



University of Fort Hare
Together in Excellence

A TRUST FRAMEWORK TO IMPROVE ADOPTION OF MOBILE BANKING BY UNIVERSITY STUDENTS IN SOUTH AFRICA

by

Robyn van Heerden



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By

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201206249

Dissertation

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Co-Supervisor: Prof. Liezel Cilliers

Abstract

Mobile banking, hereinafter referred to as m-banking, is a platform that allows individuals to conduct financial transactions using a mobile device at any given time. In today's fast paced society, technologies have evolved to provide services that are convenient and benefit both the customer and service provider; these include m-banking. M-banking further encourages financial inclusion and economic growth, which are both crucial in South Africa. The aim of this research was to develop a trust framework to improve adoption of mobile banking by university students. This is an agency issue in the financial services industry as university students are a big segment of the future income earners and adopters of technology. Getting them to adopt and become regular m-banking users would significantly impact the revenue of banking institutions. The E-Commerce Acceptance Model and the Integrative Model of Organisational Trust were the two theoretical frameworks used as underlying theories to this study. A quantitative survey tool was employed to gather data at the University of Fort Hare in the Eastern Cape. After an extensive literature review, a questionnaire was formulated and distributed to students at the University of Fort Hare, of whom 471 responded. Descriptive and inferential statistics were used to analyse the data collected. Cronbach's Alpha was employed to demonstrate the reliability of constructs used in the study and Pearson's Product Moment. Correlation Coefficient r tested the strength of the relationships between these constructs. The study found that there are several factors that are significant, such as perceived usefulness, perceived ease of use, perceived risk when investigating trust and its influences on m-banking adoption amongst university students. As a result, the study recommends that banks should consider the above-mentioned factors in order to improve trust and increase m-banking adoption among university students in South Africa.

Keywords: M-banking, adoption, trust, intention, university students

Declaration

I, Robyn van Heerden, Student number 201206249, hereby declare that:

- I am fully aware of the University of Fort Hare's policy on plagiarism and I have taken every precaution to comply with the regulations.
- The work in this dissertation is my own work and where it is based on other authors' works, all sources used or referred to have been documented and recognised.
- This dissertation has not previously been submitted in full or partial fulfilment of the requirements for an equivalent or higher qualification at any other recognised educational institution.
- I am fully aware of the University of Fort Hare's policy on ethics and I have taken every precaution to comply with the regulations. I have obtained an ethical clearance certificate from the University of Fort Hare's Research Ethics Committee and my reference number is ISA041SVAN01.
- My Supervisor is Dr Naomi Isabirye and Co-Supervisor is Prof. Liezl Cilliers.



19/01/2021

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TABLE OF CONTENTS

Abstract	iii
Declaration	iv
Acknowledgements	v
CHAPTER ONE: INTRODUCTION	1
1.1. Background	2
1.2. Statement of Problem	4
1.2.1. Primary Research Question:	5
1.2.1.1. Sub-Research Questions	5
1.3. Hypotheses	7
1.4. Objective of the Study	8
1.5. Significance of the Study	8
1.6. Preliminary Literature Review	9
1.6.1. Theoretical Literature Review	9
1.6.1.1. Consumer acceptance of electronic commerce: Integrating trust and risk with the Technology Acceptance Model.	9
1.6.2. Empirical Literature Review	11
1.6.3. Adoption of Mobile Banking in South Africa	11
1.6.4. Trust and its Role in the Adoption of M-Banking	12
1.7. Research Methodology	13
1.7.1. Research Paradigm	14
1.7.2. Research Approach	14
1.7.3. Research Design	15
1.7.4. Study Population and Sample Size	15
1.7.5. Data Collection	16
1.7.6. Data Analysis Method	17
1.7.6.1. Credibility of the research.	17

1.8. Delimitation of the Study	18
1.9. Ethical Considerations	18
1.10. Research Outline	19
CHAPTER TWO: M-BANKING IN SOUTH AFRICA.....	20
2.1. Introduction.....	21
2.2. Mobile Banking.....	21
2.3. Mobile Banking Channels.....	22
2.3.1. Browser-Based Applications.....	22
2.3.2. Messaging-Based Applications.....	23
2.3.3. Client-based applications	24
2.4. Mobile Banking Adoption in the Developing World.....	25
2.5. Implementation of Mobile Banking by South African Banks	27
2.5.1. First National Bank (FNB) of South Africa.....	28
2.5.1.1. eWallet™.	29
2.5.1.2. SA-Zim mobile banking.....	29
2.5.2. Amalgamated Banks of South Africa (ABSA).....	30
2.5.2.1. CashSend™.....	30
2.5.3. Nedbank.	31
2.5.3.1. M-Pesa in association with Nedbank.	31
2.5.3.2. Send-iMali™.....	32
2.5.4. Standard Bank.	32
2.5.4.1. MTN Mobile Money.	33
2.5.4.2. Instant Money™.	33
2.5.4.3. WeChat Wallet™.....	33
2.5.5. Capitec Bank.	33
2.6. Mobile Banking Services	34
2.6.1. Benefits of M-Banking.....	34

2.6.1.1. Customer retention.....	34
2.6.1.2. Reduced costs.....	35
2.6.1.3. Increased reach.....	35
2.6.1.4. Convenience.....	35
2.6.1.5. Ease of access.....	36
2.6.1.6. Increased efficiency.	36
2.7. Conclusion	36
CHAPTER 3: BARRIERS TO M-BANKING ADOPTION.....	37
3.1. Introduction.....	38
3.2. E-Commerce Acceptance Model	38
3.2.1. Perceived Usefulness (PU).....	39
3.2.2. Perceived Ease of Use (PEoU).....	41
3.2.3. Perceived Risk (PR).....	43
3.2.3.1. Performance Risk.	44
3.2.3.2. Financial Risk.	45
3.2.3.3. Time Risk.....	46
3.2.3.4. Social Risk.	47
3.2.3.5. Privacy/Security Risk.....	48
3.3. Conclusion	51
CHAPTER 4: TRUST AND ITS ROLE IN THE ADOPTION OF M-BANKING.....	52
4.1. Introduction.....	53
4.2. Defining Trust.....	53
4.3. An Integrative Model of Organisational Trust.....	57
4.3.1. Factors of Perceived Trustworthiness	58
4.3.1.1. Ability.	58
4.3.1.2. Benevolence.	58
4.3.1.3. Integrity.....	58

4.4. Factors to Enhance Trust in Mobile Banking	59
4.4.1. Technology acceptance and trust in m-banking.....	60
4.4.1.1. Propensity to Trust Technology.....	61
4.4.1.2. Factors Influencing Technology Trust.....	61
4.4.1.2.1. Confidentiality	61
4.4.2. Information and system quality.....	63
4.4.3. Relative Advantage	64
4.4.4. Reliability.....	64
4.4.5. Structural Assurances.....	65
4.4.6. Word-Of-Mouth (WOM)	65
4.5. Adoption of Mobile Banking	67
4.6. Actual Transaction	67
4.7. Conclusion	67
CHAPTER FIVE: RESEARCH METHODOLOGY	69
5.1. Introduction.....	70
5.2. Research Paradigm.....	71
5.3. Research Approach	72
5.3.1. Quantitative and Qualitative Approaches	73
5.3.2. Research Design.....	75
5.3.3. Research Instrument.....	76
5.4. Sample Population	79
5.4.1. Non-Probability Sampling.....	79
5.4.2. Probability Sampling.....	80
5.5. Data Analysis	81
5.6. Reliability and Validity of Measuring Instrument	82
5.6.1. Reliability of the measuring instrument.....	82
5.6.2. Validity.....	83

5.7. Ethical Considerations	83
5.8. Conclusion.....	84
CHAPTER SIX: EMPIRICAL ANALYSIS.....	85
6.1. Introduction.....	86
6.2. Response Rate	86
6.3. Descriptive Statistics: Demographics	86
6.3.1. Gender.....	87
6.3.2. Age groups	87
6.3.3. Level of education.....	88
6.3.4. Banking and banking background information.....	89
6.3.5. Bank account holders	89
6.3.6. Banking institutions used by students.....	89
6.3.7. Mobile Banking Usage Statistics	90
6.3.8. M-banking Usage Frequency	91
6.4. Descriptive Questionnaire Finding	92
6.4.1. Questionnaire Finding: Perceived Usefulness	92
6.4.2. Questionnaire Findings: Perceived Ease of Use	94
6.4.3. Questionnaire Findings: Perceived Risk	96
6.4.4. Questionnaire Findings: Trust.....	97
6.4.5. Questionnaire Findings: Actual Transaction.....	99
6.4.5.1. M-banking purchases.	99
6.4.5.2. Cash payments and transfers.....	99
6.5. Reliability Analysis.....	100
6.6. Correlation Analysis	101
6.7. Hypothesis Testing.....	102
6.8. Conclusion	104
CHAPTER SEVEN: DISCUSSION OF THE FINDINGS	105

7.1. Introduction.....	106
7.2. Demographics	106
7.3. Banking and Mobile Banking Access.....	106
7.4. Hypothesis Testing.....	107
7.4.1. Perceived Usefulness	108
7.4.2. Perceived Ease of Use.....	109
7.4.3. Perceived Risk.....	110
7.4.4. Trust	111
7.4.5 Adoption of m-banking services	112
7.5. Research Framework.....	113
7.6. Conclusion	113
CHAPTER 8: CONCLUSION.....	115
8.1. Introduction.....	116
8.2. Literature	116
8.3. Research Problem	116
8.4. Research Questions	117
8.4.1. Sub-Research Questions	117
8.4.1.1. How prevalent is mobile banking amongst university students in South Africa?	117
8.4.1.2. What are the barriers to the adoption of M-banking among university students?	117
8.4.1.3. What aspects of trust will influence M-banking adoption among university students?	118
8.5. Research Objectives and Hypotheses	118
8.6. Theoretical Framework.....	119
8.7. Research Methodology	119
8.8. Contributions Made by this Study.....	120
8.9. Limitations and Recommendations for Future Research	121
8.9.1. Limitations	122

8.9.2. Recommendations for Future Research	122
8.10. Summary	123
9. References	124
10. Appendices.....	148
Appendix A – Ethical Clearance Certificate.....	148
Appendix B – Informed consent and Research Questionnaire	150
Appendix C – Turnitin Report	154
Appendix D – Proof Reader Certificate	155

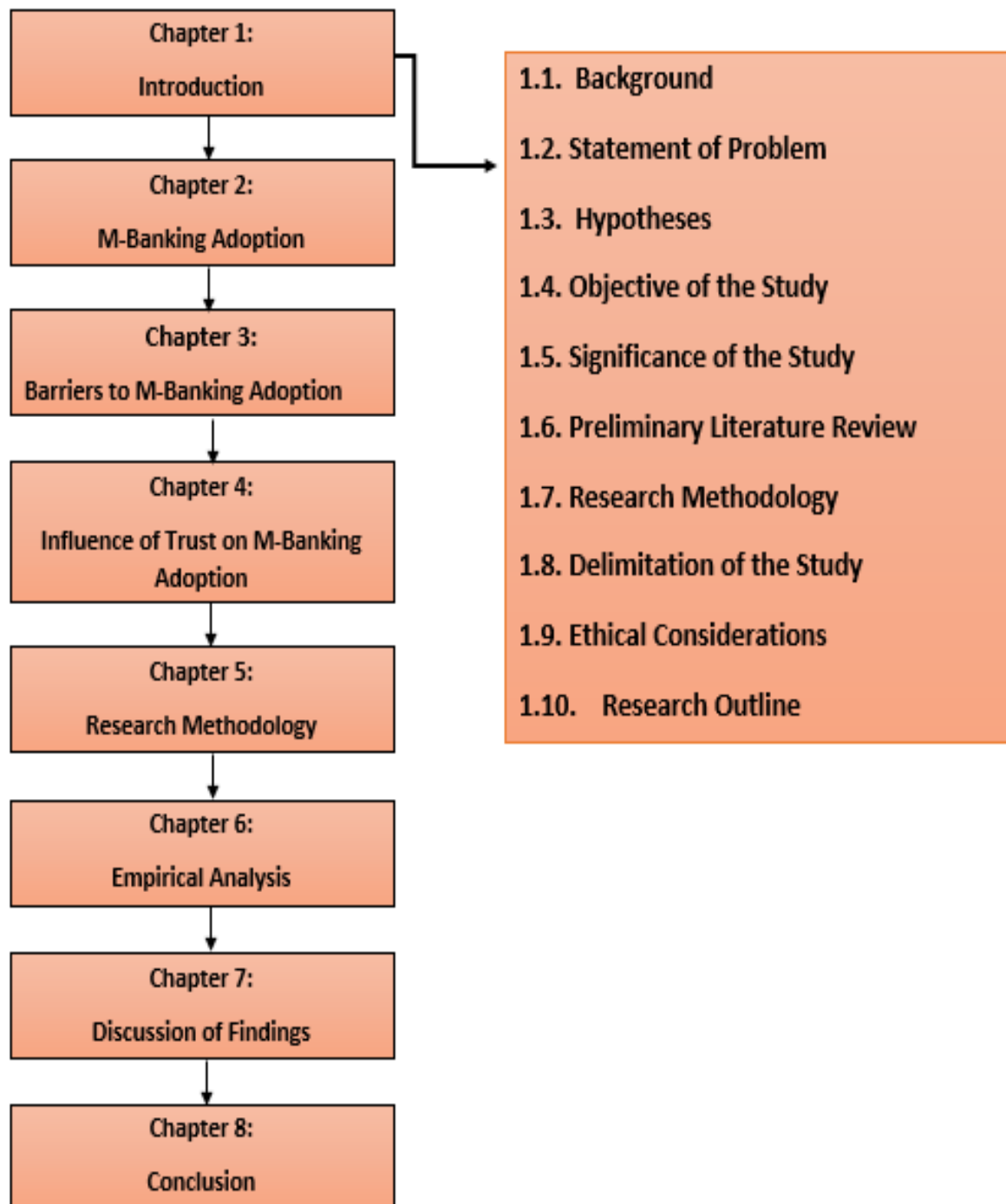
List of Figures

Figure 1: A Trust Framework to Improve Adoption of Mobile Banking by University Students	8
Figure 2: E-Commerce Acceptance Model	9
Figure 3: FNB mobile banking user interface (USSD-Based)	30
Figure 4: E-Commerce Acceptance Model by Pavlou	39
Figure 5: Integrative Model of Organisational Trust	57
Figure 6: Research Onion adopted	71
Figure 7: Typology of assumptions on a continuum of paradigms	72
Figure 8: Proposed conceptual model	82
Figure 9: Level of Education	88
Figure 10: M-banking Usage Frequency	91
Figure 11: M-Banking Channels Used	91
Figure 12: M-Banking Actual Transaction (Purchases)	99
Figure 13: M-Banking Actual Transaction (Payments)	100
Figure 14: A trust framework to improve m-banking adoption by university students	108
Figure 15: A trust framework to improve m-banking adoption among university students .	118
Figure 16: A trust framework to improve adoption of trust by university students	121

List of Tables

Table 1: Cronbach's Alpha and Scale Composite Reliability	166
Table 2: Differences between quantitative and qualitative research	733
Table 3: Cronbach's Alpha for constructs in research study	777
Table 4: Advantages and Disadvantages of Using Online Surveys	788
Table 5: Gender of Respondents	877
Table 6: Age Group	877
Table 7: Bank Account Holders	899
Table 8: Banking Institutions Used by Respondents	90
Table 9: Descriptive Results for Perceived Usefulness	933
Table 10: Descriptive Results for Perceived Ease of Use	955
Table 11: Descriptive Results for Perceived Risk	966
Table 12: Descriptive Results for Trust	977
Table 13: Reliability Analysis	100
Table 14: Correlation Analysis	1011
Table 15: Intention to Transact	1022
Table 16: Hypothesis Results	1044

CHAPTER ONE: INTRODUCTION



1.1. Background

The mobile device is proclaimed as the most omnipresent personal device worldwide owing to its ability to execute simple and complex computer functions (Masiu & Chukwuere, 2018). The expansion of the functions of mobile devices creates opportunity for an increase in the demand of mobile commerce (Jakimoski, 2014; Hussain, Mahmood and Naser, 2017) and, thus, mobile banking (M-banking). M-banking is an essential application derived from mobile commerce. M-banking is a term that is commonly defined as a channel that enables consumers to interact with a banking institution using a mobile device at any given moment (Sakala & Phiri, 2019). M-banking permits consumers to access financial records with the help of mobile phones to complete bank-related transactions, for instance, checking account statuses, transference of money and the selling of stocks (Nawaz, Motiwalla & Deokar, 2018; Kim, Shin & Lee, 2009). These services are ubiquitous, allowing banks to reach their customers in remote locations. This is especially important in the case of South Africa (SA), as many of its citizens still live in rural areas (Ondiege, 2010). According to Plecher (2018), 66% of South Africans live in urban areas. Therefore, a third of the South African population still lives in rural areas. As a result, developing countries such as South Africa can benefit from a service such a mobile banking in order to reach its citizens in remote areas.

Innovative banking solutions can be implemented to improve financial inclusion of those living in remote areas. Financial inclusion allows individuals and businesses to have access to financial products and services and further permits them to partake in the financial sector to improve their livelihood (Grant, 2020). Financial inclusion in South Africa is considered to be high because 77% of South Africans are considered to be financially included, thus allowing them to partake in financial activities (Department of National Treasury, 2019). However, it has been stated that the financial inclusion percentage includes South Africans that receive grants from South African Social Security Association (SASSA). It stands to reason then that if the SASSA grant recipients are excluded, the financial inclusion percentage of South Africans decreases to 58% (Department of National Treasury, 2019). Therefore, if SASSA indicates that social grants require bank accounts as a pre-requisite would effectively increase financial inclusivity within South Africa. Financial inclusion is essential as it promotes economic growth (Chinoda & Akande, 2019; Sethi & Acharya, 2018). Technologies such as m-banking can help mitigate issues surrounding financial inclusion in developing countries such as South Africa. M-banking is a service that benefits both the customers and the banking

institution that offers such services, as it helps retain customers by providing cost effective services (Sherman, 2014).

Despite the high rate of financial inclusivity in South Africa, an article in World Economic Forum noted that cash is still preferred by many South African communities as many distrust digital banking platforms (Rumney, 2019). Rumney (2019) further posits that only 24% of South Africans make use of their bank accounts more than thrice a month as they withdraw most of the funds upon receipt. Findings from the Digital 2020 report on South Africa show that only 54% of South Africans citizens, from the age of 15, use mobile banking applications (Kemp, 2020).

In South Africa, the adoption of mobile banking by its citizens has been deemed unsuccessful in comparison to other countries such as Kenya and Zimbabwe (Chigada & Hirschfelder, 2017). According to Nyantakyi and Sy, (2015), m-banking is more successful in East Africa with Kenya being the key player, as a result of Safaricom's M-Pesa rollout in 2007. The adoption of M-Pesa mobile banking services has reached over 72% of the population in this country (Runde, 2015). In neighbouring countries, such as Namibia and Botswana, mobile banking has seen an uptake of 80% which is more than that of South Africa. Therefore, it is evident that mobile banking adoption is significantly lower in South Africa when compared to other developing countries in Africa.

Literature indicates that the slow adoption of m-banking is a result of the lack of trust (van Deventer, 2019; Pamungkas & Kusuma, 2017; Rumanyika, 2015), and a lack of knowledge regarding this service (Richard & Mandari, 2018; Rumanyika, 2015). A study at a university in Ashanti, Ghana, found that the rejection of mobile banking is based on the poor knowledge provided on mobile banking (Iddris, 2013). Moreover, Van Deventer, De Klerk and Bevan-Dye (2017), concur, citing a lack of trust and awareness regarding m-banking as a barrier against adoption. Financial literacy and trust are amongst the key reason why users are reluctant to adopt mobile banking (Jenkin & Naude, 2019; Kaya, 2013; Shaikh, Karjaluoto & Chinje, 2015). Moreover, van Deventer, de Klerk and Bevan-Dye (2018) state that, in addition to the low m-banking adoption in South Africa, there is a need for further investigation of m-banking in South Africa.

According to prior research, m-banking was found to be especially low amongst university students (Govender & Sihlali, 2014; Ramille & Nel, 2012). However, a study recently

conducted in South Africa among generation Y students found that they are more likely to adopt m-banking based on their predisposition to trust and willingness to accept risks (van Deventer, 2019). The author further posits that m-banking adoption by students and young adults is especially important as they are the future income earners and adopters of technology. In a study conducted in Azerbaijan in Turkey amongst students, the research study found that trust is a significant factor in the intention to adopt mobile banking amongst students (Hajiyev & Chang, 2017). Furthermore, Malaquias and Hwang (2016) found in a study amongst Brazilian students that students in undergraduate courses in fields focusing on technology have a better understanding of secure E-Commerce environments. Therefore, without sufficient knowledge from banks regarding security in m-banking, their trust in this technology is more likely to be lower. According to Bhardwaj and Aggarwal (2016) and van Deventer (2019), the youth market is a key concern for banking institutions and marketers. Essentially, youth markets are more tech savvy in comparison to other age groups and display different inclinations and behaviour in technology.

This research project focuses on university students as they are entering the job market and will likely be future adopters of mobile banking. It has also been found that the adoption of m-banking is low in South Africa and focus should be put on students as they are the future income earners. The subsequent section identifies the research problem.

1.2. Statement of Problem

A study revealed that the mobile phone penetration rate is as high as 176% in South Africa (Kemp, 2020). However, despite the high mobile phone penetration, mobile banking adoption remains low (van Deventer, 2019). According to Kemp (2020), 54% of South African citizens make use of mobile banking. Therefore, it is evident that m-banking has been adopted by more than half of the South African population, but is lagging behind in comparison to other African countries (Chigada & Hirschfelder, 2017). Moreover, Ramille and Nel (2012) and Govender and Sihlali (2014) suggest that the adoption of m-banking is the slowest amongst the youth. In a study conducted amongst individuals where 93% of the population were between the ages of 21 to 40 years, the findings revealed that 44% were non-users of mobile banking. Therefore, it indicates that there is a gap to explore in order to improve m-banking adoption amongst students. According to Stats SA (2019), South Africa has a population of 58.78 million people and a third of the population are young adults from ages 18-34 years. Therefore, university

students are an ideal market segment as they are the future adopters of technologies and the potential income earners that could improve m-banking adoption.

Although mobile banking is well-known for its perceived benefits, Ramille and Nel (2012) and Malaquias and Hwang (2016) found that young adults are still unaware of the benefits associated with mobile banking. Furthermore, the lack of disclosure from banks results in lower levels of trust amongst young adults. As stated earlier, financial literacy and the lack of trust is commonly associated with m-banking in South Africa (Department of National Treasury, 2019). Trust is commonly cited as an antecedent of mobile banking adoption and behavioural intention. Trust is at the forefront of innovative financial products and services' adoption and is defined as having the confidence, reliance, objectivity, integrity and ability in something or someone. Therefore, trust plays a vital role in the adoption of m-banking. There is a lack of published literature regarding trust in mobile banking by university students. According to van Deventer (2019), it is important to understand the notion of trust in m-banking amongst students as it could assist policy makers, marketers and strategist within the financial service industry to promote trust and increase m-banking adoption by students.

The research problem exists due to the low adoption of mobile banking in South Africa as only 54% of South Africans use m-banking (Kemp, 2020). The lack of trust has often been cited as a barrier for adoption to occur (Pankomera & Van Greunen, 2018; Van Deventer, De Klerk & Bevan-Dye, 2017; Masrek, Mohamed, Daud & Omar, 2014; Kim et al., 2009). In addition, there is a lack of knowledge regarding trust and student adoption of m-banking in South Africa, despite the youth taking up a third of the country's population. This makes students an ideal target population to understand and improve m-banking adoption by identifying factors that influence trust and the consequent adoption of m-banking. As a result, this study seeks to develop a trust framework to improve m-banking adoption by university students. In order to determine how trust influences adoption in mobile banking, the following research questions have been formulated.

1.2.1. Primary Research Question:

How can trust influence the adoption of mobile banking amongst university students?

1.2.1.1. Sub-Research Questions.

The research sub-questions of this research project were formulated to investigate and solve the main research question. The secondary research questions are as follows:

1.2.1.1.1. How prevalent is mobile banking amongst university students in South Africa?

This research question is focused on the adoption of mobile banking in South Africa. It is focused on various factors such as the unbanked population of South Africa, the five major banks of South Africa and other successful mobile banking services. In South Africa, there are five major banks known as First National Bank (FNB), Standard Bank, Amalgamated Banks of South Africa (ABSA), Nedbank, and Capitec. These financial institutions offer mobile banking services to their consumers (Shambare, 2011). It seeks to provide a better understanding of the m-banking landscape in South Africa and the innovative services offered by banking institutions and mobile money service providers.

1.2.1.1.2. What are the barriers to the adoption of M-banking among university students?

This research sub-question investigated the barriers to adoption of m-banking by university students and the influence the barriers have on trust in mobile banking. Furthermore, it highlights the key barriers such as lack of Perceived Usefulness (PU) and lack of Perceived Ease of Use (PEoU). In the context of m-banking, if a user identifies the benefit of using m-banking, then their use for the service increases due to higher productivity output. Both PU and PEoU have been cited as a barrier to adoption of m-banking (Sakala & Phiri, 2019). Moreover, Perceived Risk (PR) has been cited as a barrier for adoption of m-banking as it has a negative impact on m-banking due to the risks associated with the service (Ha, Canedoli, Baur & Bick, 2012).

1.2.1.1.3. What aspects of trust will influence M-banking adoption among university students?

Trust is commonly examined in reference to trust among individuals, especially those who lack regard for trust in technology (McKnight, Carter, Thatcher & Clay, 2011). This research sub-question investigated the notion of trust and the factors that impact perceived trustworthiness. Furthermore, this question established several factors that banking institutions can consider when trying to enhance trust among customers. The question is different from the main research question as it seeks to identify the specific aspects of trust that will influence M-banking adoption (the WHAT question), while the main research question speaks to the broader trust framework that will be developed and tested against the adoption of M-banking among university students (answering the HOW question.)

1.3. Hypotheses

Researchers usually have limited or no knowledge of the research outcome prior to the research work. However, researchers may make assumptions regarding what the results are likely to be. Therefore, hypotheses are assumptions that need to be tested in a research work to arrive at the relevant conclusions of the study (Thomas, 2010). According to Cooper and Schindler (2013), there are two way ways to test significance which is by null hypothesis and alternative hypothesis. Cooper and Schindler (2013) defines the null hypothesis as a statement that no change occurs between two constructs where as an alternative hypothesis notes a change. The following are the null hypotheses denoted by $H_{01} - H_{04}$ and alternative hypotheses denoted by $H_1 - H_4$ for this study:

H_{01} : Perceived Usefulness does not significantly influence trust in mobile bank adoption among university students in South Africa.

H_1 : Perceived Usefulness significantly influences trust in mobile banking adoption among university students in South Africa.

H_{02} : Perceived ease of use does not significantly influence trust in mobile bank adoption among university students in South Africa.

H_2 : Perceived ease of use significantly influences trust in mobile banking adoption among university students in South Africa.

H_{03} : Perceived risk does not significantly influence trust in mobile banking adoption among university students in South Africa.

H_3 : Perceived risk significantly influences trust in mobile banking adoption among university students in South Africa.

H_{04} : Trust does not significantly influence adoption of mobile banking among university students in South Africa.

H_4 : Trust significantly influences mobile banking adoption among university students in South Africa.

Figure 1 below illustrates the empirical model of the hypotheses.

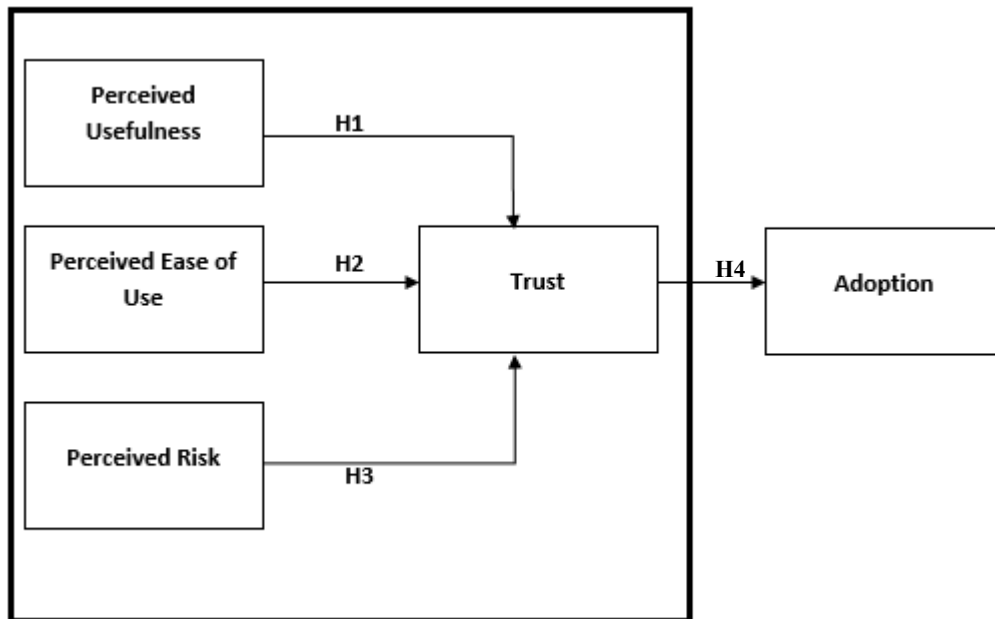


Figure 1: A Trust Framework to Improve Adoption of Mobile Banking by University Students in South Africa (own source)

1.4. Objective of the Study

The purpose of this research study was to propose a framework that establishes the extent to which trust improves adoption and the extent to which perceived risk, usefulness and ease of use are important to trust in m-banking among university students. The next section highlights the significance of the study.

1.5. Significance of the Study

Trust of mobile banking is a critical issue when adopting this service. An increase in trust will help to improve the adoption of mobile banking amongst university students. With reference to South Africa, mobile banking adoption is low with the possibility of improved financial inclusion (Department of National Treasury, 2019). It has been found that financial inclusion increases economic growth (Kishore & Sequeira, 2016). The research study is important as it can help change the perceptions of students concerning mobile banking. The adoption of mobile banking by students is important, as students will be entering the job market and will become income earners in the future (van Deventer, 2019). Furthermore, it investigates why the adoption of mobile banking is slower when compared to other developing countries in Sub-Saharan Africa. The objective of this study is to produce a framework that will assist in answering the main research question and ultimately, by adding to the current body of

knowledge within the Information Systems domain. The sections hereafter discuss the underlying theory of this study and the preliminary literature review.

1.6. Preliminary Literature Review

The following section focuses on the preliminary literature review, which discusses the adoption of mobile banking in South Africa by university students. This section further elaborates on the correlates of trust such as perceived ease of use, perceived usefulness and perceived risk in the context of mobile banking by taking into consideration the theoretical perspective in the section hereinafter.

1.6.1. Theoretical Literature Review

Mayer, Davis and Schoorman (1995), state that a theoretical perspective enables the researcher to link the research into an existing body of knowledge that will focus on the subject area. This research study made use of the E-Commerce Acceptance Model by Pavlou (2003) as the underlying theory of the study. The E-Commerce Acceptance Model (EAM) illustrated in Figure 2 was utilised in this study to provide a comprehensive understanding of the challenges that students are faced with, when adopting a new technology. These issues include trust, perceived risks (PR), perceived usefulness (PU), Perceived Ease of Use (PEoU) and usage intention. The theoretical perspective proposes that constructs such as PR, PU, PEoU, and Trust influence adoption. The model put forward by Pavlou (2003) can be seen in Figure 2 below.

1.6.1.1. Consumer acceptance of electronic commerce: Integrating trust and risk with the Technology Acceptance Model.

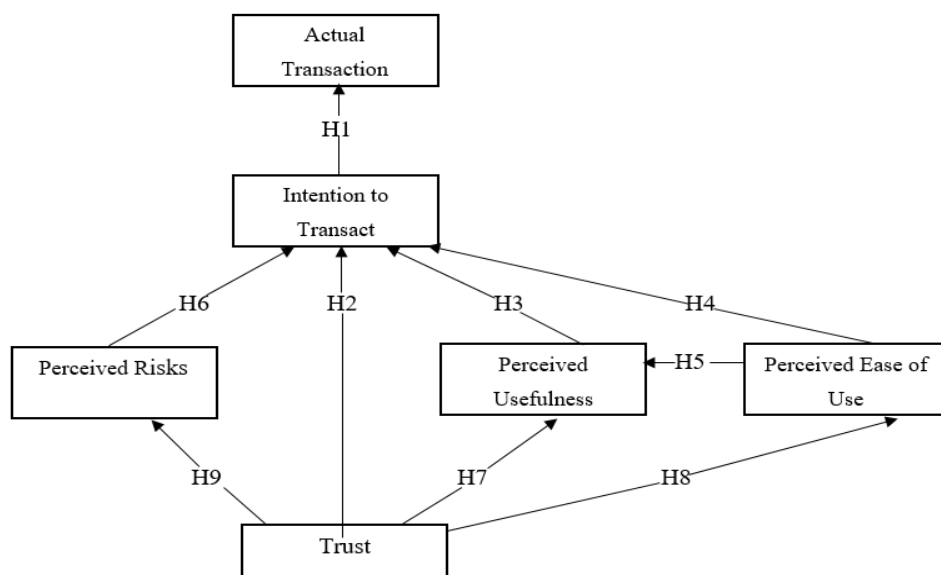


Figure 2: E-Commerce Acceptance Model by Pavlou (2003)

The E-Commerce Acceptance Model (EAM) illustrated in Figure 2 uses constructs from the Technology Acceptance Model (TAM) and the Integrative Model of Organisational Trust by Mayer et al. (1995). The Integrative Model of Organisational Trust by Mayer et al. (1995) was used in this study to understand the notion of trust and the components (ability, benevolence, and integrity) that form part of the construct and are applied in the context of m-banking. The model shown in Figure 2 was used and applied in the context of mobile banking in order to understand how enhancing trust of students will improve the adoption of mobile banking. The underlying theory of this study highlights the key constructs that were investigated in this study and underpins that trust is an antecedent of PEOU, PU and PR. However, Mou and Cohen (2015) argue that it is important to understand the antecedents of trust as customers trust beliefs influence their online behaviour. The authors posit that previous literature has highlighted antecedents of trust but has not specified the key antecedents of trust and found that perceived usefulness and perceived ease of use are key factors to consider as antecedents of consumer trust (Mou & Cohen, 2015). A study conducted by Mou, Shin and Cohen (2017) found that trust and risk are vital factors on e-services acceptance and found trust to be a stronger factor to consider. Moreover, Dinev and Hart (2006) argue that perceived risk is an antecedent of trust as the authors noted that if uncertainties exist and are low then there is a low need to form trust perceptions. As a result, this study identified PEOU, PU and PR as antecedents of trust in m-banking adoption among university students in South Africa.

Perceived ease of use is defined as an individual's perception of how easy it is to learn how to use a new technology without it requiring much effort (Ramos, Ferreira, De Freitas & Rodrigues, 2018). In the context of this study, PEOU will be used to determine its influence on trust and the consequent adoption of m-banking by university students. Moreover, perceived usefulness is identified as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p.320). In the context of m-banking, this study identified the benefits of the service and determined the relationship with trust. The final scale of this study explored Perceived Risk. Perceived risk is defined as the degree of doubt a consumer faces when deciding about a product/service, in addition to an expectation of loss that he/she may encounter (Malhotra, 2012; Bauer, 1960). Therefore, the research study explored the influence PR has on trust to improve m-banking adoption among university students in South Africa. The proposed model will be discussed in more detail in Chapter 3.

1.6.2. Empirical Literature Review

The next section that follows focused on the two main constructs in this study. First, the adoption of m-banking in South Africa is discussed, followed by a discussion of how trust can influence adoption of mobile banking.

1.6.3. Adoption of Mobile Banking in South Africa

Mobile banking has been established in a number of countries with dissimilar levels of success (Ghosh, 2012). In South Africa, there are five major banks known as First National Bank, Standard Bank, Amalgamated Bank of South Africa, Nedbank and Capitec (Coetzee, 2018); these financial institutions offer mobile banking services to their consumers (Shambare, 2011). As discussed earlier, the purpose of this study is to establish how improving students' trust in mobile banking can lead to adoption. The first sub-research problem will look at the status of mobile banking in South Africa. In order to answer this problem, the second chapter provides an overview of mobile banking. Moreover, it seeks to provide an understanding of how mobile banking has been adopted in South Africa. The adoption of mobile banking is low in comparison to other African countries (Chigada & Hirschfelder, 2017), therefore Chapter Two focuses on South African banking institutions, the m-banking services that are offered and the perceived benefit derived from m-banking. Research indicates that one of the main setbacks in mobile banking is the uncertainty of risks associated with such a service, therefore consumers become sceptical, resulting in the distrust of mobile banking services (Lin, Wang, Wang and Lu, 2014). This may result in a lack of m-banking adoption. M-banking is an innovative technological solution provided by banking institutions to allow consumers to conduct banking transactions using a mobile device. Mobile banking is a service that, to a certain degree, is mostly based on technology, security, authentication and trust (Augustine & Kingsley, 2020).

The lack of knowledge and trust are the key reasons for consumers' low adoption of mobile banking in South Africa (Jenkin & Naude, 2019). A study conducted in KwaZulu Natal by Govender and Sihlali (2014) indicates that students appear to have severe misgivings with regards to using a mobile device to complete banking transactions. Moreover, a study where the majority of respondents were undergraduates, post graduates and between the ages of 18-28 years, it was found that trust is a key factor that influences attitudes toward mobile banking adoption (Sreelakshmi & Prathap, 2019). In order to improve m-banking adoption in South Africa by focusing on students, it is also important to understand the role of trust pertaining to the uncertainty faced by the students, which is discussed in Chapter Three.

1.6.4. Trust and its Role in the Adoption of M-Banking

The concept of trust is an imperative factor that may influence students to accept mobile banking and is discussed in Chapter Four. Trust is a challenging construct as many researchers define it in various perspectives and disciplines, therefore there is no unified definition of trust (Lin et al., 2014). Trust is important when trying to understand the complexity of consumer behaviour (Pavlou, 2003). According to the Mayer, Davis and Schoorman (1995, p.712) trust is defined as “the willingness of a party to be vulnerable to the actions of another party, based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party.” Trust is recognised as a vital issue in social environments that encompass individuals and technology (Hajiyev & Chang, 2017; Boateng, Okoe & Thomas, 2016).

The lack of trust is a barrier restricting mobile banking adoption. Current literature reveals that the worldly acceptance of mobile banking systems poses a major challenge as many studies indicate that consumers lack trust in mobile banking (Pamungkas & Kusuma, 2017; Maduku, 2014; Shaw, 2014; Cheng & Huang, 2013; Masrek et al., 2013; Zhou, 2012; Rouibah, Abbas & Rouibah, 2011; Gu, Lee & Suh, 2009). Therefore, in order to understand trust in mobile banking this study looked at various factors that influence trust such as perceived ease of use. Gu et al. (2009) states that the perceived ease of use affects trust in mobile banking as consumers become familiar with the service provided. Another factor that can give users a sense of trust is perceived ease of use. The underlying theory of the research project indicates that there are several factors that influence trust and vice versa. In the context of mobile banking, trust and PEOU lead to the intention to use mobile banking and, ultimately, lead to the adoption of this service. Perceived ease of use involves the users’ perception of how much effort is involved with the use of a given technology. When customers believe that learning and adopting mobile banking is relatively easy, their perception of the usefulness becomes enhanced (Maroofi, Kahrarian & Dehghani, 2013). As students realise the ease of use concerning mobile banking, the easier it will be to trust this service. Therefore, Figure 1 infers that the abovementioned factors all relate to trust as well as its impact on the intention to transact. This research study will look at other factors such as technology acceptance, structural assurances, and relative advantage etcetera in order to improve student trust in mobile banking for improved adoption.

As technologies progress, industries are required to keep up with modern technologies. The financial sector is no different. Industries providing new services need to ensure that their customers are aware of the new products and services. As stated earlier, the lack of trust and knowledge are part of the primary reasons why South Africans are reluctant to adopt m-banking (Kaya, 2013). Therefore, it is imperative to understand the manner in which the different factors influence trust and the adoption of mobile banking by students. An important aspect of mobile banking that students should be aware of is the perceived risks associated with this service. Perceived risk is frequently associated with trust and risk taking in relationships (Schoorman, Mayer & Davis, 2007). Risk is delineated as a customer's perceptiveness towards the uncertainty and unfavourable results of partaking in an activity (Dowling & Staelin, 1994). In addition, it may be viewed as a hesitation regarding the result of using a product/service that is mobile banking (Malhotra, 2012). Moreover, Malhotra (2012) states that perceived risk is one of several facets that need to be considered when presenting new technology applications, as consumers are more likely to be reluctant when using newer technologies. Students adopting mobile banking need to be aware of the perceived risks associated with this service. The E-Commerce Acceptance Model by Pavlou (2003) illustrates the link joining trust and perceived risks. Perceived risk encompasses five facets of risk which include performance risk; security and privacy risk; time risk; social risk and financial risk (Luo, Li, Zhang & Shim, 2010). To overcome the fear of the perceived risks associated with mobile banking, customers need to be become more aware as a lack of awareness may result in customers becoming vulnerable to attacks (Luvanda, Kimani & Kimwele, 2014). Another important aspect of mobile banking that students should be aware of is the perceived usefulness. Perceived usefulness allows consumers to identify how straightforward it is to carry out banking related tasks via a mobile device and the value they gain from using m-banking technologies. Therefore consumers, especially students, will develop a positive attitude as they discover that mobile banking in general, is very advantageous.

Section 1.7 describes the research design used in this study.

1.7. Research Methodology

Research methodology refers to the manner in which a study will go about solving the research questions. It provides a comprehensive description of how data will be collected and examined as well as the sources from which the data is provided. It entails the ethical considerations and the constraints that the study may encounter (Saunders, Lewis & Thornhill, 2016).

1.7.1. Research Paradigm

Research paradigms refer to a fundamental set of beliefs relating to how the various components of research fit together, how they can be investigated and provide meanings to our discoveries (Wisker, 2007). Furthermore, Neuman (2013) states that a paradigm is a widespread organising framework for theory and research that consists of underlying assumptions, important issues, representations of quality research, and techniques in search of answers. According to Clough and Nutbrown (2012), research is frequently categorised uncritically in terms of polarisations: being either positivist or interpretivist.

This research adopts the positivist approach as it seeks to test the relationship between the constructs in order to develop a trust framework to improve mobile banking adoption by university students. The positivist method is generally linked to quantitative research (Saunders, Lewis & Thornhill, 2016). Furthermore, Saunders et al. (2016, p.135) define positivism as “the philosophical stance of the natural scientist. This entails working with an observable social reality and the end product can be law-like generalisations similar to those in the physical and natural science.” Positivism is considered as a long-established approach as it allows a researcher to provide accurate and observable evidence (Neuman, 2013).

1.7.2. Research Approach

There are two types of research approaches that one could use to obtain primary data. These research techniques are identified as qualitative and quantitative research techniques. Qualitative research technique is commonly used to provide a detailed understanding of a phenomena without the use of numerical scales and techniques; it seeks to determine the true inner meanings and provide new insights (Zikmund, Babin, Carr & Griffin, 2013). Furthermore, quantitative research techniques are often referred to as techniques used in research to address objectives through the use of numerical measurements, analysis and hypotheses testing. Furthermore, Bryman (2012) defined quantitative research techniques as an information gathering method that is structured and underlines the quantification in the gathering and statistical examination of information. Following the research paradigm, this study makes use of quantitative research techniques in order to test hypotheses. These techniques are important in order to develop a trust framework to improve mobile banking adoption among university students in South Africa.

Two of the most prevalent techniques for data gathering from research participants are through interviews and questionnaires (Clough & Nutbrown, 2012). The quantitative data collection

technique of this study will be in the form of a questionnaire. Questionnaires seek out the responses from a large number of respondents as they can be calculated, measured and analysed statistically (Wisker, 2007). The questionnaire will be based on previous questionnaires in the field of m-banking as well as issues regarding m-banking amongst university students. Due to budget constraints, the questionnaire was conducted online, using Google Forms in order to reach all students that are currently enrolled at the University of Fort Hare. The questionnaire was distributed by means of a link to a web-based questionnaire and emailed to participants. In order to collect data, the study requires an accurate sample size to ensure that the researcher can draw valid and reliable conclusions from the data collected.

1.7.3. Research Design

Parahoo (2014) states that the research design is the strategy that outlines how, when and where information will be gathered and evaluated. The research design applied will be based on the survey research design. Survey research is often quantitative in nature in that a researcher asks a large number of individuals the same questions and then records the answer obtained from them (Neuman, 2013).

Survey research refers to a written questionnaire or a formal interview to obtain information concerning the backgrounds, behaviour, opinions, and attitudes from a large group of individuals (Neuman, 2013). The key objective of survey research is to obtain raw data from a large population based on a sample of that population. For this study, the researcher will employ a questionnaire technique for the digital collection of the data. Questionnaires collect data directly by questioning individuals and making use of the responses for data analysis. It is frequently used to collect information regarding facts, perspectives, behaviour, proceedings and responses to events and typically involves a list of written questions (Clough & Nutbrown, 2012). Following an in-depth literature review, the study produced a conceptual model (Figure 1) based on the research problem. Thereafter, the researcher formulated a questionnaire in order to test the hypotheses presented in Section 1.3. The following section identifies the data collection technique.

1.7.4. Study Population and Sample Size

The population refers to a group of individuals pertaining to the study based on their characteristics as it enables the researcher to collect information and draw conclusions to the research problem (Hallebone & Priest, 2009). The targeted users of this study were students in a higher education setting that have bank accounts as well as being users and non-users of m-

banking. This study targeted the students between the ages of 18-35 at the University of Fort Hare. The University of Fort Hare currently has 15 681 students that are enrolled (University of Fort Hare, 2020). Therefore, based on the population size, the study made use of the Rao calculator using a 95% confidence level and 5% confidence interval to determine the sample size. The sample size of this research project was 374 students. The sampling method employed for this study was Convenience Sampling. Convenience sampling enables researchers to make use of individuals that are accessible and readily available (Leedy & Ormrod, 2016). Once the data is collected using the sample size, the data will be analysed. The following section discusses the data collected in this study.

1.7.5. Data Collection

Data collection occurs after the research problem has been identified and the research design identified. Researchers should consider the two types of data which are primary data and secondary data (Kothari, 2004). Primary data describes the type of information that is gathered for a particular research problem by means of techniques that are the most applicable to the research problem (Hox & Boeijie, 2005; Kothari, 2004). Furthermore, primary data collected provides additional insight to the present collection of social knowledge (Hox & Boeijie, 2005). For this study, primary data will be collected making use of a questionnaire that was adapted from Pavlou (2003) and other literature studies focusing on trust and mobile banking. The questionnaire consisted of three parts that include demographics of the participants, their background information concerning m-banking, and finally their responses based on the three scales making use of a Likert scale ranging from 1-4. Moreover, the study draws on previously validated scales to measure perceived usefulness, perceived ease of use and perceived risk (Pavlou, 2003), and trust (Bhattacharjee, 2002). Below in Table 1, the various research scales and reliability indicators are shown.

Table 1

Cronbach's Alpha and Scale Composite Reliability

<i>Research scales</i>	<i>Cronbach's Alpha</i>	<i>Source</i>
Perceived Usefulness	0.90	Pavlou (2003)
Perceived Ease of Use	0.90	Pavlou (2003)
Perceived Risk	0.90	Pavlou (2003)
Trust	0.89	(Bhattacharjee, 2002)

Secondary data collection is described as the process of re-analysing data that has been previously used for other purposes (Saunders, Lewis & Thornhill, 2009). Using secondary data will provide a comprehensive understanding of the research topic, thus enabling the researcher to answer the research questions. Current literature will be used in the form of secondary data as this provides published summaries (Saunders et al., 2009). The research study critically reviewed the literature, as it provided a deeper understanding of the topic. It will enable the researcher to gain insights on the topic with the use of previous literature. For this study, literature from various journals, articles and conference proceedings published by ACM, ScienceDirect and other databases were examined.

1.7.6. Data Analysis Method

Data analysis is determining the type of data that the researcher requires from the information that was gathered (Cant, 2005). Quantitative researchers depend greatly on deductive reasoning by establishing particular premises and then developing a logical conclusion from them (Leedy & Ormrod, 2016). The data gathered from the questionnaires was analysed using Statistical Software Package (SPSS) V.25. The SPSS provides a number of benefits, such as increased user friendliness, assumption testing, speed of completion and graphics (Leedy & Ormrod, 2016).

The responses obtained from the respondents for the demographic section were displayed through graphs, tables, and cross-tabulations and other forms of descriptive statistics. To ensure validity and reliability in the study, the questionnaire sections were tested with Cronbach Alpha to demonstrate the reliability of the constructs used in the study. The Pearson's Product Moment Correlation Coefficients were used to test the strength of the relationships between constructs. Pearson's Product Moment Correlation Coefficient refers to a technique that is used to determine the strength of the relation between two variables which ranges from -1 to +1. The Pearson's Product Moment Correlation Coefficient technique was used in this study to test the relationship between Trust, PU, PEOU, PR, trust and adoption of mobile banking. The technique was further used to determine the significance amongst the factors that influence trust and adoption of m-banking as per the hypotheses presented in Section 1.3.

1.7.6.1. Credibility of the research.

The quality of the data gathered and analysed has the potential to strengthen the credibility of the research (Greener, 2008). When ensuring the credibility of the research, there are four factors to consider when using a quantitative approach. These factors include: internal validity,

external validity, reliability, and objectivity. Internal validity identifies the extent in which the data produced allows the researcher to infer cause-and-effect and other relationships within the data (Leedy & Ormrod, 2016). Furthermore, in terms of questionnaires, internal validity signifies the ability of the questionnaire to measure what it is intended to measure (Mark Saunders et al., 2016). This was achieved by reviewing literature and using existing questionnaires for constructs highlighted in the study. Reliability in research discusses the transparency and consistency of the research study as it will enable other researchers to reach the same conclusions from the research findings (Greener, 2008). As a result, reliability measures internal consistency of a scale. The scales under investigation in this study include perceived usefulness, perceived ease of use, perceived risk, and trust. According to literature, a good Cronbach alpha is .70 (Field, 2013; Pallant, 2011). The Cronbach alpha coefficients for the constructs range from .89 to .90 indicating that the constructs display good internal consistency. Objectivity is often encountered in quantitative research as objectivity ensures that the data collected and analysed minimises human subjective factors (Neuman, 2013). In order to achieve external validity and objectivity, the study focused on quantitative methods and data collection approach based on online questionnaires.

1.8. Delimitation of the Study

The study focused on how trust affects the adoption of mobile banking amongst university students. There are several factors that contribute to the slow adoption of mobile banking; however, this research project focused on perceived ease of use, perceived usefulness, perceived risk, trust and adoption of mobile banking. The targeted users of this study were students in a higher education setting that have bank accounts and engage in mobile banking as well as non-users of mobile banking. Despite newer innovations provided by Financial Technology firms (Fintechs) such as mobile money, this study only focused on m-banking services offered from banking institutions.

1.9. Ethical Considerations

Ethics plays a significant role when undertaking a research study (Neuman, 2013). Data has frequently been altered by individuals and organisations to reflect their own agendas by partaking in activities that are not in line with the standards of scientific conduct (Bhattacharjee, 2012). Moreover, Cooper and Schindler (2013) state that the main objective of ethics in research is to safeguard individuals that partake in research activities and ensure that they are not mistreated or suffer from adverse consequences. According to Bhattacharjee (2012), ethical

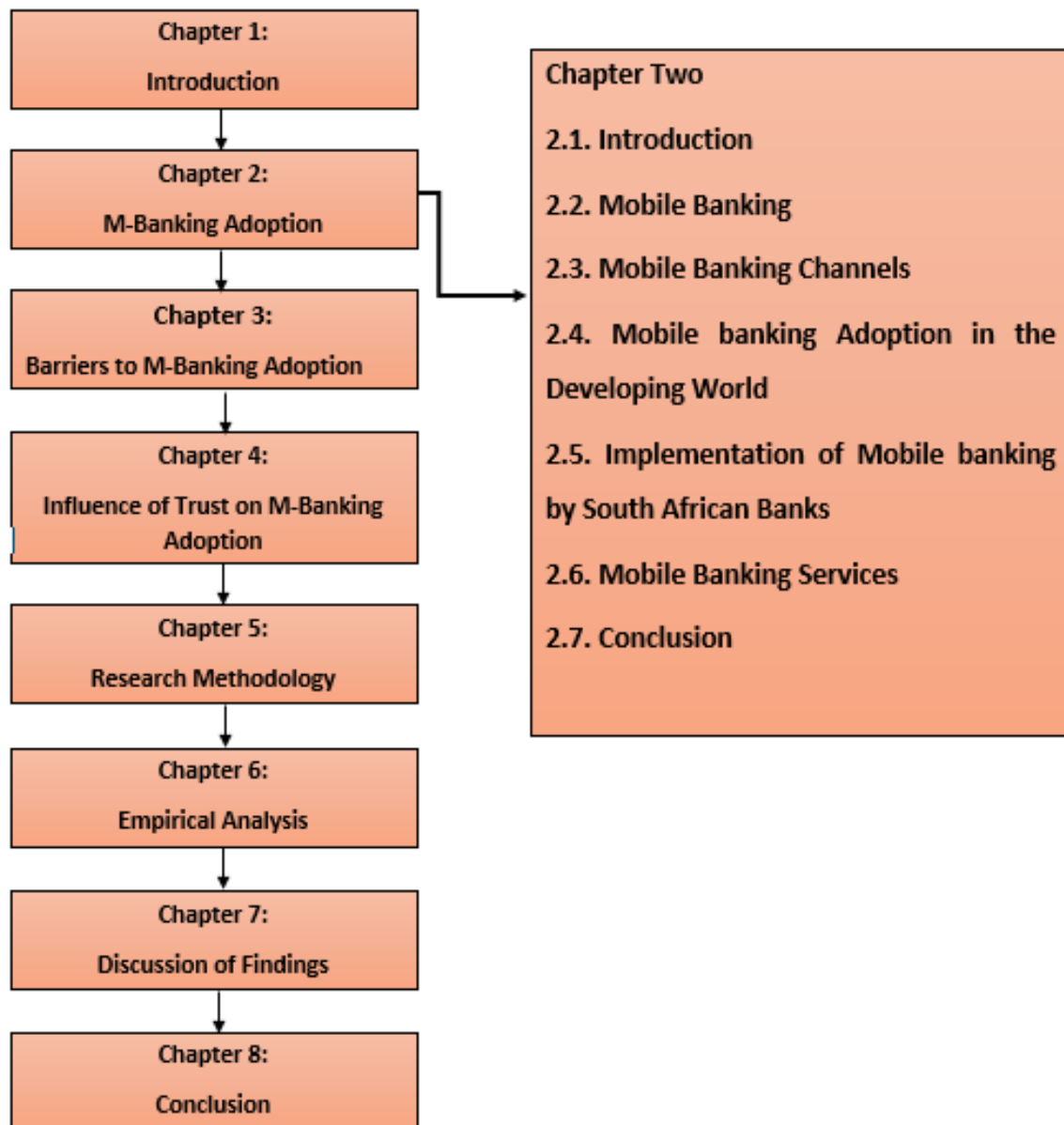
behaviour in research can be followed by researchers who ensure the following factors are considered, such as, voluntary participation and harmlessness; anonymity and confidentiality; informed consent; disclosure; and analysis and reporting. Based on the guideline derived by Bhattacharjee (2012), the researcher was aware of the ethical considerations and sought to undertake the research project in an ethical manner.

For this research study, no persons under the age of eighteen was used for the purpose of this study. An ethical clearance from the University of Fort Hare's Research Ethics Committee (UREC) was obtained before the collection of data (see Appendix A) this ensures that the research will be compliant with the ethical regulations stipulated by UREC. Students participating received full disclosure and were allowed to determine their participation, as they could withdraw from partaking in the study. Additionally, the participants partaking in this study will remain anonymous.

1.10. Research Outline

The research study has undertaken the following sequence. Chapter One introduced the research topic, problem statement, hypotheses, objective of the study, significance and the research methodology that was followed throughout the study. The chapters thereafter introduced the literature to provide more context. Chapter Two focused on mobile banking adoption in South Africa and the services offered by banking institutions. Chapter Three focused on the three constructs, namely, perceived usefulness, perceived risk and perceived ease of use and its influence on trust in mobile banking. Chapter Four discussed the notion of trust and outlined factors that enhance trust and the theoretical framework. Furthermore, Chapter Five focused on the research methodology and research design that was used for this study. Chapter Six provided the empirical findings and the data analysis. Chapter Seven discussed the findings and lastly, Chapter Eight focused on the recommendations and limitations of the study.

CHAPTER TWO: M-BANKING IN SOUTH AFRICA



2.1. Introduction

The preceding chapter provided an overview of mobile banking, the underlying theory of this study and a discussion of how the study was conducted. Chapter One introduced the research problem and the research questions that the research study has addressed. The key objective of this research study was to investigate how trust influenced the adoption of mobile banking amongst university students. This chapter discusses the first sub-question which is, ***how prevalent is mobile banking amongst university students in South Africa?*** In order to understand the key objective of this study, this chapter provides an understanding of m-banking, as it is the cornerstone of this research study. It investigates the various mobile banking services offered by banking institutions and the adoption and growth of mobile banking in Africa and, more specifically, in South Africa and the uptake of m-banking.

2.2. Mobile Banking

Over the past three decades, radical changes can be seen in various fields because of Information and Communication Technology (ICT) developments. As a result, many individuals have become more 'tech-savvy'. Bhatt (2016) claims that ICT has created a technology deluge as both corporate and retail levels can profit from cost-effectiveness, convenience and time-effectiveness because of technology. With constant changes provided by technological development, more consumers are forced to become familiar with technology therefore, becoming more 'tech savvy' (Rajkumar et al., 2020). According to Rajkumar et al. (2020), millennial's are considered to be the 'tech savvy' generation and play a vital role in building the current and future business operations and the success thereof.

New, innovative ICT technologies have been introduced in the financial service sector. According to Shaikh and Karjaluo (2016), the financial service sector has developed several new ways of providing financial services to customers in order to gain a competitive advantage. This has enabled customers to access financial information and make decisions, irrespective of time or location. The developments in ICT create several ways in which banking institutions can become more flexible with regards to their methods of payment, for example, by providing banking services that are comprehensible and convenient (Maroofi et al., 2013). An example of such a service is mobile banking. Mobile banking has been derived from mobile commerce which was based on electronic commerce.

As defined by Gupta, Bagoria and Bagoria (2013), mobile banking is an extension of mobile computing that affords consumers the ability to bank anywhere, anytime through the use of a

mobile device by making use of mobile services such as Short Message Service (SMS). Furthermore, mobile banking allows consumers to have access to their financial statements, account history and monitoring services, SMS alerts, fund transfer services, loan payments and mobile recharges (Chiu, Bool & Chiu, 2017; Vinayagamoorthy, Sankar & Sangeetha, 2012).

Mobile banking promotes the development of mobile technologies and the growth in the financial service sector as banking institutions providing such services have to provide innovative services in order to retain customers. In order to remain in the competitive environment of current financial services, banks are required to consider the most effective cost saving methods of applying information technologies to their banking, ensuring that the best practices are implemented (Lu, Tzeng, Cheng & Hsu, 2014). M-banking is a service that is beneficial for all parties involved; however, m-banking also has its own challenges and many consumers are not aware of how to use their mobile devices to access this service.

In order for consumers to make use of mobile banking, banking institutions are required to ensure that data protection and safety standards are met and fall in line with the regulatory frameworks of the country (Daud, Kassim, Said & Noor, 2011). The following section reviews the various m-banking platforms provided by banks.

2.3. Mobile Banking Channels

Mobile banking services can be executed by means of three different application-based technologies, ensuring the protection of data and safety standards are adhered to by banking institutions offering mobile banking services. These applications consist of browser-based applications, messaging-based applications, and client-based applications (Tiwari & Buse, 2007).

2.3.1. Browser-Based Applications

One of the first examples of mobile banking applications was browser-based applications based on Wireless Application Protocol (WAP) and i-mode (Tiwari & Buse, 2007). The WAP allows the access of information over a mobile wireless network (Mostafa & Eneizan, 2018). Similarly, i-mode delivers a variety of features to mobile device users and allows the users to stay connected to the internet through access to the web via a mobile phone (Malakar, 2015). Moreover, browser-based applications are beneficial as the processing of data is performed on a server, without additional software being required (Tiwari & Buse, 2007). According to Mostafa and Eneizan (2018), there are some limitations with WAP such as low speed and

restricted bandwidth, storage capacity and complexities surrounding encryption that are problematic for mobile devices using WAP. The authors further posit that WAP, therefore, is favourable when making use of internet banking instead of mobile banking. An example is internet-based mobile banking which makes use of a user's mobile screen as a computer in order to complete transaction and access financial information (Chandran, 2014). This type of mobile banking requires communication between the customers' mobile device and banking institution via an unsecured network also known as the internet.

2.3.2. Messaging-Based Applications

Customers can communicate with their banking institution through the use of a messaging-based application. The communication between the banking institution and customers can be conducted via text messages (Tiwari & Buse, 2007). Technologies that enable text-based services for mobile banking are known as Short Messaging Service (SMS) and Unstructured Supplementary Service Data (USSD) which are well-suited to most mobile devices.

2.3.2.1. Secure SMS-Based mobile banking.

According to Gupta et al. (2013), there are two forms of SMS banking, which are Push SMS services and Pull SMS services. Push SMS banking services refer to sending a message from a SMS server to a mobile device and is a one-way message that is initiated by a mobile application. Push services enable consumers to receive SMSs that include One Time Passwords (OTP), monthly reports regarding salaries and other transactions, whereas Pull SMS services refer to sending a request and receiving a response. For this reason, it is considered as a full duplex scenario in which the user sends a request to the SMS banking application and the application then responds with the necessary information (Thulani, Kosmas, Collins & Lloyd, 2011). Despite being a common way in which customers bank, SMS-based banking has its own set of disadvantages. According to Vishnuvardhan, Manjula and Naik, (2020), SMS banking technologies are widely available, but they offer no security. The involvement of third parties, such as mobile network operators (MNOs), poses a risk to the customer as there is no encryption offered in text messages.

2.3.2.2. USSD-based mobile banking.

USSD-based m-banking enables consumers to access their financial information by dialling the banks service code (Chandran, 2014). The USSD-based mobile banking is a form of SMS service that provides a menu with a timed session and is a standard feature in all mobile devices. Customers can send a command to the bank with the use of a registered mobile number, the

customer can then use text messages to perform banking transactions (Masinge, 2010). This form of mobile banking provides customers with an array of options and allows the customer to select options based on the menu provided by the bank resulting in an effective communication medium between the bank and its customers (Cavus & Chingoka, 2015). USSD-based mobile banking is readily available on all devices and does not require any installation of applications. However, similar to SMS-based mobile banking, there is no encryption as it is not possible and requires involvement of third parties such as MNOs (Vishnuvardhan et al., 2020).

2.3.3. Client-based applications

Applications that are client-based make use of a particular software that is installed on the mobile device, known as the SIM Toolkit Standard (STK) (Tiwari & Buse, 2007).

2.3.3.1. Mobile banking applications (Apps).

There are several ways consumers can access mobile banking as it continues to diversify and develop to accommodate more consumers. Newer technologies and mobile devices make use of Android, iPhone OS (iOS) and Blackberry OS operating systems in order to complete mobile banking transactions. Banking institutions have partnered with their respective information technology departments to develop bank applications. Banking applications are made available for download on various platforms working on Code Division Multiple Access (CDMA) and Global System for Mobile Communication (GSM) handsets (Chandran, 2014). Furthermore, this is achieved by downloading and installing mobile banking applications from app stores, granted that the user accepts the permissions for installation to proceed (Jorgensen et al., 2015).

Mobile technology has changed the way in which people bank. The literature reveals that there are several mobile banking platforms that are readily available for consumers. This may be due to banks attempting to remain competitive by continuously meeting their customers changing needs. Omnichannel banking allows customers to use these platforms interchangeably in a seamless manner making mobile banking more efficient while still providing customers with a more personalized experience when banking (Rabe, 2020).

In order to remain competitive, banks have implemented newer technologies for mobile banking such as contactless methods such as Near Field Communication (NFC). According to Trütsch (2020), modern advances in the banking sector endeavour to mimic the ability of cash payments by introducing cashless methods of banking. As part of the banking sectors initiatives, banks try to provide payment services that are efficient and provide convenient

banking services that attempt to reduce transactional costs of payments that customers may encounter. The author further posits that “contactless payment is therefore seen as a more competitive payment alternative to traditional cash payments compared to conventional payment cards” (Trütsch, 2020. p.1). Contactless methods of payments use NFC technologies.

NFC technology allows customers to complete banking transaction by aiming their mobile devices to an NFC enabled payment terminal (Gerstner, 2015; Khalilzadeh, Ozturk, & Bilgihan, 2017). Therefore, smartphones with NFC tags embedded within it can act as a virtual wallet and requires two key factors which are an initiator which establishes a communication exchange and a target that responds to requests sent from the initiator (Liébana-Cabanillas, Singh, Kalinic, & Carvajal-Trujillo, 2021). Therefore, allows mobile banking users to conduct banking transactions at their convenience with their smartphones acting as a virtual wallet.

Mzekandaba (2020) states that a report generated by the Independent Communications Authority of SA (ICASA) reveals the smartphone penetration rate in South Africa. Smartphone penetration rates are currently over 90% in South Africa. As mentioned in chapter one, only 54% of South Africans use mobile banking (Kemp, 2020). Therefore, based on the above statements, there is discrepancy between the smartphone penetration rate and number of mobile banking users, further indicating that there is a need for further investigation on how to improve adoption of m-banking. After identifying the various mobile banking applications, the following section examines mobile banking adoption in the developing world.

2.4. Mobile Banking Adoption in the Developing World

As mentioned in Section 2.2., the progression of ICT has changed the manner in which consumers do banking in today’s society (Shambare, 2011). In addition, the advancements in ICT have led to the progression of ‘brick banking’ to ‘click banking’ (Sharma, 2011). Therefore, banks can be represented by ATM’s, debit cards, the internet and mobile devices/phones.

M-banking is a delivery channel recognised by retail and microfinance banking institutions in developing and advanced countries, despite the successful channels of delivery offered for traditional banking by ATMs, telephone, and the internet (Safeena, Date, Kammani & Hundewale, 2012). Despite the successful delivery channels offered by banking institutions, Tekutiev (2015) states that there are 2.5 billion people worldwide that do not possess bank accounts. In South Africa, some of the barriers to consumers accessing accounts are due to the

amount of paper work involved, high costs and access to banking facilities (Rumney, 2019). Therefore, it is necessary for the development of services such as mobile banking as it will allow the financial and social inclusion of many more individuals. Studies by Clarkson (2015) and Reaves, Scaife, Bates, Traynor and Butler (2015) found that there are currently 250 mobile banking and mobile money services worldwide with approximately 480 million transactions taking place per month in 88 countries, which service a total of 203 million registered accounts.

The constant need for management of money via applications, as well as the increase in the prevalence of mobile phones have allowed m-banking services to thrive. The uptake of m-banking in developing countries has increased tremendously over the years and is evident as many Sub-Saharan countries such as Nigeria, Zimbabwe and Kenya endeavour to become cashless societies. In developing countries such as India, the adoption of mobile phones is steadily approaching saturation, resulting in an increase of revenue for network operators through mobile banking (Goyal, Pandey & Batra, 2012). Mobile banking is also a driver for agricultural transactions and boosting of Short-Medium Enterprises (SMEs) in developing countries, thus improving the standard of living in rural areas. Although mobile banking poses a relative advantage for most consumers, many banking institutions face known and unknown challenges with these services resulting in barriers for adoption occurring.

In Tanzania, one of the main barriers to adoption of m-banking that occurs is due to poor network coverage being made available by mobile network operators (MNO). According to Rumanyika (2015), poor network availability equally affects urban and rural areas in Tanzania, as the mobile network infrastructure of the country is in a poor state. Mashenene and Mkende (2019) concur as the authors found that 72.4% of the participants in their study were affected by network failure in Tanzania which, in turn, affected m-banking. Moreover, Iddris (2013) stated that poor telecommunications is a barrier for mobile banking adoption to occur. This is evident in the case of Ghana, as consumers become frustrated when conducting bank related transactions using their mobile devices.

In Nigeria, a study by Saidu and Hassan (2016) found that a substantial amount of individuals are reluctant to use mobile banking due to mobile banking illiteracy. Consumer lack understanding of complex mobile banking operations and tend to become frustrated especially in countries where there are recognisable language barriers. Language barriers are another reason that consumers are reluctant to adopt mobile banking in countries such as India as there are 18 official languages.

In order to comprehend consumer resistance in mobile banking, Cheng, Lee and Lee (2014) found that in China, security and perceived risks associated with mobile banking were a major issue in the resistance to adoption of m-banking. However, regardless of the security risks related to m-banking in China, the adoption appears to be increasing at a rapid rate. China is also considered as one of the countries with steep mobile device penetration, as it is at the forefront of the production of mobile devices (Cheng et al., 2014). Despite the steep penetration of mobile phones and mobile banking in some developing countries, most African countries such as South Africa lag behind.

2.5. Implementation of Mobile Banking by South African Banks

In South Africa, there are five key players in the retail banking industry. These key players are known as First National Bank (FNB), Standard Bank, Amalgamated Banks of South Africa (ABSA), Nedbank, and Capitec Bank. These banking giants offer mobile banking and mobile money services to their consumers, so they are the foundation of this study.

South Africa's banking industry, alongside Morocco and Egypt, has set high standards for financial services in Africa as it has proven that innovation is continuous within the industry (Abbott, 2015). South Africa has also been known to have one of the most progressive telecommunications' infrastructure on the continent, allowing services such as digital banking to thrive. Donou-Adonsou, Lim and Mathey (2016) concluded that telecommunications' infrastructure promotes economic growth in Sub-Saharan Africa. This is evident in the case of South Africa as more individuals become tech-savvy and rural dwellers are financially included.

Many South Africans reside in rural areas or semi-urban areas where access to a bank is restricted (Ondiege, 2010). According to the World Bank (2019), almost a third of South Africa's population resides in rural areas. Therefore, South Africa has come a long way in terms of m-banking as banks provide such services to the population that remains unbanked in South Africa. Financial inclusion in South Africa has increased over the past few years. As stated in Chapter One, South Africa has a banked population of 77% (Department of National Treasury, 2019). Mobile banking was first introduced by ABSA in South Africa. Subsequently, First National Bank (FNB), Standard Bank, NedBank, and Capitec Bank have launched mobile banking services (Dagada, 2013). According to Dagada (2013), ABSA and FNB remain at the forefront in the market for mobile banking, while NedBank continues to make huge strides in

spite of being the one of the last banks to provide mobile banking services. An example of m-banking options can be seen in figure 3. According to Insite Consulting's SITEisfaction Survey report, FNB was declared as the best digital bank in South Africa, leading in both online and mobile banking. The FNB received a score of 81 out of 100 in the consumer satisfaction survey for internet banking as well as for mobile banking. The survey revealed that Capitec Bank received a consumer satisfaction score of 78 out of 100. The third best digital bank in South Africa was TymeBank which received a score of 74 out 100 which was followed closely by Nedbank with a score of 72. Moreover, Standard Bank received a score of 66 and lastly ABSA received a score of 61 (Venter, 2020). Although the abovementioned commercial banks lead in South Africa's digital economy, mobile banking adoption remains a setback as only 54% percent of South Africans use this service (Kemp, 2020). As stated in Chapter One, cash is still the preferred way South Africans conduct transactions as many do not trust banking institutions (Rumney, 2019). Many South African mobile network operators (MNOs) have contributed tremendously to the success of mobile banking within the country (Dagada, 2013). Partnerships between banking institutions and mobile companies have been encouraged as the banking regulations in South Africa state that all corporations that provide mobile banking services should be in possession of a banking licence (Dagada, 2013). The biggest MNOs in South Africa are Vodacom, MTN, Cell C and Telkom (Bronkhorst, 2015). Although the success of the mobile network operators in South Africa is evident, Dagada (2013) states that there is a discrepancy between the amount of mobile phone subscriptions and the quantity of consumers adopting mobile banking. The section below seeks to identify various banks in South Africa and the mobile banking and mobile money platforms they provide for banking customers.

2.5.1. First National Bank (FNB) of South Africa

In the early 2000's, First National Bank (FNB) developed a service called InContact, notifying FNB account holders about transactions on their bank accounts via SMS (Matthew, 2014). FNB initiated major marketing strategies in order to increase their customer base, this in turn ensured that consumers understood the user friendly and secure services offered by the banking institution (Matthew, 2014). The FNB has since grown their mobile banking services. In 2009, 56 million transactions were undertaken by FNB's customers to the value of ZAR 7.2 billion (Ondiege, 2010). In 2009, FNB found that two million customers used their mobile banking services. This number has grown at an exponential rate, and therefore FNB has four million users out of its seven million retail users (Arde, 2013; Ondiege, 2010). FNBs customer base has grown to 7.5 million users in 2016.

2.5.1.1. eWallet™.

FNB grew their customer base by developing a new service called ‘e-Wallet’. The mobile device based e-wallet solution enables FNB consumers to transfer money to any cell phone number in South Africa, regardless of the mobile network operator (Kruger, 2011). According to Kruger (2011), the e-wallet solution is one of the most convenient money transfer applications in South Africa, allowing the receiving customer to go to the nearest FNB ATM, generate a reference number and capture it into the ATM. The receiving customer then collects the money immediately, without inserting a card into the ATM. In addition, the wallet allows senders and receivers to access other services such as the transfer of funds to a third party (Ondiege, 2010). As a result, FNB’s success is derived from its ability to provide their customers with such innovative mobile banking services (Ondiege, 2010).

2.5.1.2. SA-Zim mobile banking.

This service was launched in 2013 in order for South African citizens to send money via a mobile device or online banking to an individual residing in Zimbabwe. The recipient is required to obtain a valid Zimbabwean identity document (ID) as well as a voucher reference sent via SMS or e-mail in order to collect the money at any OK Zimbabwe Ltd Money Counter (FNB, 2016). This service both combats challenges consumers face when sending money across borders and increases cross border transactions.

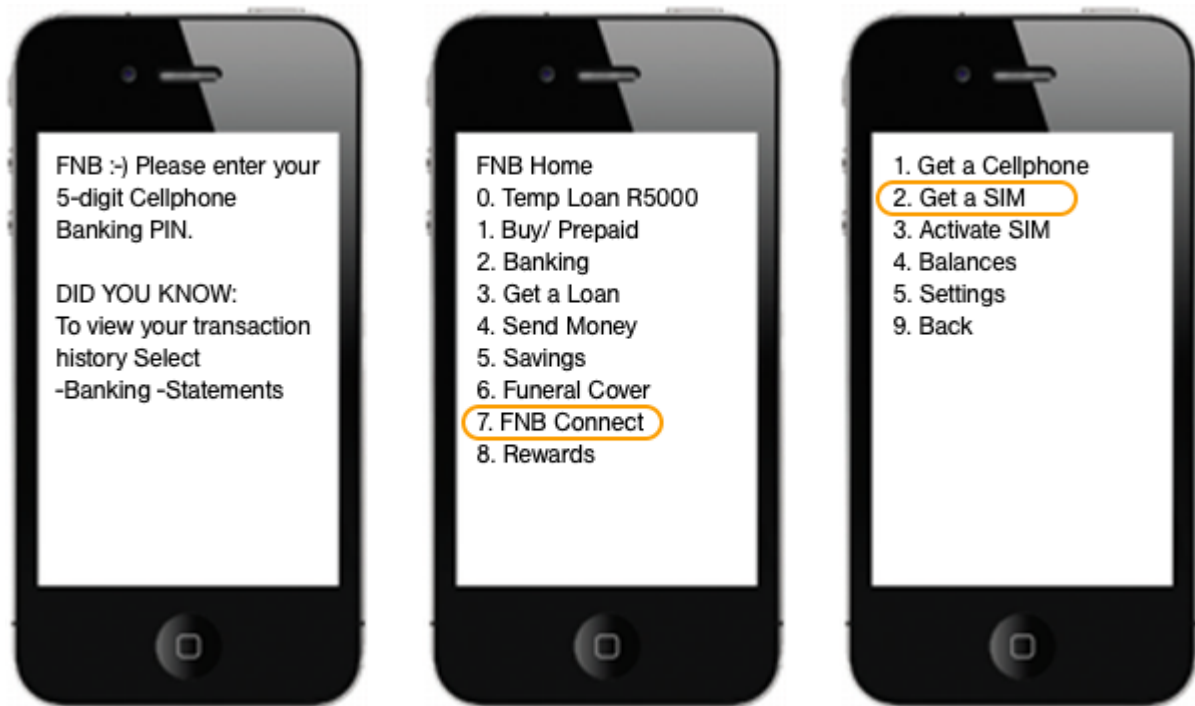


Figure 3: FNB mobile banking user interface (USSD-Based) (FNB, 2016)

2.5.2. Amalgamated Banks of South Africa (ABSA).

In the early 2000s ABSA introduced WAP-based and Wireless Internet Gateway (WIG) based mobile banking options. Vodacom and MTN subscribers are therefore able to use ABSA WIG mobile banking (Ismail & Masinge, 2012). Thereafter, ABSA introduced the expansion of their mobile banking services by offering a USSD mobile banking option in 2008, thus remaining relevant with its customers (Kruger, 2011).

According to Arde (2013), the head of digital channels and payments of ABSA stated that ABSA has four million users registered for mobile banking (Arde, 2013). The bank, ABSA, has increased its customer base in 2014-2015 to 9.2 million, thus showing a 7 percent increase from the 2012-2013. In order to use mobile banking, users require airtime. Most banks cover the expense of this service whereas ABSA in association with Vodacom allow users to dial the ABSA dial string for free (Arde, 2013).

2.5.2.1. CashSend™.

By all accounts, ABSA, is a member of Barclays Africa Group Limited that launched their CashSend™ service in 2008. CashSend, similar to FNB's eWallet, has been highly successful in South Africa, having reached R1 Billion transactions in 2012 (Vorster, 2012). CashSend™ allows ABSA consumers to transfer money to any South African mobile number. ABSA makes use of various banking platforms to ensure the usage of this service, therefore money may be

transferred from an individual's savings or cheque account using mobile banking, online banking, and ABSA ATMs. This service is ideal in South Africa as it seeks to benefit both the banked and unbanked population of the country (Istrate, 2014). Security is crucial when sending or receiving money via a handheld device therefore cash payments and cash withdrawals remain secure as ABSA requires a six digit access code created by the sender as well as a ten digit code sent from the CashSend system (ABSA, 2016).

2.5.3. Nedbank.

As stated earlier, Nedbank was the last to implement mobile banking services out of the four major banks in South Africa (Dagada, 2013). Nedbank has come a long way in terms of their mobile banking services. In March 2010, Nedbank and Vodacom publicised the joint initiative of bringing M-Pesa to South Africa; it enables unbanked consumers to transfer money via a mobile device (Nedbank, 2010). Vodacom alongside Nedbank ensures that the joint venture satisfies and complies with all the requirements put in place by the South African Reserve Bank by proactively engaging with the banking regulator (Nedbank, 2010).

2.5.3.1. M-Pesa in association with Nedbank.

M-Pesa is a mobile money transfer and payment service which was developed in Kenya by Safaricom in 2007. This service has been wildly successful in East Africa. The success of Kenya's M-Pesa has enabled further development of this service and now provides over 40000 agents across Kenya with over 17 million users, thus increasing financial inclusion within the country. The registration for M-Pesa is free therefore consumers do not require bank accounts; however, it does require that users provide proof of national identification upon registration (Nyantakyi & Sy, 2015).

M-Pesa permits consumers to transfer money into an account stored on their mobile device. It also enables users to forward balances via SMS technology to other consumers (as well as to the suppliers of commodities and services) and to convert deposits for regular money. Amounts payable are subtracted from a customer's account and collected when e-float or e-money (M-Pesa currency) is sent or money is withdrawn (Jack & Suri, 2011).

In August 2010, Nedbank in association with Vodacom publicly initiated M-Pesa in South Africa. M-Pesa is accessible to all Vodacom users and it is supported through the Unstructured Supplementary Service Data (USSD) technology (Nedbank, 2010). M-Pesa has extended rapidly, becoming one of the most thriving mobile phone-based financial services in the developing world (Jack & Suri, 2011). It has been found that M-Pesa flourished rapidly in

Kenya as opposed to South Africa. In 2012, Kenya reached 9.7 million active user and 15 million registered users whereas South Africa had difficulty and only gained 1.2 million users after the first two years (Budree & Williams, 2013). Therefore, this indicates that South Africa has had a poor success rate with M-Pesa, despite using the same model. Furthermore, the failure of M-Pesa may have been a result of Nedbank's customer base as it only had 7.1 million customers in 2014, despite Nedbank's M-Pesa initial target of 10 million customers in South Africa.

2.5.3.1.1. M-Pesa™ Relaunch.

M-Pesa was relaunched in August 2014 in South Africa as a result of its failure, especially in comparison to other African countries. When Vodacom and Nedbank launched M-Pesa in 2010, their target market had been set to reach 10 million consumers to adopt this service. This joint venture expectation was hardly met as Vodacom report that in 2015 they had reached one million users and only 76000 of those users were actively engaging in this service. Despite the unsuccessful launch of M-Pesa in South Africa, Nedbank has moved on to new ventures in terms of mobile banking offering a service to its consumers known as Send-iMali™.

2.5.3.2. Send-iMali™.

In order to employ sustainable banking, Nedbank launched a new mobile banking service in 2014 which is known as Send-iMali™. In an effort to increase financial inclusion in South Africa, Nedbank's Send-iMali™ allows consumers to send and receive money on all of the digital platforms made available by Nedbank, including Nedbank AppSuite. According to Nedbank, this service is fast and convenient as it does not require a bank account or any form of identification. Its only requirement is that the recipient has a valid South African mobile number. Completing transactions using Send-iMali can be done by dialling the USSD string and selecting the options made available thereafter (Nedbank, 2014).

2.5.4. Standard Bank.

Standard Bank, formed an alliance with MTN and put into service MTN banking, which is a mobile money service based on WIG that consumers are required to install on their individual SIM cards (Ismail & Masinge, 2012). Customers of Standard Bank are provided with services that are cost effective, suitable and safe through the use of self-service banking that is mobile banking (Ismail & Masinge, 2012). The implementation of mobile banking at Standard Bank is achieved through either a WIG-based option or WAP-based option, in which case both work on any mobile device (Masinge, 2010).

2.5.4.1. MTN Mobile Money.

The MTN mobile money allows consumers to access their accounts from anywhere in the world and allows consumers to control their finances through a secure connection (Ondiege, 2010). It thus can be said that MTN Mobile Money is a secure and affordable way to do banking and it is made available to consumers on all networks (MTN, 2020). It ensures that consumers pay no monthly or annual subscriptions fees and it requires no minimum account balance (MTN, 2020).

2.5.4.2. Instant Money™.

In the year 2010, Standard Bank in Association with Spar launched a new money exchange service. This service is known as Instant Money™, allowing customers to transfer money without the need for a bank account. Instant Money™ is a person-to-person money transfer service, however it requires a mobile device in order for the recipient to receive an SMS with a reference number and pin to obtain the money. Money transfers and payment solutions make use of the various banking platforms offered by Standard Bank at a charge of R9.95 (Instant Money, 2014). The rollout of this money transfer solution offers smart banking to individuals living in rural areas (Moneyweb, 2010).

2.5.4.3. WeChat Wallet™.

WeChat™ collaborated with Standard Bank in order to launch WeChat Wallet™ in South Africa. WeChat is a social communication application that allows individuals to connect and communicate regardless of distance. The WeChat Wallet allows consumers to store their bank cards on the virtual wallet, once it has been approved by Visa and MasterCard security systems (Standard Bank, 2016). Once a bank account has been loaded, consumers using the WeChat app may transfer money to a WeChat contact or make payments to a supporting merchant in order to make cash withdrawals. Cash withdrawals are charged at a fee of R10 per transaction at any supporting merchant, including SPAR, Cambridge, Rhino, and Choppie stores as well as the Standard Bank ATM (Vermeulen, 2015).

2.5.5. Capitec Bank.

Capitec Bank is a fairly new contender in the banking industry of South Africa. Capitec Bank was first established on March 1st, 2001, and officially listed on the Johannesburg Stock Exchange (JSE) on February 18, 2002. This banking institution has been growing at an exponential rate with over 7.3 million customers and 720 branches. According to the Capitec Chief Financial Officers report in 2015, the bank had 3.4 million mobile customers, however

according to the Annual Integrated Report published by Capitec Bank, their mobile banking clients increased to 4.2 million (Capitec Bank, 2016). Although Capitec Bank has been a late player to the commercial banking industry, it is evident that it is up as it has more customers than First National Bank.

The abovementioned retail banks all offer mobile banking applications that may be downloaded on various operating systems. Users are required to download and install the application and simply insert their bank account information to complete banking related transactions.

2.6. Mobile Banking Services

Banks in South Africa offer their customers with a wide variety of financial services that can be completed via mobile banking. Essentially, they allow customers to access their account details, check and request mini-statements for account history, provide alerts for various account activities, mobile recharging, that is, purchasing airtime and provide access to loan statements (Goyal et al., 2012). They have also accommodated consumers who want to complete payment transactions and transfer funds locally and internationally. It helps consumers with insurance policy management, micro-payment handling and pension plan management (Arde, 2013).

2.6.1. Benefits of M-Banking.

According to literature, banking institutions have benefitted from the ease of use when reaching their customers. Mobile banking allows banking institutions to expand their offerings to customers by taking advantage of the latest technologies (Riquelme & Rios, 2010). Mobile banking offers a wide range of advantages for both banking institutions and customers. According to Mehrad and Mohammadi (2016), perceived benefits accompanying m-banking are a strong determinant of a consumer's attitude towards this service. The following benefits will be examined:

2.6.1.1. Customer retention.

Banking institutions have numerous reasons for providing services such as mobile banking for their customers. Customer retention and customer loyalty are one of the many motivations behind mobile banking (Sherman, 2014). Banking institutions are required to implement strategies that enhance customer loyalty or retention thus, becoming more profitable (Puschel,

Mazzon & Hernandez, 2010). According to a study by Haripersad and Sookdeo (2018), it is more cost effective to retain customers than to appeal to new consumers. Mobile banking allows existing consumers to have access to financial services “on the go”, making it easier to transact. Customers benefit as they are offered innovative and convenient services by their banking institution (Saleem & Rashid, 2011). Successful customer relationship strategies benefit both banking institutions and customers.

2.6.1.2. Reduced costs.

The introduction of mobile banking enables banking institutions to reduce costs significantly for their consumers, moreover for students. As a result, the reduction in costs allows students to complete simple transactions performed with a mobile device in a less expensive manner when compared to transactions occurring at banking branches (Sherman, 2014). As mobile banking decreases costs, it provides an increased reach to students as affordability remains a key issue among university students in South Africa.

Newcomers such as TymeBank, Discovery Bank and Bank Zero offer financial services at lower rates. Mobile banking is a cost-effective method for both the bank and the customer. Customers can transact anywhere in the world at lower rates. Mobile banking is cost effective for banks as they can employ less employees and save on overhead costs (Motsoeneng, Chalumbira & Roelf, 2018).

2.6.1.3. Increased reach.

Mobile banking is considered as an enabler of economic growth (Sherman, 2014). Access to financial services, like mobile banking, allows governments to expand the acceleration of economic growth. Individuals are able to identify the opportunities provided by mobile banking, therefore financial access is not only desired by governments and banking institutions (Sherman, 2014). As seen in Section 2.5.1.2., FNB provides SA-Zim mobile banking features demonstrating that increased reach is beneficial for foreigners. Banking institutions may reach several consumers and further allow cross-border transactions, thereby increasing the number of students using m-banking.

2.6.1.4. Convenience.

Mobile banking is a convenient service offered by banking institutions to their customers as it enables users to connect quickly and easily. Mobile devices or phones are increasing in functionality and usability, thus allowing easier completion of mobile banking transactions

(Abdelkarim & Nasereddin, 2010). Mobile banking allows consumers to transact at a time and place that is well suited for the individual engaging in financial transactions (Chandran, 2014).

2.6.1.5. Ease of access.

Mobile banking ensures that users are able to access their financial information beyond working hours. It enables consumers to gain access to banking services by making a call to the banking institutions or dialling the USSD string provided by a bank (Chandran, 2014). Furthermore, banking institutions in South Africa also provide mobile banking apps.

2.6.1.6. Increased efficiency.

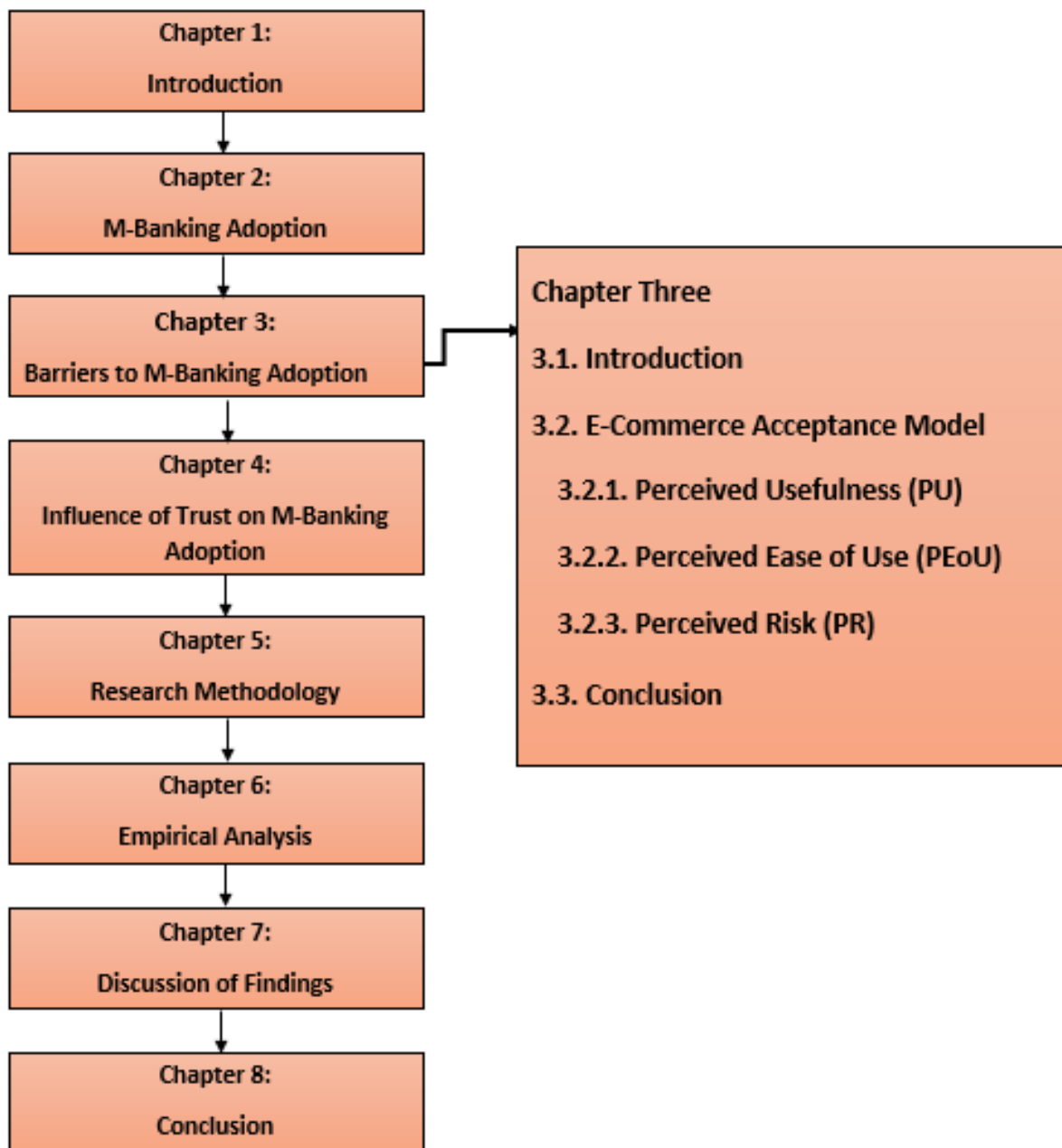
Mobile banking improves efficiency in the banking sector as it helps with the decongestion of bank branches as well as the reduction of paperwork for both bank tellers and customers (Chandran, 2014). Paperwork reduction may be a result of many processes becoming digitalised and allowing banks and customers to store electronic copies.

Despite the extensive perceived benefits derived from m-banking, perceived benefits was not included as a construct as it was not part of the underlying theory of this study.

2.7. Conclusion

This chapter provided a comprehensive overview of mobile banking and its applications. It discussed mobile banking in the developing world and the barriers of adoption that consumers face when transacting via a mobile device. Furthermore, the literature indicates that Information Technology has changed the way individuals transact in today's society. It is evident that South African retail banks provide mobile banking services that are more convenient and flexible and suit all individuals. South Africa has emerged as one of the most successful nations in the context of telecommunications infrastructure, however, the uptake of m-banking still remains low. The five key players in South Africa's banking industry all provide new innovative mobile banking services in order to ensure that South Africa remains at the forefront with mobile banking technologies. Moreover, the findings of this chapter reveal that financial inclusion has increased tremendously since 2012. The following chapter identifies the barriers to m-banking adoption and their impact on trust.

CHAPTER 3: BARRIERS TO M-BANKING ADOPTION



3.1. Introduction

The preceding chapter provided an overview on the subject of mobile banking. It discussed the various ways in which consumers engage in mobile banking and m-banking in developing countries. Additionally, Chapter Two highlighted m-banking adoption in South Africa and the key players in South Africa's commercial banking industry such as FNB, ABSA, NedBank, Standard Bank and Capitec Bank. Although mobile banking services are innovative and a convenient way in which consumers can bank, South Africa only has an adoption rate of 54% for these services (Kemp, 2020).

As discussed in the previous chapter, there are numerous aspects that challenge the acceptance of m-banking in South Africa as well as in other developing countries. Banking institutions are required to ensure that consumers understand how to complete bank-related tasks using a mobile device for secure transactions and provide end-to-end security to safeguard information exchange between the customer and the banking institution (Weerasinghe, Rakocovic & Rajarajan, 2012). The improvement and development of the mobile device creates numerous challenges and threats for individuals, businesses and society, especially those partaking in mobile benefit services such as mobile banking (Sujithra & Padmavathi, 2012). This chapter then discusses the second sub-question which reads: What are the barriers to the adoption of M-banking among university students? The chapter also discusses the E-Commerce Acceptance Model by Pavlou (2003) which includes topics such as perceived risk, perceived ease of use and perceived usefulness and its impact on trust and the consequent adoption of mobile banking by university students in a South African context.

3.2. E-Commerce Acceptance Model

The underlying theory in this study will be based on the E-Commerce Acceptance Model (EAM) by Pavlou (2003). The EAM utilises constructs from the Technology Acceptance Model (TAM) and the Integrative Model of Organisational Trust by Mayer et al. (1995). The

model explores the relationships between perceived usefulness, perceived ease of use and perceived risk and trust and consequent adoption of m-banking.

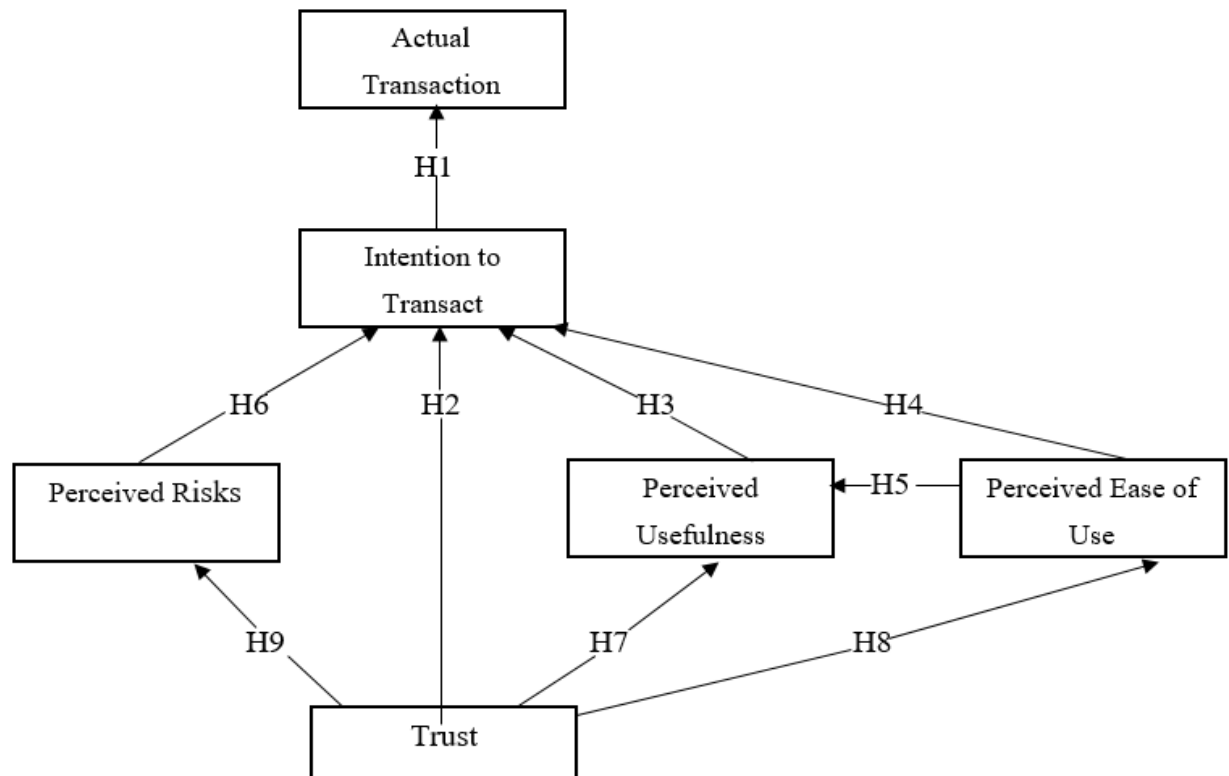


Figure 4: E-Commerce Acceptance Model by Pavlou (2003)

The model shown in Figure Four was employed in the context of mobile banking to illustrate how increasing a student’s trust will improve the adoption of mobile banking. The use of this model provided a better understanding as to how perceived ease of use, perceived usefulness and perceived ease of risk influence trust and adoption. The following sections discuss the various constructs of the model, starting with the Perceived Usefulness construct.

3.2.1. Perceived Usefulness (PU)

Perceived usefulness is identified as “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis, 1989, p. 320). In terms of mobile banking, it reveals how convenient mobile banking is for banking customers to carry out banking related tasks (Maroofi et al., 2013). Consumers will consequently develop a positive attitude as they discover that mobile banking in general, is very advantageous. Perceived usefulness has a close association with subjective probability, which refers to the idea that the utilisation of m-banking is beneficial, making banking an easier task (Maroofi et al., 2013). Koenig-Lewis, Palmer and Moll (2010) found that compatibility, perceived usefulness, and perceived risk are important indicators in the adoption of mobile banking

services. Moreover, extant literature indicates that perceived usefulness is the most significant driver that may influence mobile banking adoption (Laukkanen, 2007; Lee et al. 2009; Lin, 2010; Wessels & Drennan, 2010).

As stated earlier, mobile banking is an alternative financial service delivery platform, therefore, according to Kazi and Mannan (2013), as soon as consumers recognise the significance of alternative technology-based service methods, such as mobile banking, the intention to adopt such a service will escalate. This is evident in the underlying theory of this study (Figure 4). Pavlou (2003) theorised that perceived usefulness has a positive influence on trust and on the intention to transact. In the case of mobile banking, perceived usefulness will therefore increase a student's intention to transact, which will influence actual mobile banking transactions taking place. Furthermore, Lin (2011) states that a consumer will continue using mobile banking services if their beliefs over its usefulness are confirmed by the ongoing usage experience. In a study involving 435 university students in Turkey, Akturan and Tezcan (2012) found that perceived usefulness affected the student's behaviour towards mobile banking and that attitude was a major influential factor of mobile banking usage intention. Perceived usefulness acts as a crucial factor in encouraging the use of m-banking (Hassan & Wood, 2020). Therefore, in order to change a student's perceptions towards mobile banking, banking institutions need to embrace awareness campaigns to promote the benefits and ease of using m-banking. This will provide students with the knowledge and guidance to transact.

Furthermore, a study by Ramos, et al. (2018), states that when consumers recognise the usefulness of m-banking, they are more likely to have their trust positively affected as perceived usefulness has a positive influence on trust in m-banking. The authors further posit that time coupled with the consumer's standard of living in today's society, demonstrates the awareness of usefulness on applications that allow individuals to be more productive and increase performance. According to (Daud et al., 2011), awareness of mobile banking benefits is crucial among existing and potential banking customers in the initial adoption of this service. Measures should be put in place to increase awareness via advertising and promotion of m-banking, allowing banks to create a mobile banking frenzy which will increase the interests of future adopters (Daud et al., 2011). Moreover, Ifeonu and Ward (2015) concluded in a study based in Nigeria that mobile banking adoption is based on three factors, namely technology trust, perceived usefulness and perceived ease of use. The authors found that, of those three factors, perceived usefulness was the most influential factor contributing to the intention to

adopt mobile banking. Therefore, as mentioned earlier, South African banks should promote awareness with regards to the ease of use and benefits associated with m-banking to increase adoption among their customers. In a study involving trust in online firms, Bhattacharjee, (2002), found that awareness contributes to building trust and is a strong predictor of trust.

Alsheikh and Bojei (2014) inspected factors encouraging consumer's intention to adopt m-banking in Saudi Arabian commercial banks. Their study revealed that out of the 403 respondents, 95.5% have an educational background that ranges from a high school certificate to doctoral degrees. In addition, the study found that 18.9% of the respondents were students and determined that 'awareness of service' and mobile device familiarity are significant when understanding m-banking and related functionalities and benefits, where as a lack of information and knowledge increase risk perception. Students are often easily influenced, therefore, according to Al-Jabri and Sohail (2012), once a consumer is aware of the distinct benefits of mobile banking, the likelihood of adopting the service increases. An increase in awareness of mobile banking benefits will increase a student's perceived usefulness of m-banking services and ultimately increase a student's decision to trust this service and adopt m-banking. In order to test the relationship between perceived usefulness and trust, the following hypothesis was derived based on the proposed model:

H₁: Perceived usefulness significantly influences trust in mobile banking adoption among university students in South Africa.

3.2.2. Perceived Ease of Use (PEoU)

Perceive ease of use involves the prospect that mobile banking usage is effortless. As consumers become conscious of how easy it is to learn and adopt mobile banking, their positive perception of usefulness becomes enhanced (Maroofi et al., 2013). Perceived ease of use also refers to a system that is easier to use when accomplishing tasks as compared to a more challenging system (Chuchuen, 2016). This is consistent with the assessment made by Mehrad and Mohammadi (2016) stating that consumer awareness regarding PEoU allows consumers to identify the rapid rate at which they can operate m-banking, therefore this service would be more appreciated. Extant literature indicates that PEoU is a strong predictor of mobile banking adoption. Studies found that perceived ease of use is a determining factor in a consumer's attitude and usage intention of a product or service such as mobile payment services and internet banking (Dlodlo, 2015; Ali, Abouhogail, Tarrad & Youssef, 2014; Kesharwani & Bisht, 2012). Additionally, Jeong and Yoon (2013) identified perceived ease of use as a key

influential factor explaining the attitude difference concerning adopters and non-adopters toward m-banking.

In a study based on university students, Akturan and Tezcan (2012) found that perceived ease of use positively affects the perceived usefulness towards using mobile banking. According to Zhou (2012), a well-designed m-banking user interface with powerful navigation reflects a retail bank's ability and benevolence and, as a result, influences a user's trust. As a student's awareness increases regarding the perceived ease of use concerning mobile banking, they will be able to identify a retail bank's ability and benevolence, which will either increase or decrease their trust.

In addition, Mehrad and Mohammadi (2016) found that perceived ease of use and perceived usefulness have a positive influence on a consumer's behaviour regarding their intention to continue using the service. However, Jeong and Yoon (2013) state that perceived ease of use has minimal implications on the intention to adopt m-banking, suggesting instead that consumers strive for a simpler, easier, faster process and environment for bank related tasks. Mehrad and Mohammadi (2016) concurred with the findings of Akturan and Tezcan (2012) stating that Perceived ease of use had been found to have a significant effect on perceived usefulness in their study. According to Shaikh and Karjaluoto (2015), perceived ease of use and perceived usefulness are one of the most frequently cited factors in determining mobile banking adoption.

Jeong and Yoon (2013) further suggest that the steep mobile device penetration rate has promoted the use of mobile banking. However, the use of a mobile device poses many challenges that affect the perceived ease of use of mobile banking. Challenges of a mobile device that contribute to the non-adoption of mobile banking include compatibility issues such as screen size, complex texting mechanisms, requirements for high data storage, and shorter battery life appear to be restrictions that impact perceived ease of use. However, as stated earlier, usability and compatibility issues may arise affecting the perceived ease of use and perceived usefulness. In order to overcome usability issues, banking institutions must focus on providing a service that is beneficial to all as perceived ease of use influences adoption (Luo et al., 2010). Gu et al. (2009) state that the perceived ease of use affects trust in mobile banking as consumers become familiar with the service provided. In order to test the relationship between perceived ease of use and trust, the following hypothesis was derived based on the proposed:

H2: Perceived ease of use significantly influences trust in mobile banking adoption among university students in South Africa.

The following section examined the perceived risks associated with mobile banking and its influence on trust in mobile banking.

3.2.3. Perceived Risk (PR)

Perceived risk is frequently associated with trust and risk taking in relationships (Schoorman, Mayer & Davis, 2007). Perceived risk is described as “a combination of uncertainty plus seriousness of outcome involved and the expectation of losses associated with purchase and acts as an inhibitor to purchase behaviour” (Bauer, 1960. p.389). In addition, it is viewed as the hesitancy regarding the usage of a product/service such as mobile banking (Malhotra, 2012). Moreover, Malhotra (2012) posits that perceived risk is one of several aspects that need to be taken into consideration when launching technology applications as consumers are more likely to be reluctant. Furthermore, Daud et al. (2011), concur by stating that the perceived risk associated with an innovation may result in a prospective adopter postponing the decision to either adopt or decline the innovation.

According to Kuykendall (2017), there are several risks associated with m-banking, despite the perceived benefits. For instance, banks leave a consumer’s personal information exposed to hackers due to a lack of enforcing encryption or information security measures necessary to protect m-banking platforms. Therefore, perceived risk has the ability to affect mobile banking negatively in a variety of situations (Ha, Canedoli, Baur & Bick, 2012). Past literature reviews conducted in developed countries indicate that the objective of use mobile banking entails a certain amount of uncertainty (Daud et al., 2011). The additional risks perceived by consumers may result in consumers becoming wary with regards to mobile banking (Huili, Shanzhi & Yinghui, 2013).

Studies in the field of mobile banking indicate that perceived risk influences behavioural intention, hindering the successful adoption of mobile banking in South Africa and other developing countries such as Jordan, Iran, Ghana, Togo, Ivory Coast and Brazil (Alalwan, Dwivedi, Rana & Williams, 2016; Gbongli, Peng & Ackah, 2016; Cruz, Neto, Muñoz-Gallego & Laukkanen, 2010; Brown, Cajee, Davies & Stroebel, 2003).

Owing to the high perceived risks related to mobile banking, it is important for service providers and banking institutions to obtain users’ trust (Zhou, 2012). Although many studies

state that perceived risk associated with mobile banking hinders the adoption of this service, Alsheikh and Bojei (2014) argue that in order to gain a consumer's trust, banking institutions should provide consumers with additional knowledge and information regarding mobile banking services, thereby diminishing the risk of the mobile banking services. In addition, the authors concluded that when consumers receive additional information and guidance from retail banks, the easier it becomes to use the service. They further suggested that high awareness of m-banking services resulted in low consumer perceived risks. Furthermore, Laukkanen and Kiviniemi (2010) proposed in a study based on information and guidance concerning mobile banking, that the two abovementioned factors (information and guidance) significantly increase the perceived benefits and decrease the perceived risks associated with mobile banking. Based on a study of future adopters such as students and non-mobile banking users, Alsheikh and Bojei (2014) found that a lack of awareness and information reduces the perceived benefits of this service as perceived risk is maximised. Therefore, students may distrust m-banking based on their level of knowledge concerning the perceived risks linked to this service.

Perceived risk involves five facets of risk that students need to be aware of, which include performance risk, security/privacy risk, time risk, social risk and financial risk (Luo et al., 2010). These risks are discussed in the following sections.

3.2.3.1. Performance Risk.

Performance risk identifies the likelihood of the service/product not performing and malfunctioning as it is initially intended and publicised. As a result, it might fail to deliver the desired outcomes (Featherman & Pavlou, 2003; Gbongli et al., 2016). Performance risk, in terms of m-banking, refers to the loss or failure acquired by a deficiency or malfunction of m-banking servers (Lee & Chung, 2009). It is essential for banking institutions to consider various performance problems that may arise when launching an array of technical based solutions on their own platforms for the enhancement of competitiveness and the promotion of their reliability programs (Huili et al., 2013). When consumers are denied access to their accounts, they may recognise that transactions cannot be completed using mobile banking. They then deduce that performance of this service is less satisfying in comparison to non-mobile services (Daud et al., 2011). In a study by Chavali and Kumar (2018), the authors found that the respondents were mostly concerned with issues relating to servers that may be affected and slow internet connectivity which will impact performance. There are different ways in which

performance of mobile banking service can fail or threaten adoption of mobile banking by university students.

3.5.1.1.1. Usability/Compatibility Issues.

Perceived compatibility is defined as the extent to which an innovation is consistent with existing value, users' experiences and meeting the needs of prospective consumers (Rogers, 1995). In mobile banking, the service should not only be convenient, but also consistent in meeting the needs of mobile banking users and their lifestyle (Chopra & Sherry, 2014). In order for banking institutions to enhance a student's decision to trust mobile banking, they should educate their consumers regarding the services and threats surrounding mobile banking. Mobile devices differ in many ways therefore affecting the usability of mobile banking. According to Jakimoski (2014), mobile devices tend to differ in size, colour of the display, keyboard, memory, Central Processing Unit (CPU)/processing power, and supported operating processing systems etcetera, therefore mobile users can receive different types of services. Ease of use or the lack thereof is another vital factor contributing to the reluctance of mobile banking adoption and distrust.

Despite the convenience that mobile banking provides, malware presents one of the biggest challenges as hackers and cyber criminals obtain personal and sensitive information illegally. Therefore, a secure mobile banking experience remains a challenge to many banking institutions. Trusting mobile banking may be tricky for many students. However, if the perceived benefits and experience of engaging in mobile banking outweigh the risks associated with mobile banking, students may adopt it more readily.

Furthermore, banks should cooperate with telecommunication companies and mobile manufactures to develop easier to use mobile services by designing phones that have features such as a bigger screen size, convenient keypads and better screen resolutions that encourage the ease of use. Easy operation of a handset, in turn, could lead to usage of more m-banking services by university students in order to prevent financial risk.

3.2.3.2. Financial Risk.

Financial risk in mobile banking represents the possible financial loss due to transactional inaccuracies or the exploitation of a bank account (Gbongli et al., 2016). When using mobile banking, consumers perceive that reversing a transaction, discontinuing payments after realising a mistake has been made, or refunding may not be possible (Daud et al., 2011). Lin

et al. (2014) support the above statement, stating that consumers are terrified of losing money while performing transactions. In a study by Arif, Afshan and Sharif (2016), it was found that financial risk and privacy risk have a negative relationship with attitude towards m-banking. Traditional banking through formal proceedings and receipts gives consumers a sense of assurance as opposed to mobile banking. Therefore, consumers tend to think that mobile banking services contain inherent risk causing them to opt out and distrust mobile banking altogether (Lin et al., 2014).

Despite the financial risk users face when engaging in mobile banking activities, the cost of transfers is often less expensive by paying lower fees and creating a positive impact on poorer households (Donner & Tellez, 2008). This applies to students as they are often low-income earners and will benefit from low costs of engaging in m-banking.

3.2.3.2.1. Perceived Cost.

As stated above, the cost of transfers is often less expensive as consumers pay lower fees, creating a positive impact on poorer households (Donner & Tellez, 2008). However, the cost of doing mobile banking remains a problem, despite it seeming insignificant as compared to the other challenges that individuals encounter. Costs include network traffic fees for the use of mobile banking (Huili et al., 2013). Some banking institutions charge extra fees for this service or for software required, therefore the charges add up, becoming more expensive when mobile banking is used often to access account information (Gupta et al., 2013). As a result, university students may perceive mobile banking as expensive. Moreover, the increased perceived costs affect mobile banking usage and adoption as consumers become more concerned when using mobile banking (Huili et al., 2013). In order to promote the usage of m-banking among university students, banks need to review the perceived costs of m-banking in order to improve affordability, resulting in increased m-banking adoption (Asongu, 2018; Cudjoe, Anim & Nyanyofio, 2015).

3.2.3.3. Time Risk.

Time risk is often referred to as convenience risk. It is defined as the loss of time and any difficulty experienced due to the hindrance of receiving payments or the complexity of navigation (Lee, 2009). As consumers discover innovations, they lose time when trying to become more knowledgeable with new products and services just to have to substitute them if they do not perform as expected (Featherman & Pavlou, 2003). Hanafizadeh and Khedmatgozar (2012) found that time risk was a major concern in internet banking as bank

consumers were concerned about spending a great amount of time on transacting and solving difficulties that may arise. In addition, Hanafizadeh and Khedmatgozar (2012) concluded that awareness concerning the perceived benefits of internet banking played a significant role in decreasing time risk. This may be applied in m-banking as learning a new technological innovation may become an inconvenience and time consuming for university students. However, once students are more knowledgeable of the perceived benefits of m-banking, the less time consuming this service will become.

3.2.3.4. Social Risk.

Lee (2009) elucidates perceived social risk as the likelihood that mobile banking could possibly result in the loss of status amongst an individual's friends, acquaintances and family. Chavali and Kumar (2018), concur stating that m-banking customers seek to appear as tech savvy as it affords them a sense of "status" amongst people. Research indicates that humans are extremely receptive to social normative influences in order to create or retain an approving image within a reference group (Kesharwani & Bisht, 2012). According to Hanafizadeh and Khedmatgozar (2012), social risk may refer to the loss of direct contact between a consumer and a retail bank teller for added assistance. Social risk is also linked to knowledge-based risk.

3.2.3.4.1. Knowledge-Based Risk.

According to past literature, consumers rely on their mobile device 24/7, but despite this, they are still unaware about mobile device security (Collett, 2014). A Symantec's Threat Report revealed that in 2012, 44 percent of mobile device users were uninformed about security solutions for mobile devices (Collett, 2014). According to the report, the lack of education regarding security solutions is partly to blame. In addition, individuals with feature phones that have restricted security requirements became smartphone users and were unaware of the need to install a security app (Collett, 2014).

Consumer education in mobile banking is vital, as consumers in emerging markets including South Africa, prefer using cash instead of mobile money transfers (Sefako, 2014). Despite the increase in mobile device usage, a Mobile Money Conference in Johannesburg, South Africa, revealed that consumers are reluctant to use mobile banking due to issues concerning trust and cost factors (Sefako, 2014). Collett (2014) states that mobile device malware and scams will continue to fluctuate as mobile phones will contain more sensitive and rich data. Therefore, while some South Africans embrace technological innovations such as mobile banking, it is imperative that banking institutions educate the banked and unbanked consumers (Sefako,

2014). Laukkanen and Kiviniemi (2010) state that a simultaneous decrease in social and performance risk ought to be highly encouraged. Banking institutions must accept that information and direction considerably amplifies the value added by mobile banking, resulting in a decline with regards to perceived risks associated with this innovation (Laukkanen & Kiviniemi, 2010). Therefore, this will allow banking institutions to increase trust related to mobile banking services.

3.2.3.5. Privacy/Security Risk.

Featherman and Pavlou (2003) define this facet as the possible loss of control over personal information, for instance, when an individual's information is used regardless of his/her knowledge or consent. With regards to mobile banking, Lee (2009) states that privacy/security risk is described as the possible loss due to criminal activity such as fraud or a hacker infiltrating the security of a mobile banking user. When implementing a technological innovation such as mobile banking, it is important for banking institutions to consider privacy disclosure risk (Huili et al., 2013). Privacy disclosure risk occurs when mobile banking customers make use of mobile banking and are required to provide personal information such as identity numbers, mobile phone numbers, account numbers and passwords (Huili et al., 2013). Furthermore, Bhatt (2016) states that the shortage of awareness concerning the technical and security risks has a negative influence on the adoption of mobile banking as consumers are reluctant to use m-banking. In South Africa, it was found that m-banking consumers pay less attention to the perceived risk therefore additional awareness concerning security issues need to be put in place in order to promote the field of information security for m-banking and mobile money (Njenga & Ndlovu, 2013). In order to ensure that university students adopt m-banking in South Africa, retail banks need to promote the credibility of their services.

Perceived credibility is linked to perceived risk and trust components, and it is described as the point at which a person thinks that mobile banking will have no security/privacy threats (Luo et al., 2010). Perceived credibility, therefore, has a strong influence on usage intention and could result in the enhancement of consumer trust (Luo et al., 2010). University students that engage in m-banking need to ensure that they are aware of security risks in m-banking in order to reduce security breaches. This is vital as Cudjoe, Anim and Nyanyofio (2015) found that perceived financial cost and perceived credibility were the most influential factors that contributed to the slow adoption of mobile banking.

3.2.3.5.1. Security Issues Using WAP.

The WAP is often used for communication between devices, such as, mobile phones. The encryption process allows secure data transmission between banking institutions and its consumers, but despite the secure data transmission, the encryption process is not secure enough to protect sensitive information between the bank and its consumers (Goyal, Pandey & Batra, 2012). Mobile devices have low computational capacity therefore security methods entail more powerful computing and high storage capacity (Goyal et al., 2012). Another method of completing mobile banking transactions is through USSD. The USSD-based mobile banking creates a number of issues that will be identified in the following section.

3.2.3.5.2. SMS-Based Mobile Banking Issues.

SMS technology in m-banking has been found to expose clients to security risk as SMS is less secure than USSD technology (Jacobs, 2015). The contents of a SMS are stored in a SMS centre therefore it is visible to a network provider making it easy for hackers to hack the SMS centre and read the messages it contains (Jawanjal & Joshi, 2015). As they stand, WAP and SMS based mobile banking require mobile network services, which could result in many challenges for mobile banking users.

3.2.3.5.3. Mobile Malware.

In South Africa, the growth of digital banking adoption has increased criminal activity indicating that the sophistication of digital banking crime in South Africa is growing exponentially (Dagada, 2013). Digital banking criminal activity has increased due to multiple social engineering tactics used to defraud users. The South African Banking Risk Information Centre (SABRIC) has stated that many consumers are defrauded due to vishing, phishing and malware installation (SABRIC, 2020). One of the biggest challenges at present in mobile banking and mobile payment systems is malware (Islam, 2014). Mobile malware penetrates systems by finding weaknesses and taking advantage of vulnerabilities. As a result, Trojans and other malicious programs may be used to penetrate financial systems by opening the backdoor for hackers in order to obtain financial information (Abdullah, Ahmed & Ameen, 2018). Bluetooth is another method used to spread malware from device-to-device, therefore once a secure connection is created, the compromised device sends malicious content (Islam, 2014). An example of a mobile malware attack is phishing which occurs when an individual pretends to be from an established entity to obtain user login credentials, this can be done through urgent emails sent to targeted users (Abdullah et al., 2018).

3.2.3.5.4. Mobile Network Services.

Mobile network operators support mobile devices and vice versa therefore making networks susceptible to threats. In South Africa Vodacom, MTN, Cell C and Telkom are the biggest mobile network operators (Bronkhorst, 2015). Hackers are able to exploit networks by identifying flaws or technical loopholes in the mobile operating systems or any software that operates on local or cellular networks (Huili et al., 2013; Sujithra & Padmavathi, 2012). Cellular services provide opportunities for phishing attacks allowing an attacker to obtain sensitive information from an individual by presenting itself as a reliable entity (Sujithra & Padmavathi, 2012).

3.2.3.5.5. Physical Risk.

Mobile banking provides an element of physical risk to consumers as mobile devices are portable and designed for everyday use. Consumers may lose their mobile devices or they may be stolen, therefore easily resold on the black market (Sujithra & Padmavathi, 2012). In a recent study conducted by Jorgensen et al. (2015), it reveals that consumers are apprehensive regarding the exposure of their personal information such as financial information (credit card information, banking credentials, and passwords), identifying information (cell phone numbers, date of birth), login credentials, and browser history etcetera. Physical risk is an important factor to consider for both consumers and banking institutions. It is imperative for banking institutions to ensure that consumers are educated when using mobile banking services in order to promote a positive mobile banking experience.

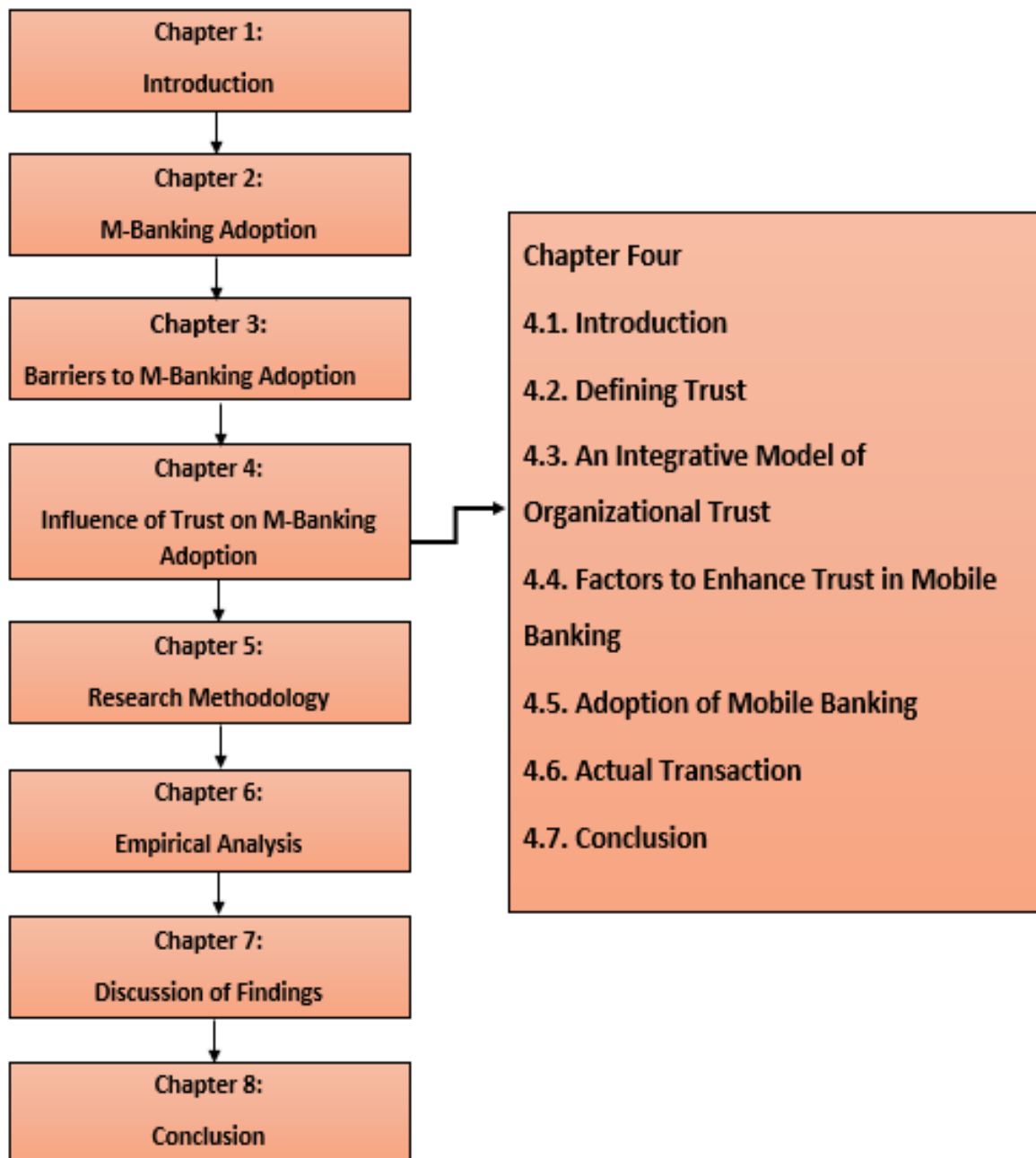
According to Abdullah et al. (2018), it is imperative for m-banking services to safeguard transactions between the user and the bank by ensuring that they are transmitted through a secure and safe channel. The authors further posit that this will improve trust in m-banking and their adoption of m-banking (Abdullah et al., 2018). Therefore, if banks cannot provide secure environments for user to transact, it may diminish users' trust in m-banking as the user risk to financial loss may increase. Therefore, in order to test the relationship between perceived risk and trust, the following hypothesis was derived in the proposed model:

H₃: Perceived risk significantly influences trust in mobile banking adoption among university students in South Africa.

3.3. Conclusion

From this chapter, it can be concluded that the relationship between trust, perceived ease of use, perceived usefulness and perceive risk is vital to the success of m-banking. Perceived ease of use and perceived usefulness promote the intention to use m-banking, whereas the perceived risks associated with m-banking have a negative influence of m-banking usage intention. Perceived risk has many facets which include performance risk, financial risk, time risk, social risk and security risk. These risks increase a student's distrust in m-banking which may impact the adoption of this service. However, an increase in awareness and knowledge may diminish the perceived risks associated with m-banking and enhance a student's decision to trust m-banking. Based on the literature, the hypotheses were developed which were tested in Chapter Six.

CHAPTER 4: TRUST AND ITS ROLE IN THE ADOPTION OF M-BANKING



4.1. Introduction

In the previous chapter, the study found that perceived usefulness, perceived ease of use and perceived risk are some of the factors that may result in a university student deciding whether they will trust and make use of mobile banking or not.

This chapter will examine the third sub-question: *What aspects of trust will influence M-banking adoption among university students in South Africa?* The discussion centres on factors of perceived trustworthiness including ability, benevolence and integrity. The chapter outlined several factors that banking institutions should consider in order to enhance a student's trust. These factors include relative advantage, word-of-mouth and structural assurances provided by mobile banking. It is essential that students trust mobile banking, as it remains one of the top concerns amongst consumers when adopting these services.

4.2. Defining Trust

Lin et al. (2014) state that trust is a difficult notion to comprehend as many researchers attempt to define it in various perspectives and disciplines. As a result, there is no unified definition of trust. Pavlou (2003) defines the notion of trust based on studies by Gefen (2000) and Mayer et al. (1995), as “the belief that the other party will behave in a socially responsible manner, and, by so doing, will fulfil the trusting party's expectations without taking advantage of its vulnerabilities.” (Pavlou, 2003, p. 74). In addition, McKnight, Carter, Thatcher and Clay (2011) elaborated on this definition by stating that trust is generally expressed as one party's psychological expectations that another party will not engage in opportunistic behaviours. In their monograph, Mayer et al. (1995) put forward a dyadic model of trust in an organisational environment concentrating equally on the individualities of the trustor and trustee to define which components contribute to the formation of trust. The proposed model reveals the three factors of perceived trustworthiness of the trustee that include ability, benevolence and integrity, resulting in conditions of trust for the trustor. Mayer et al. (1995, pp., 276) further states that trust is the “willingness to be vulnerable” and found that the notion of trust changes because of observation and interactions.

Furthermore, trust refers to the expectation of competency, benevolence and truthfulness of the trusted party, whereas distrust is expressed as the expectations of people regarding others' inability, undesirable motivations and destructive behaviour (Huili et al., 2013). As identified earlier, trust is frequently observed in terms of trust in individuals lacking concern for trust in

technology. As a result, this research project will focus on both facets, as research in IS explores the rate at which consumers affect IT acceptance or trust in an IT artefact such as mobile banking (Luo et al., 2010; McKnight et al., 2011). In general, the decision to trust an individual depends on an individual's own predisposition to trust, one's relationship with the person and one's opinion of the person's actions and decisions (Adali et al., 2010). According to Mayer et al. (1995), there are many terms synonymous with trust therefore it adds to the complexity and essence of trust. These terms are cooperation, confidence and predictability:

➤ **Cooperation**

Mayer et al. (1995) argue that the distinction concerning trust and cooperation remains unclear as trust often results in cooperative responses or actions, therefore, trust is not a requirement for cooperation to occur. For example, there does not need to be trust between the banking institutions and mobile network providers as cooperation between the two entities will allow service such as m-banking to thrive on their infrastructure.

➤ **Confidence**

Mayer et al. (1995) argue that the association involving trust and confidence is vague in the literature of trust. However, Souza (2015) states that as the number of consumers using mobile phones increase, consumers become more confident about how to operate a mobile device, especially when it moves towards banking. Such confidence ultimately increases a customer's trust in m-banking. Confidence in m-banking essentially means that the customer needs to be able to have assurance that they are performing transactions in a secure environment. Customers also need to be confident in the banks providing digital transactional platforms and network operators transferring financial information in a safe and secure manner (Singh, Srivastava, & Srivastava, 2010). According to Cudjoe, Anim and Nyanyofio (2015), increasing customer confidence is vital as it could increase adoption or if mismanaged, it could be detrimental for banks as customers may feel despondent when using m-banking and may spread negative information (Cudjoe et al., 2015).

➤ **Predictability**

Mayer et al. (1995) state that there is an association exists between predictability and trust, however the association is unclear. Mayer et al. (1995) state that if an individual expects that another individual will in all likelihood conduct themselves in a positive light, individuals will

more likely cooperate with others. For example, if a student can identify that m-banking service providers will act in a predictably positive manner, they will more likely cooperate and trust the service provider.

It is essential to not only distinguish the notion of trust from the aforementioned terms, but to identify the various forms of trust also as trust is complex. According to Lewicki and Bunker (1996), there are three forms of trust: calculus-based trust, knowledge-based trust, and identification-based trust. Calculus-based trust refers to the notion that a logical individual will act in their own best interest. Furthermore Li, Hess and Valacich (2008) concur stating that when trusting an unknown or known trustee in an unfamiliar situation, the trustor will usually presume that the trustee is logical and calculative in nature, therefore the trustee will act based on their self-interest. In the context of mobile banking, university students will assume that banking institutions will act purely in their own self-interest therefore in order for students to trust m-banking, banks need to reassure their customers that they will achieve nothing by violating a consumer's trust.

Knowledge-based trust refers to the relationship between the trustor and trustee as the trustor has the ability to predict the behaviour of the trustee in a situation (Lewicki & Bunker, 1996; McKnight et al., 2011). Furthermore, Lin (2011) examined knowledge-based trust in mobile banking and found that factors such as perceived competence, benevolence and integrity influenced attitude towards this service.

Identification-based trust is defined by Lewicki, Tomlinson and Gillespie (2006) as trust that refers to identification of another party's needs and intentions thus creating mutual understanding. In the context of mobile banking, identification-based trust may exist between the bank and a university if students trust m-banking based on prior knowledge and experience creating a mutually beneficial relationship.

Many banking institutions have concentrated on promoting m-banking services as they provide a real-time ability to perform banking transactions and are not limited to location, thus reducing operating expenses. However, as stated in Chapter Three, trust involves a certain element of risk therefore uncertainty and risk may result in the distrust of mobile banking. The willingness to transfer money and the technology acceptance of mobile banking depends on consumer trust in mobile banking services and their applications (Chuchuen, 2016). Mobile banking transactions do not require the presence of a physical branch, as well as face-to-face relations

between employees from a banking institution and consumers. As a result, trust remains a key challenge for service providers (Dlodlo, 2015). Sadiku, Tembely, Musa and Momoh (2017) state that trust is vital in consumer loyalty due to the lack of face-to-face interaction in m-banking as it involves sensitive personal information. The authors further posit that when service providers have developed trust of consumers, they are easily able to satisfy the customers. Therefore, due to the lack of face-to-face interaction, it is difficult to form trust (Sadiku et al., 2017).

In South Africa, the lack of trust and knowledge are the key reasons why South Africans are reluctant to use mobile banking services (Kaya, 2013). Extant literature indicates that a lack of trust exists in mobile banking and it is frequently cited as a barrier against adoption (Ifeonu & Ward, 2015; Yu, 2012; Lin, 2011; Kim et al., 2009).

Despite the reluctance of adopting mobile banking, the benefits exceed the risk. The lack of trust is one of the most frequently cited reasons for consumers not using mobile banking (Lin, 2011). Trust is a key concern in the acceptance of new technologies, especially when consumers are faced with challenging conditions such as perceived financial loss. Due to the perceived risks associated with mobile banking, as well as the diversity of South African cultures and population groups, it is important that the concerns regarding trust be examined in this study, as they are key determinant in the adoption of mobile banking. Huili et al. (2013) highlighted the concept of trust and distrust in their study, stating that a logical consumer does not completely trust or distrust, expounding that distrust is a mechanism for risk handling, playing an identical role as trust in an individual's decision-making. Their study further investigated distrust stating that it is commonly a result of the insecurity, perceived costs and perceived risks.

Pavlou (2003) discovered in his study regarding consumer acceptance in E-Commerce that trust in web retailers builds positive attitudes and promotes perceived behavioural control concerning transactions. Thus, diminishing risks on the conditions that the expectations of transactions remain satisfactory, would likely result in a consumer's intention to transact. Wentzel, Diatha and Yadavalli (2013) based their monograph on comprehending technology-enabled financial service adoption in South Africa and concluded that the individuals at the bottom of the pyramid are uneducated therefore organisations providing goods and services need to take that into account. Furthermore, the authors suggested that banking institutions ought to instil trust in the unbanked population of South Africa as trust in technology-enabled

financial services was found to be an important construct. According to a study conducted by (Yang, 2009) and Ramille and Nel, (2012), students' perceived m-banking as less trustworthy as a result of the inherent risks associated with this service. However, Govender & Sihlali (2014) discovered in their study that at the University of Kwa-Zulu Natal, there is a trust in m-banking to some extent among university students signifying that students do not perceive this service to be susceptible to risk. The students at the University of Kwa-Zulu Natal did not perceive any security and privacy risks. However it is important to note that the population of the study was based on students that were familiar with IT and were enrolled as Information Systems technology students, and therefore it may be argued that the population of the study might have been biased (Govender & Sihlali, 2014). Furthermore, it is evident that trust has a major influence in a consumer's decision to adopt technologies such as m-banking as it may influences a student's behavioural intention and adoption.

In order to determine the formation of trust, the next section examines the Integrative Model of Organisational Trust by Mayer et al. (1995) in the context of m-banking. When focusing on trust, it is important to look at the factors of perceived trustworthiness.

4.3. An Integrative Model of Organisational Trust

Factors of Perceived Trustworthiness

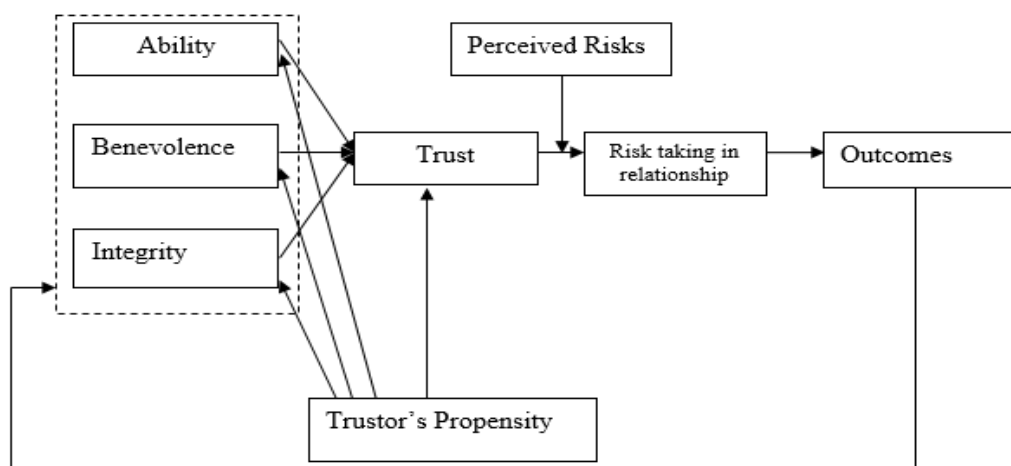


Figure 5: Integrative Model of Organisational Trust by Mayer, et al. (1995)

The Integrative Model of Organisational Trust was established by Mayer, Davis and Schoorman (1995) in order to understand the concept and the importance of trust. The model defines what trust is and the roles and characteristics of the trustee and trustor. The use of this theory will provide the factors of perceived trustworthiness as shown in Figure 1. These factors include: *Ability*, *Benevolence*, and *Integrity* which will be discussed further on in this chapter.

These three factors will provide an indication as to whether the consumers trust or distrust mobile banking.

4.3.1. Factors of Perceived Trustworthiness

The Integrative Model of Organizational Trust by Mayer et al., (1995), states that there are three factors of perceived trustworthiness. These factors are ability, benevolence and integrity (Kabir, 2013). These three factors will be taken into consideration regarding mobile banking.

4.3.1.1. Ability.

Ability is defined by Mayer et al. (1995) as the collection of skills, competencies and characteristics enabling an individual to have influence within a specific domain. In addition, McKnight and Chervany (2001) state that it refers to the belief that an individual has the capability to fulfil what is required for another individual. Therefore, in terms of mobile banking, ability means that banking institutions offering mobile banking services have enough information, expertise and capabilities to ensure that the required tasks are fulfilled to promote formation of trust in university students.

4.3.1.2. Benevolence.

Mayer et al. (1995) identify benevolence as the degree to which a trustee is believed to want to do good toward the trustor. This will determine if the financial institutions are acting in good faith towards their consumers. Mobile banking service providers will therefore take their consumers' concerns into consideration, demonstrating receptivity and empathy towards consumers (Bhattacharjee, 2002; Maroofi et al., 2013).

4.3.1.3. Integrity.

Mayer et al. (1995), state that integrity is shown by adhering to a set of principles. With regards to mobile banking, integrity refers to a consumer's perception that mobile banking service providers will be reasonable, honest and comply with the practical conditions of transactions, ensuring that its consumers will not be deceived (Bhattacharjee, 2002; Zhou, 2012). In order to instil trust in university students, m-banking service providers need to adhere to the promises made to students. In order to enhance consumers' trust in mobile banking, the following section will focus on several factors that can help banking institutions to enhance consumer trust in their services.

4.4. Factors to Enhance Trust in Mobile Banking

In order to establish a trust base among university students, it is vital that banks focus on what encompasses trustworthy mobile banking. A study based in Gauteng, a province in South Africa, found that trust was a key determinant of attitude towards m-banking (Maduku & Mpinganjira, 2012). This further suggested that banks should focus their efforts on investigating methods in which they can enhance trust as South Africans perceive m-banking as easy to use and useful, despite their low levels of trust in the service (Maduku & Mpinganjira, 2012). Trust plays a crucial role in the adoption of mobile banking. Therefore, it is imperative that the various attributes of trustworthy mobile banking be taken into consideration for this study. It is evident that the factors of perceived trustworthiness by Mayer et al. (1995) are widely integrated in m-banking studies as a determinant of trust.

According to Li, Hess and Valacich (2008) and Simmel (1978), trust encompasses a certain level of cognitive familiarity. As a result, the authors posit that while individuals lack direct information and regular involvement with the trustee, they will develop their cognitive familiarity based on information derived from impressions, cognitive signals and cognitive processes. Previous literature on the cognitive trusting base proposes that a trustor may classify an unfamiliar trustee as trustworthy or untrustworthy, based on the reputation of the trustee (Li et al., 2008). Therefore, a positive reputation is considered as an essential characteristic of trustworthy mobile banking. Additionally, perceived confidentiality in mobile banking is considered as an attribute of trustworthiness as many individuals care about transaction information. Confidentiality is defined as the property of an information system that safeguards the transactional information, therefore it cannot be viewed by an unapproved individual (Merz, 2002).

Information Systems (IS) research has been investigating trust in a technology, which refers to the trustee as a technological artefact such as an information system (Lin et al., 2014; McKnight, 2005; Corritore, Kracher & Wiedenbeck, 2003). Therefore, trust in technology or a technological artefact is similar to trust in an individual, reflecting the trustor's willingness to depend on a piece of software (McKnight, 2005). In a study conducted by Maduku (2014), the author suggests that the quality of mobile connectivity reflects strongly on mobile banking adoption. Therefore, the quality of mobile connectivity may be a vital attribute of trustworthiness in mobile banking as it will reflect positively on the services being offered. Service quality refers to the quality of support that mobile banking consumers obtain from

banking institutions via several service channels, therefore when consumers are given timely, professional and sincere support with regards to m-banking issues, they would be more satisfied (Al-Ghazali, Rasli, Yusoff & Mutahar, 2015). According to Kim et al. (2009) and Zhou (2011), information quality, system quality, structural assurance, self-efficacy, propensity to trust, perceived usefulness and perceived ease of use influence an individual's initial trust in m-banking technologies, consequently affecting the adoption of this service. This study will investigate these factors in order to enhance and build a student's trust in mobile banking. Banking institutions need to consider such factors.

4.4.1. Technology acceptance and trust in m-banking

In order to comprehend trust and the acceptance of technology, McKnight et al. (2011) argue that researchers need to investigate how trust in technology relates to the value-added post-adoption use of IT. Furthermore, McKnight et al. (2011) state that researchers can scrutinise how trusting beliefs concerning precise attributes of technology relate to individual IT acceptance and their post-adoption behaviour by focusing on technology itself. Technology trust is well-defined as “an individual's willingness to be vulnerable to an information technology, based on expectations of technology predictability, reliability and utility and influenced by the individual's predilection to trust technology” (Lippert & Davis, 2006, p. 438). Moreover, the concept of trust is often associated with IT artefacts such as hardware and software that facilitate IT related tasks (Vance, Elie-Dit-Cosaque & Straub, 2008).

Empirical research indicates that technology trust has an influence on usage behaviour (McKnight et al., 2011; Meng, Min & Li, 2008; Min, Meng & Zhong, 2008). In line with this, Vance et al. (2008) revealed that both trust and a lack thereof in an IT artefact will influence an individual's usage intention, consequently affecting the adoption of the IT artefact. In the context of m-banking, a university student's trust in technology may influence their trust in m-banking and its services thus resulting in the intention to transact as well as actual transaction or a lack of trust will result in their reluctance to transact and adopt m-banking. In terms of mobile banking, consumers may believe that the technologies they use are dependable and trustworthy, and as a result, they will be more likely to assess the overall services satisfactorily, leading to better customer satisfaction (Masrek et al., 2014).

In order to determine trust in technology, it is vital that this study focuses on an individual's propensity to trust technology.

4.4.1.1. Propensity to Trust Technology.

When applying trust in technology, the propensity to trust indicates that an individual is willing to depend on technology across situations and technologies (McKnight et al., 2011). According to McKnight and Chervany (2001), the propensity to trust technology consists of two constructs: faith in general technology and trusting stance. Simply put, faith in general technology refers to the extent to which a consumer assumes that IT is reliable, functional, and offers the necessary help, whereas trusting stance refers to the extent to which a consumer believes that a positive outcome will result from relying on a technology (McKnight et al., 2011). A university student's propensity to trust m-banking will depend on their natural inclination to trust technology. Zhou (2011) states that individuals with a high propensity to trust are often optimistic when it comes to new technologies. As a result, university students with a high propensity to trust will develop trust more readily in m-banking, whereas a university student with low-levels of trust propensity will possibly question the reliability of m-banking.

4.4.1.2. Factors Influencing Technology Trust.

In order to trust technology, it is important to investigate the factors that influence trust in technology. The following factors influence trust in technology:

4.4.1.2.1. Confidentiality.

When dealing with sensitive banking information, it is important that all party's involved practise confidentiality. According to Whitman and Matford (2011), confidentiality of information occurs when data is protected from revelation or disclosure to unsanctioned individuals or systems. The authors posit that confidentiality safeguards information in order to ensure that only those with authorised access have the ability to obtain that information; confidentiality may be breached as a result of unauthorised access. In the context of mobile banking, confidentiality refers to complications concerning privacy thus determining a consumer's trust based on the ability of IT to protect users from disclosure of personal information and manipulation of personal data obtained illegally (Ifeonu & Ward, 2015). Banks need to reassure customers that there are safeguards in place to protect users from being financially exploited due to a confidentiality breach. Furthermore, Pousttchi and Wiedemann (2007) define perceived confidentiality as the standard to which an individual believes the collection and ensuing access, use and disclosure of his or her private details and payment information is consistent with his or her expectations. In addition, the factors of performance

of the IT artefact such as responsibility, reliability and information accuracy will be considered as it will contribute to the understanding of trustworthiness in mobile banking, as well as the components of the process of the IT artefact, and lastly the purpose of the IT artefact.

4.4.1.2.2. Authentication.

Authentication is the process of validating a user's identity. Whitman and Matford (2011) found that there three commonly used authentication structures: these include, something a user knows, something a user has, and something a user is. Something a user knows refers to an authentication method that depends on something a user can recall such as a password, passphrase or personal identification number (PIN). The PINs are commonly used in USSD-based mobile banking. Authentication reduces an individual's susceptibility to risks associated with mobile banking. In the context of mobile banking, it provides end-to-end security between a consumer's mobile device and the banks system therefore promoting mobile banking trust through secure transactions (Bilal & Sankar, 2011).

4.4.1.2.3. Non-repudiation.

Ifeonu and Ward (2015) define non-repudiation as a structure that certifies the parties included in a transaction. As a result, the parties cannot repudiate partaking in the transaction once they have partaken in it. Furthermore, Ifeonu and Ward (2015) argue that non-repudiation in terms of m-banking is a predecessor of technology trust, since a consumer's willingness to trust m-banking will ideally escalate if processes are in place to ascertain that participants in a transaction are unable to deny participation in that transaction.

4.4.1.2.4. Access Control.

Access control is accomplished by a combination of guidelines, programs and technologies and is defined as the manner in which a system determines how it will allow an individual into a restricted area of an organisation. According to Ifeonu and Ward (2015), access control in mobile banking refers to the system's ability to allow transactions to take place without interruptions by unauthorised parties. Access control will therefore stimulate a student's trust in m-banking as banks with strict policies and technologies will ensure that only authorised individuals have access to their m-banking services, thus reducing the perceived risks. Furthermore, Sarhan, Hafez, Safwat and Hegazy (2015) state that m-banking perceived risks may decline by securing a mobile device with access control and memory encryption. A secure m-banking platform will thus increase trust in this service as users will be less vulnerable to attacks.

4.4.1.2.5. Integrity.

As stated earlier, integrity alongside ability and benevolence are major determining factors in the creation of trust in individuals. Trust is typically examined in dyadic relationships and may be further examined in technology. In fact, Vance et al. (2008) state that trust in technology is a nascent area of research, therefore integrity may be viewed in both humans and technology artefacts as an antecedent of trust. Integrity in m-banking influences trust centred on the construct that the reliability of m-banking's processes and accuracy of financial transactions will fuel trust and usage intention (Ifeonu & Ward, 2015).

4.4.1.2.6. Availability.

Availability describes a consumer's disposition to trust centred on the consistent existence of mobile banking infrastructure as concerns regarding poor network availability, defective mobile devices and the absence of m-banking services result in decreased consumer confidence in this service (Ifeonu & Ward, 2015). Availability may influence a student to trust this service as a dominant presence of m-banking services, device functionality and a strong connection to m-banking systems will boost a student's confidence when engaging in m-banking activities.

4.4.1.2.7. Best Business Practices.

Best business practices are another determining factor of technology trust. According to (Ifeonu & Ward, 2015), this construct is similar to structural assurances as it refers to regulatory frameworks and policies. These regulatory frameworks and policies administer the use of m-banking technologies and ensure that service providers maintain good customer relations. This is done by considering users complaints which then leave consumers feeling satisfied therefore increasing trust in both m-banking and technologies.

4.4.2. Information and system quality

Extant literature indicates that information and systems quality is an antecedent of trust in technology adoption. The results from a study by Vance et al. (2008) discovered that system quality characteristics, such as ease of use, influences trust in an IT artefact. Information quality and system quality have been noted as antecedents of information system success in the DeLone and McLean Model of information system success. In addition, these two attributes have been found to influence initial trust in m-banking services. According to Petter, DeLone and McLean (2008) system quality in an IS context is theorised as the desirable features of an IS. Furthermore, Al-Ghazali et al. (2015) state that m-banking system quality in context of the

DeLone and McLean Model is hypothesised as the desirable features of m-banking applications.

Information quality within an IS context is defined as the desirable features of IS outputs (Petter et al., 2008). As a result, information quality in m-banking refers to desired features of the outputs of this services application. Kim, Xu and Koh (2004) found that quality information is a result of timeliness, accuracy and the significance of information. Moreover, individuals depend on the quality of information to perform transactions which improve their livelihood and work performance efficiency (Zhou, 2011). Students will expect to have access to m-banking at any time and to obtain information regarding payments from any place. Zhou (2011) argues that users may question a banking institution's ability and benevolence on the condition that the quality of information provided is inapt and out of date, therefore influencing trust and, eventually, the adoption of the service. High quality of information in m-banking will therefore leave students feeling more satisfied resulting in trust of m-banking; whereas poor information quality will lead to unsatisfied consumers resulting in the distrust of this service. It, therefore, is evident that information and system quality influence initial trust and trust in general and may be considered as an antecedent in the success of m-banking usage intention and actual adoption. Another factor that influences trust in m-banking is relative advantage.

4.4.3. Relative Advantage

Factors that assist initial trust consist of the relative advantage of mobile banking as an alternative for other banking channels, an individual's predisposition to trust technology and new business associates, and the structural assurances presented by mobile banking firms (Luo et al., 2010). Relative advantage defines the extent in which a product or service is more beneficial to the consumer than rival brands. The rate of adoption of a new product or service relies on the relative advantage recognised by a prospective consumer. Therefore, mobile devices provide a competitive advantage to consumers because of convenience. According to Kim et al. (2009), relative advantage and perceived usefulness are similar in theory as both of these drivers of adoption relate to performance improvement of a new product or service over the current services and products. However, consumers will still assess the available services to select one that best suits their needs and offers better value (Kim et al., 2009).

4.4.4. Reliability

According to Behjati, Nahich and Othaman (2012), reliability is defined as the ability to complete an activity or service dependably, regularly and precisely and it is commonly

associated with fulfilling assurances given by organisations regarding goods and services. Reliability is an important aspect to consider when offering mobile banking services to consumers as it ensures that consistent and quality services are provided to consumers (Asfour & Haddad, 2014). Reliability with regards to mobile banking refers to the stability and delivery of proper services which include: accurate account information, timely services and no errors regarding transactions (Fang, 2013). Reliability is not often cited in mobile banking literature, so banking institutions should investigate this factor as information and system quality play a major role in trust and usage intention (Zhou, 2011). Reliability of an m-banking system will allow students to conduct bank-related transactions with precision, which is important as an unreliable platform may result in the distrust of the system and m-banking overall.

4.4.5. Structural Assurances

Gu et al. (2009) state that structural assurances are the most powerful antecedent of trust and could possibly result in the increase of mobile banking adoption. Structural assurance is said to affect initial trust in terms of m-banking as it ensures that service providers minimise reputational risks and optimise acceptance of this service. In addition, Oliveira, Faria, Thomas and Popović (2014) hypothesised that structural assurance affects initial trust in m-banking. Moreover, it refers to the legal and technological structures that exist to guarantee payment security in mobile banking (Maroofi et al., 2013).

In comparison to online banking, mobile banking is set up on mobile networks, therefore increasing vulnerabilities which hackers rely on to intercept information (Maroofi et al., 2013). This will result in consumers becoming more concerned with regards to their account payments and security when using mobile banking. Consumers often lack direct experience and therefore may depend on structural assurances to establish trust in mobile banking (Maroofi et al., 2013). Structural assurances will improve and build user confidence in mobile commerce services such as mobile banking (Kim et al., 2009). This will also increase usage intention as a positive word-of-mouth message will be spread amongst consumers and students.

4.4.6. Word-Of-Mouth (WOM)

Mobile banking is accepted as part of the daily lives of many individuals; however, focusing on purely adopting this technology is insufficient. It is important for managers to consider customer loyalty and positive word-of-mouth as two major concerns in mobile banking (Javabdeh & Ahmad, 2014). Word-of-mouth (WOM) communication is described as a marketing tool whereby consumers exchange opinions regarding a company's products

(Almossawi, 2015). As such, WOM may be considered as either positive or negative; however, many marketers find that WOM is a powerful tool that can be used to promote brands, particularly when it is expressed by a well-known or trusted individual (Ashtiani & Iranmanesh, 2012). Positive WOM may result in consumer trust of mobile banking as consumers trust their banking institutions and the services they offer.

As technology develops, banking institutions need social media platforms to promote mobile banking to emphasise WOM, by making use of advertising strategies on emerging social media sites such as Facebook, Twitter, Instagram and Blogs (Yu, 2012). Furthermore, Yu (2012), states that this will improve the rate of adoption and penetration in mobile banking. Therefore, satisfied consumer of any business will repeat purchases, show brand loyalty and give positive word-of-mouth (Ashtiani & Iranmanesh, 2012). This will increase the usage intention of mobile banking as customer will receive positive feedback about the services offered by banking institutions.

Many companies make use of social networking tools in order to understand the views of existing and future products that are made available in competitive markets. Companies undertake the use of social networking tools to provide excellent marketing strategies to entice consumers into purchasing their products as this helps with generating public opinion and the improvement of goods and services (Baruah, 2012). However, according to Berthon, Pitt, Plangger and Shapiro (2012), businesses attempt to target the generation that has grown up with social media therefore, the companies using social networking tools for marketing purposes experience difficulty as it is not just simply about creating a Facebook fan page, tweeting or placing brand advertisements on YouTube. Posting on Social media platforms such as Twitter can result in a heavy backlash for a business as all posts on Twitter are public and businesses cannot control what people say.

The factors to enhance trust in m-banking were not included in the empirical work as it was not part of the underlying theory used in the study. Furthermore, the factors to enhance trust in m-banking such as reliability, structural assurance, relative advantage, information and system quality and last word of mouth were not included due to the length of the questionnaire and therefore were omitted but remain an integral part of the literature. It is important to note that there are several ways in which banking institutions can enhance trust amongst customers and more importantly, university students in South Africa as they are future adopters of m-banking services.

4.5. Adoption of Mobile Banking

The literature throughout Chapter Four indicated that if trust is enhanced in m-banking, the likelihood of trust influencing usage intention increases. According to Pavlou (2003), a likelihood of trust influencing transaction intention exists based on attitude. Ramos et al. (2018) postulate that if consumers trust their banking institution, they are more likely to demonstrate an intention to trust m-banking. As a result, trust will positively influence a consumer's intention to use m-banking (Ramos et al., 2018). Based on a study by Zhou (2012), the author highlights that there is a need to increase trust amongst consumers and enhance their experience in order to promote adoption and usage intention of m-banking.

H4: Trust significantly influences mobile banking adoption among university students in South Africa

4.6. Actual Transaction

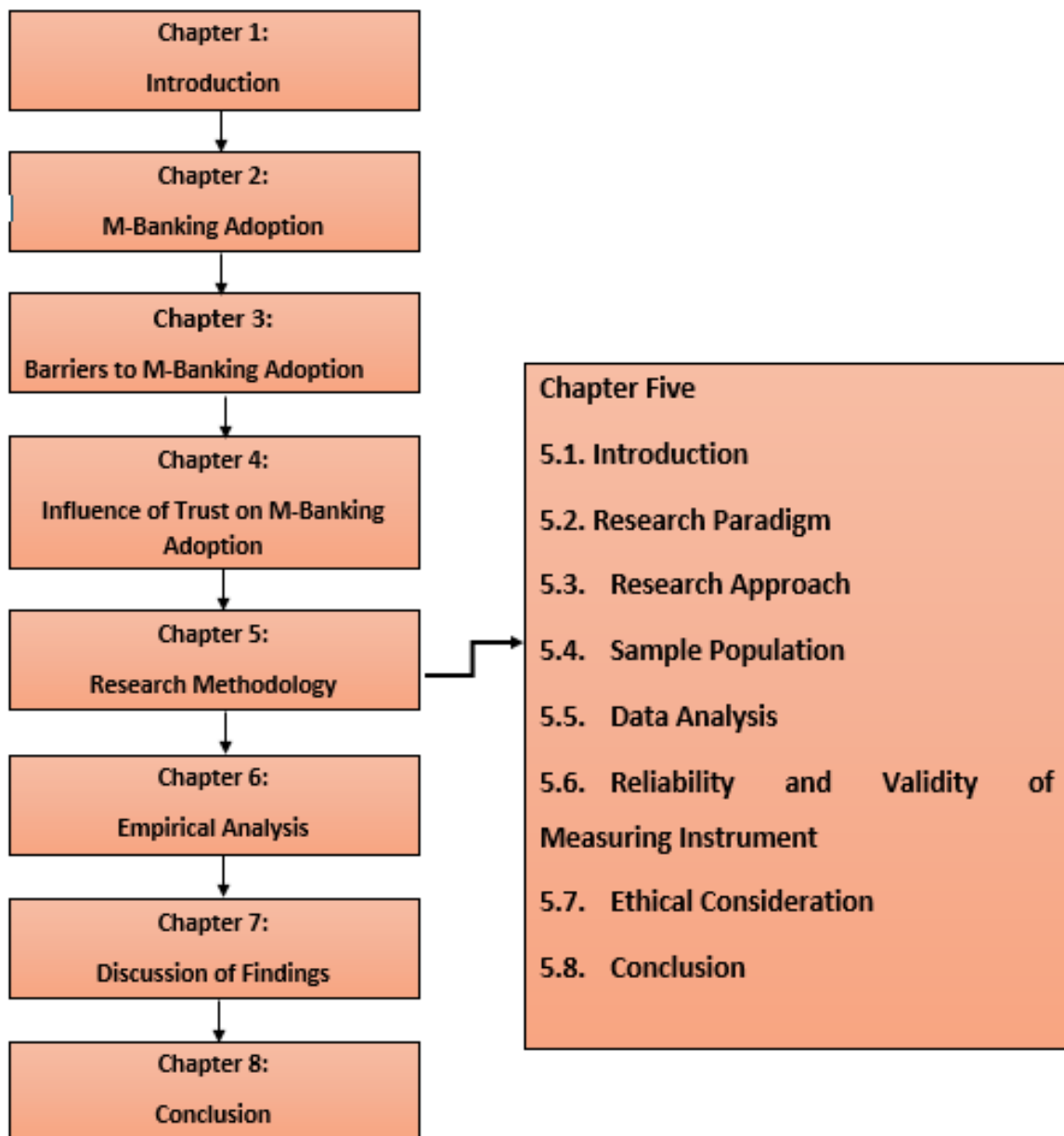
Actual transaction refers to a consumer's use of a service after intention of using technologies has been identified (Pavlou, 2003). In a study by Tam and Oliveira (2016), the authors found that it is vital to attract future adopters of m-banking, however the authors posit that it is equally important to retain existing consumers. Moreover, Sharma and Sharma (2019) hypothesised that intent to use positively and significantly influences actual transaction in m-banking. Therefore, the relationship between the intention to use and actual transaction has been established. For this study, the questionnaire focused on the actual usage of the respondents such as how they make use of m-banking through purchases, payments and transfers.

4.7. Conclusion

In concluding this chapter, it is evident that the notion of trust has been studied in an array of disciplines. It has been investigated in both dyadic relationships between two individuals and between individuals and technology and therefore there is no generic definition of trust. In general, trust is portrayed as one party's psychological expectations that another party will not engage in opportunistic behaviours. Therefore, there is an evident relationship between trust and uncertainty. In the context of m-banking, the lack of trust is often cited. The lack of trust is an antecedent of adoption in m-banking in South Africa; however, a study based on students at the University of Kwa-Zulu Natal found that students are more inclined to trust m-banking. It must be stated though that the study was based on IT students' responses. Trust has the ability to influence a student's behavioural intention and consequently the adoption of m-banking.

There are several factors that may prevent a student's distrust of m-banking such as ability, benevolence, and integrity. In addition, the literature highlights a number of factors that may be enhanced to improve trust in m-banking as trust influences usage intention.

CHAPTER FIVE: RESEARCH METHODOLOGY



5.1. Introduction

The three preceding chapters of this study provided the literature review for the study. Chapter One highlighted the research problem and how this study seeks to address the topic at hand. Chapter Two focused on the concept and technologies surrounding m-banking. It reviews m-banking services offered by South African banking institutions and the implementation of m-banking in third world countries. Chapter Three revealed the core constructs of this study and their impact on trust and the consequent adoption of mobile banking by university students. Chapter Four elaborated on the notion of trust and how banks can improve it. The following section identifies the research methodology used to address the research topic. Furthermore, it reviews the research design, data collection methods and data analysis conducted in this study.

Research methodology is defined as “the scientific methodology is a tool of fundamental importance for the knowledge of the methods that are used in the elaboration of a scientific document, such as a manuscript, dissertation or a work of completing a university course. Scientific methodology includes the study of the methods or the instruments necessary for the elaboration of a scientific work” (Queirós, Faria & Almeida, 2017, p. 370). The research methodology is an integral part of any research study as it is defined as the process that assists in developing a blueprint for a research project and assists in solving the research questions found in the exploration phase (Bhattacharjee, 2012). The research methodology refers to the course of action that the researcher will undertake in order to answer the research questions. The Research Onion by Saunders et al. 2016, in Figure 6 illustrates the order in which to develop a research methodology for a study.

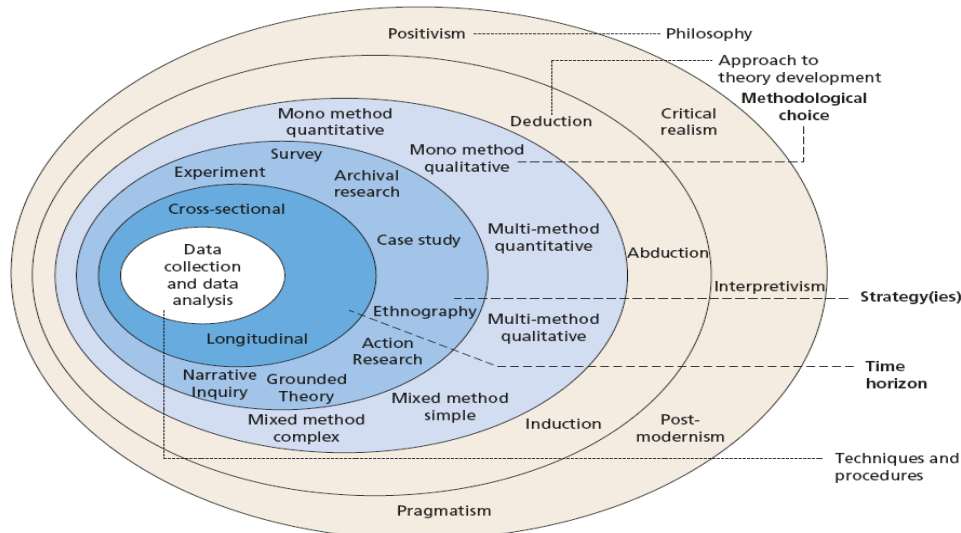


Figure 6: Research Onion adopted by Saunders et al. (2016)

The research paradigm chosen for this research study is a positivist paradigm. Positivists argue that knowledge must be deduced in an objective manner, without the beliefs of the researcher influencing the final outcome (Park, Konge & Artino, 2020). Therefore, following the research paradigm, the study made use of deductive reasoning as it tested the hypotheses put forward in Chapter One. Deductive reasoning is used to derive logical deductions based on a set of premises; the deductions are derived as true when all premises are true (Saunders, Lewis & Thornhill, 2016). This then indicates that the research study was quantitative in nature as it seeks to test the relationships between constructs, as mentioned in the preceding chapters.

The research study made use of the survey research strategy that is often associated with quantitative research. This strategy allowed the researcher to ask a large number of individuals the same questions. After receiving a response from the respondents, the researcher was able to record the answers obtained from the individuals (Neuman, 2013). As a result, the study employed a cross-sectional time horizon to analyse and study a specific phenomenon at a specific time. The following section investigates the research paradigm chosen for this study.

5.2. Research Paradigm

Neuman (2013) states that a paradigm is a prevalent framework for theory and research that comprises the underlying assumptions, significant issues, representations of quality research, and techniques in search of answers. As illustrated in Figure 7, there are two prominent paradigms in social sciences research known as *Interpretivism* and *Positivism*. The paradigms fall on the opposite sides of the continuum, thus indicating that researchers have several ways of undertaking a research study. This is evident in Figure 7 found below.

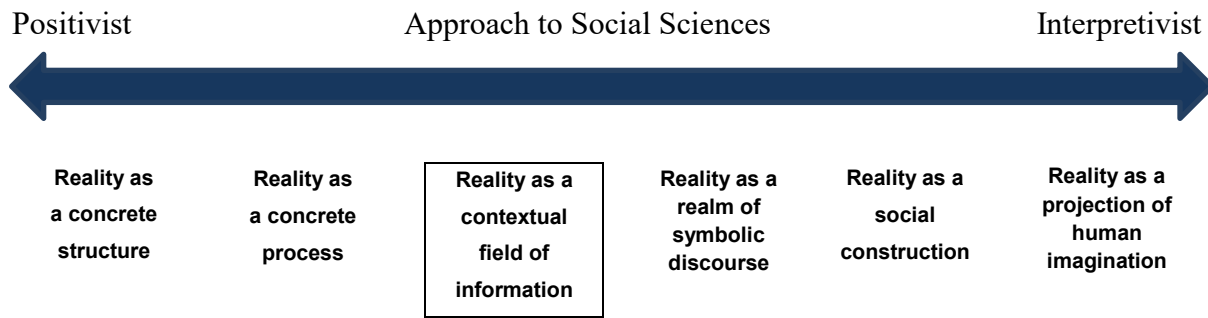


Figure 7: Typology of assumptions on a continuum of paradigms by Collis and Hussey (2009)

Interpretivism is defined as an approach of social sciences that is based on learning about an individual's experiences. It is founded on the notion that an individual's experience itself is intrinsically subjective and based on the context in which people live, whereas, *Positivism* is defined as "the philosophical stance of the natural scientist. This entails working with an observable social reality and the end product can be law-like generalisations similar to those in the physical and natural sciences" (Saunders et al., 2016, p. 135). In other words, this paradigm is based on logic, reasoning and scientific proof in order to validate findings rather than metaphysics. This research will veer toward a positivist approach following deductive reasoning, as this paradigm is further esteemed as a deep-rooted approach that enables a researcher to deliver accurate and observable evidence (Neuman, 2013). Furthermore, this paradigm will ensure that the research problem is solved in a structural manner from a large group of students at the University of Fort Hare. Figure 7 depicts the typology of assumptions on a continuum of paradigms. This research study will fall under the "reality as a contextual field of information" realm on the continuum. The reasoning for this selection is to identify the relationships between the constructs and their influence on adoption of m-banking amongst university students in South Africa. This indicates that the research study is quantitative in nature; however, it made use of qualitative methods of analyses which are found in the literature review.

5.3. Research Approach

The research approach refers to the overall approach used when conducting the research study which further dictates which instrument the researcher will use (Leedy & Ormrod, 2016). This study made use of a quantitative research approach. In order to understand the Qualitative and Quantitative research approaches, the section hereinafter will provide an explanation of the two methods, comparisons and similarities.

5.3.1. Quantitative and Qualitative Approaches

In order to gather raw information, a researcher should be able to comprehend the two types of research approaches commonly used in social sciences. These approaches are known as Quantitative and Qualitative research. Qualitative research is found to be subjective in comparison to quantitative research. Qualitative research allows a research study to become more involved by listening, observing and interpreting (Zikmund et al., 2013). Qualitative data collection techniques are often associated with inductive reasoning, which allows a researcher to identify patterns in their data and research in order to generalise based on their conclusions (Antwi & Hamza, 2015).

On the other hand, quantitative research allows a researcher to quantify concepts with constructs, thus providing numerical values which, in turn, may be used for statistical computation and hypothesis testing (Zikmund et al., 2013). Quantitative data collection methods are commonly associated with deductive reasoning as researchers deduce from their hypothesis or hypotheses (Antwi & Hamza, 2015). Quantitative and qualitative research methods are different in nature. The characteristics of each is shown in Table 2 below.

Table 2

Differences between quantitative and qualitative research (own source)

Quantitative	Qualitative
Makes use of numbers	Makes use of words
Researcher remains distant	Researcher is close to study
Focuses on theory testing	Theory emergent
Static	Process
Structured	Unstructured
Generalisation	Contextual understanding
Hard, reliable data	Rich, deep data
Behaviour	Meaning
Artificial setting	Natural setting

Note. Information retrieved and paraphrased from Zikmund et al. (2013).

Despite the differences between the two methods of research, it is important to note that there are a few common characteristics found between these two methods of research. These common characteristics include (Flick, 2015):

- Working methodically by making use of empirical techniques; generalising the findings of the study for further research;
- Following specific research questions that are applicable to the methods selected to undertake the study;
- Ethical considerations; and
- Showing transparency in the research process in order to present the findings of the study in an understandable manner.

The research approach was quantitative in nature as it seeks to understand the constructs established in the E-Commerce Acceptance Model in the context of mobile banking. The main question focuses on how trust of mobile banking can be enhanced to improve adoption amongst university students. There are three types of quantitative research techniques that a researcher can undertake to obtain and analyse primary data which include, causal, descriptive, and exploratory (Zikmund et al., 2013).

Causal research is commonly associated with hypothesis testing research studies, which are also known as experimental research. Causal research determines how one or more variables influences variations in another variable, therefore it can be described as the study of practical relationships existing between two or more variables (Kothari, 2004; Saunders et al., 2016). Exploratory research refers to the ability to search for new understandings regarding a phenomenon and to ask questions and evaluate the phenomena in a new manner (Saunders et al., 2016). Cooper and Schindler (2013) add that exploratory research is beneficial when a researcher lacks clarity on an idea of the challenges likely to be encountered during the study. It therefore enables the researcher to grasp and develop concepts with more clarity and further establish priorities. The final technique of quantitative research is descriptive research. Descriptive research is defined as a form of research that describes characteristics of entities, individuals, organisations and environments and attempts to produce a true representation of a given situation (Zikmund et al., 2013). In addition, it is defined as statistically describing, gathering and presenting the relations between constructs (Bhattacharjee, 2012). Descriptive research often relies on a large sample size and entails descriptive analysis, descriptive

observations and descriptive statistics in order to summarise and explain the findings of a research study in a manner that is simple and comprehensible.

According to Sekaran and Bougie (2013), descriptive research seeks to assist researchers with the following:

- ability to comprehend the individualities of a specific demographic;
- to think methodically about aspects in a specific situation;
- offer concepts for further investigation and research; and
- assist in decision-making by simplifying information.

This study adopted the descriptive techniques in order to establish and identify the relationships between the constructs highlighted in the literature review. These constructs include perceived usefulness, perceived ease of use, perceived risk, and trust. As a result, the study will effectively solve the research problem identified in Chapter One by testing the propositions of the model created after the assessment of the literature.

Moreover, quantitative research allows the findings and conclusions of a study to be generalised and used in other studies as it attempts to study and analyse the effectiveness of practicability of a phenomenon. In addition, Singh (2006) states that quantitative research outcomes yield high internal validity and employ elaborate techniques and designs of experiments which attempt to impose control over the situation in order to examine the true cause-effect relationship. In quantitative research, there are three common strategies to collect data in a research study. These approaches include interviews, observation and surveys. The following section will identify the research strategy for this study.

After reviewing the literature based on qualitative and quantitative research techniques, the study made use of the quantitative research approach to examine the relationship between the constructs and the outcome thereof.

5.3.2. Research Design

Survey research is a type of research method that encompasses standardised questionnaires or interviews in order to gather information in a methodical manner about people and their ideas, preferences and attitudes (Bhattacharjee, 2012). Surveys are used by several individuals and institutions, for example, academic researchers, businesses, government and any individual seeking insight into what others are thinking and doing. In addition, information gathered from

surveys often contains knowledge concerning demographics, economic variables and marketing variables. Furthermore, Blair, Czaja and Blair (2013) define surveys as the collection of information by cross-examining a sample of respondents from a distinct population (Blair, Czaja & Blair, 2013). According to Zikmund et al. (2013), using surveys typifies descriptive studies which is evident in this study as it will make use of both descriptive techniques for the analysis of the data and survey methods to gather the data. In order to gather data using the survey method, the following section will discuss the research instrument that gathers primary data.

5.3.3. Research Instrument

This section discusses the data collection technique and research instrument used for this study. In order to gather data, this section will investigate primary data collection in the form of a questionnaire as well as secondary data. Secondary data refers to the findings of prior research done by researchers for their respective purposes (Cooper & Schindler, 2013). The research study reviewed and analysed prior studies in order to answer the main research question. By reviewing previous research, key authors, patterns and methodologies were revealed that allowed the researcher to gain insights into the research topic. As stated in Chapter One, this study examined literature from various journals, articles and conference proceedings published by ACM, ScienceDirect, SpringerLink and other databases. Primary data refers to the information that a researcher gathers in order to address a specific research problem (Cooper & Schindler, 2013). The quantitative data collection instrument used in this study was a questionnaire.

As stated in Chapter One, questionnaires are used to gather information by questioning people first hand and using the responses for the analysis of the data collected. Questionnaires provide large source of information, therefore the questionnaire in this study was designed in a manner that aids the objective of this study. Questionnaires are a well-established method of collecting data and are generally advantageous if a study requires large volumes of data to be collected. As specified by Saunders et al. (2016), a researcher's preferred type of questionnaire is influenced by the availability of time, when data is collected, financial implications, assistance required when collecting data, and the online survey tool.

The literature sets the direction for the primary data collection. Therefore, the questionnaire was based on the literature of this study as well as prior questionnaires in the field of m-banking that addressed issues of trust and adoption. In addition, the questionnaire used the published

questionnaire amassed by Pavlou (2003) as a guideline as the E-Commerce Acceptance Model is the underlying theory of this study. The questionnaire encompasses the following constructs: perceived ease of use (Section 3.4), perceived usefulness (Section 3.3), perceived risk (Section 3.5), trust (Chapter 4), usage intention (Section 4.6) and actual transaction (Chapter 2). The conceptual model indicates that there are seven constructs. However, as witnessed in extant literature, the relationship between the trust and intention to use has been proven in multiple disciplines as well as the relationship between intention to use and adoption (Oliveira et al., 2014). Therefore, this study seeks to explore the four constructs that include PU, PEOU, PR, and Trust as shown in table 3:

Table 3

Cronbach's Alpha for constructs in research study

<i>Research constructs</i>	<i>Cronbach's Alpha</i>	<i>Source</i>
Perceived Usefulness	0.92	Pavlou (2003)
Perceived Ease of Use	0.92	Pavlou (2003)
Perceived Risk	0.88	Pavlou (2003)
Trust	0.89	(Bhattacharjee, 2002)

When considering a questionnaire as a research instrument, the researcher needs to understand how to design the questions. In order to elicit information from participants in a study, researchers can follow the two formats when designing questions for their questionnaires. These formats include open-ended questions and closed-ended questions. Open-ended questions refer to questions that enable respondents to have open-ended responses whereas close-ended restrict the responses of the respondents (Zikmund et al., 2013). Closed-ended questions are often associated with ranking, rating, and quantity.

The questionnaire will follow the closed-ended question format and was split into 8 categories: demographics, banking and m-banking background, perceived usefulness, perceived ease of use, perceived risk, trust, intention to transact and actual transaction. Questionnaires are frequently associated with rating scales that seeks to collect information concerning an individuals' opinion or perceptions. The questionnaire made use of the Likert Scale. According

to Saunders et al., (2016), Likert scale rating occurs when a respondent is questioned on how strongly he or she agrees or disagree with a statement or sequence of statements. The Likert method of rating is commonly based on a four-point to seven-point rating scale. This study will make use of a four-point rating scale which is also referred to as an Ipsative scale. Allowing the researcher to determine whether students are more inclined or disinclined regarding questions found in the questionnaire. The four-point Likert scale consisted of four categories which were Strongly Disagree, Disagree, Agree, and Strongly Agree.

The research instrument for this study is an online questionnaire. There are several advantages and disadvantages when selecting online questionnaire as a data collection method. Table 4 presents the benefits and disadvantages associated with online questionnaires.

Table 4

Advantages and Disadvantages of Using Online Surveys

Advantages	Disadvantages
Low cost	Questionnaire may be complex
Length of data collection is short	Questions must be short and simple
Wide geographic distribution of questionnaire	Poor response rate
Good quality of recorded response	Not applicable for sensitive topics
Non-threatening questions	Poor rapport

Note. Information paraphrased from Blair et al. (2013)

The University of Fort Hare has 3 campuses, therefore in order to collect data from these campuses, requires travelling. Due to budget and time constraints, the questionnaire was conducted online, using Google Forms in order to reach all students that are currently enrolled at the University of Fort Hare. Therefore, the questionnaire was distributed by means of a link to a web-based questionnaire and emailed to participants (Appendix B). In order to collect data, the study requires an accurate sample size to ensure that the researcher can draw valid and reliable conclusions from the data collected. In order to ensure the validity of the measuring instrument, a pilot study was conducted amongst 10 Masters' and PhD students that did not

participate in the final study. Based on the pilot study that was conducted, all ambiguous questions were rectified and positive feedback was received regarding the length of the questionnaire and the time it took to complete online.

5.4. Sample Population

According to Greenfield and Greener (2016), the sample size of a study is a vital determinant of precision. The targeted users of this study are students in a higher education setting that have bank accounts as well as being users and non-users of m-banking. This study will target the students between the ages of 18-35 at the University of Fort Hare. The University of Fort Hare currently has 15 681 students that are enrolled (University of Fort Hare, 2020). Therefore, based on the population size, the study used the Rao calculator, using a 95% confidence level and 5% confidence interval to determine a representative sample size. The sample size of this research project is thus 374 students based on the Rao calculator as this was deemed a sufficient sample size to generalize findings. There are two types of methods considered for sampling, which are known as Non-Probability sampling and Probability sampling. The following section will discuss these two methods.

5.4.1. Non-Probability Sampling

Non-probability sampling techniques do not involve random selection. They are used when certain factors regarding the population are unknown or cannot be recognised independently (Kumar, 2011). There are 5 types of non-probability sampling methods listed below (Kumar, 2011):

- **Quota sampling:** is a technique that provides easy accessibility to the sample population for a researcher. It ensures that the sample is reflective of certain aspects of a population. Therefore, when collecting the data, a researcher will seek out individuals with relevant characteristics and ask them to become participants. The process continues until the research reaches a quota.
- **Convenience sampling:** refers to the extent of convenience in accessing the sample population. The sample is based on individuals that are readily available until the researcher reaches the targeted sample size.
- **Judgemental/purposive sampling:** this technique is based on the researchers' judgement based on which individuals will provide the best information in order to

achieve the objective of the study. Therefore, the researcher will seek out individuals who contain the information and are prepared to disclose the information.

- **Expert sampling:** similar to purposive sampling, however the population is based on experts in the field of this study being investigated or a particular area of interest.
- **Snowball sampling:** refers to the process of obtaining information from participants in a study and then asking the said participants to identify other individuals, with similar characteristics, who can also be approached.

5.4.2. Probability Sampling

Cooper and Schindler (2013, p.345) define probability sampling as “a controlled, randomised procedure that ensures that each population element is given a known nonzero chance of selection. Furthermore, it is utilised to attract participants that are demonstrative of a target population, thus allowing the findings to be transposed from a sample population to a targeted population” (Cooper & Schindler, 2013). Therefore, this method of sampling involves probability theory and involves techniques such as simple random sampling, systematic sampling and cluster sampling, as seen below:

- **Simple Random sampling:** refers to a probability sampling technique that make sure that each element in the population stands an equal opportunity of being included in the sample.
- **Systematic sampling:** this technique allows the preliminary sampling point to be randomly selected, thereafter entities are systematically selected.
- **Cluster sampling:** refers to the probability sampling technique whereby the targeted population is separated into groups. These groups are then called clusters.

The sampling technique used in this study was a non-probability sampling method known as *Convenience* sampling or *Accidental* sampling, due to the large number of students and the sample size. Convenience sampling enables researchers to make use of individuals that are accessible and readily available (Leedy & Ormrod, 2016). Once the data is collected based on the sample size, the data will be analysed. The following section identifies the data analysis methods that were utilised.

5.5. Data Analysis

Data analysis is determining the type of data that the researcher requires from the information that was gathered (Cant, 2005). Generally, data analysis consists of reducing the data that is collected to a manageable size, creating summaries, observing patterns, and applying statistical methods to analyse the data. Quantitative researchers depend greatly on deductive reasoning by establishing particular premises and then developing a logical conclusion from them (Leedy & Ormrod, 2009). The data gathered from the questionnaires was analysed using Statistical Software, namely, the Statistical Package for the Social Science (SPSS) V.25 SPSS which provides a number of benefits, such as increased user friendliness, assumption testing, speed of completion and graphics (Leedy & Ormrod, 2009). Descriptive analysis of the primary data was done by describing the data via measures of standard deviations and range of scores. Inferential statistics was used to answer the 4 hypotheses presented in Chapter One. Correlation is a statistical technique used to study the relationship between two or more variables. Therefore, this technique seeks to identify how variables are related to each other and to determine the strength of the relationship amongst the variables. Several techniques may be used to quantify the strength of the relationship amongst variables, resulting in the correlation coefficient. The correlation coefficient is fundamental in determining whether the association between two or more variables are positively or negatively related, thus giving the relationship between the variables' linear direction. The correlation coefficient is denoted by the letter "r" with values ranging from +1 to -1. To test the significance of r, the study utilised the Pearson's Product Moment Correlation Coefficient.

Pearson's Product Moment Correlation Coefficient is a statistical method used to determine the strength of the relationship between two quantitative variables. It seeks to determine the nature of the relationship, that is, if the relationship between two variables is positive, negative, or if there is no relationship. This technique was used in this study to determine the strength of the relationship between trust, perceived ease of use, perceived risk, and perceived usefulness.

The model illustrated in Figure 2 was adopted in this study in order to examine the relationship between perceived usefulness, perceived ease of use and perceived risk and its degree of association to trust in mobile banking and the consequent adoption. This, in turn, resulted in the proposed conceptual model illustrated in Figure 8.

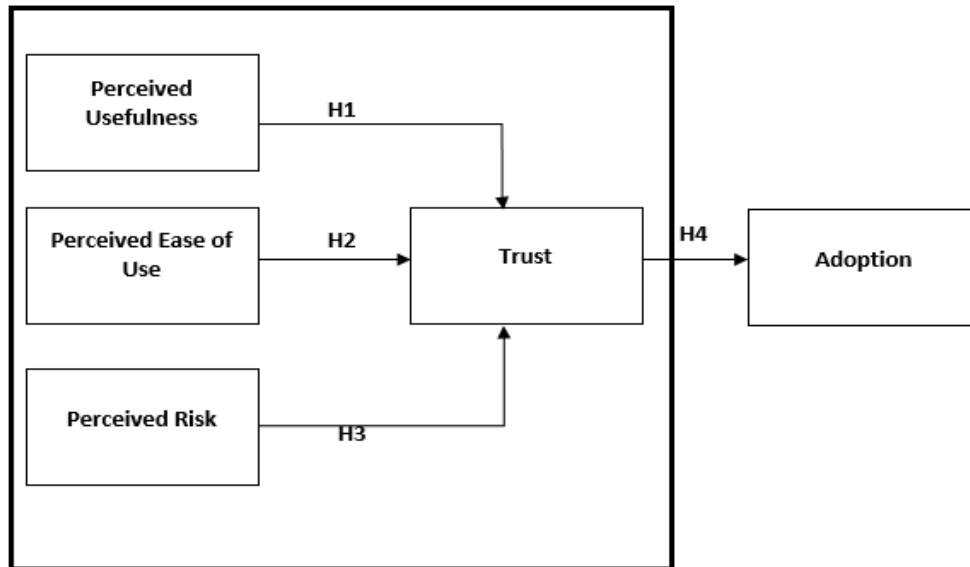


Figure 8: Proposed Conceptual Model

The following section examines the inferential statistical techniques that was used to analyse the data collected.

5.6. Reliability and Validity of Measuring Instrument

Reliability and validity are an essential aspect when analysing and assessing a measuring instrument (Tavakol & Dennick, 2011). Section 5.6.1 discusses the technique used to assess the reliability scores of the constructs used in the measuring instrument.

5.6.1. Reliability of the measuring instrument

As stated earlier, reliability refers to the uniformity of the questions that are administered and the uniform interpretation of participants in research (Blair et al., 2013). In addition, it discusses the transparency, precision and consistency of the research study as it will enable other researchers to reach the same conclusions from the research findings (Cooper & Schindler, 2013; Greener, 2008). Reliability measures internal consistency by employing a widely used statistic known as Cronbach's coefficient alpha. Internal consistency refers to the extent of which all the items in the scale measure the same scale (Pallant, 2011). Therefore, Cronbach's alpha is used to determine the average correlation of the items in a measurement scale ranging from 0 to 1. According to Tavakol and Dennick (2011), Cronbach's alpha is deemed acceptable with levels ranging from 0.7 to 0.95; however, some argue that 0.6 is acceptable but questionable. Cronbach's alpha for constructs of trust, perceived ease of use, perceived

usefulness, and perceived risk were determined once the data had been collected as these constructs were adopted from prior research.

5.6.2. Validity

Validity identifies the extent to which the data produced allows the researcher to withdraw precise deductions regarding cause-and-effect and other relationships within the data (Leedy & Ormrod, 2016). In terms of questionnaires, validity signifies the ability of the questionnaire to measure what it is intended to measure (Saunders et al., 2016). Validity ensures that the researcher measures what he or she intended to test.

There are four different techniques that may be employed to measure validity. These techniques are known as *Face validity*, *Scale validity*, *Content validity*, and *Criterion validity*.

- Content validity is described as “the extent to which the items on a test are fairly representative of the entire domain the test seeks to measure.” (Salkind, 2010, p. 239).
- Face validity refers to the content of a scale and whether the scale measures what it is intended to measure.
- Criterion validity is commonly referred to as pragmatic validity. Criterion validity is defined as “the ability of a measure to correlate with other standard measures of similar constructs or established criteria” (Zikmund et al., 2013, p. 308).
- Scale validity refers to how well a measure accurately represents a new concept. It encompasses the abovementioned tests of validity as well as convergent and discriminant validity.

The study made use of content validity which was obtained by using items based on literature in m-banking. Content validity was applied to ensure that the items in the measuring instrument was clear and that the questionnaire items provided an appropriate level of understanding. A preliminary research study was explored by conducting a pilot study amongst 10 Masters and PhD students. This ensured that feedback from the pilot group was applied in the research instrument.

5.7. Ethical Considerations

Ethical considerations are an important factor when a research study is undertaken. According to Walliman (2017), the main objective of ethics in research is to ensure that no harm is caused

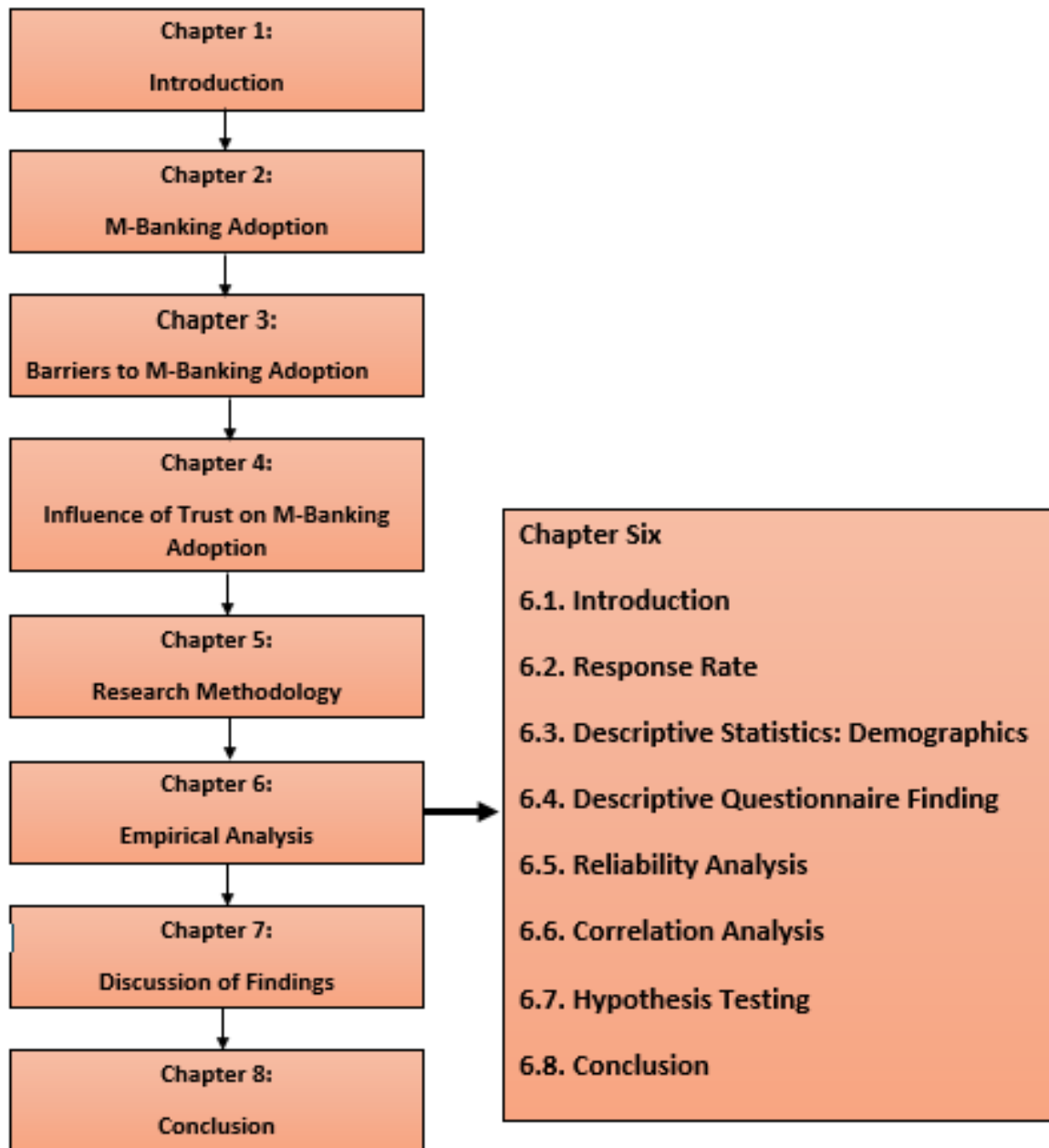
by choosing methods that reduce risks which may affect the dignity and privacy of the participants. As stated in Chapter One, ethical behaviour in research can be ensured by confirming that the following factors are considered: these factors are voluntary participation and harmlessness; anonymity and confidentiality; informed consent; disclosure; and analysis and reporting (Bhattacharjee, 2012). Based on the guideline derived from Bhattacharjee (2012), the researcher was aware of the ethical considerations and sought to undertake the research project in an ethical manner.

For the purposes of this research study, no persons under the age of eighteen were included. An ethical clearance from the University of Fort Hare's Research Ethics Committee (UREC) was obtained before the collection of data. This ensured that the research would be compliant with the ethical regulations stipulated by UREC. An application for ethical approval was received from the University Research Ethics Committee (UREC). The Certificate Reference Number is ISA041SVAN01 (Appendix A).

5.8. Conclusion

In conclusion, this chapter discussed the research paradigm, research strategy, and research instrument. The research paradigm selected for this study follows a positivistic approach following a quantitative research method. The research approach for this study made use of the survey method, which is closely linked to questionnaires. Therefore, the research instrument used in this study was an online questionnaire, which was sent to university students digitally at the University of Fort Hare. The questionnaire was sent via a link on the university's webmail. The questionnaire was based on prior research in m-banking and the underlying theory of study which focuses on EAM. Furthermore, the chapter identified the targeted population of this study and revealed the sample size and well as the convenience sampling technique which was used when collecting data. Data analysis was completed using SPSS and descriptive statistics were used to interpret the data once it was collected. To ensure validity and reliability in the study, Pearson's Product Moment Correlation Coefficient was employed to test the strength of the relationships between constructs.

CHAPTER SIX: EMPIRICAL ANALYSIS



6.1. Introduction

The previous chapter discussed the manner in which the data was collected and analysed. It focused on the importance of determining the sample size and the statistical techniques that were used to assist in answering the research question.

This chapter focuses on the analysis of the data collected and whether the hypotheses based on the literature are supported or rejected. The sections hereafter, provides evidence based on the findings from the questionnaire and will be split into five sections. The first section, 6.2, discussed the data screening and response rate. The second section (6.3) focused on the demographics and background information based on the respondents use and non-use of banking and m-banking services. The third section (6.4) discussed the descriptive statistics for the items based on the constructs used in the questionnaire. Section 6.5 revealed the reliability of each scale. The fifth and final section determines the correlation amongst the constructs and hypothesis testing.

6.2. Response Rate

As mentioned in Chapter One and Five of this study, the sample size was calculated based on the number of registered students at the University of Fort Hare. A sample size of 374 students was deemed representative of the population. The survey was sent via a web link on Google forms to the email addresses of all registered students at the university. Thereafter, data cleaning methods were used in order to ensure that the data collected was complete and to further detect any irregularities. According to Bradley (2013), researchers may choose to accept or discard a particular respondent's data record. During the data collection phase of this study, 471 students responded to the survey which was deemed adequate when compared to the proposed sample size. The data was scrubbed and 471 responses were deemed usable.

The following section discusses the descriptive statistics of the survey. This is broken down into two sections which are the demographics (gender, age, and level of education), and the descriptive results focused on banking and m-banking data of users and non-users.

6.3. Descriptive Statistics: Demographics

This section explored the descriptive statistics of this study. This included the demographic characteristics of the respondents and the m-banking usage information. The demographic profile of the respondents consisted of gender, age group, and the respondents' current level of education at that time.

6.3.1. Gender

Table 4 reports the respondents' gender that participated in this study. The results from the survey indicated that 471 respondents completed the study, of which the majority were female (52.7%) compared to the male population (47.13%). According to Stats SA (2019), this is congruent with the female to male ratio in South Africa. During the census of 2020, there were more females (51.1%) recorded than males (48.9%). The following section discusses the age groups of young adults who participated in the study.

Table 5

Gender of Respondents

Gender	Frequency (n=471)	Percentage (%)
Male	223	47.3
Female	248	52.7
Total	471	100.0

The following section in the demographic results will look at the age groups of the respondents.

6.3.2. Age groups

This section revealed the statistics pertaining to the age groups of the respondents. The ages of the respondents are split into four groups. This was illustrated in Table 6.

Table 6

Age Group

Age Group	Frequency (n = 471)	Percentage (%)
18-24	305	64.8%
25-29	108	22.9%
30-35	40	8.5%
≥ 36	18	3.8%
Total	471	100%

The first group consisted of university students between the ages of 18-24 and yielded 64.8 % of the respondents. The second group was between the ages of 25-29 and encompassed 22.9 % of the population. The third group was 30-35 years of age. Table 6 indicates that the third group made up 8.5% of the population. The fourth and final group consisted of students who were 36 years of age or older. Table 6 indicated that the final age group only constituted 3.8 % of the sample's population. Therefore, the most predominant age group amongst the respondents consisted of students between the ages of 18-24. The following section, based on the demographic results, reveals the level of education of the respondents.

6.3.3. Level of education

The participants were asked to identify which level of education they had achieved. This would reflect the study period of the student at the University of Fort Hare. The students were given seven categories from which to choose. The study made provision for students currently in their fourth year of university studies e.g. nursing or education students, but who are not Honours students.

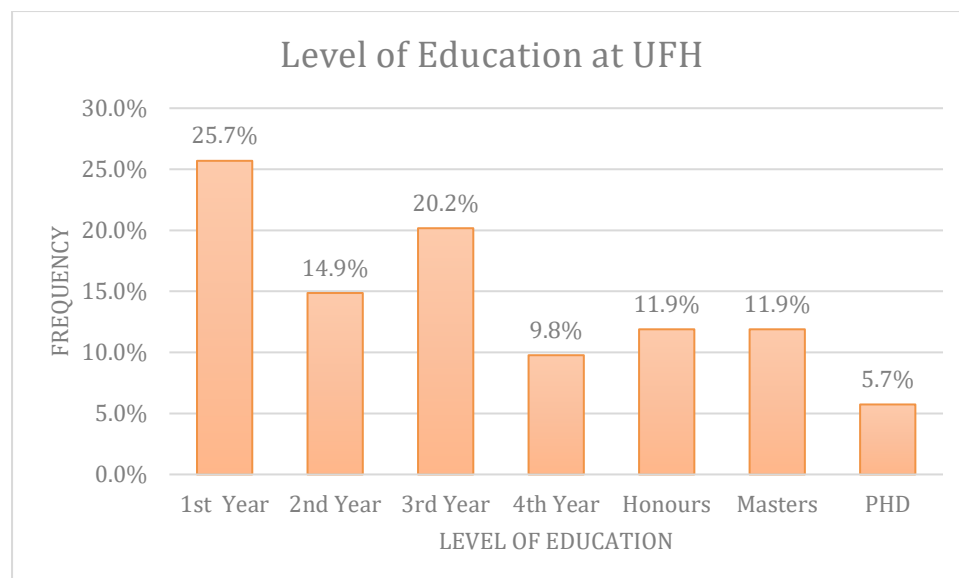


Figure 9: Level of Education

The findings as illustrated in Figure 9 indicated that the first category, showing the highest percentage of student responses, came from the first-year students. The first-year students accounted for (25.7%) of the responses received from the online survey. The second category consisted of the second-year students at the University of Fort Hare. The second-year students accounted for 14.9% of the responses. The third category showed the results of the third-year students. The figure above indicated that the third-year students had the second highest

response rate at 20.2%. The fourth category, which consisted of fourth-year students, accounted for 9.8% of the population; this category was also the second lowest following the Doctoral students. The fifth and sixth categories, based on the level of education, revealed that both Honours and Masters students' response rates were 11.9% respectively. The final category focused on PhD students where the lowest response rate was documented. Doctoral students only accounted for 5.7% of the respondents in this study. The results reflected the opinions of respondents from different genders, age group and levels of education. The following section looks at the banking and m-banking background information of users and non-users.

6.3.4. Banking and banking background information

This section revealed the results of the respondents' background information pertaining to their banking and m-banking usage. The following sections discuss whether the respondents have bank accounts and which their preferred banking institutions are.

6.3.5. Bank account holders

Table 6 reveals the results of the respondents' bank account status. The results indicated that 94% ($n=444$) of the respondents have bank accounts with the 5 major banking institutions in South Africa. The results showed that the majority of the respondents can be considered financially inclusive as presented in Table 7.

Table 7

Bank Account Holders

Bank Account Holder	Number of Respondents (<i>n</i>)	Percentage (%)
Yes	444	94%
No	27	6%
Total	471	100.0

6.3.6. Banking institutions used by students

As stated in Chapter Two, there are five major banking institutions in South Africa. This study outlined the five major institutions as FNB, Standard Bank, ABSA, NedBank, and Capitec

Bank. The findings of the study revealed that 21% of the respondents use FNB. The results further revealed that 20% of the students use Standard Bank, whereas ABSA is only used by 6% of the respondents. NedBank has the lowest number of students as only 4% of the respondents use this banking institution. The final banking institution is Capitec Bank. Table 8 shows that Capitec Bank is the most commonly used bank amongst the respondents as 43% of them use this bank. According to Hesse (2019), Capitec Bank is the preferred bank of many low-income earning South Africans due to the low rates charged by this institution. Furthermore, 6% of the respondents chose the final category which is “None”, this refers to those who are not bank account holders. This is consistent with the number of respondents that do not have bank accounts in the previous question. See Table 8 below for the findings.

Table 8

Banking Institutions Used by Respondents

Banking Institution	Frequency (n)	Percentage (%)
FNB	98	21%
ABSA	30	6%
Standard Bank	92	20%
Ned Bank	20	4%
Capitec	204	43%
None	27	6%
Total	471	100%

The above results indicated that the majority of the respondents are financially included. The study further investigated if they make use of m-banking services. Therefore, the following section discusses how many of the respondents are users or non-users of m-banking.

6.3.7. Mobile Banking Usage Statistics

The respondents were requested to indicate whether they were m-banking users or non-users. Based on the findings, 76% of the respondents indicated that they used m-banking, whereas 24% did not make use of m-banking services. The question thereafter determined whether the non-adopters would transact with m-banking in the future. Based on the responses of the respondents, 84% confirmed that they would make use of m-banking, whereas 16% confirmed that they did not intend to use m-banking in the future.

The following section focused on how often students make use of m-banking.

6.3.8. M-banking Usage Frequency

The survey determined how frequently the respondents used m-banking. The respondents were given seven categories to choose from, as illustrated in Figure 10. The first category, ‘Daily’ showed that only 26 (6%) respondent’s used m-banking services on a daily basis. Furthermore, 170 (36%) respondents used m-banking services a few times a week, 51 (11%) of respondents used m-banking once a week, 99 (21%) of respondents used this service once a month, and only 11 (2%) respondents used this service once a year. The number of students that ‘Never’ use m-banking services amounted to 51 (11%) respondents and the final category “other” indicated that 13% of the respondents made use of m-banking differently as opposed to the categories provided in the questionnaire. Unfortunately, the questionnaire did not provide for the respondents to indicate why they chose the “other” category.

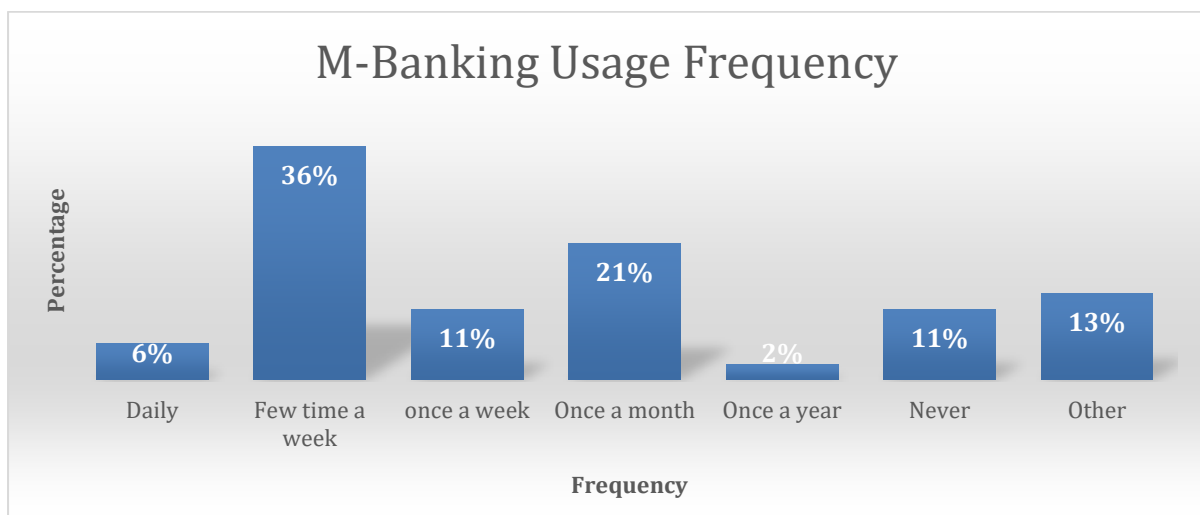


Figure 10: M-banking Usage Frequency

As mentioned in Chapter Two, there are several m-banking platforms that may be used. The

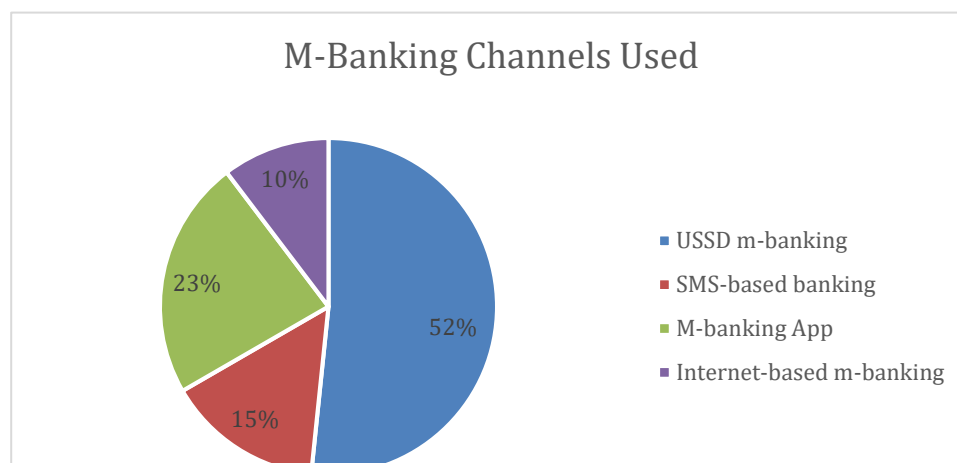


Figure 11: M-Banking Channels Used

questionnaire identified four categories of m-banking platforms which included USSD- based

m-banking, SMS-based banking, Mobile internet banking, and M-banking applications from the various banks.

The results of the study indicated that 52% of the respondents used USSD- based m-banking, 15% of the respondents indicated that they used SMS-based banking and 10% of the respondents made use of Mobile Internet banking. The last category revealed that 23% of the respondents made use of m-banking apps. The results are indicated in Figure 11 above.

This concluded the section of the demographic information of the respondents as well as their banking and m-banking usage statistics. The following section discusses m-banking trust, and its influencing factors such as perceived risk, perceived usefulness and perceived ease of use.

6.4. Descriptive Questionnaire Finding

The purpose of this section seeks to investigate the perceptions of students regarding m-banking trust and how they perceived m-banking usefulness, ease of use and risk.

6.4.1. Questionnaire Finding: Perceived Usefulness

The first section delved into the perceptions of students regarding PU. As stated in the literature, perceived usefulness generally refers to the convenience customers obtain when making use of mobile banking, allowing consumers to identify how much easier and simpler it is to carry out banking related tasks (Maroofi et al., 2013). The questionnaire sought to identify the perceptions of students regarding m-banking usefulness.

Table 9***Descriptive Results for Perceived Usefulness***

Perceived Usefulness	Strongly Disagree n (%)	Disagree n (%)	Agree n (%)	Strongly Agree n (%)
Overall, I find mobile banking useful.	3 (0.6%)	16 (3.4%)	179 (38%)	273 (58%)
Mobile banking has prevented me from standing in long queues.	5 (1.1%)	42 (8.9%)	137 (29.1%)	287 (60.9%)
I believe mobile banking improves my banking experience.	3 (0.6%)	30 (6.4%)	205 (43.5%)	233 (49.5%)
I believe mobile banking is convenient as it provides users with the ability to make cash payments and transfers.	2 (0.4%)	10 (2.1%)	170 (36.1%)	289 (61.4%)
I believe mobile banking gives me more control over my banking activities.	4 (0.8%)	44 (9.3%)	208 (44.2%)	208 (45.6%)
Mobile banking does everything I expect it to do.	9 (1.9%)	134 (28.5%)	222 (47.1%)	106 (22.5%)
I believe mobile banking uses insignificant amounts of data/airtime.	27 (5.7%)	109 (23.1%)	217 (46.1%)	118 (25.1%)
I believe mobile banking is always operational	15 (3.2%)	104 (22.1%)	256 (54.4%)	96 (20.4%)

Based on Table 9, 96% of students found m-banking useful, whereas the remaining 4% disagreed with this statement. Perceived usefulness elicits the benefits associated with m-banking. The majority of the respondents (60.9%) indicated that they strongly agreed that m-banking had prevented them from standing in long queues. A further 29.1 % agreed with this statement. The following statement regarding PU identified whether the respondents believed that m-banking improved their banking experience. The study revealed that 49.5% of the respondents strongly agreed that m-banking improved their banking experience, while 43.5% of the respondents agreed with the statement. As can be seen in Table 9, the majority of the respondents, 61.4%, strongly felt m-banking is convenient as it allowed users to make cash payments and transfers, while 36.1% of respondents agreed with this statement. There are many benefits associated with m-banking therefore, when respondents were asked if they believed they had more control over their banking activities, the majority of the respondents (45.6%) strongly agreed, while 44.2% agreed that m-banking allowed them to have more control over their banking. When asked if m-banking does everything it is expected to do, the respondents indicated that there was some room for improvement as only 22.5% strongly agreed. Following the same statement, 47.1% agreed and a 28.5% disagreed with the statement, 1.9% strongly

disagreed therefore indicating a higher expectation for the services offered on the application. As mentioned earlier in Chapter Two and Three, there are a number of costs associated with banking. It was found that m-banking reduces costs of normal banking as it has moved away from brick-banking (Sharma, 2011). Some banking institutions do not charge users for making use of m-banking services, however there are data/airtime costs involved with m-banking transactions. The respondents revealed that only 25.1% strongly agreed that m-banking uses insignificant amounts of data; a further 46.1% agreed to the m-banking using insignificant amounts of data and 23.1% disagreed, indicating that m-banking has to an extent consumed significant amounts of data. The remaining respondents (5.7%) strongly disagreed with the statement. The last statement in the scale, perceived usefulness, sought to identify whether respondents believed that m-banking is always operational. The results indicated that 20.4% of the respondents strongly agreed, 54.4% agreed, 22.1% found that it was not always operational and lastly 3.2% strongly disagreed with the statement.

Based on the results above, it is clear that the majority of the respondents perceive m-banking as a useful and beneficial service. The following section focuses on the findings regarding Perceived Ease of Use.

6.4.2. Questionnaire Findings: Perceived Ease of Use

As stated in the literature, perceived ease of use is a determining factor in a consumer's attitude and usage intention of a product or service, such as, mobile payment services and internet banking (Ali et al., 2014; Dlodlo, 2015; Kesharwani & Bisht, 2012). The respondents were asked a series of nine questions for the PEOU scale. The respondents were asked if their interaction with m-banking was clear and understandable. A quarter (25.9%) of the respondents strongly agreed with the statement, while 60.9% agreed with the statement. A small proportion of the respondents, 11.5%, disagreed and 1.7% strongly disagreed, indicating that m-banking is not as clear and understandable for some individuals. The respondents were asked if they believed that m-banking is effortless. The majority of the respondents (87.5%) were positive that m-banking was effortless, while 12.5% of the respondents disagreed with the statement. The third item in the scale sought to determine if the respondents are able to complete banking transactions quickly. The majority of the respondents (91.7%) were positive that they were able to conduct banking transactions quickly. Furthermore, the majority of the respondents (86%) confirmed that they found m-banking to be a cost-effective way to bank demonstrating effectiveness of the application. Table 10 further illustrated the statistics for respondents that

were asked whether they were able to recover quickly and easily from their mistakes on m-banking channels. Despite the majority of respondents (66.7%) confirming that they were able to recover from their mistakes, a great number of respondents (33.3%) disagreed, indicating there might be issues when trying to rectify mistakes via m-banking. Furthermore, the majority of the respondents (77.5%) confirmed that m-banking does not require much mental effort, but a sizable proportion of the respondents (22.5%) confirmed that it does require mental effort when using the service. Similarly, a sizeable majority of the respondents (87.7%) found it easy to learn how to navigate m-banking, whereas 12.7% may have experienced difficulty navigating the application in the past. However, 86.4% respondents indicated that they were able to fulfil their intended banking tasks using the service. Furthermore, only 6% of 471 respondents confirmed that they would not recommend m-banking to a friend.

Table 10

Descriptive Results for Perceived Ease of Use

Perceived Ease of Use	Strongly Disagree <i>n</i> (%)	Disagree <i>n</i> (%)	Agree <i>n</i> (%)	Strongly Agree <i>n</i> (%)
My interaction with mobile banking is clear and understandable.	8 (1.7%)	54 (11.5%)	287 (60.9%)	122 (25.9%)
I believe using mobile banking is effortless.	3 (0.6%)	56 (11.9%)	255 (54.1%)	157 (33.3%)
I am able to complete banking transactions quickly.	6 (1.3%)	35 (7.4%)	220 (46.7%)	210 (44.6%)
I believe using mobile banking is cost-effective way to do banking.	8 (1.7%)	58 (12.3%)	250 (53.1%)	155 (32.9%)
I can recover from mistakes quickly and easily.	20 (4.2%)	137 (29.1%)	241 (51.2%)	73 (15.5%)
Interacting with mobile banking does not require a lot of mental effort.	12 (2.5%)	94 (20%)	259 (55%)	106 (22.5%)
I find it easy to learn how to navigate mobile banking.	9 (1.9%)	49 (10.4%)	292 (62%)	121 (25.7%)
I am able to fulfil my intended banking tasks using mobile banking.	7 (1.5%)	57 (12.1%)	275 (58.4%)	132 (28%)
I would recommend mobile banking to a friend.	5 (1.1%)	28 (5.9%)	222 (47.1%)	216 (45.9%)

Based on the findings for PEOU, it is clear that the respondents find m-banking services to be efficient, effective, user-friendly, and easy to learn. The following section focuses on the descriptive findings for Perceived Risk.

6.4.3. Questionnaire Findings: Perceived Risk

This section focuses on the findings of the scale, perceived risk. As with many new technologies, there are always risks involved. As mentioned in the literature, m-banking is associated with risks such as financial risk, social risk, performance risk, privacy/security risk, and time risks. As a result, the respondents were asked to answer five items on this scale.

Table 11

Descriptive Results for Perceived Risk

Perceived Risk	Strongly Disagree n (%)	Disagree n (%)	Agree n (%)	Strongly Agree n (%)
I believe mobile banking has many risks	11 (2.3%)	120 (25.5%)	212 (45%)	128 (27.2%)
I am concerned with making mobile banking payments due to financial loss.	18 (3.8%)	186 (39.5%)	191 (40.6%)	76 (16.1%)
I am less likely to use mobile banking as my personal information may be accessed or misused without my knowledge.	52 (11%)	215 (45.6%)	132 (28%)	72 (15.3%)
I would be less inclined to use mobile banking if I experienced a negative encounter.	12 (2.5%)	66 (14%)	241 (51.2%)	152 (32.3%)
Conducting banking transactions on mobile devices is risky as one can easily lose or misplace their mobile device.	32 (6.8%)	135 (28.7%)	190 (40.3%)	114 (24.2%)

As demonstrated in Table 11, the first question in the scale identified whether the respondents perceived m-banking to have many risks. A number of the respondents (27.2%) confirmed that they strongly agreed with this statement, moreover, 45% agreed, 25.5% disagreed and 2.3% strongly disagreed. Therefore, this indicated that almost a third of the respondents believed there are risks associated with m-banking. Furthermore, when asked if respondents were concerned with making mobile banking payments due to financial loss, 56.7% confirmed that they were concerned at the possibility of financial loss, the remaining 43.3% confirmed that they were not concerned with regards to this risk. In addition, respondents were also asked if they were less likely to use m-banking due to personal information being accessed or misused without their knowledge. The majority of the respondents (45.6%) disagreed while 11% strongly disagreed with the statement. In addition, the majority of the students (83.5%) further positively indicated that they would be less inclined to use m-banking if they were to experience a negative encounter, as opposed to the 16.5% that confirmed they would still

continue using the service. The final item in the scale investigated the perceptions of the students with regards to the risk of losing a mobile device that they use for banking transactions. Almost a quarter of the respondents (24.2%) strongly agreed that conducting banking transactions on mobile devices can be risky as one can easily lose or misplace the said device. Furthermore, Table 11 shows that 40.3% agreed that losing or misplacing a mobile device is risky, whereas 28.7% disagreed with the notion and a further 6.8% strongly disagreed. Therefore, based on the values in Table 11, the majority of the respondents find it risky to conduct m-banking transactions on a mobile device as it may be easily lost or misplaced.

The final scale in the study is Trust. The following section focused on the students' perceptions towards trust in m-banking.

6.4.4. Questionnaire Findings: Trust

As mentioned in the literature, the concept of trust has been widely documented in many different fields and studies. When focusing on the notion of trust, it is imperative to look at the composition of trust. Trust is broken down into three components which are ability, benevolence, and integrity (Mayer, et al., 1995). Based on the three components, the questions in the scale were derived and can be seen presented in Table 12.

Table 12

Descriptive Results for Trust

Trust	Strongly disagree <i>n</i> (%)	Disagree <i>n</i> (%)	Agree <i>n</i> (%)	Strongly agree <i>n</i> (%)
I believe mobile banking is trustworthy.	11 (2.3%)	75 (15.9%)	291 (61.8%)	94 (20%)
I believe banking service providers keep my best interests in mind.	9 (1.9%)	57 (12.1%)	313 (66.5%)	92 (19.5%)
I believe that mobile banking providers have the ability to facilitate secure banking transactions.	5 (1.1%)	40 (8.5%)	314 (66.7%)	112 (23.8%)
I believe that mobile banking providers have the policies and procedures in place to ensure that my personal information is not misused.	6 (1.3%)	28 (5.9%)	308 (65.4%)	19 (27.4%)
I believe that banks apply the policies and procedures consistently to ensure personal information is not misused.	4 (0.8%)	50 (10.6%)	281 (59.7%)	136 (28.9%)
I believe that banks apply the necessary controls, policies and procedures to ensure security	3 (0.6%)	33 (7%)	300 (63.7%)	135 (28.7%)
I believe mobile banking service providers are concerned with the interests of all users.	10 (2.1%)	40 (8.5%)	291 (61.8%)	130 (27.6%)

I believe M-banking is secure	10 (2.1%)	75 (15.9%)	288 (60.7)	100 (21.2%)
Overall. I trust mobile banking.	11 (2.3%)	62 (13.2%)	272 (57.7%)	126 (26.8%)

The respondents were asked a series of nine questions with regards to trust in m-banking as illustrated in Table 12. Table 12 presents a summary of the findings for trust. The findings from the survey for the first item indicates that 81.8% of the respondents confirmed that they believed m-banking is trustworthy, whereas 18.2% believe m-banking is untrustworthy. Furthermore, respondents were asked if they believed that m-banking service providers kept their best interests in mind, the answers were as follows: 19.5% strongly agreed; 66.5% agreed; 12.1% disagreed and 1.1% strongly disagreed, thus indicating that a stronger percentage of the population believes that banking institutions have their best interests at heart. Moreover, respondents were asked if they believed that m-banking providers have the ability to facilitate secure banking transactions. The majority of the respondents (90.5%) confirmed that they believed the banks could provide secure m-banking platforms whereas the remaining participants were negative towards the statement. The fourth item in the scale identified whether respondents believed that m-banking providers have policies and procedures in place to ensure that their personal information is not misused. More than a quarter of the respondents (27.4%) confirmed that they firmly agreed with the fourth item on the constructs, the majority of the respondents (65.4%) agreed, 5.9% disagreed and 1.3% strongly disagreed, thus indicating that some of the respondents believed that m-banking providers do not have the required policies in place to safeguard personal information from potential risks. Furthermore, the respondents were asked if they believed that banks applied the policies and procedures consistently to ensure personal information is not misused. Only 28.9% strongly agreed, 59.7% agreed, 10.6% disagreed and the remaining 0.8% disagreed, indicating that the majority of the respondents were positive. The respondents were also asked if they believed that banks apply the necessary controls, policies and procedures to ensure security. The majority of the respondents (92.4%) confirmed that they positively believed in the statement, whereas 7.6% negatively responded to the statement. Moreover, the majority of the respondents (89.4%) indicated that they believed that m-banking service providers are concerned with the interests of all users. The second last question in the scale sought to determine if the students believed m-banking is secure: the majority of the students (81.9%) indicated that they did believe that it is secure. A remaining number of students (18%) indicated that they did not believe m-banking is secure. The final item in the constructs sought to identify the overall perception of trust in

m-banking that the students have. The majority of the students (84.5%) indicated that they trust m-banking. However, 15.5% indicated that they distrust the service, as reflected in Table 12.

The following section looked at the ways in which the respondents used m-banking such as cash payments, cash transfers and purchases.

6.4.5. Questionnaire Findings: Actual Transaction

This section sought to investigate which services the students make use of on their m-banking platforms.

6.4.5.1. M-banking purchases.

This section investigated the type of purchases students made when using m-banking. The students were asked which of the three categories they used for m-banking. Figure 12 illustrates that the majority of the students make use of m-banking to purchase airtime. The second highest purchase was data bundles and only one person indicated that they used m-banking to purchase electricity. Furthermore, 13.8% of the respondents indicated they used m-banking for none of the above categories.

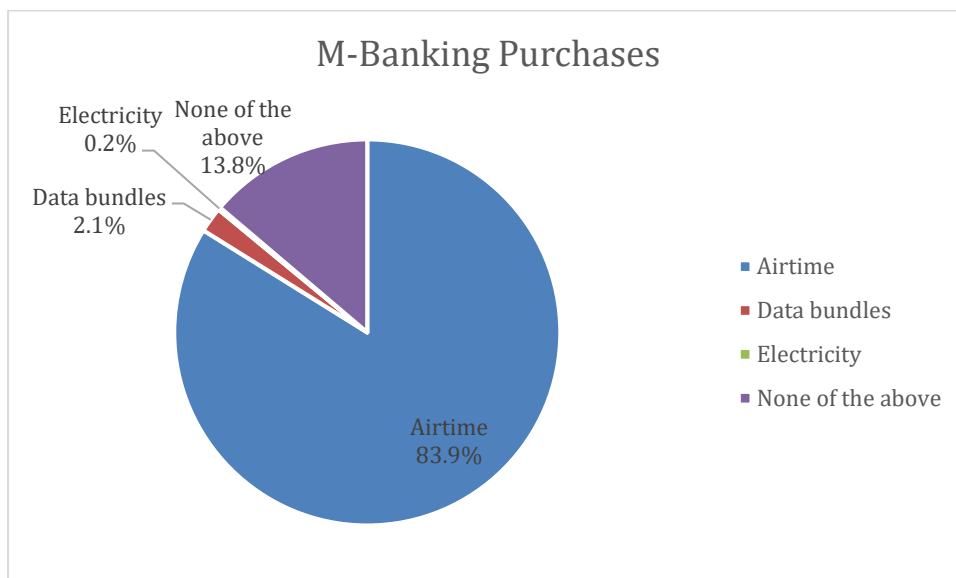


Figure 12: M-Banking Actual Transaction (Purchases)

6.4.5.2. Cash payments and transfers.

This section identified the type of cash payments and transfer services the students made use of in m-banking. Figure 13 illustrates that the majority (59%) of the students used m-banking to make cash payments, 15.5% used m-banking for cash transfers, 4.5% made use of withdrawals, 4.7% made use of m-banking to pay clothing accounts and 0.2% used it to pay

traffic fines. Furthermore, 0.4% of the students used m-banking services for debit orders and 15.7% confirmed that they did not use m-banking for any of the abovementioned categories.

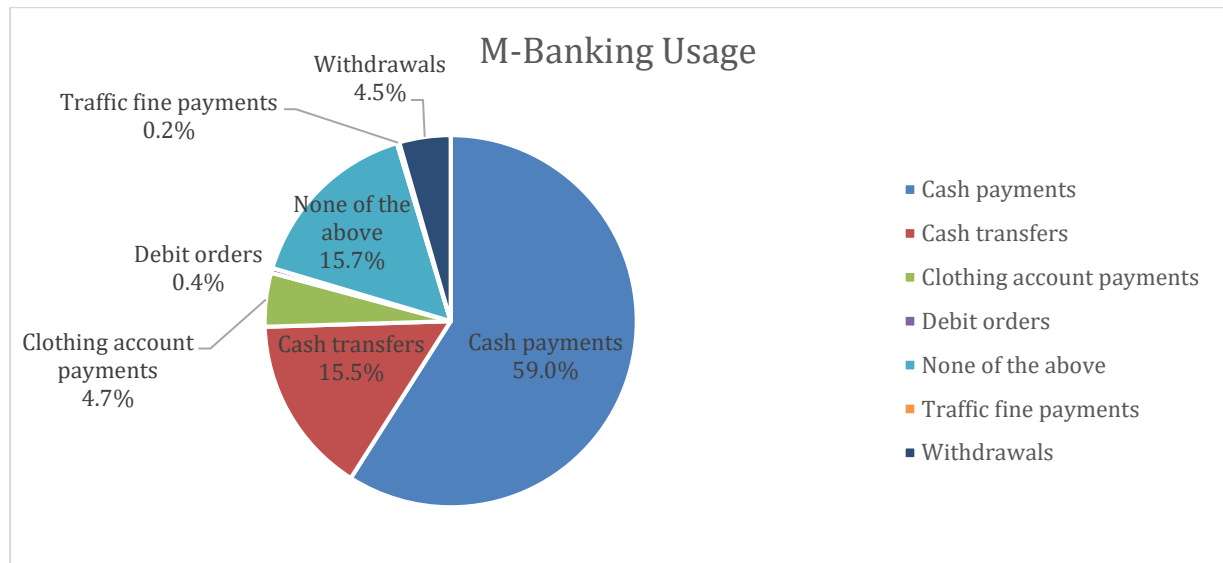


Figure 13: M-Banking Actual Transaction (Payments)

The following section discusses the reliability analysis of this study.

6.5. Reliability Analysis

According to Pallant (2011), the most common form of internal consistency is through Cronbach's Alpha coefficient. As mentioned in Chapter Five, reliability is essential in quantitative research methods to ensure that the constructs are measuring the items consistently. The sections hereafter reveal the Cronbach's alpha coefficients of constructs found in the measuring instrument as well as the inter-item correlations. The results of the internal consistency for each scale is presented in Table 13.

Table 13

Reliability Analysis

Scale	Cronbach's alpha	No. of Items
Perceived Usefulness	.778	8
Perceived Ease of Use	.870	9
Perceived Risk	.753	5
Trust	.921	9

The Cronbach's alpha for perceived usefulness was calculated at .778. The following scale, as indicated in Table 13, is perceived ease of use. The PEOU scale consisted of 9 items with a

Cronbach's alpha of .870. The third scale examined in this study was perceived risk. Perceived risk consisted of 5 items and had a Cronbach's alpha of .753. The final scale of this study was trust. The trust scale consisted of 9 items. The Cronbach's alpha for trust was found to be .921. The Cronbach's alpha coefficients for the abovementioned constructs indicate good internal consistency based on the required Cronbach alpha coefficient of .70. The results indicated that all the constructs were above the required level of .70 as the constructs range from .753 to .921.

6.6. Correlation Analysis

This study demonstrates that there are three key constructs that have an influence on trust. As mentioned previously, Pearson product-moment correlation was used to test the strength of the relationship between the constructs. This determined whether there were positive or negative relationships between the constructs.

Table 14

Correlation Analysis

		Correlation			
		Perceived Usefulness	Perceived Ease of Use	Perceived Risk	Trust
Perceived Usefulness	Pearson Correlation	1	.731**	-.132**	.533**
	Sig. (2-tailed)		.000	.004	.000
	N	471	471	471	471
Perceived Ease of Use	Pearson Correlation	.731**	1	-.150**	.575**
	Sig. (2-tailed)	.000		.001	.000
	N	471	471	471	471
Perceived Risk	Pearson Correlation	-.132**	-.150**	1	-.201**
	Sig. (2-tailed)	.004	.001		.000
	N	471	471	471	471
Trust	Pearson Correlation	.533**	.575**	-.201**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	471	471	471	471

** . Correlation is significant at the 0.01 level (2-tailed).

When analysing Table 14, it demonstrated that a Pearson product-moment correlation was run in order to determine the relationship between two variables. Perceived usefulness had a

confirmed score of 0.533 in relation to trust, therefore indicating that perceived usefulness had a moderately positive relationship with trust, which was statistically significant ($r = .533$, $p < .001$). Table 14 indicated that perceived ease of use had a confirmed score of .575 and had a moderate positive correlation with trust ($r = .575$, $p < .001$). The final scale in Table 14 indicated that the Pearson product-moment correlation run between perceived risk and trust. Perceived risk has a significant negative correlation with trust ($r = -0.201$, $p < 0.001$).

Table 15

Intention to Transact

Correlations			
		Trust	Intention to transact
Trust	Pearson Correlation	1	.535**
	Sig. (2-tailed)		.000
	N	471	471
Intention to transact	Pearson Correlation	.535**	1
	Sig. (2-tailed)	.000	
	N	471	471

Table 15 reviews the relationship between trust and intention to transact. Table 15 indicated that Pearson product-moment correlation was utilised to test the relationship between trust and intention to transact. Trust had a correlation coefficient of 0.535 between trust and intention to transact thus indicating a moderate positive relationship between trust and intention to transaction ($r = 0.535$, $n = 73$, $p < .000$).

6.7. Hypothesis Testing

This section reviews the hypotheses for this study. The hypothesis is either rejected or accepted based on the significance level between the constructs. This study used Pearson Product Moment correlation to test the hypothesis to help determine the statistical significance between the constructs by making use of the range -1 to +1. The results from Tables 14 and 15 were

used by the researcher to make the decision on whether to accept or reject the different hypotheses.

Hypothesis One has a null hypothesis (H_{01}) stating that perceived usefulness does not have a significant influence on trust in mobile banking adoption among university students in South Africa. Its alternative hypothesis (H_1) states that perceived usefulness has a significant influence on trust in mobile banking adoption among university students in South Africa. The results from Table 14 show that there is a correlation between perceived usefulness and trust as the correlation result was 0.533. Therefore, a positive relationship exists between perceived usefulness and trust. As a result, one can accept the alternative hypothesis stating, perceived usefulness has a significant influence on trust in mobile banking adoption among university students in South Africa. Furthermore, this indicates that students are more likely to trust mobile banking, based on their perceived usefulness experienced when using m-banking services.

Hypothesis Two has a null hypothesis (H_{02}) which states that perceived ease of use does not have a significant influence on trust in mobile banking adoption among university students in South Africa. Its alternative hypothesis (H_2) states that perceived usefulness has a significant influence on trust in mobile banking adoption among university students in South Africa as demonstrated in Table 14. The results from Table 14 show a positive relationship exists between perceived ease of use and trust, due to the correlation coefficient value of 0.575. As a result, one can accept the alternative hypothesis stating, perceived ease of use has a significant influence on trust in mobile banking adoption among university students in South Africa.

Hypothesis Three has a null hypothesis (H_{03}) which states that perceived risk does not have a significant influence on trust in mobile banking adoption among university students in South Africa. Its alternative hypothesis (H_3) states that perceived risk has a significant influence on trust in mobile banking adoption among university students in South Africa, as demonstrated in Table 14. The results from Table 14 show a negative relationship exists between perceived risk and trust, due to the correlation coefficient value of -.201. A negative correlation describes the extent to which two variables move in opposite directions. For example, an increase in the variable risk is associated with a decrease in the variable trust. A negative correlation coefficient is also referred to as an inverse correlation.

Hypothesis Four has a null hypothesis (H_{04}) which states that trust does not have a significant influence on mobile banking adoption among university students in South Africa. Its alternative hypothesis (H_4) states that trust significantly influences mobile banking adoption among university students in South Africa as demonstrated in Table 15. The results from Table 15 show a positive relationship exists between trust and intention to transact due to the correlation coefficient value of .535. As a result, one can accept the alternative hypothesis stating, trust has a significant influence on intention to transact in mobile banking adoption among university students in South Africa.

Based on Tables 14 and 15, Table 16 below highlights the results and states whether the null hypotheses and alternate hypotheses were accepted or rejected.

Table 16

Hypothesis Results

Hypothesis	Frequency (n)	p-value	r-value	Reject/ Accept
H ₁ : Perceived Usefulness significantly influences trust in mobile banking adoption among university students in South Africa.	471	p<.001	0.533	Accept
H ₂ : Perceived ease of use significantly influences trust in mobile banking adoption among university students in South Africa.	471	p<.001	0.575	Accept
H ₃ : Perceived risk significantly influences trust in mobile banking adoption among university students in South Africa.	471	p<.001	-0.201	Accept
H ₄ : Trust significantly influences mobile banking adoption among university students in South Africa	73	p<.001	0.535	Accept

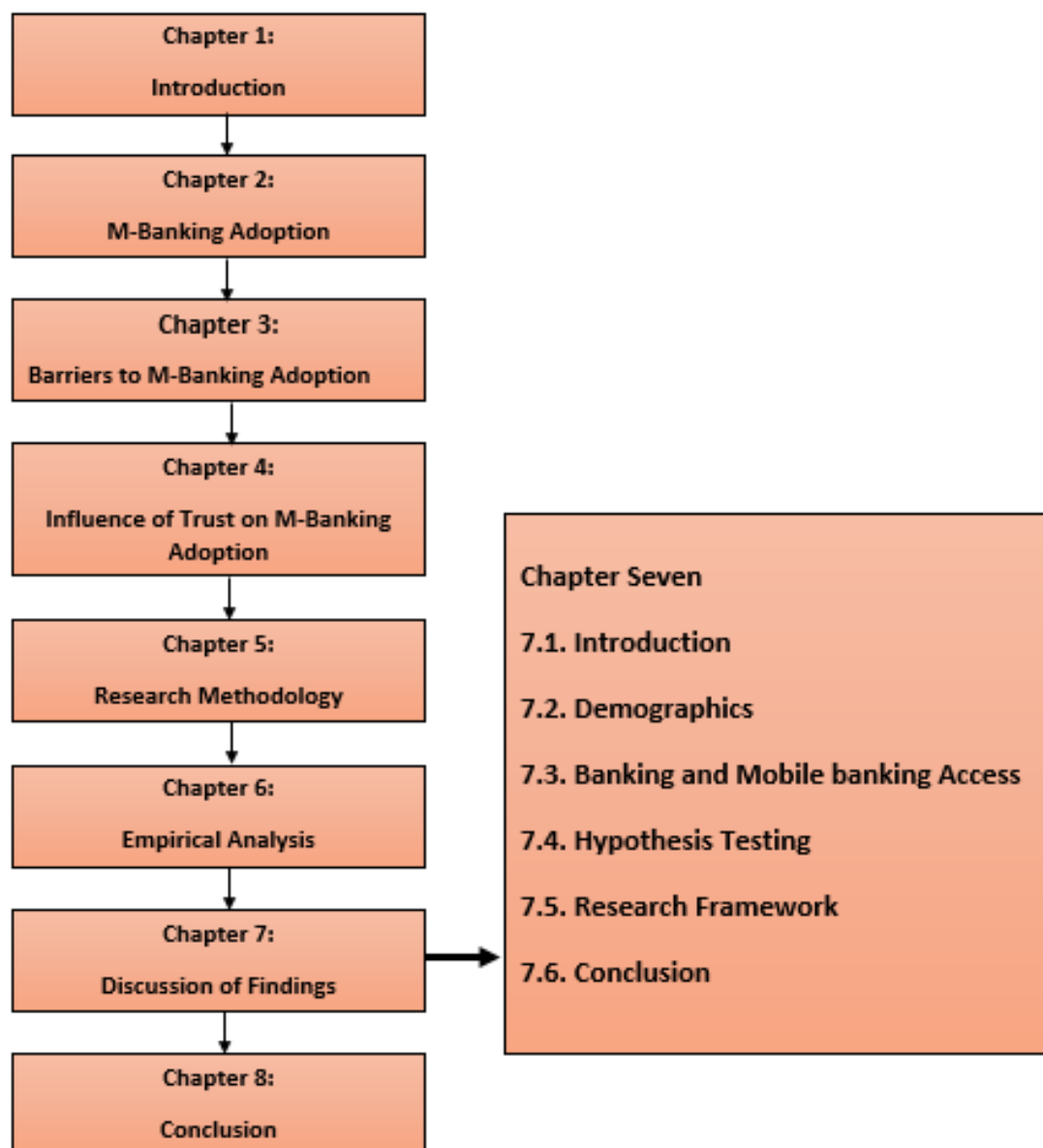
6.8. Conclusion

This chapter presented the analysis of data collected by means of the web-based questionnaire. The research instrument was made up of sections: these included demographics, background information regarding students banking and m-banking usage and intention and factors influencing trust, such as, perceived usefulness, perceived ease of use and perceived risk. The findings of the study were presented in the form of text, graphs and tables. Moreover, the study made use of Cronbach's alpha to test reliability. The Cronbach's alpha coefficients for the constructs indicated good internal consistency based on the required Cronbach's alpha coefficient of .70. The results indicated that all the constructs were above the required level of

.70 as the constructs range from .753 to .92. The study made use of Pearson product-moment correlation in order to test the strength of relationship between the constructs. The results of the correlation analysis found that perceived ease of use, perceived usefulness and perceived risk have an influence on trust and the consequent adoption of mobile banking by university students. Based on the r-values and p-values, Table 16 illustrates the rejected and accepted hypotheses.

The section hereafter discusses the findings of data analysed in Chapter Six.

CHAPTER SEVEN: DISCUSSION OF THE FINDINGS



7.1. Introduction

In the preceding chapters, the problem statement was discussed and the main objective of this study was identified. The main objective of this study was to investigate how trust can influence the adoption of mobile banking among university students in South Africa. Based on this objective, research questions were posed in Chapter One to provide a better understanding of the problem statement. A literature review was conducted which aided in the derivation of the hypothesis in this study.

The preceding chapter provided a comprehensive statistical analysis of the data gathered using questionnaires. As a result, the hypotheses were all accepted and are discussed in more detail in this chapter. The section hereinafter focuses on the demographic information of the participants.

7.2. Demographics

The results from the survey showed the majority of respondents were female (52.7%), whereas the male population was 47.13%. According to Stats SA (2019), this is congruent with the female to male ratio in South Africa. During the census of 2020, there were more females (51.1%) recorded than males (48.9%). Following this, the survey looked at the ages of the respondents which varied from 18- 36 or older. In addition to the demographics, the study investigated the level of education of the respondents and found that the survey was completed by students across various levels in their tertiary education. The tertiary level of the respondents ranged from first year university students to student completing their PhDs. Therefore, the results reflect the opinions of university students from different genders, age groups and levels of education.

7.3. Banking and Mobile Banking Access

Findings from the survey indicated that the majority of the respondents had bank accounts with one or more of the five major banking institutions in South Africa. A small number of the respondents indicated that they did not own bank accounts. Therefore, the survey indicates that majority of the students are financially included as they have access to financial products and services. This could be due to the National Student Financial Aid Scheme (NSFAS), which has prompted students to have bank accounts to ensure redistribution of funds directly to students (South African Government New Agency, 2020).

The study outlined the five major banking institutions as FNB, Standard Bank, ABSA, Nedbank, and Capitec Bank. The survey results indicated that only 4% of the respondents used Nedbank. Moreover, the findings revealed that 20% of the participants had Standard Bank accounts, while 21% of the respondents used FNB. Furthermore, the results revealed that just less than half of the respondents had bank accounts at Capitec Bank. The findings concluded that Capitec Bank is the most commonly used bank amongst the respondents as 43% of the respondents have bank accounts at this banking institution. As stated in the previous chapters, Capitec Bank is the preferred bank of many low-income earning South Africans due to the low charge rates offered (Hesse, 2019). The results confirmed that Capitec Bank is the preferred bank amongst university students at the University of Fort Hare.

In the study, more than three quarters of the respondents indicated that they used mobile banking. Therefore, less than a quarter of the respondents indicated that they do not use mobile banking. This deduction indicated that there is an opportunity for banks to expand and try to reach more students as they will become the future income earners who will require mobile banking technologies. Furthermore, the non-adopters of m-banking further indicated that they intended to use m-banking in the future. The study further explored the various m-banking platforms and found that the majority of the respondents made use of USSD m-banking. The USSD mobile banking provides customers with an array of options and allows the customer to select options based on the menu provided by the bank, resulting in an effective communication medium between the bank and its customers (Cavus & Chingoka, 2015). USSD m-banking is most commonly used to purchase airtime or data bundles. In this study, the most prevalent transaction was airtime purchases (83%). This is an interesting finding as students have access to free WIFI throughout the university and residences.

Therefore, university students are an ideal market segment as they are future adopters of technologies and income earners. Banks need to make it their business to ensure that their customers find the m-banking option attractive so that the banks can record higher adoption figures.

7.4. Hypothesis Testing

The section hereinafter focuses on the hypotheses' results and provides a more detailed discussion on each finding. This study used Pearson Product Moment correlation to test each hypothesis to help determine the statistical significance between the constructs; use was made

of the range -1 to +1. The results helped determine whether to accept or reject the different hypotheses.

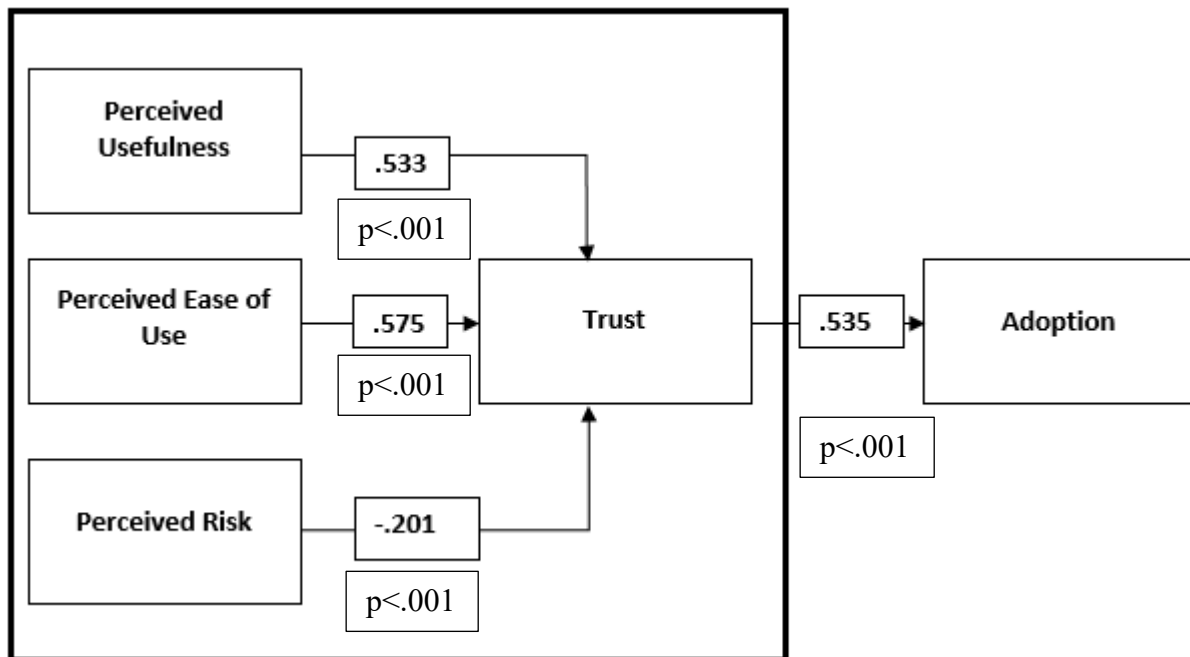


Figure 14: A trust framework to improve m-banking adoption by university students

7.4.1. Perceived Usefulness

Hypothesis One stated that perceived usefulness significantly influenced trust in mobile banking adoption among university students in South Africa.

Perceived usefulness is identified as “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis, 1989, p.320). Moreover, van Deventer (2019) conducted a study amongst the youth in South Africa and noted that the findings of the study suggested that ease of use and usefulness amongst other factors contributed to trust in mobile banking.

The results from the study suggest that there is a correlation between perceived usefulness and trust as correlation result was 0.533, $p < .001$. Therefore, a positive, but medium strength relationship exists between perceived usefulness and trust. As a result, one can accept the alternative hypothesis stating, perceived usefulness has a significant influence on trust in mobile banking among university students in South Africa. As highlighted in section 3.2.1, the literature indicated that perceived usefulness influences trust in m-banking (Hassan & Wood, 2020; Ifeonu & Ward; 2015). Based on the findings found in Chapter Six, 96% of students found m-banking useful. Therefore, this indicated that the students in this study found m-

banking to be beneficial. According to the literature in section 3.2.1, perceived usefulness acts as a key factor in promoting the adoption of m-banking (Hassan & Wood, 2020). Therefore, the more useful students deem m-banking, the more likely they will be to adopt m-banking.

The findings of the study found that m-banking increased productivity as 60.9% indicated that they no longer had to stand in long queues to conduct banking related tasks, thus increasing their perceptions of usefulness. The findings in Chapter Six further indicated that students might perceive m-banking as useful as the majority of the students indicated that they found m-banking convenient as they are allowed to make cash purchases and payments. The literature highlighted that when consumers recognise the usefulness of m-banking, they are more likely to have their trust positively affected as perceived usefulness has a positive influence on trust in m-banking (Ramos et al., 2018; Maroofi et al., 2013). In the context of this study, students might perceive m-banking as useful due to the benefits that m-banking elicits, thus influencing their trust in m-banking. As a result, the hypothesis is congruent with the literature in section 3.2.1 as perceived usefulness has a significant and positive influence on trust in m-banking adoption amongst university students (Laukkanen, 2007; Lee et al. 2009; Lin, 2010; Wessels & Drennan, 2010).

7.4.2. Perceived Ease of Use

Hypothesis Two stated that perceived usefulness significantly influenced trust in mobile banking adoption among university students.

Shaikh and Karjaluoto (2015) state that perceived ease of use and perceived usefulness are one of the most frequently cited factors in determining mobile banking adoption. Ramos et al. (2018, p. 181) define perceived ease of use as “the belief that the individual forms regarding the absence of effort in learning to use a new technology. The greater the perception of m-banking’s ease of use, the more positive the consumer’s attitude will be towards the technology.” The results of this study concluded that the majority of the students found m-banking to be clear and understandable during m-banking interactions. As a result, this indicated that students perceive m-banking as easy to use. Based on the findings in Chapter Six, perceived ease of use has been found to be efficient as the majority of the students had indicated that they were able to conduct transactions quickly and cost effectively. Moreover, the results demonstrated that the majority of the students found it easy to learn how to navigate on m-banking services. As a result, this further indicated that they were able to recover from their mistakes quickly. According to Zhou (2012), a well-designed m-banking user interface

with powerful navigation reflects a retail bank's ability and benevolence and, as a result, influences a user's trust. As a student's trust increases due to the perceived ease of use concerning mobile banking, they will be able to identify a retail bank's ability and benevolence, which are contributing factors to perceived trustworthiness.

The findings from the study suggest that a positive, but medium strength relationship exists between perceived ease of use and trust, due to the correlation coefficient value of 0.575, $p < .001$. As a result, one can accept the alternative hypothesis stating, perceived ease of use has a significant influence on trust in mobile banking adoption among university students in South Africa. The findings from the study conclude that perceived ease of use is the strongest correlate to trust in m-banking adoption among university students. As stated in chapter One, Mou and Cohen (2015) found perceived ease of use to be an antecedent of trust, as a result the findings of this study concur. The literature of this study therefore supports the hypothesis by stating that there is a positive relationship between perceived ease of use and trust.

7.4.3. Perceived Risk

Hypothesis Three has a null hypothesis (H_0), which stated that perceived risk does not have a significant influence on trust in mobile banking adoption among university students in South Africa. Its alternative hypothesis (H_3) stated that perceived risk has a significant influence on trust in mobile banking adoption among university students in South Africa. The results demonstrated that a negative relationship exists between perceived risk and trust, due to the correlation coefficient value of $-.201$, $p < .001$. A negative correlation describes the extent to which two variables move in opposite directions. In this case, an increase in the variable risk is associated with a decrease in the variable trust.

Perceived risk alludes to the insecurity or loss that might occur as a result of a consumer using mobile banking services (Anyanwu, Ubi & Ananwude, 2017). Alsheikh and Bojei (2014) found that trust was inversely related to the risk perception of banking customers. The study suggested that banking institutions should provide consumers with knowledge and information regarding the mobile banking services they offer to instill trust, thereby diminishing the risk of the mobile banking services.

Perceived risk has been cited as an inhibitor of mobile banking adoption. According to the literature in Chapter Three, perceived risk has the ability to affect mobile banking negatively

in a variety of situations (Ha, Canedoli, Baur & Bick, 2012). Section 6.2.3 found that perceived risk encompasses five facets of risk that consumers need to be aware of, which include performance risk, security/privacy risk, time risk, social risk and financial risk (Luo, Li, Zhang & Shim, 2010).

Based on the result in Chapter Six, the majority of the respondents believed there are risks associated with m-banking. More than half the students indicated that they were concerned with the possibility of financial loss when conducting payments. Therefore, students may encounter financial risk. Furthermore, 83.5 % of participants indicated that they would be less inclined to use m-banking if they were to encounter a negative experience. As a result, a negative experience may reduce a student's trust in m-banking and banking institution as it will diminish their ability to continue using the service. This will also change the perceptions students may have regarding the cost of conducting transaction using m-banking.

The findings in Chapter Six therefore concluded that students found m-banking to be risky. According to Abdullah et al. (2018), it is imperative for m-banking services to ensure that the transactions between the user and the bank are transmitted through a secure and safe platform as this will improve trust and adoption of m-banking as the risk is decreased (Abdullah et al., 2018; Alalwan, Dwivedi, Rana & Williams, 2016; Gbongli, Peng & Ackah, 2016).

7.4.4. Trust

Lin et al. (2014) state that trust is a difficult notion to comprehend as many researchers attempt to define it in various perspectives and disciplines. As a result, there is no unified definition of trust. According to Huili et al. (2013), trust refers to the expectation of competency, benevolence and truthfulness of the trusted party, whereas distrust is expressed as the expectations of people on others' inability, undesirable motivations and negative behaviour. Consumer trust is a vital contributing factor in the success of m-banking (Kim et al., 2009). As stated in the literature, there are three factors that encompass the formation of trust which are ability, benevolence and integrity. As a result, the questionnaire for trust was tailored to identify the factors of perceived trustworthiness. The findings stated that as a whole, more than 80% of the students found m-banking to be trustworthy, whereas the remainder confirmed that they did not find m-banking to be trustworthy. This may be due to the perceived risks associated with the service. In addition, the majority of the students indicated they believed that banking

and m-banking service providers have their best interests in mind and ensure that they have the ability to facilitate secure banking transactions. The findings suggest that students are able to determine a bank's ability, benevolence and integrity thus increasing trust.

In South Africa, the lack of trust and knowledge are the key reasons why South Africans are reluctant to use mobile banking services (Kaya, 2013). Extant literature indicates that a lack of trust exists in mobile banking and it is frequently cited as a barrier for adoption to occur (Ifeonu & Ward, 2015; Yu, 2012; Lin, 2011; Kim et al., 2009). The result from the construct indicate that student found m-banking trustworthy which was surprising as extant literature indicated that a lack of trust exists in m-banking adoption. Based on this study, it was found that 81.9% believed m-banking is secure. Furthermore, the majority of the students (84.5%) indicated that they trust m-banking. Based on the literature, trust has a significant influence on m-banking adoption.

Hypothesis Four has a null hypothesis (H04) which stated that trust does not have a significant influence on mobile banking adoption among university students in South Africa. Its alternative hypothesis (H4) stated that trust significantly influences mobile banking adoption among university students in South Africa. The findings from the study suggest that there is a positive relationship that exists between trust and usage intention due to the correlation coefficient value of .535, $p < .000$. As a result, one can accept the alternative hypothesis stating, trust has a significant influence on mobile banking adoption among university students in South Africa. The literature and the underlying theory of this study therefore support the hypothesis. Furthermore, the literature indicated that a lack of trust influences adoption. The findings in Chapter Six revealed students trust m-banking because this study revealed a positive relationship between the constructs.

7.4.5 Adoption of m-banking services

The E-Commerce Acceptance Model by Pavlou (2003) has been used as the underlying theory of this study. As a result, the study included the intention to transaction scale in order to determine how many non-adopters of m-banking would intend to transact in the future. The findings revealed that 115 students do not make use of m-banking. Moreover, 84% of the non-adopters indicated that they intend to use m-banking in the future. In a study by Pavlou (2003), it was established that there is a relation between intention to use and actual transaction. As a result, this study sought to identify the various ways in which the university students made use of actual m-banking services. This study investigated the number of students that had adopted

m-banking. The results found that 76% of the participants already made use of m-banking. The findings further indicated that m-banking adoption amongst students at the university was relatively high. The study also investigated the various m-banking platforms used by students and found that USSD was the most commonly used m-banking platform. The study focused on actual transactions by highlighting sub categories within cash payments, purchases and transfers. The results revealed that the majority of the students used m-banking to purchase airtime and data bundles. Furthermore, the study revealed that the university students used m-banking for cash payments, clothing account payments and payments of traffic fines. As stated, in previous chapters, there are many barriers in m-banking adoption such as trust, perceived usefulness, perceived ease of use and perceived risk. However, this study found that the factors constructs investigated in this study influenced trust which, in turn, influences adoption of m-banking.

7.5. Research Framework

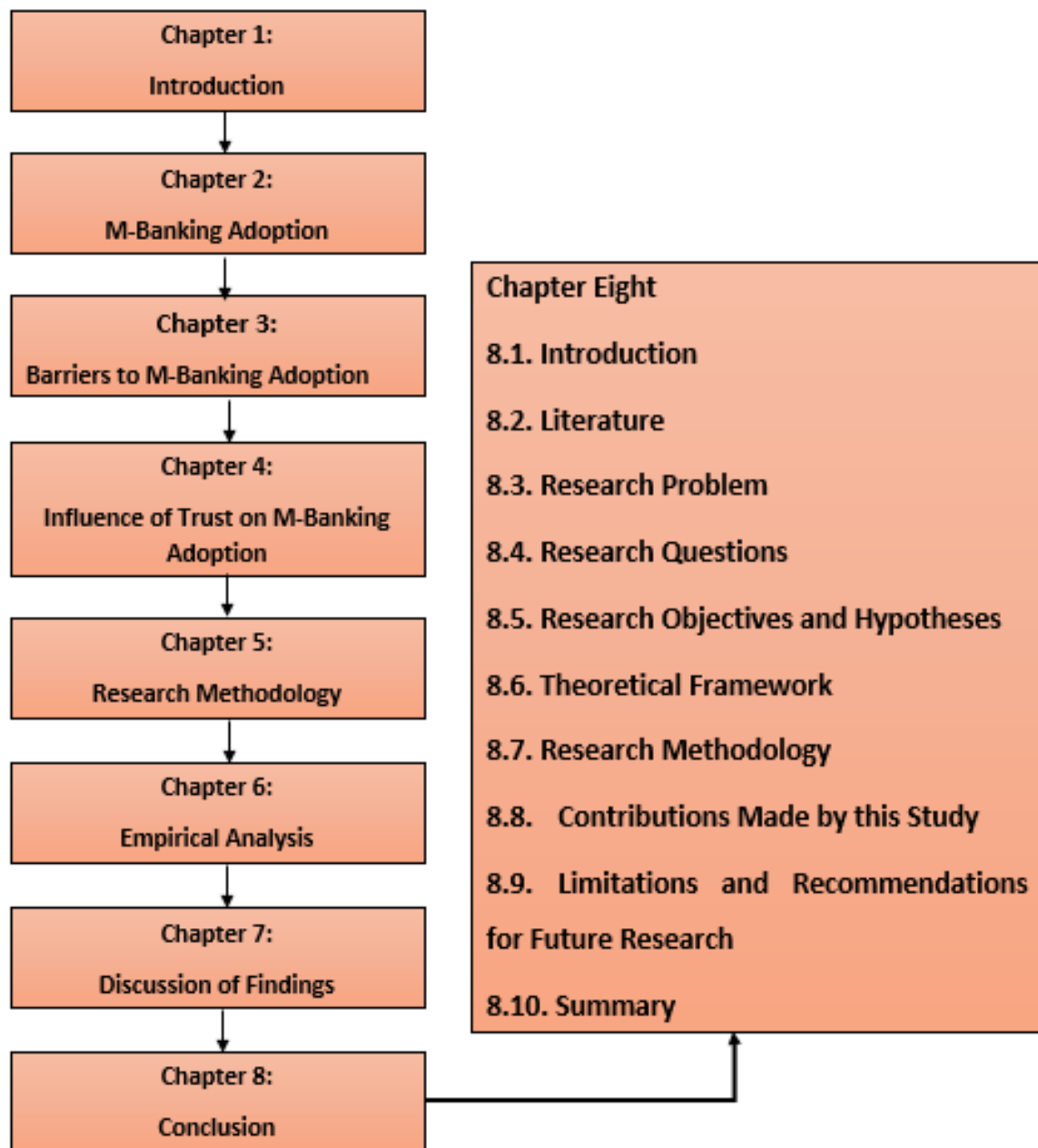
The study revealed that perceived usefulness, perceived ease of use, perceived risk and trust are significant contributors to the adoption of m-banking services among university students in South Africa. The findings of the study revealed that the four hypotheses were accepted. Consistent with previous studies, perceived usefulness, perceived ease of use, perceived risk and trust were found to be significant antecedents of mobile banking adoption. Therefore, the advantage of using the E-Commerce Acceptance Model by Pavlou (2003) and The Integrative Model of Organisation Trust by Mayer et al. (1995) as underlying theories of this study was that they had been widely adopted in various fields. The abovementioned theories have also been confirmed and tested comprehensively therefore allowing them to be applied to multiple studies. Based on the literature, hypotheses and findings of this study, a trust framework to improve adoption among university students in South Africa has been derived and tested. The hypotheses confirmed that perceived usefulness and perceived ease of use have a positive relationship with trust. The study further investigated the relationship between perceived risk and trust and found that a negative relationship exists. The final hypothesis confirmed a medium positive relationship between trust and m-banking adoption.

7.6. Conclusion

This chapter provided a discussion based on the findings in Chapter Six. It discussed the demographics of the students that participated in the study and confirmed that both males and females took part in the study with majority of the respondents being female. The chapter

further explored the age groups and tertiary levels of education of the participants and concluded that the results reflected the opinions of university students from different genders, age groups and levels of education at the University of Fort Hare. The second section of the study investigated the banking and m-banking status of the participants and found that the majority of the participants were financially included as they owned banks accounts. It further revealed that the majority had adopted m-banking. The third section focused on the hypotheses of the study and confirmed that PU and PEOU had a medium positive relationship with trust whereas perceived risk had a negative relationship with trust. It further discussed the positive relationship between trust and m-banking adoption. The final section of this study discussed the research framework and highlighted the success of the framework used in this study.

CHAPTER 8: CONCLUSION



8.1. Introduction

The preceding chapter discussed the findings of the study. Chapter Eight concludes the study by synthesising the results of this research study. It provides the background of the research, objectives, outlines the methodology, theoretical frameworks adopted and contributions made by the study. This section concludes with limitations and recommendations for future research.

8.2. Literature

The term m-banking is commonly defined as a channel that enables consumers to interact with a banking institution using a mobile device at any given moment (Sakala & Phiri, 2019). M-banking is ubiquitous, allowing banks to reach their customers in remote locations; this is essential in the context of South Africa where many citizens live in rural areas (Ondiege, 2010; Plecher, 2018). M-banking is therefore a service that can reach many unbanked South Africans to facilitate their becoming part of financial inclusion and the benefits available through m-banking services.

As stated in Chapter One, financial inclusion is vital as it promotes economic growth (Kishore & Sequeira, 2016). However, in comparison to other developing countries, m-banking adoption remains lower in South Africa and requires further investigation in order to understand the barriers of adoption of this service (Chigada & Hirschfelder, 2017). Research has indicated that m-banking is low amongst university students. Further research states that there are several contributing factors to consider in the adoption of technologies. In the context of mobile banking, factors such as perceived usefulness, perceived ease of use, perceived risk, trust and intention to use have been found to be antecedents of m-banking adoption (Kim et al., 2009; Maroofi et al., 2013; Ramos et al., 2018; Zhou, 2012). It has been found that the youth market is a key concern for banking institutions and marketers (van Deventer, 2019). Therefore, the target population for this study was students as they are considered future adopters of m-banking technologies. The section hereinafter presents the research problem and question posed in Chapter One in order to develop a framework for trust in m-banking adoption among university students in South Africa.

8.3. Research Problem

Despite the high mobile phone penetration, mobile banking adoption has remained low as only 54% of South African citizens make use of mobile banking (Kemp, 2020). M-banking has been adopted by more than half of the South African population, but remains slower in comparison

to other African countries (Chigada & Hirschfelder, 2017). The research problem exists due to the low adoption of mobile banking in South Africa. The lack of trust has often been cited as a barrier against adoption. Moreover, there is a lack of knowledge regarding trust and student adoption of m-banking in South Africa, despite the youth making up a third of the country's population. According to van Deventer (2019), it is important to understand the notion of trust in m-banking amongst students as it could assist policy makers, marketers and strategists within the financial service industry to promote trust and increase m-banking adoption by students. This makes students an ideal target population to understand and improve m-banking adoption by identifying factors that influence trust and the consequent adoption of m-banking. As a result, this study sought to develop a trust framework to improve m-banking adoption by university students. In order to determine how trust influences adoption in mobile banking, the following research questions were formulated.

8.4. Research Questions

How can trust influence the adoption of mobile banking amongst university students?

8.4.1. Sub-Research Questions

The research sub-questions of this research project were formulated to investigate and solve the main research question. The secondary research questions are as follows:

8.4.1.1. How prevalent is mobile banking amongst university students in South Africa?

This sub-question was addressed in Chapter Two. It provided a discussion of m-banking in order to better understand the phenomena. It further investigated m-banking in South Africa and the m-banking services provided by banks in South Africa. This confirmed that banks in South Africa are actively competing, by providing m-banking services that are tailored to various people's needs. Chapter Two further discussed the various m-banking platforms and the various m-banking channels offered by banks. This was followed by examples of the m-banking adoption in South Africa.

8.4.1.2. What are the barriers to the adoption of M-banking among university students?

This research question investigated the barriers to adoption of m-banking and their influence on trust in mobile banking adoption, which was addressed in Chapter Three. It provided a detailed discussion on perceived usefulness, perceived ease of use, and perceived risk which have been cited as barriers against m-banking adoption. It further sought to investigate the

relationship between the constructs and trust, which were tested and confirmed in Chapter Six and further discussed in Chapter Seven.

8.4.1.3. What aspects of trust will influence M-banking adoption among university students?

In order to answer the research question posed above, the literature in Chapter Four addressed the notion of trust. It highlighted the various factors that might enhance trust in m-banking adoption. Moreover, it investigated intention to use m-banking and found the existing relationship between intention to use and actual use of m-banking. The factors that influenced trust were highlighted in Chapter Three. The study included factors such as perceived trustworthiness in order to better understand trust in m-banking and its influence on adoption. The trust constructs were discussed further in Chapters Six and Seven.

8.5. Research Objectives and Hypotheses

The purpose of this research study was to propose a framework that establishes which factors improve trust in the adoption of mobile banking among university students in South Africa.

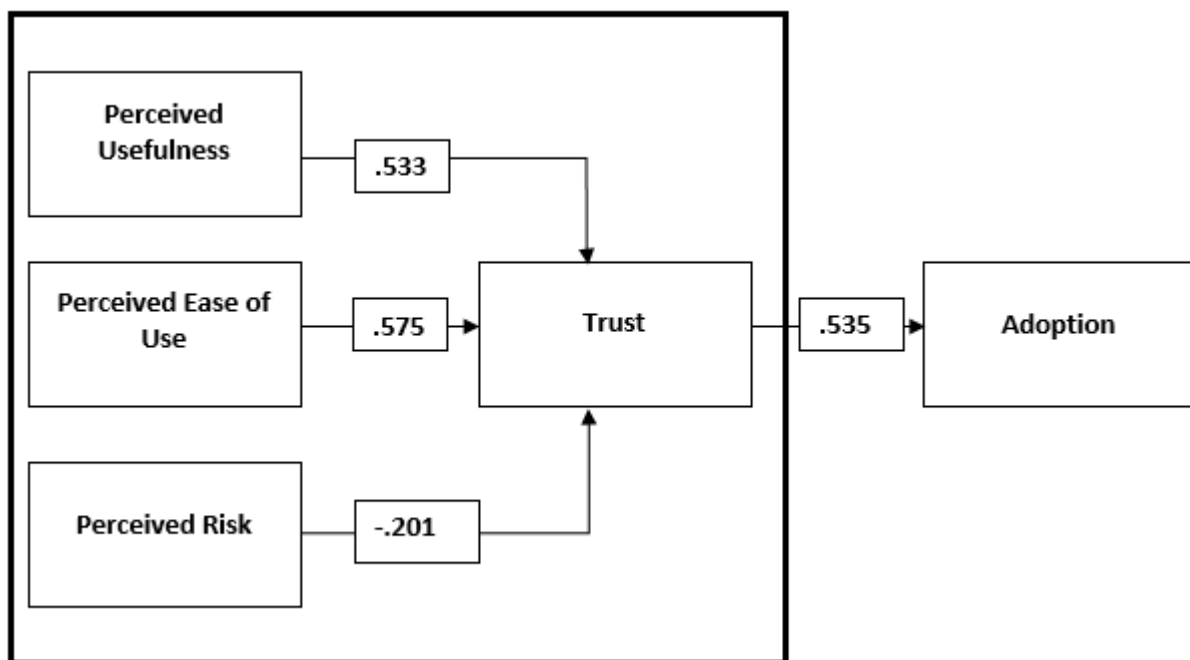


Figure 15: A trust framework to improve m-banking adoption among university students in South Africa

Based on the literature, the study highlighted four key factors that have been cited as barriers against m-banking adoption. The hypotheses were derived, based on the underlying theory and literature in this study. The hypotheses were tested and confirmed using Pearson Product

Moment Correlation Coefficient to determine the strength of the relationships between the constructs. As a result, the study found that perceived usefulness has a positive relationship with trust. The same was found for the relationship between perceived ease of use and trust. Furthermore, it investigated the relationship between trust and perceived risk and found that a negative relationship exists between the two constructs. The final hypothesis confirmed a positive relationship between trust and m-banking adoption.

The section hereinafter reviews the theoretical framework adopted in this study.

8.6. Theoretical Framework

The research study made use of the E-Commerce Acceptance Model by Pavlou (2003) as the underlying theory of the study. The E-Commerce Acceptance Model (EAM) was utilised in this study to provide a comprehensive understanding of the challenges that students are faced with when adopting a new technology. These issues include trust, perceived risks (PR), perceived usefulness (PU), Perceived Ease of Use (PEoU) and usage intention. The theoretical perspective proposes that constructs such as PR, PU, PEoU, and Trust influence adoption.

Moreover, The Integrative Model of Organisational Trust by Mayer, Davis and Schoorman (1995) was used in this study to understand the notion of trust and the factors that contribute to perceived trustworthiness (ability, benevolence, and integrity) and applied in the context of m-banking.

8.7. Research Methodology

The research paradigm selected for this study follows a positivistic approach following a quantitative research method. The research approach for this study made use of the survey method, which is closely linked to questionnaires. Therefore, the research instrument employed in the study was an online questionnaire which was sent to university students at the University of Fort Hare on the university's webmail. The questionnaire was based on prior research in m-banking and the underlying theory of study which focused on the Ecommerce Acceptance Model put forward by Pavlou (2003). The questionnaire also included the Integrative Model of Organisational Trust by Mayer et al. (1995). The targeted population of this study were university students. A total of 471 students responded to the online survey; the sample size was determined by a convenience sampling technique to gather the data. The SPSS v.20 package was used to analyse the data collected, which included descriptive statistics and inferential statistics. To ensure validity and reliability, the study employed the Pearson's Product Moment

Correlation Coefficient to test the strength of the relationships between constructs. Secondary data was collected in the form of a literature review.

Ethical considerations were applied in this study. No persons under the age of eighteen was used for the purposes of this study. An ethical clearance certificate from the University of Fort Hare's Research Ethics Committee (UREC) was obtained before the collection of data. This ensured that the research would be compliant with the ethical regulations stipulated by UREC. Students participating received full disclosure and were allowed to determine whether they wanted to partake or withdraw from the survey. Moreover, the participants were ensured that their identity would remain anonymous.

8.8. Contributions Made by this Study

This research study has demonstrated that there are multiple factors that influence trust in m-banking adoption among university students in South Africa. It found that there was a positive relationship between trust and perceived usefulness and perceived ease of use. It further demonstrated that there was a negative relationship between trust and perceived risk, which was congruent with the literature. The study further demonstrated that trust significantly influences intention to use when considering m-banking adoption, albeit that the study found the relationship to be a positive one. Therefore, the hypotheses derived in the study were confirmed and validated. Thus, a contribution was made by adding to the body of knowledge with regards to m-banking adoption research. Based on the hypotheses in this study *A Trust Framework to Improve Adoption of Mobile Banking by University Students in South Africa* was formulated and the hypotheses were confirmed. The framework highlights the factors contributing to the improvement of trust in m-banking adoption as demonstrated in Figure 14 below. Furthermore, the study found that almost three quarters of the population made use of m-banking services. Therefore, it demonstrates that there is an increasing growth in m-banking adoption amongst university students. However, a quarter of the respondents were found to be non-adopters of the service, in which the majority of the non-adopters stated their intention to use m-banking in the future. Based on the literature, there is a steep increase in mobile/smartphone penetration within South Africa. As a result, banks and marketers may find an opportunity to increase their reach to students to adopt m-banking services. This is essential for banks as university students are the future income-earners who can contribute to economic growth of the communities and country whilst being financially included in a digitalised manner. The study found that perceived ease of use to be the strongest correlate to trust

therefore banking institutions and Fintechs should ensure that they put in more effort into designing mobile banking applications that improve the customers ease of use. The study therefore concludes that perceived ease of use is an important factor that influences trust in m-banking. The study further highlights that perceived usefulness is another important contributor to improving trust in m-banking adoption amongst university students in South Africa.

Furthermore, based on the results of the study, perceived risk has a negative relationship with trust in m-banking. Despite the negative relationship that exists between the constructs the research study found that a number of students did not perceive m-banking to be too risky however it still has a negative influence on trust. Banking institutions and Fintechs should therefore consider adding additional security features when developing m-banking apps to ensure that the end-user feels more secure when conducting banking transaction thus promoting a trusting environment between customers and the banks.

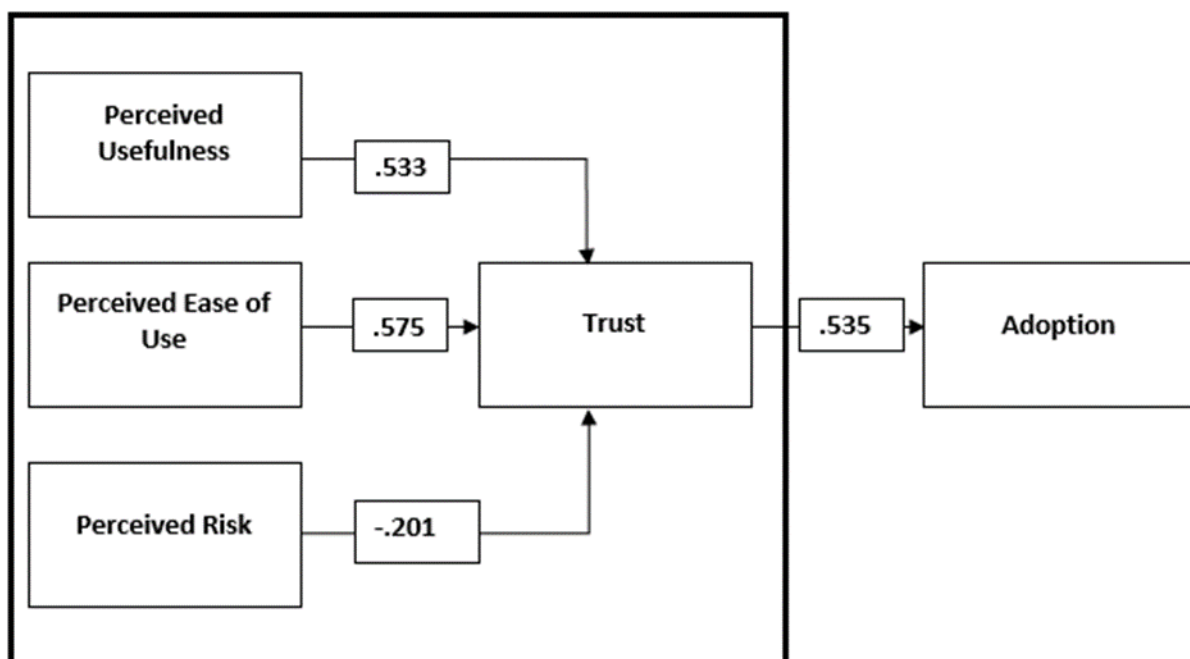


Figure 16: A trust framework to improve adoption of trust by university students

8.9. Limitations and Recommendations for Future Research

This section identifies the limitations and recommendations of this study.

8.9.1. Limitations

- The first limitation of this study was due to the fact that the study was only conducted with university students based at the University of Fort Hare. Therefore, this study did not include multiple universities within South Africa.
- The second constraint of this study was based on the age categories of the university students. The majority of the respondents were between the ages of 18-25. As a consequence, these may have been students that had no financial need to participate in m-banking services as they were students and might not have been part of the workforce.
- The third constraint was that the study highlighted three key factors in order to improve trust in m-banking adoption. These factors included perceived usefulness, perceived ease of use, and perceived risk. However, there are more inhibitors of m-banking adoption that should be considered when taking trust into account.

8.9.2. Recommendations for Future Research

- The first recommendation focuses on the population of the respondents. As stated previously, the study was only conducted at one university in South Africa, therefore, recommending that more universities are taken into consideration throughout the country.
- The second recommendation is that future studies need to consider other factors that may improve trust in m-banking such as awareness, perceived benefit, structural assurances and word of mouth. This study highlighted those factors in enhancing trust which concluded that the abovementioned factors contribute to intention to use m-banking services.
- The third recommendation focuses on banks within South Africa. Banks should consider university students when developing new services that may cater to their needs. The banks and marketers should also promote the benefits of m-banking services to increase trust and consequently improve adoption.
- Future research should investigate continuance usage of m-banking in South Africa as there is a lack of knowledge regarding post adoption of m-banking services within South Africa.

8.10. Summary

This study identified *A Trust Framework to Improve Adoption of M-banking by University Students*. M-banking is a platform that enables consumers to interact with a banking institution using a mobile device at any given moment. M-banking is a service that is beneficial to both the banking institutions of South Africa as well their customers. Therefore, it is imperative that banks understand the inhibitor(s) of m-banking adoption among university students in South Africa who are potential income earners. The framework developed in this study could be used by banks and marketers as an opportunity to understand and improve m-banking adoption by improving individual trust, which is one of the factors that influence a student's trust in m-banking. As a result, this may improve adoption as a whole in South Africa.

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10. Appendices

Appendix A – Ethical Clearance Certificate



University of Fort Hare
Together in Excellence

ETHICAL CLEARANCE CERTIFICATE REC-270710-028-RA Level 01

Certificate Reference Number: ISA041SVAN01

Project title: **An awareness model for enhancing trust for improved adoption of mobile banking by university students.**

Nature of Project: Masters

Principal Researcher: Robyn Kristin van Heerden

Supervisor: Dr N Isabirye

Co-supervisor: N/A

On behalf of the University of Fort Hare's Research Ethics Committee (UREC) I hereby give ethical approval in respect of the undertakings contained in the above-mentioned project and research instrument(s). Should any other instruments be used, these require separate authorization. The Researcher may therefore commence with the research as from the date of this certificate, using the reference number indicated above.

Please note that the UREC must be informed immediately of

- Any material change in the conditions or undertakings mentioned in the document
- Any material breaches of ethical undertakings or events that impact upon the ethical conduct of the research

The Principal Researcher must report to the UREC in the prescribed format, where applicable, annually, and at the end of the project, in respect of ethical compliance.

Special conditions: Research that includes children as per the official regulations of the act must take the following into account:

Note: The UREC is aware of the provisions of s71 of the National Health Act 61 of 2003 and that matters pertaining to obtaining the Minister's consent are under discussion and remain unresolved. Nonetheless, as was decided at a meeting between the National Health Research Ethics Committee and stakeholders on 6 June 2013, university ethics committees may continue to grant ethical clearance for research involving children without the Minister's consent, provided that the prescripts of the previous rules have been met. This certificate is granted in terms of this agreement.

The UREC retains the right to

- Withdraw or amend this Ethical Clearance Certificate if
 - Any unethical principal or practices are revealed or suspected
 - Relevant information has been withheld or misrepresented
 - Regulatory changes of whatsoever nature so require
 - The conditions contained in the Certificate have not been adhered to
- Request access to any information or data at any time during the course or after completion of the project.
- In addition to the need to comply with the highest level of ethical conduct principle investigators must report back annually as an evaluation and monitoring mechanism on the progress being made by the research. Such a report must be sent to the Dean of Research's office

The Ethics Committee wished you well in your research.

Yours sincerely

 23/08/2016
Professor Wilson Akpan
Acting Dean of Research

16 August 2016

Appendix B – Informed consent and Research Questionnaire

A Trust Framework to Improve M-Banking Adoption among university students in South Africa

Ethical Reference Number: ISA041SVAN01

Dear participant

I am a student in the Information Systems Department at the University of Fort Hare (East London Campus), currently conducting research for my M.Com (Information Systems) degree under the supervision of Dr Naomi Isabirye and co-supervisor Prof. Liezl Cilliers. The focus of the research project is based on *A Trust Framework to Improve M-Banking Adoption among university students in South Africa*. The purpose of this research study was to propose a framework that establishes which factors to improve trust in the adoption of mobile banking among university students in South Africa

This survey should take approximately 10 minutes to complete. This is an independent research study and participation is voluntary. Your responses will be treated as strictly confidential and the anonymity of respondents is assured. Therefore, no person or firms will have access to your completed questionnaire.

☐ Informed Consent

By completing and submitting this survey, you are indicating your consent to participate in the study. Your participation is appreciated. If you have any questions regarding the survey or this research project in general, please contact Robyn van Heerden via email (robynkvh@outlook.com) or Dr Isabirye at (043) 704 7066.

We look forward to your response.

Yours sincerely,

Robyn van Heerden

Demographic Information

Gender

Male	1
Female	2

Age Group

18-24	1
25-29	2
30-35	3
35 or older	4

Educational Level

1 st year student	1
2 nd year student	2
3 rd year student	3
4 th year student	4
Honours student	5
Masters student	6
Doctoral student	7

Background Information

Do you have a bank account?

Yes	1
No	2

If you answered yes, with which banking institution is your account held?

FNB	1
ABSA	2
Standard Bank	3
Nedbank	4
Capitec	5
None	6

Do you use mobile banking?

Yes	1
No	2

Do you intend on using M-banking (participant that ticked no in 2.3)?

Yes	1
No	2

If yes, how frequently do you use mobile banking?

Daily	1
Few times a week	2
Once a week	3
Once a month	4
Once a year	5
Never	6

2.6. Which form of mobile banking do you use?

Internet based m-banking (using the browser on your mobile phone to access Internet banking).	1
---	---

SMS-based m-banking (sending and receiving SMSs for banking purposes).	2
USSD m-banking (using a string or code to access banking services via a mobile device for e.g. *120*321#).	3
M-banking app (downloading and installing mobile banking applications from operating systems app stores).	4

Questionnaire

<i>Statement/Question</i>	<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>Perceived Usefulness</i>				
Overall, I find mobile banking useful.	1	2	3	4
Mobile banking has prevented me from standing in long queues.	1	2	3	4
I believe mobile banking improves my banking experience.	1	2	3	4
I believe mobile banking is convenient as it provides users with the ability to make cash payments and transfers.	1	2	3	4
I believe mobile banking gives me more control over my banking activities.	1	2	3	4
Mobile banking does everything I expect it to.	1	2	3	4
I believe mobile banking uses insignificant amounts of data/airtime.	1	2	3	4
I believe mobile banking is always operational	1	2	3	4
<i>Perceived Ease of Use</i>				
My interaction with mobile banking is clear and understandable.	1	2	3	4
I believe using mobile banking is effortless.	1	2	3	4
I am able to complete banking transactions quickly.	1	2	3	4
I believe using mobile banking is cost-effective way to do banking.	1	2	3	4
I can recover from mistakes quickly and easily.	1	2	3	4
Interacting with mobile banking does not require a lot of mental effort.	1	2	3	4
I find it easy to learn how to navigate mobile banking.	1	2	3	4
I am able to fulfil my intended banking tasks using mobile banking.	1	2	3	4
I would recommend mobile banking to a friend.	1	2	3	4
<i>Perceived Risk</i>				
I believe mobile banking has many risks	1	2	3	4
I am concerned with making mobile banking payments due to financial loss.	1	2	3	4
I am less likely to use mobile banking as my personal information may be accessed or misused without my knowledge.	1	2	3	4
I would be less inclined to use mobile banking if I experienced a negative encounter.	1	2	3	4

Conducting banking transactions on mobile devices is risky as one can easily lose or misplace their mobile device.	1	2	3	4
Trust				
I believe mobile banking is trustworthy.	1	2	3	4
I believe banking service providers keep my best interests in mind.	1	2	3	4
I believe that mobile banking providers have the ability to facilitate secure banking transactions.	1	2	3	4
I believe that mobile banking providers have the policies and procedures in place to ensure that my personal information is not misused.	1	2	3	4
I believe that banks apply the policies and procedures consistently to ensure personal information is not misused.	1	2	3	4
I believe that banks apply the necessary controls, policies and procedures to ensure security	1	2	3	4
I believe mobile banking service providers are concerned with the interests of all users.	1	2	3	4
I believe M-banking is secure	1	2	3	4
Overall, I trust mobile banking.	1	2	3	4

Actual Transaction:

I make use of mobile banking for purchases of the following:

Airtime	1
Data bundles	2
Electricity	3
Lotto	4
Metrorail	5
None of the above	6

I make use of mobile banking for cash payments and transfers such as:

Clothing account payments	1
Cash Transfers	2
Withdrawals	3
Debit orders	4
Traffic fine payment	5
None of the above	6

Appendix C – Turnitin Report

Dissertation

ORIGINALITY REPORT

20%

SIMILARITY INDEX

18%

INTERNET SOURCES

8%

PUBLICATIONS

5%

STUDENT PAPERS

PRIMARY SOURCES

1

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Appendix D – Proof Reader Certificate

TO WHOM IT MAY CONCERN

I have 42 years' experience in the teaching profession, both at high school and tertiary level. In my last position before retiring in December 2016, I was a Teaching and Learning Consultant and had acted as Manager of the Teaching and Learning Centre (TLC) of the University of Fort Hare on three different occasions. As a consultant, I facilitated modules on the Post Graduate Diploma in Higher Education and Training (PGDHET) and also evaluated lecturers' teaching and their courses. My skills set allowed me to focus on management, language, research and student development. Activities which speak to this include being the Co-ordinator of the Language and Writing Advancement Programme (LWAP) and the Supplemental Instruction Programme (SI) for two years plus being the Editor of the TLC's bi-annual newsletter for approximately eight years.

For the past three years I have been proofreading and editing for academics on a time-on-task basis. I hereby certify that I have proofread a Master's thesis submitted to me by the corresponding author, Robyn van Heerden, Student Number 201206249, whose study's research topic is:

'A TRUST FRAMEWORK TO IMPROVE ADOPTION OF MOBILE BANKING BY UNIVERSITY STUDENTS'

I have corrected superficial errors in spelling, grammar, syntax and punctuation in the abstract and the body of the manuscript. I have checked the balance required between in-text referencing and end-referencing, where the one needs to be a mirror image of the other, according to APA referencing guidelines. I trust that the aforementioned will meet with the examiners' approval and that the language used accurately reflects the author's intended meaning. Furthermore, I have made every effort to ensure that the manuscript is clear, reads smoothly and avoids confusion or misunderstanding. The principles of anonymity, confidentiality, accountability and reliability have been respected by all researching parties.

DISCLAIMER: The proofreader cannot be held responsible for any errors introduced after the proofreading has been completed, due to changes being made during the corrections' process.

Should there be any questions that arise from this exercise, kindly contact me on lscheckle@gmail.com.



Linda Scheckle (Private Editing Service)

29 January 2021



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