed at increasing consumers' usage of mobile money. Thus, mobile money service providers should find ways of harnessing the trust relationship with their customers. Consumer trust can be harnessed by ensuring that mobile money is safe (e.g. less susceptible to hacking in the face of increasing cybercrime), reliable (e.g. by providing quick response times), trustworthy (e.g. by protecting customers' funds against any loss) and accurate (e.g. by ensuring that customers' transactions are always completed successfully and reach the intended recipients). These measures will make customers comfortable to use mobile money.

Fourthly, the findings of the study show that trust has a positive effect on both hedonic value and utilitarian value. Thus, trust augments instrumentality and enjoyment value of mobile money. Even though hedonic value was found to have no effect on the intention to use mobile money, utilitarian value was found to have a direct effect on the intention to use mobile money. Therefore, mobile money service

providers can increase chances of better usage of mobile money by adding features of instrumental value.

As stated earlier, one of the reasons consumers use mobile money is the convenience of access at anytime from anywhere (Heyer and Mas, 2011). For example, in order to increase instrumental value, service providers could consider allowing consumers to withdraw cash at several outlets such as agents, any bank branch, any ATM, petrol stations, retailers and post office outlets. This way, consumers would have many options to access their cash without having to look for specific outlets or agents as is currently the case with mobile money. This would substantially increase accessibility and convenience of mobile money.

Fifthly, trust has been found to have a negative effect on risk. Past research has found that trust is vital due to the uncertainty and vulnerabilities that characterize mobile based transactions (Lu, Yang, Chau and Cao, 2011). Thus, trust plays a critical role in lessening the anxiety that users may have when transacting using mobile money. As a result, mobile money practitioners can use this knowledge to leverage users' trust to mitigate perceived risks associated with the use of mobile money. For example, mobile money practitioners can use their reputable brands and those of their mobile money outlets (such as established retail stores) as a selling point against any perceived risks.

Lastly, in the context of South Africa, where banking related scams are on the rise, the perception users have regarding mobile money is that it is risky. Perceived risk has been found to dampen consumers' intention to use technology by previous studies (Featherman and Pavlou, 2003; Pavlou, 2003). Therefore, as a way of mitigating the risk perceptions, mobile money service providers can educate consumers about risks associated with use of mobile money versus risks associated with similar payment methods. Mobile money service providers can also put in place measures that will assure consumers that, should technical errors occur while using mobile money (including scams, fraud and hacker intrusion), they would be fully compensated. This may negate the risk perceptions that consumers could have.

These findings also have practical implications for mobile money users.

Firstly, users' risk concerns discourage them from using mobile money. However, users can also play a role in minimizing these risk perceptions. For example, this can be achieved by adhering to measures such as avoiding sharing pins or changing a pin as soon as users suspect that somebody else might have seen their pin. These simple measures, which are within users' control, may minimize the risk perceptions that deter the use of mobile money.

Secondly, consumers' trust plays an important role in their preference of mobile money. Trust plays a crucial role in business interactions, especially for transactions that involve money. While trust is important and that cannot be downplayed, the results of this study indicate that the benefit (i.e. utilitarian value) of using mobile money seems to carry more weight in consumers' decision-making process. As a result, using trust as the only criteria when choosing mobile money may not be in the best interest of the users. Thus, users should target and subscribe to mobile money services where their utilitarian or instrumental motivations of using mobile money will also be fulfilled. Therefore, making conscious decision upfront by taking trust and utilitarian value into consideration, will help users to avoid disappointments with the performance of mobile money at the later stage.

Lastly, the results indicate that PIIT has a significant positive influence on trust and a significant negative influence on risk. This implies that users that are more innovative are likely to be more trusting and less risk averse towards trying new technologies. This self-awareness is important to users of mobile money as it influences the way they perceive mobile money.

Besides the practical and theoretical implications, this study also has limitations. The next section discusses the limitations of the study and implications for the future research.

7.4. Limitations and Future Research

It is important to note that there are some limitations that ought to be considered when interpreting the results of this study. Firstly, the study focused on bank led mobile money in South Africa. This is because mobile money is generally bank led in South Africa (Evans and Pirchio, 2014). Therefore, care must be taken not to generalize the findings of this study beyond bank-led mobile money. Perhaps future research could consider replicating this study using non-bank led mobile money such as M-Pesa and Mukuru.

Secondly, the study was geographically limited to South Africa. Therefore, to improve generalizability of these findings, future research could replicate this study beyond the borders of South Africa.

Lastly, contrary to the expectation of this study, results show that hedonic value has no effect on intention to use mobile money. In addition, social influence was also found not have influence on trust and perceived risk as expected. Perhaps, future research could adopt a longitudinal approach to examine if the effect of these factors changes over time.

7.5. Conclusion

The results of this study indicate that the proposed research model has good explanatory power (R^2 = 50.8%) to predict consumers' use of mobile money. The findings of this study offer new insights regarding consumers' use of mobile money. In particular, the study established that trust and utilitarian value have significant positive effect while risk has a significant negative effect on usage of mobile money. Similar future studies need to be conducted to replicate these findings using probability sampling techniques and more geographically disperse population, which will enhance generalizability of these findings.

Despite the study's limitations, the study contributes to the existing literature of mobile money by identifying some of the factors influencing usage of mobile money.

The study's limitations could be used as a foundation for future research. Lastly, based on the findings of this study, mobile money operators in South Africa will be able to make more informed decisions in their efforts to retain and entice more consumers to embrace mobile money.

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9. **APPENDIX 1:** Turn-it-in Report

24%	17%	13%	16%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	www.emeraldinsight.com Internet Source	1%
2	bura.brunel.ac.uk Internet Source	1%
3	Submitted to Midlands State University Student Paper	1%
4	link.springer.com Internet Source	1%
5	www.tandfonline.com Internet Source	<1%
6	repository.up.ac.za Internet Source	<1%
7	Submitted to University of Glasgow Student Paper	<1%
8	www.som.buffalo.edu Internet Source	<1%
9	pdfs.semanticscholar.org Internet Source	<1%

28/02/20

10. APPENDIX 2: Ethics Clearance Certificate

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

SCHOOL OF ECONONICS AND BUSINESS SCIENCERS ETHICS COMMITTEE
CONSTITUTED UNDER THE UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER: CBUSE/1519**
PROJECT TITLE	**Using extended valence framework to examine factors that influence the usage of mobile money in South Africa.**
INVESTIGATOR	**Mr. Rankali Maobi**
SCHOOL/DEPARTMENT OF INVESTIGATOR	**School of Economic and Business Sciences**
DATE CONSIDERED	**22 August 2019**
DECISION OF THE COMMITTEE	**Approved unconditionally**
EXPIRY DATE	**31 October 2019**
ISSUE DATE OF CERTIFICATE	**16 September 2019**

CHAIRPERSON
(Dr Suvera Boodhoo)

cc: **Supervisor: Mr Nugi Nkwe**

DECLARATION OF INVESTIGATOR

To be completed in duplicate and **ONE COPY** returned to the Chairperson of the School/Department ethics committee.

I fully understand the conditions under which I am are authorized to carry out the abovementioned research and I guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee.

Rankali Moabi
Signature

Date 16/ Nov / 2019

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES

11. **APPENDIX 3:** Participation Form (Online)



Dear Sir/Madam

My name is Rankali Moabi and I am a Masters student in the Department of Information Systems at Wits University in Johannesburg. As part of my studies I have to undertake a research project, and I am investigating factors that affect usage of mobile money. The aim of this research project is to understand the effect of trust, risk, benefit, social influence and personal traits on the intention to adopt and the actual usage of mobile money.

As part of this project I would like to invite you to take part in an answering a questionnaire. This activity will involve answering a few questions and will take around 15 minutes.

You will not receive any direct benefits from participating in this study, and there are no disadvantages or penalties for not participating. You may withdraw at any time or not answer any question if you do not want to. The questionnaire will be completely confidential and anonymous as I will not be asking for your name or any identifying information, and the information you give to me will be held securely and not disclosed to anyone else. I will be using a pseudonym (false name) to represent your participation, in my final research report. If you experience any distress or discomfort, you can stop.

Your decision to complete the survey will be taken as your consent.

If you have any questions afterwards about this research, feel free to contact me on the details listed below. This study will be written up as a research report which will be available online through the university library website. If you have any queries, concerns or complaints regarding the ethical procedures of this study, you are welcome to contact the University Human Research Ethics Committee (non-medical), telephone + 27(0)11 717 1408, email Shaun.Schoeman@wits.ac.za

Yours sincerely,
Rankali Moabi

Researcher: 9906533h@students.wits.ac.za, 071-560-9552

Supervisor: Nugi Nkwe, nuki.nkwe1@wits.ac.za, 011-717-8998

12. APPENDIX 4: Participation Form (For Paper-Based Questionnaire)



Dear Sir/Madam

My name is Rankali Moabi and I am a Masters student in the Department of Information Systems at Wits University in Johannesburg. As part of my studies I have to undertake a research project, and I am investigating factors that affect usage of mobile money. The aim of this research project is to understand the effect of trust, risk, benefit, social influence and personal traits on the intention to adopt and the actual usage of mobile money.

As part of this project I would like to invite you to take part in an answering a questionnaire. This activity will involve answering a few questions and will take around 15 minutes.

You will not receive any direct benefits from participating in this study, and there are no disadvantages or penalties for not participating. You may withdraw at any time or not answer any question if you do not want to. The questionnaire will be completely confidential and anonymous as I will not be asking for your name or any identifying information, and the information you give to me will be held securely and not disclosed to anyone else. I will be using a pseudonym (false name) to represent your participation, in my final research report. If you experience any distress or discomfort, you can stop.

If you have any questions afterwards about this research, feel free to contact me on the details listed below. This study will be written up as a research report which will be available online through the university library website. If you have any queries, concerns or complaints regarding the ethical procedures of this study, you are welcome to contact the University Human Research Ethics Committee (non-medical), telephone + 27(0)11 717 1408, email Shaun.Schoeman@wits.ac.za

Yours sincerely,
Rankali Moabi

Researcher: 9906533h@students.wits.ac.za, 071-560-9552

Supervisor: Nugi Nkwe, nuki.nkwe1@wits.ac.za, 011-717-8998

13. APPENDIX 5: Consent Form (For Paper-Based Questionnaire)



Title of project: Using Extended Valence Framework to examine factors that influence the usage of mobile money in South Africa

Name of researcher: Rankali Moabi

I …….. agree to participate in this research project. The research has been explained to me and I understand what my participation will involve.

I agree that my participation will remain anonymous	YES	NO	(please circle)
I agree that the researcher may use anonymous quotes in his/her research report	YES	NO	
I agree that the information I provide may be used anonymously by other researchers following this study	YES	NO	

…… (signature)
…… (name of participant)
…… (date)

14. APPENDIX 6: Research Instrument

Constructs and measurement items

In this context, **mobile money** refers to any of the following: Absa's Cash Send, Capitec (send cash), FNB's eWallet, Nedbank's MobiMoney, Standard Bank's Instant Money

QUESTIONNAIRE	
Please tick in the correct circle	
Gender	Male ◯ Female ◯ Prefer not to say ◯
Age group	18 – 24 ◯ 25 – 30 ◯ 31 – 35 ◯ 36 – 40 ◯ 41 – 45 ◯ 46 – 50 ◯ 50 and above ◯
Education	Pre Matric ◯ Matric ◯ Post Matric (Certificate/Diploma ◯ Undergraduate Degree ◯ Postgraduate ◯

Occupation	Corporate ◯ Government ◯ Non Govermental Organisation ◯ Student ◯ Self-employed ◯ Unemployed ◯
Which mobile money do you use or intent to use?	Absa (Cash Send) ◯ Capitec (send cash) ◯ FNB (eWallet) ◯ Nedbank MobiMoney ◯ Standard Bank (Instant Money) ◯

		Please tick in the box that best reflects how you feel about the statement						
STATEMENT		**STRONGLY DISAGREE**	**DISAGREE**	**SOMEWHAT DISAGREE**	**NEITHER AGREE NOR DISAGREE**	**SOMEWHAT AGREE**	**AGREE**	**STRONGLY AGREE**
TR1.	My mobile money provider always provides accurate financial services.	1	2	3	4	5	6	7
TR2.	My mobile money provider always provides reliable financial services.	1	2	3	4	5	6	7
TR3.	My mobile money provider always provides safe financial services.	1	2	3	4	5	6	7

TR4.	My mobile money provider is trustworthy	1	2	3	4	5	6	7
PR1.	I worry about the occurrence of fraud and hacker intrusion whilst using mobile money.	1	2	3	4	5	6	7
PR2.	If mobile money errors were to occur, I worry that I would be unable to get compensated.	1	2	3	4	5	6	7
PR3.	Mobile money is risky, because it may fail to deliver what it promises	1	2	3	4	5	6	7
PR4.	Using mobile money may waste my time	1	2	3	4	5	6	7
BI1.	Assuming I have access to mobile money, I predict that I would use it.	1	2	3	4	5	6	7
BI2.	I plan to use mobile money in the future	1	2	3	4	5	6	7
BI3.	I expect that I would use mobile money in the future	1	2	3	4	5	6	7

BI4.	I intend to use mobile money in the future	1	2	3	4	5	6	7
UV1.	Using mobile money would increase my chances of achieving things that are important to me	1	2	3	4	5	6	7
UV2.	Compared to the effort and time I need to put in and spend, the use of mobile money would be beneficial and worthwhile to me	1	2	3	4	5	6	7
UV3.	Using mobile money would help me accomplish things more quickly	1	2	3	4	5	6	7
UV4.	Mobile money would be useful in my daily life	1	2	3	4	5	6	7
HV1.	I expect that using mobile money would be enjoyable	1	2	3	4	5	6	7
HV2.	I expect to have fun using mobile money	1	2	3	4	5	6	7
HV3.	Using mobile money would make me feel good	1	2	3	4	5	6	7

HV4.	Mobile money would be a service that I feel relaxed about using	1	2	3	4	5	6	7
SI1.	People who influence my behaviour think that I should use mobile money.	1	2	3	4	5	6	7
SI2.	My friends think that I should use mobile money.	1	2	3	4	5	6	7
SI3.	Using mobile money is considered a status symbol among my friends.	1	2	3	4	5	6	7
SI4.	People who use mobile money have a high profile.	1	2	3	4	5	6	7
PIIT1.	If I heard about a new information technology, I would look for ways to experiment with it.	1	2	3	4	5	6	7
PIIT2.	Among my peers, I am usually the first to explore new information technologies.	1	2	3	4	5	6	7
PIIT3.	I like to experiment with new information technologies.	1	2	3	4	5	6	7

PIIT4.	In general, I am hesitant to try out new information technologies.	1	2	3	4	5	6	7
U1.	I currently use mobile money	1	2	3	4	5	6	7
U2.	I will continue to use mobile money	1	2	3	4	5	6	7
U3.	I frequently use mobile money	1	2	3	4	5	6	7