Applying a managerial framework to encourage digital adoption of banking products in rural areas

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ABSTRACT

Banks are continuously striving to stay competitive and relevant by delivering products and services more efficiently and cost-effectively. No different than in other parts of the world, South African banks are investing substantial amounts of investor capital in providing digital banking services to customers to increase market penetration and ultimately returns. It can be concluded that digital banking will play a fundamental role in the strategies of financial institutions going forward although the adoption rates are currently still a challenge. The digital banking platform offers banks the opportunity to not only improve product and service delivery but also to reach a substantially wider audience in a more cost-effective manner. In short, digital banking offers considerable benefits to the banks as well as the consumers. The challenge in a developing country like South Africa is the vast number of individuals currently not using digital solutions, especially in rural areas. The purpose of this study is to establish digital readiness and to gain a proper understanding of the propensity of consumers in rural areas to adopt digital banking. Banks need a more holistic understanding of their rural customers' digital needs and obstacles preventing digital adoption in the rural areas of South Africa. It can be derived from the literature study conducted that financial institutions need to adapt and align their digital adoption strategies to stay relevant. Even though most of the banks in South Africa have embraced digital banking, it is still uncertain as to whether the strategies they employ are inclusive enough to create the needed economies of scale. The literature pointed out that people in rural areas are still reluctant to take up the available digital solutions. Currently, the financial institutions face considerable challenges to remove obstacles preventing digital banking adoption and change the mind-sets of individuals from traditional brick and mortar to digital platforms due to a possible lack of understanding the challenges and opportunities. The literature examined tried and tested theoretical foundations and technology innovation models explaining possible factors impacting digital acceptance. This study used awareness of digital banking, perceived cost, perceived risk, attitude towards digital banking and subjective norm in conjunction with the constructs from the Technology Acceptance Model and compatibility from the Information Diffusion Model to get a better understanding of the predictors of digital banking adoption in the rural areas of South Africa. A structured self-completing questionnaire aligned to the rural milieus in South Africa was developed and used for the study since it offers the individual possible answers and reduces the margin of error. The information gathered confirmed that the constructs included in the study indeed

contributed to digital banking adoption. This study identified perceived usefulness, closely followed by compatibility and attitude as the pre-dominant predictors of digital banking adoption in the rural areas. This is in contrast with previous studies which found the risk to be the strongest predictor of digital banking adoption. The study further indicated that certain demographic factors like age, income and qualifications play an important role in digital adoption intentions and patterns. Finally, the most important empirical findings as well as the literature review were summarised and aligned to primary and secondary objectives of the study. The conclusions were used to create context and make recommendations to financial services organisations regarding the strategic improvement of digital banking adoption in rural areas. The recommendations primarily focused on practical suggestions to improve digital banking adoption and the potential benefits for the institutions as well as the customers. The importance for banks to address the identified concerns and opportunities in their strategies were highlighted to ensure widespread adoption, economies of scale and ultimately an improved cost-to-income ratio and increased profitability.

Key terms: Digital banking, adoption, rural areas, digital readiness, banks, profitability, ease of use, usefulness, compatibility, risk, cost, subjective norm, awareness, attitude

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LIST OF ABBREVIATIONS

ABSA	Banks of South Africa
ATM	Automated Teller Machine
E-banking	Electronic banking
E-commerce	Electronic commerce
IDT	Innovation Diffusion Theory
IT	Information Technology
ITU	International Telecommunication Union
FNB	First National Bank
NWU	North West University
OTP	One Time Pin
PCA	Principal Component Analysis
PEU	Perceived Ease of Use
PIN	Personal Identification Number
PU	Perceived Usefulness
PWC	Price Waterhouse Coopers
SPSS	Statistical Package for the Social Sciences
Stats SA	Statistics South Africa
TAM	Technology Acceptance Model
N	Required sample size for set parameters
Z	Number of standard deviations required for given accuracy
π	Proportion of sample of interest
e	Error allowable

CHAPTER 1: ORIENTATION AND PROBLEM STATEMENT

1.1 INTRODUCTION

Banks in the modern era are confronted with the dilemma of delivering better service while reducing cost and protecting margins. Over the past couple of decades, innovation within the financial services industry accelerated to contest market share, combat high costs and deliver improved levels of service delivery and convenience to a sophisticated customer base. The latest innovation in the digital distribution channels, online and smartphone-enabled banking, has turned this traditionally conservative and stagnant sector on its head (Bradley, 2000:2). It is clear that the groundbreaking developments and innovations in digital communications technology will change banking as we know it forever. Online banking and smartphone-enabled banking will, despite uncertainties, play a pivotal role in how banking will be conducted in future. This study will attempt to shed some light on and provide useful insight of the current as well as the potential digital market in the rural areas of South Africa. It will focus on aspects involving demography, customer opinions and attitudes towards digital banking, information security concerns, social influences, availability and strategic impact on plans and benefits for the banks, its employees as well as consumers.

This study aims to pinpoint and gain a better understanding of the factors impacting the adoption of digital banking solutions in the rural areas. A study conducted in Singapore proved that an understanding of digital banking and its benefits lead to higher levels of implementation amongst bank management within the financial services environment (Gerrard & Cunningham, 2003:16). Up to now, very little research has been conducted locally in rural areas (see annexure1 to 5 for results of searches conducted on google scholar with selected key words) to gain more insight into these factors which might be the exact reason why digital banking uptake has been slow and not exploited more. Even though there is marginal year on year improvement in South Africa's digital banking adoption rate, this locally based study has the potential to accelerate the process through improved strategies and unlock the tremendous benefits that it offers with regards to cost saving, service and convenience.

1.2 CONTEXT

All organisations across the globe strive to be more competitive and profitable hence driving efficiencies to be more cost-effective in delivering their products and services to

their total customer spectrum. Technology has the potential to improve efficiencies across all sectors of the economy if understood, available and utilized by consumers or customers (Brand South Africa reporter, 2014). The financial service industry spends a sufficient amount of time and resources in developing state-of-the-art digital banking solutions for their customers. In order however to maximise the benefits of digital banking technology these financial institutions need to understand the propensity of the potential customers to take up these solutions (Kim et al., 2011:76). The challenges incurred by financial institutions seem to vary as a result of certain demographic and geographic inconsistencies across the country, and a “one size fits all” approach will not deliver required results. It will be impossible for financial organisations to ensure maximum return on investment without the necessary digital adoption insights across all communities. Financial institutions will need to consider rural adoption patterns to devise and implement a workable and cost-effective strategy in these communities.

The challenge in developing countries like South Africa is not only to design and implement robust strategies but also to adjust these strategies to address specific challenges around adoption (Ghobakhloo et al., Hong, Sabouri & Zulkifli, 2012:37). Alternative digital delivery platforms for rural areas need to be identified, investigated and introduced to ensure the benefits for institutions as well as customers in these market segments and geographical areas are not lost. A good understanding and additional data are required to increase digital banking uptake in the rural areas. An increase in digital banking adoption in rural areas will benefit not only financial services institutions but also customers. Banks will be able to utilise scarce and expensive resources more effectively, and the customer will benefit from convenience and cost-effectiveness.

1.3 CAUSAL FACTORS

The reason for this study is to address and create clarity regarding the following (see figure 1.1):

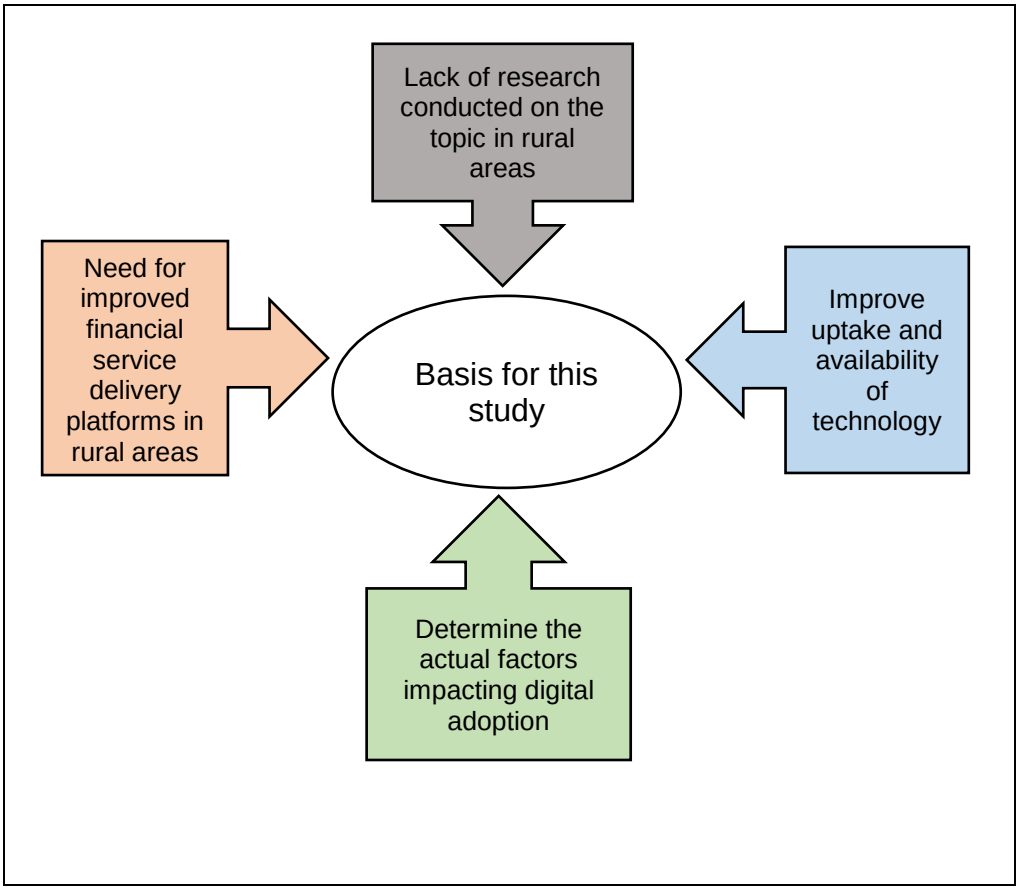

Figure 1.1: Causal factors highlighted

Source: Adapted from Nicho and Al Mourad (2012:27)

- Not sufficient research has been done on the actual uptake, challenges and current accomplishments of digital adoption of banking products and services in rural areas – see annexures 1 to 5
- An increasing need for improved, more convenient and cost-effective sales and service delivery platforms for rural customers within the financial services industry
- Even though financial services institutions are implementing new technology at often extremely high costs the uptake and availability in rural communities is not clear
- To determine the actual factors impacting digital adoption of banking products and services in rural areas to design managerial frameworks and strategies in support of successful implementation and adoption

- Identify and communicate benefits of successful digital banking adoption in rural areas to the relevant organisations as well as the customers

The information should allow management to improve decision making around digital adoption practices in rural areas.

1.4 IMPORTANCE OF THIS STUDY

The study of digital adoption patterns in rural areas is first and foremost essential due to the limited research available on this subject for the specified geographical areas. The information gathered will aid financial services organisations and its staff to make the necessary paradigm shift needed, align their strategies and improve resource allocation to improve customer service and profitability ultimately. The study will ultimately assist management to utilise staff more effectively as a result of the prospective surplus time available. The potential benefits of a more digitally aligned sales and service delivery platform will not only benefit the financial services organisation, but customers will also be able to bank more conveniently and cost-effectively.

1.5 PROBLEM STATEMENT

Banks in developing countries are caught up in a fast-changing competitive environment and have to rely on technology to remain relevant and profitable. They need to capitalise on digital innovation and adoption by penetrating the rural areas (Berndt, Saunders & Petzer, 2010:48). To capitalise on the opportunities offered by automated teller machines, Internet banking, telephone banking and cell phone banking, the banks need to understand potential customers' propensity to take up the technology above (Kim et al., 2011:76). Even though studies of existing banking markets are more aggressive as well as exploring new alternatives (on the readiness for banking technologies done in the past, only a few focused on to the acceptance and adoption levels of electronic banking service offerings in the rural environments.

Banks need to get a better understanding of their rural customers' digital needs and challenges to develop workable strategies. More demanding customers, cost reduction challenges as well as an increase in non-traditional competitors has forced banks to adopt a more radical approach in delivering products and service (Arnaboldi & Claeys, 2008:3) They need to move in the direction of Internet, telephone and mobile banking to stay relevant (Karjaluoto, Mattila & Pento, 2002:261). It is in the best interest of the banks as

well as the customers to make a paradigm shift and progressively moves from over the counter (face to face) to electronic banking channels (Yu & Guo, 2008:8; Kim et al., 2011:76). Electronic banking offers customers the opportunity to reduce their number of branch visits substantially (Hernandez-Murillo, Llobert & Fuentes, 2012:17). Initial electronic banking devices like ATMs and telephone banking did increase transaction numbers but failed to reduce the number of branch visits (Rosenthal, 2012). In contrast, tablets and smartphones are increasing the transaction numbers while reducing branch visits. It is in the best interest of banks as well as customers to migrate from traditional offline banking to more convenient, easily accessible online banking. Benefits for banks: generate additional income, improved customer relationships over the long term, extended marketing capabilities and cost saving through alternative resource utilisation.

According to Hosein (2010) e-banking offers substantial opportunities for banks to improve their cost ratios. Customers are better off with electronic banking which offers the following benefits: an increased sense of control, speed in obtaining services, access to services, cost savings, convenience, reliability, market information and knowledge as well as more consistent service (Padachi, Rojid & Seetanah, 2007:559). The challenge for developing countries like South Africa is encouraging customers to use these online banking facilities, but it seems there are acceptance, technology and infrastructure issues. Banks need to design and implement robust strategies and adapt quickly to these challenges (Ghobakhloo et al., 2012:37). Substantial customer adoption of e-banking services is necessary for banks to get sufficient returns on their investments. Authors argue that, to succeed, banks need to develop strategies to change people's attitudes and perceptions towards electronic banking and the utilization of new technology (Eriksson & Nielson, 2007:163). Pride and Ferrell (2012:201) warn that ignoring customers' attitudes and reservations towards electronic banking when developing marketing strategies will impact negatively on the bank's success rate in obtaining this market. In rural markets, banks need to understand the retail customer's perceptions on electronic banking adoption. Juwaheer, Pudaruth and Ramdin (2012:217) and Jeong and Yoon (2013:37) found that users develop a positive attitude towards electronic banking if they perceive it to be more convenient, more efficient and easier to use. There is a positive relationship between the physical and mental effort customers are expected to exercise and electronic banking adoption (Moses et al., 2013). Yousafzai, Pallister and Foxall (2010:1180) indicated that besides perceived ease of use and usefulness, social effects also known as subjective norm could also impact on usage intentions, but Maduku and

Mpinganjira (2012:184) found only limited evidence of this in their study. Confidentiality and a lack of trust have been pointed out as one of the main reasons why consumers are reluctant to take on digital banking solutions.

The purpose of this study is to establish the digital readiness as well as the ability of consumers in rural areas of South Africa to adopt electronic banking as well as to determine the impact of demographics, access, utilisation and desirability on readiness. Technology readiness in this regard is consumers' willingness to use technology (Caison et al., 2008:288).

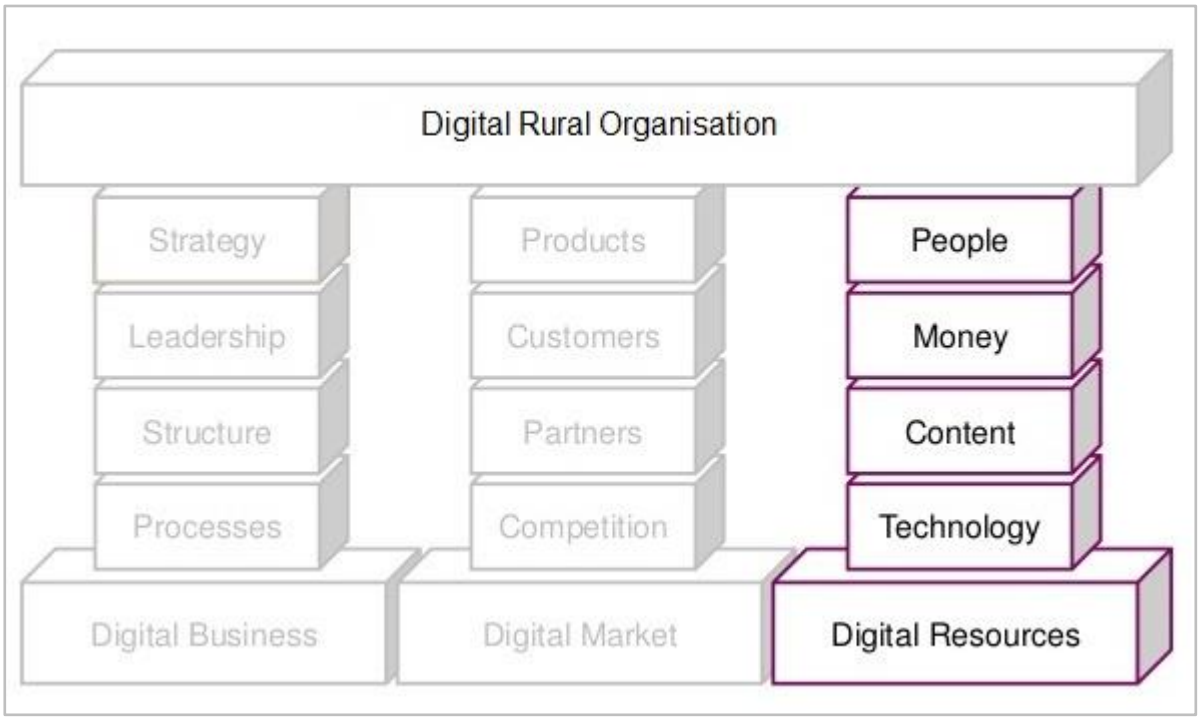

Figure 1.2: The three pillars of digital readiness

Source: Adapted from Voirol (2015:73)

Even though there are three pillars impacting digital readiness this study will concentrate on the digital resource pillar as shown in figure 1.2. In the study, the Technology Acceptance Model (TAM) will be used as a basis, but it will be extended to include demographic variables, subjective norm, readiness variables as well as trust. The information gathered will assist banks to increase their bottom line by speeding up the digital adoption in rural areas by unlocking the benefits for customers as well as banks. In conclusion, it is imperative for banks if they want to overcome challenges and stay relevant, to focus its resources on creating customer-centric product solutions. Bill Gates

quoted: “We need banking, but we don’t need banks anymore” (Amberber, 2015). A twofold shift is needed to optimise digital adoption; clients and institutions need to adjust.

1.6 RESEARCH OBJECTIVES

1.6.1 Primary Objective

To introduce a framework for improving strategic managerial decision making and profit by identifying the challenges with regards to the digital adoption of banking products and services in rural areas.

1.6.2 Secondary Objectives

To realise the primary objective the following needs to be achieved:

- Establish the existing state of technology acceptance and adoption in rural areas
- Identify the most pertinent factors and possible patterns that impact digital adoption in rural areas
- Establish the impact levels of the identified variables on digital adoption and how it can benefit the institution, its staff and the customer
- Use information to devise a rural adoption strategy in support of the organisation’s triple bottom line objectives
- Establish the role of technology and digital adoption in creating a competitive advantage
- Apply information gathered to improve customer service delivery and satisfaction
- Examine how information that was gathered can improve the understanding of the role and benefits of technology
- Understand the levels of readiness in the rural banking sector

1.7 RESEARCH METHODOLOGY

The research completed consists of a comprehensive literature review as well as an empirical investigation conducted through the completion of questionnaires.

1.7.1 Literature and theoretical review

For the review journal articles, books, Internet articles, dictionaries, theses and dissertations as well as statistical information were utilised to discuss the topics below:

- Digital banking
- Benefits of digital banking
- Factors impacting digital banking adoption

- Technology Acceptance Model
- Information Diffusion theory

The study is limited to information and sources which was readily accessible and available on the Internet and in libraries until 20 November 2017.

1.7.2 Empirical Review

A convenient sample was used to gather the necessary information for the study due to its simplicity and comprehensiveness. This will allow the researcher to gain an understanding of the identified variables to supply clarification with regards to the primary and secondary objectives. The questionnaire developed has been pre-tested to ensure understanding and to ensure the necessary information will be obtained.

- **Participants**

  The unit of analysis is the core entity that a researcher will analyse and base a study on (Trochim, 2006:23). This well-defined group or collection of individuals is known to show similar trademarks – they often have a common characteristic that group or bind them together. The study sample will comprise individual retail bank customers from different demographic backgrounds from different rural district municipalities in the North West Province. Different towns identified, in rural areas, will be used. Since the sample size often determines the accuracy of the general population represented the aim will be to get at least 400 completed questionnaires back.

- **Measuring instruments**

  The study will follow a quantitative approach using a self-completing questionnaire to gather the required data. A covering letter will be accompanying each questionnaire with relevant information on the reasons for the study and completion guidelines. The questionnaire will be based on an extended, more comprehensive version of the Technology Acceptance Model and demographic influences. A 5-point Likert scale will be used to measure information regarding the extended TAM while ordinal scales will be used for demographic and other questions. The Likert scale will range from 1 = strongly agree to 5 = strongly disagree.

- **Statistical Analysis**

  Professional consultation services of the NWU were used in this study. In this study, ordinal and nominal variables will be measured. Multivariate analysis can be used. Contingency tables are flexible and can be used to analyse relationships. If a linear

relationship is established the Pearson's correlation coefficient *r* can be used to determine the strength of such a relationship. To determine in detail how much the one variable impacts another researcher can use the coefficient of determination. Spearman's rho can be used to determine the relationship between pairs of ordinal variables – the correlation coefficient, unlike Pearson's *r*, is not based on the assumption that data is normally distributed. To determine how generalizable the findings of the study are the necessary statistical significance tests will be done. It will be determined beforehand what level of significance will be acceptable to prove the reliability of results. The chi-square test is a further test that can be executed to establish the relationship levels between two nominal variables. All the scales that the researcher intend using in this study will be tested for reliability, using Cronbach's alpha (α), before it is used in the final analysis. Al-Dujaili (2011:11) claims that the Coefficient alpha, also known as the Cronbach's alpha (α) is believed to indicate the reliability measuring of a sole, uni-dimensional construct indirectly. Once the data is collected, it can be analysed using computer packages available. Other statistical techniques that can be used to analyse the information and data are descriptive statistics, independent sample t-testing, correlation analysis and regression analysis.

1.7.3 Limitations

1.7.3.1 Sources

There are limited literature sources on digital/online banking adoption in rural areas available on the Internet (see annexures 1 to 5) and in libraries.

1.7.3.2 Research

The sample is limited with regards to the geographical coverage and participants predominantly came from the rural areas of the North West province, Northern Free State and a few selected small towns of the Northern Cape with low to moderate technological infrastructure. The individuals used in the survey primarily comes from one of the large banks with a substantial footprint in this central region of South Africa.

1.7.4 Ethical considerations

It is crucial for this study to disclose the theoretical standpoint of the research up front. The research objectives and consequences must be noticeably defined and stated at the beginning of the process. The covering letter forms an integral part of the ethical aspects and considerations and is critical to establish a trust relationship between the researcher

and the respondent – the respondent must give his/her informed permission. Not only does it contain important information like the aim of the study, confidentiality and anonymity guarantees, expected benefits for the researcher, and who the feedback will be communicated to but also that it is voluntary and gives the assurance that the respondent can withdraw at any time should he/she wish to. Researchers need to guard against putting pressure on or being overly persistent if respondents do not respond in time (Walliman, 2011:47). It is all about acting with integrity and treating people with respect from the beginning to the end of the research. Respondents can only be included if the research once they have given consent and agreed to the information supplied by the researcher as well as the confidentiality and anonymity assurance. The researcher should upfront notify the potential respondent of any citations and acknowledgement of any other applicable people involved in the research. A researcher may under no circumstances manipulate, misinterpret or ignore collected data or evidence. Researchers also need to avoid bias, patronising respondents, stereotyping and discrimination of any kind and never raise fictitious expectations. Information gathered should be safeguarded appropriately and when disposed of it should be done appropriately – documents should be shredded, and tapes/discs should be erased. The researcher should get the necessary permission if he/she wants to target respondents in a specific company or customers from a specific institution. In the end, the researcher needs to build trust by being open and honest to potential respondents with regards to the process.

1.8 LAYOUT

Chapter 1: Orientation and problem statement

This chapter contains some background information and gives some context to the study. It further discusses causal factors, the problem statement and the objectives of the study. The last section of the chapter shortly describes the research methodology and layout of the remaining chapters.

Chapter 2: Literature review

This chapter focuses on the available literature regarding the research topic and available digital adoption models.

Chapter 3: Empirical study

In this chapter, the research methodology as well as the statistical analysis, is covered in depth. It zooms in on the sampling method applied as well as techniques used for data collection and analysis.

Chapter 4: Conclusion and recommendations

This chapter is a summary of the findings about theoretical data and will give answers to the primary and secondary objectives. The findings derived at will allow the researcher to draw conclusions and make recommendations for future use.

1.9 CONCLUSION

Banks are striving to stay competitive and relevant by delivering products and services in a more efficient and cost-effective manner. It can be concluded that digital banking will play a fundamental role in the strategies of financial institutions going forward. The digital banking platform offers banks the opportunity to not only improve product and service delivery but also to reach a substantially wider audience in a more cost-effective manner. In short, digital banking offers considerable benefits to the banks as well as the consumers. The challenge in a developing country like South Africa is the vast number of individuals currently not using digital solutions, especially in rural areas. Additional data is required to gain a proper understanding of the propensity of consumers in rural areas to adopt digital banking. Banks need a more holistic understanding of their rural customers' digital needs and readiness to develop workable strategies. Increasing digital adoption levels in rural areas will drive economies of scale which in turn is necessary for banks to ensure sufficient return on investment. The purpose of this study is to establish digital readiness and identify possible obstacles that are preventing digital adoption in rural areas of South Africa to assist banks to address these challenges and subsequently increase digital adoption levels.

1.10 CHAPTER SUMMARY

This chapter aims to give a holistic overview of the digital banking adoption in rural areas. The chapter starts with a short introduction into the world of digital banking and its importance for banks and consumers. The second part creates context and understanding regarding the reasons for the study. In the middle section of the chapter, the challenges with digital banking adoption in the rural areas of South Africa is noted, and detail around the purpose of the study shared. This is followed by the primary as well as secondary objectives or anticipated outcome of the study. The last section of the chapter gives a short overview of the research methodology that was followed. It covers the literature, theoretical and empirical reviews, limitations as well as ethical considerations. The chapter concludes with a summary of the layout of the total research document.

CHAPTER 2: LITERATURE STUDY

2.1 INTRODUCTION

The Banking Association of South Africa (2012:1) indicates that South Africa's banking system is well regulated and compares well with other developed countries. The success of banks today depends on their ability to service the evolving needs of their customers through differentiated and innovative products and service offerings (Coetzee, Van Zyl & Tait, 2013:2). To make this a reality and differentiate them from competitors, banks have capitalised on opportunities evolving from Information Technology innovation such as digital banking (Maduku & Mpinganjira, 2012:172; Luo et al., 2010:222). Digital banking is described by Pousttchi and Schurig (2004) as possibly the most effective business-to-consumer applications developed in e-commerce. Since the introduction of Internet banking, most of the banks in South Africa have embraced and promoted digital banking to drive convenience and service offerings (Maduku, 2013:77). Maduku (2013:78) isof the view that all the banks are putting strategies in place to not only attract new customers but also to retain customers through digital intervention. The shift from brick and mortar banking to digital banking is likely to make huge strides shortly through improved infrastructure and broadband accessibility. The highly competitive business environment and the drive for customer number optimisation force banks to increase innovation through alternative delivery channels (Bauer, Hammerschmidt & Falk, 2005:153). If banks want to improve customer service and avail banking services to previously unbanked individuals in 2017, the key focus needs to be on online and in particular mobile banking channels as well as social media platforms (Walker, 2017). Understanding factors impeding digital adoption in rural areas will offer banks the opportunity to protect their margins and come up with competitive strategies (Hollensen, 2003:401).

2.2 BACKGROUND

Internet banking according to Singh (2004:190) only started in South Africa in 1996. Despite the efforts by South African banks to promote digital banking, create awareness around security, convenience and cost implications, customers in rural areas are still reluctant to accept and take on these new technological solutions (Ramavhona & Mokwena, 2016:3). Available statistics indicate that 38.3% or approximately 22 million people of the South African population resides in rural areas and 61.7% in urban areas (Stats SA, 2011). The banks in South Africa aim to provide this large rural population with digital banking solutions to enable them access to products and services without

physically visit a brick and mortar outlet (Wang et al., 2003:22). More than two decades after independence the question remains how to improve access and adoption of digital banking in marginalised areas (Maumbe, 2006:72). The difference in infrastructural distribution between the rural areas and the urban areas in South Africa poses some challenges as a result of the Internet infrastructure and demographics factors (Green & Van Belle, 2002). The adoption of digital banking in rural are substantially lower than in urban areas (Masocha, Chiliya & Zindiye, 2011:1858) and some of the bank's customers still prefer the traditional way of banking (Munusamy, 2012:2). Even though the initial adoption of digital banking in South Africa was slow, the convenience and cost benefits of digital banking seem to attract customers. However, studies conducted in South Africa reveal that all retail financial institutions face serious challenges when it comes to migrating individual customers from the traditional face to face or over-the-counter approach to the new digital services (Singh, 2004:188; Brown & Molla, 2005).

It would seem that the customers in rural South Africa are reluctant to use digital banking. Research conducted to establish the digital banking adoption rate in the rural areas of South Africa revealed that insufficient Internet penetration, stubbornness to consider new technology, low levels of education and a lack of computer skills to access the Internet are major obstacles for new technology adoption (Cloete & Ramburn, 2006). Clarity regarding stumbling blocks with regards to digital adoption in rural areas will assist financial institutions to make sound business decisions that will ultimately inform strategy (Govender & Pretorius, 2015:2). It is critical for management to determine and understand the factors hindering digital adoption in rural areas since not all factors will be of equal strategic importance (Sultan & Chan, 2000:106). Information released in 2013 indicated that two-thirds of the South African population were at the time urbanised (Southafrica.info, 2013). Note that most of those who moved from the rural areas, were still living in informal settlements still lack infrastructure and equipment to take up digital banking successfully (Stats SA, 2013). There are some stumbling blocks, especially in rural areas and informal settlements, which prevent customers from realising the benefits of digital banking (Ramavhona & Mokwena, 2016:2).

2.3 DIGITAL BANKING

Internet banking, digital banking, online banking and e-banking are frequently used to define technology driven, online product and service offerings (Dhurup, Surujlal & Redda, 2014:588). "E-banking refers to the provision of retail and small value banking products

and services through electronic channels. Such products and services can include deposit-taking, lending, account management, provision of financial advice, electronic bill payment and the provision of other electronic bill payment products and services such as electronic money" (Basel Committee Report, 1998:3). Digital banking technology includes a whole range of services including but not limited to: ATMs, Internet banking, telephone banking, television-based banking and lately cellphone banking (Parker & Parker, 2008:20). Driven by consumer demand and the quest for efficiency banks have diverted their approaches and focus towards information technology solutions in the form of digital banking (Masocha et al., 2011:1857). Innovations in IT has shifted business dimensions and changed the face of the banking sector forever (Maduku, 2014:79). Subsequently, the entire buying and selling of financial services products have been exposed to some major changes in line with technological innovation (Laukkanen & Pasanen, 2008:86). Previously, banks used IT to assist with internal financial activities and for promotion purposes but recently the use of IT innovation to improve service delivery to customers has gained popularity (Martins, Oliveira & Popovič, 2013:13). Maumbe (2006:74) states that digital banking has emerged as the main driver of financial product and service delivery and banks are moving more and more from paper-based to digital. Online banking is a service platform created by banks to allow customers to do their banking online (Onay & Ozsoz, 2013; Ongkasuwan & Tantichattanon, 2002:3).

The adoption of digital banking has given banks the opportunity to move away from a productivity orientated approach by becoming really customer-centric and deliver tailor-made services in line with customer expectations (Lamb, Hair & McDaniel, 2002:649). Kim et al. (2011:76) describe digital banking as service and product delivery through the Internet or mobile platforms. Digital banking is evolving into a wireless service delivery platform with the ability to add ongoing value for consumers when performing banking transactions (Pousttchi & Schurig, 2004). Digital banking is described by Ombati et al. (2010:156) as the process a customer follows to do transactions electronically without having to visit a physical bank outlet. McColl-Kennedy (2003:383) simply defines digital banking as a user-friendly service made available to customers using the Internet platform. According to Hoffman and Bateson (2006:341), digital banking uses the net to solve problems and conduct business transactions. Daniel (1999:73) simply describes digital banking as the supply of information on products and services by banks to clients using computers and/or cell phones through the Internet. According to ITU (2012), digital banking is the usage of mobile equipment to provide information, products and services

to customers. Typical services will include transferring funds, account payments, balance enquiries and product purchases online. Digital banking for *this study* refers to an Internet platform or portal that customers can utilise to complete banking transactions, ranging from product uptake to information services (Pikkarainen et al., 2004:224). Knowing and understanding the determinants impacting digital banking uptake is crucial for banks, not only to stay relevant, but to gain a competitive advantage over their rivals (Kayabas, Celik & Büyükarslan, 2013:320). Wang (2002:3) mentions that the birth and rapid growth of the digital banking environment has resulted in increased competition amongst financial institutions which in turn impacts consumer behaviour. This has put pressure on banks to gain a better understanding of the dynamics impacting customer acceptance of digital banking. Utilising the digital delivery platform has become the ideal vehicle for banks to deliver a convenient and efficient service to customers (Wai-Ching, 2008:59). Kamel (2005:306) points out that digital banking is poised to completely overwhelm and maybe even completely substitute traditional branch banking as we know it.

2.4 DIGITAL ADOPTION

Rogers (2003:20) describes digital adoption as the conscious decision, after taking all factors determining satisfaction into consideration, by customers to take up innovation. Several scholars state that availability and adoption of digital banking in rural areas is hampered by low Internet penetration, customers' attitude towards innovative technology, and low educational levels amongst others (Masocha et al., 2011:1858). Understanding these challenges and their diffusion creates tremendous opportunities for digital banking adoption and growth in these previously untapped markets (Maumbe, 2006:73). Dasgupta, Paul and Fuloria (2011:13) are of the opinion that mobile banking has the potential to substantially enhance digital banking adoption in rural areas where Internet infrastructure is limited. Singh (2004:187) makes it clear that people living in rural areas, unlike the urban dwellers, lack consciousness when it comes to digital banking. By 2011, World Wide Worx indicated a drop in Internet banking on computers as a result of the growth in cell phone banking. It is predicted that cell phone banking will continue to grow, especially in developing countries, as cell phones are getting more affordable (Searll, 2014; PWC, 2013:49).

2.5 CHANGES IN THE BANKING SECTOR

Loonam and O'Loughlin (2008:759) are of the opinion that margins and profitability in the retail banking space have come under tremendous pressure over the last couple of years

as a result of advances and innovation in the information technology environment. These developments had a huge impact on new market entrants in the form of insurance companies as well as transparency and switching behaviour amongst bank customers (Haenlein, Kaplan & Beeser, 2007:221). Banks are not the only providers of banking products and service in the market today (Fourie, Falkena & Kok, 2001:90). The banking industry in South Africa, no different from other developing countries, is faced with multiple strategic challenges with substantial consequences for unexploited local markets (Maumbe, 2006:72). The booming of technology-driven systems, primarily those related to the Internet had a major impact on the way banks network and communicate with their customers (Ombati et al., 2010:152). Technology is the key driver used by banks today, not only to improve customer service but also to gain substantial benefits in the form of improved margins for themselves (Fourie et al., 2001:73). The ability of customers to connect digitally has removed all banking limitations and even allow them to connect and transact internationally (Reedy & Schullo, 2004:10). Ladhari (2010:464) summarised the differences between digital and traditional banking as follows:

- Convenience: Digital offers customers a more efficient way of doing banking – less time and effort is required when using digital banking.
- Safety: Customers have trust issues and concerns about safety and confidentiality in the digital environment.
- The absence of personal interaction: Customers use a technical interface in the digital environment (Fassnacht & Koese, 2006:25).
- Co-responsibility for quality of service: In the digital space the customers play a more noticeable role in co-producing service delivery standards than in the traditional banking system (Fassnacht & Koese, 2006:25).

Financial institutions need to ensure their customers change with them to realise the full potential and benefits of digital banking for the organisation as well as their customer.

2.6 POSSIBLE BENEFITS OF DIGITAL BANKING FOR THE BANK

The huge paradigm shift in how banks conduct their business has forced them to invest in and utilise the Internet-based channels to conduct their business and deliver a more efficient service to their clients. To derive maximum benefit, however, it is essential for all stakeholders, clients and management in banks, to understand the potential benefits of digital banking (Vater, Youngsuh & Sidebottom, 2012:1).

2.6.1 Attracting the desired level of customers

It is the view of Shah and Clarke (2009:4) that digital banking tends to attract customers with higher income levels, advanced levels of education who are more profitable and ultimately impact revenue streams positively. Digital banking can further assist banks to reduce physical interaction with non-profitable customers through their branch network which is an extremely expensive service platform for banks to maintain (Berger & Gensler, 2007).

2.6.2 Improved image and visibility

Originally image was seen as an element of the relative advantage concept until Tornatzky and Klein (1982:33) pointed out that it has a huge impact on attitudes and subsequently needs to be considered as a variable on its own. Moore and Benbasat (1991:195) defined an image as "the degree to which the use of innovation is perceived to enhance one's image or status in one's social system" and then concluded that it affects an individual's digital adoption behaviour. Püschel, Mazon and Hernandez, (2010:394) state that a close alignment between digital banking and an individual's image the optimistic one's attitude will be towards digital banking adoption and use. Despite the fact that digital banking is commonly available in the market today an appealing easy to navigate website with a relevant portfolio of available products and services still have a positive impact on the bank's image (Shah & Clarke, 2009:5). The quality of digital banking is important due to the potential impact it might have: attractiveness, customer acquisition, customer retention and profitability (Santos, 2003:234).

2.6.3 Increased revenue

Local banks, like all banks globally, are continuously investing very large amounts of money into creating and improving digital banking service platforms to drive revenue (Maduku, 2014:82). Chavan (2013:21) states that these capital investments not only assist banks to address the demand for higher revenue but also improve competitiveness through cost reduction. Sheshunoff (2000:54) is of the opinion that a quality full-service digital banking offering can be used by banks to prevent customers from switching. Switching requires time and effort hence if a customer adopts the full digital offering of one bank there is a very slim possibility of that customer moving to a competitor. Mols (1998:200) states that digital banking customers are more loyal to their financial institutions than customers using traditional banking channels. Littler and Melanthiou

(2006:436) highlighted the opportunities for financial institutions to expand their market share and improve the internal cross-sell ratio of products through digital banking.

2.6.4 Improved resource allocation and efficiency

The availability of the Internet and cellular telephone access are increasing at a rapid pace. Dagada (2013) is of the opinion that this is hugely beneficial to the banking community. Banks can now expand and grow geographically without incurring the high costs of opening new branches. Digital banking can aid banks to improve their efficiency. If banks can decrease customer reliance on physical channels and drive digital adoption, it will have a positive net effect on efficiency and subsequently on the cost-to-income ratio, one of the most important ratios in the annual reports (Dagada 2013). Improved infrastructure to improve Internet access and smartphone ownership in South Africa will open up more opportunities for banks to improve their cost-to-income ratios through effective digital utilisation. The overhead costs as well as the individual transactional costs once economies of scale are achieved, are substantially lower than the cost to serve customers in physical channels (Dagada, 2013). Lovelock and Wright (1999:45) recognised the shift from a high contact branch environment to low contact digital solutions. Digital banking has changed the manner in which banks manage their business and allow them the opportunity to expand their consumer base into rural areas more effectively (Gonzalez, Dentiste & Rhonda, 2008:41). Digital banking will enable financial institutions to build up an internal database that can later be used to customise sales and service propositions for individual customers (Yu & Guo, 2008:9).

2.6.5 Workload distribution

The automated nature and convenience of digital banking result in customers using it for routine transactions and hence reducing the workload of call centres and physical outlets. According to Shah and Clarke (2009:6), this tendency is likely to carry on and enhancements to onboard more sophisticated digital services are also envisaged. It should lead to a reduction in cost for the banks as fewer people will be required. It could potentially also lead to higher levels of efficiency due to the re-allocation of scarce resources to higher profit generating areas.

2.6.6 Costs

For banks, the biggest benefit and economic driver for spending on digital banking is the anticipated long-term cost benefit, not only for the bank but also for the customer

(Chavan, 2013:22). In the harsh environment of financial services, banks find it increasingly difficult to maintain and grow profits. Financial institutions who fail to embrace and implement digital banking, stand a good chance of losing customers since the cost of delivering e-banking is substantially less than traditional over the counter service (Chibonda, 2014:12). Hossein (2010:3) states that digital banking offers huge opportunities to cut operational cost for the bank. By reducing frontline staff, banks can reduce their salary bill as well as reduce space occupied by branches which will ultimately lead to a decrease in overhead costs and higher profitability (Compaq, 2001). Banks are progressively investing in digital technology to provide a more efficient service to savvier customers at lower operational cost (Nasri, 2011:143). The players in this sector will continue to use automation to drive cost down whilst using the digital banking platform extensively to deliver a better service as well as a growing range of products (Walker, 2017). Cost can be a deciding factor whether to adopt digital banking or not as stated in the Wallis report (1997). A study performed by Barczak, Ellen and Pilling (1997:137) show that customers might be hesitant to adopt new technology unless there is a significant cost benefit. Price is seen as one of the major determinants of digital banking adoption (Iqbal, Verma & Baran, 2003:55). According to Al-Hawari and Ward (2006:129) consumers using online banking are more price conscious than those using offline consumers. The main focus for driving digital adoption in rural areas shifted away from cost towards the holistic strategic implication it suggests (Sieber & Valor, 2008:3). The adoption of digital banking has a positive impact on cost reduction and enables change in the banking environment (Laukkanen & Lauronen, 2005:328).

2.7 THEORETICAL FOUNDATIONS OF THE ADOPTION OF TECHNOLOGY INNOVATION MODELS

According to the considerable number of studies conducted it is obvious that people are interested in digital banking adoption patterns (Brown et al., 2003; Lee et al., 2003; Luarn & Lin, 2005; Pederson, 2005; Sulaiman, Jaafar & Mohezar, 2007; Laukkanen et al., 2008).

2.7.1 Technology Acceptance Model (TAM)

TAM, as illustrated in figure 2.1, was developed to use in all areas of human-computer interaction (Davis, Bagozzi & Warshaw, 1989:983). The Technology Acceptance Model (Davis 1989) is extensively used to forecast user acceptance of technology such as digital banking (Kim, Kang & Cha, 2013:1215).

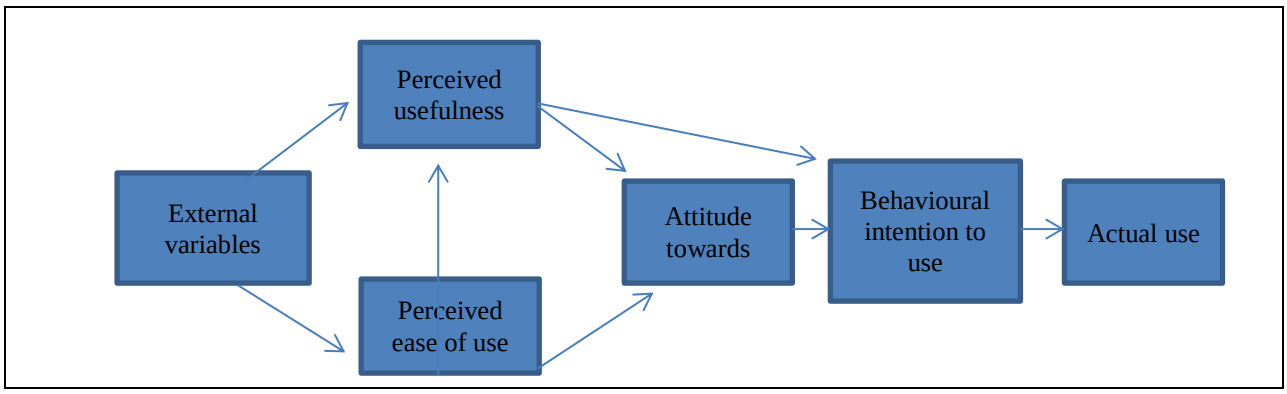

Figure 2.1: Original TAM

Source: Davis (1989:322)

The TAM constructs of perceived ease of use (PEU) and perceived usefulness (PU) are key determinants of technology innovation acceptance and has a direct impact on behavioural intentions to adopt digital technology (Davis et al., 1989:984). Venkatesh and Davis (2000:186) note that "TAM consistently explains a substantial proportion of the variance (typically about 40 percent) in usage intentions and behaviour and that TAM compares favourably with alternative models such as the Theory of Reasoned Action and the Theory of Planned Behaviour". Mathieson, Peacock and Chin (2001:88) are of the opinion that TAM explains the attitude an individual express towards the utilisation of technology information systems that are superior to other multi-attribute models. TAM constructs, according to Pikkarainen et al. (2004:226), have been more successful in predicting digital adoption intention amongst individuals than other models.

It is for this reason that a large number of researchers utilise TAM, as illustrated in figure 2.1, to investigate the acceptance and adoption of digital banking (Yousafzai, Pallister & Foxall, 2010; Yaghoubi, 2010; Lai & Li, 2005; Pikkarainen et al., 2004). Davis (1989:321) states that perceived ease of use as well as perceived usefulness directly influence a potential adopter's attitude towards information technology and whether they will use it or not. Amin, Hamid, Lada and Anis (2008:44) investigated the aspects in the TAM impacting digital adoption amongst bank customers and found perceived ease of use and usefulness as the main factors impacting adoption intention. The model points out that PEU and PU has an indirect influence on digital system adoption and usage (Lee, Hsieh & Hsu, 2011:125). A substantial amount of research done on the explanatory value of the TAM produced consistent results regarding the digital acceptance behaviour of individuals (Igbaria et al., 1997:284; Venkatesh & Davis, 2000:188; Horton et al., 2001:242). Chin and Todd (1995:238) state that the TAM is effective when it comes to

individual acceptance of different kinds of technological innovations. Moon and Kim (2001:217) pointed out certain gaps in the Technology Acceptance Model with regards to certain usage and technology content which influence the accuracy of predicting adoption behaviour. As a result, a substantial number of studies have included additional complementary factors such as, security, risk, trust, subjective norm, demographic variables as well as ad hoc information on digital banking to get more clarity regarding digital adoption behaviour (Maduku & Mpinganjira, 2012; Yaghoubi, 2010; Pikkarainen et al., 2004).

2.7.1.1 Perceived ease of use

Maduku and Mpinganjira (2012:174) describe the ease of use in the digital banking environment as the "physical or mental effort that customers exert or are likely to exert during electronic banking". There is a direct relationship between ease of use and perceived usefulness. PEU, one of the strategic constructs of the TAM, is all about whether using new technology will be without any struggles and free of effort (Davis et al., 1989:985). The less complex and easier to use technology is the higher the expectations in relations to benefits (Morosan & Jeong, 2008:288). Empirical evidence proves that a system that is easy to use will attract people and have a positive impact on digital adoption and usage (Maduku, 2013; Jeong & Yoon, 2013; Venkatesh, Speier & Morris, 2002).

2.7.1.2 Perceived usefulness

Davis et al. (1989:985) describe perceived usefulness as the extent to which a person believes a digital innovation will impact current performance. According to Frangos (2009:57), PU is the dominant motive for digital adoption and usage. This is also the biggest reason for people moving from face to face banking to digital solutions (Laforet & Li, 2005:67). In the technology innovation space awareness and information quality directly affects trust which again impacts on perceived usefulness which in turn is a predictor of the intention to adopt digital banking (Zhou, 2011:532). Many studies emphasise the fundamental contribution that PU plays in driving digital banking adoption and usage (Jeong & Yoon, 2013; Akturan & Tezcan, 2012; Viehland & Leong, 2007). Fishbein and Ajzen (1975) state that TAM stems from the theory of reasoned action which in a nutshell means individual actions are motivated by behavioural intention which is driven by an individual's attitude.

2.7.1.3 Modifications to TAM

Many scholars including Flavián, Guinaliu and Torres (2006) adapted TAM to include additional constructs associated with digital banking adoption. They also broke the PU construct further down to include additional perceived benefits factors to make it more comprehensive. In 2010, Hosein developed his own generic framework to include the factors he believed impact digital banking adoption. Even though Hossein's model contains certain aspects of TAM, it was modified to include additional factors as illustrated in Figure 2.2.

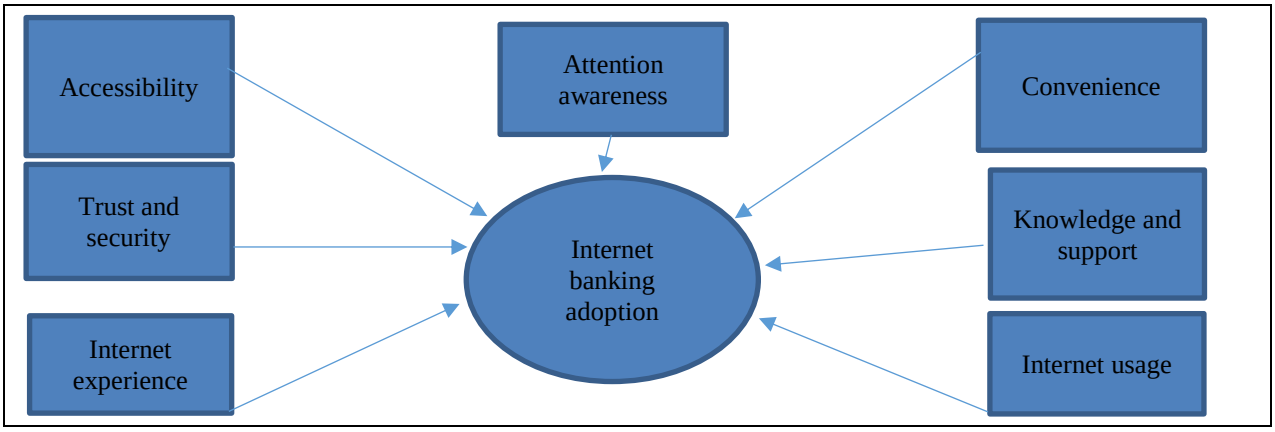

Figure 2.2: Consumer adoption of Internet banking, a generic theoretical framework

Source: Hosein (2010:4)

2.7.2 Innovation Diffusion Theory

Sulaiman et al. (2007) and Brown et al. (2003) made use of the Innovation Diffusion Theory of Rogers to explore digital banking adoption while Luarn, and Lin (2005) preferred the Technology Acceptance Model. According to Püschel et al. (2010:391), the IDT is the most prominent digital adoption model. The Innovation Diffusion Theory of Rogers (1995) which was used in conjunction with the TAM model for this study aims to identify specific patterns and the rate at which innovation is adopted. Innovation is "an idea, practice or object that is perceived as new by an individual or another unit of adoption" (Rogers, 1995:11). Rogers (1995:5) defines diffusion as "the adoption of innovation over time by a given social system and as a consequence diffusion processes result in the acceptance or penetration of a new idea, behaviour or physical innovation". Technology adoption is when an individual adopts a specific technology while diffusion is the stage where new technology spreads to a larger community and is generally applied. Rogers (1962:247) also stresses the importance of the five adoption stages and speeds

– see figure 2.3 below. For this research, the original technology acceptance curve figure as introduced by Rogers was used.

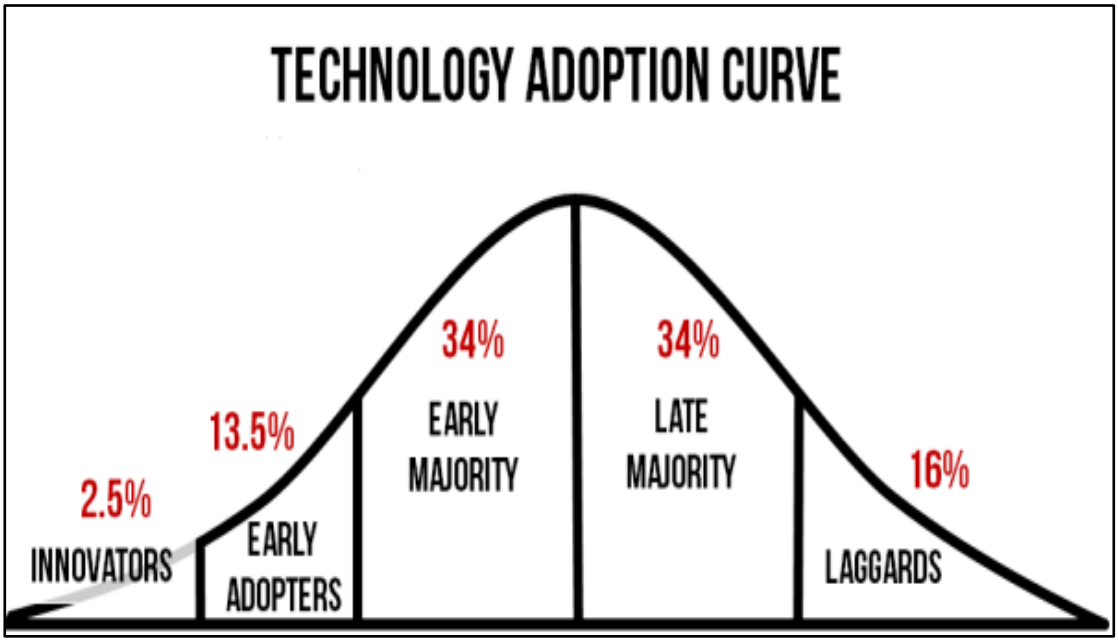

Figure 2.3: Five digital adoption stages

Source: Rogers (1962:247)

According to Rogers (1962:247), more than two-thirds of people are quite conservative when it comes to the adoption of new technology for various reasons. IDT is acknowledged by Al-Jabri and Sohail (2012:380) as one of the more influential theories aiming to explain factors which are believed to impact the adoption of new technology like digital banking in rural areas. Agarwal (2000:90) pronounces that adoption or rejection of technology innovation according to IDT is based on individuals' opinions about such an innovation. There are five factors according to IDT (figure 2.4) that impact an individual's decision to adopt new technological innovations:

- **Relative advantage** is described as the degree of improvement an innovation offers relative to previous models or existing counterparts and is normally measured regarding social and economic benefits (Moore & Benbasat, 1991:194). Rogers (2003) add that relative advantage leads to economic benefits, better status and improved efficiency for adopters. Previous research established a positive relationship between relative advantage and digital adoption (Moore & Benbasat, 1991:195). McCloskey (2006:51) indicates that customers tend to take on a new technology if the perceived usefulness or relative advantage of the new digital technology is superior to the existing

solution. Lin (2011:255) declares that advantages such as immediacy, affordability and convenience will drive digital banking adoption. When combining TAM and IDT relative advantage is often preferred over perceived usefulness because it is believed to cover a wider variety of dimensions (Püschel et al., 2010:393). The more eminent the relative advantage of digital banking the healthier the attitude towards adoption and use. It is, therefore, possible to advocate that digital banking advantages over other methods used to deliver services and conduct transactions, would impact adoption rates (Shambare, 2011:3).

- **Compatibility** is defined as the alignment of the innovation to the potential adopter's values, needs and past experiences (Chen, Gillensen & Sherrell, 2004:14) Rogers (2003) is of the opinion that compatibility forms a critical part of innovation since alignment with a potential user's lifestyle can drive a rapid rate of digital adoption. Tornatzky and Klein (1982:32) conclude that technological innovation is more readily accepted by potential adopters when it is aligned or compatible with their personal value system and work responsibilities. The researchers also see digital banking as a delivery channel most suited for a specific profile individual, a contemporary client who is most probably computer literate and accustomed to the Internet. It is often determined by the compatibility of innovation to a potential adopter's lifestyle. Research indicated that compatibility has a direct impact on a customer's decision to adopt a new technology (Ndubisi & Sinti, 2006:20). Compatibility has been found to have an influential and positive impact on digital banking adoption (Koenig-Lewis, Palmer & Moll, 2010:423). Individuals will adopt the digital banking source most compatible with their way of living (Shambare, 2011:4). It was established that compatibility is a determining factor in digital adoption specifically (Hernandez & Mazzon, 2007:75; Eriksson, Kerem & Nilsson, 2008:158).
- **Complexity** is simply the individual's perception around the ease of use of the innovation and is measured by levels of difficulty experienced by possible adopters (Rogers 1995). Cheung, Chang and Lai (2000:91) simply define complexity as the degree of difficulty involved in using and understanding of innovation technology. They are also of the opinion that the more complex digital innovation, the lower the uptake or adoption rate. Complexity is described as the total opposite of ease of use which indicates the extent to which digital banking is perceived as easy to access and use (Al-Jabari & Sohail, 2012:381). A vast

number of researchers proclaim that there is a definite correlation between ease of use of new technology and the adoption thereof (Gu, Lee & Su, 2009:11612; Luarn & Lin, 2005:882; Wang, Lin & Luarn 2006:169). In cases where digital banking has easy to access and comprehensible interfaces, it is perceived to be easy to use which positively influence customers' attitudes towards adoption (Lin, 2011:256). Several empirical studies regarding digital banking adoption agree that adoption intention is negatively impacted by complexity to use and understand the new technology (Au & Kauffman, 2008:155; Mallat, 2007:422; Ondrus & Pigneur, 2006:253). Technical complexity is the predominant barrier to digital banking adoption amongst individuals (Vrechoupoulos et al., 2003:335). Potential digital banking adopters will be reluctant to continue the process if is perceived to be time-consuming, require a substantial amount of mental effort and cause frustration (Al-Jabari & Sohail 2012:381).

- Rogers (1983) indicates that **triability** is about the comfort an innovation creates among potential users and its potential positive effect on the willingness to adopt in future. There is a bigger chance for people who are given the opportunity to experiment and get comfortable with innovation technology, to adopt it in the end (Agarwal & Prasad, 1998:211; Rogers, 2003). Tan and Teo (2000:35) state that possible unknown fears may be alleviated and digital adoption rates increased if customers are afforded the opportunity to try out innovation. If banks can offer demonstrations and give guidance on digital banking during a no obligation trial period, it can address fears and stimulate adoption (Al-Jabri & Sohail, 2012:382).
- **Observability** is about the visibility of the results of innovation to others (Rogers, 2003). Moore and Benbasat (1991:216) redefine observability into two paradigms namely: "visibility and result demonstrability". In the case of digital banking, observability is referred to as the capability to perform banking transactions anytime, anywhere without any delays and see transaction and account details instantly. Through this experience of digital banking new adopters are spreading the accessibility benefits to additional individuals which in turn facilitate further adoption (Al-Jabri & Sohail, 2012:381).

Püschel et al. (2010:391) point out that except complexity, all other constructs have a positive impact on digital adoption intention and behaviour.

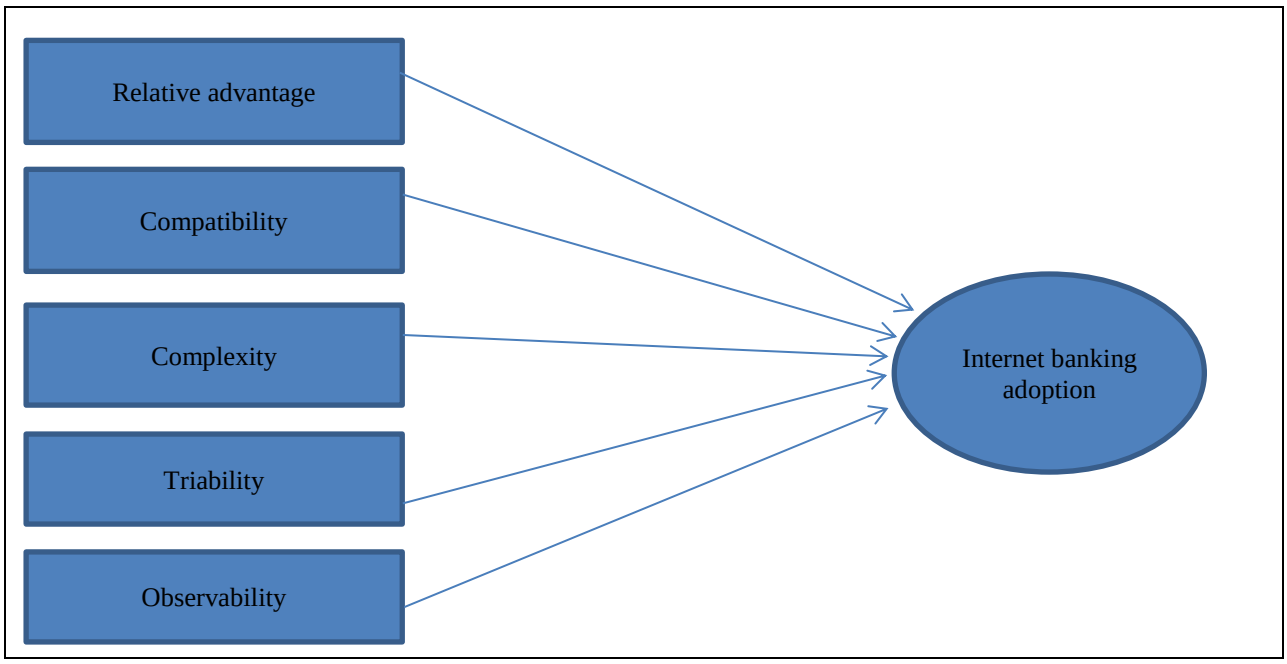

Figure 2.4: Innovation Diffusion Theory

Source: Rogers (1983:233)

A substantial number of previous studies into digital adoption and diffusion have consistently found the factors above and in particular complexity, relative advantage and compatibility to influence customers' intentions to adopt innovation technology (Koenig-Lewis et al., 2010:424; Liu & Li, 2010:316; Papies & Clement, 2008:148). Ramavhona and Mokwena (2016:2) found that triability, compatibility and external factors such as security and awareness have a major influence on adoption of digital banking in the rural areas of South Africa while relative advantage does not have a big impact on adoption. The same study also concludes that security concerns and complexity are hindering adoption intentions in the rural areas. Suoranta and Mattila (2004:355) mention that demographic features, possible risk and aspects relating to innovation diffusion impacts digital adoption. Lack of awareness of digital banking benefits is highlighted by Ramavhona and Mokwena (2016:2) as reasons for reluctance to adopt. Customers in rural areas do not use digital banking due to insufficient resources such as smartphones and computers. Russel and Hoag (2004:103) state that the main reason for digital adoption failure is as a result of awareness. People in rural areas are not made aware of the facts and benefits of digital banking.

2.8 OTHER FACTORS INFLUENCING DIGITAL BANKING ADOPTION

2.8.1 Convenience

Convenience is the first benefit that comes to mind when talking about digital banking. As customers become digitally savvier and the demand for convenience increase a substantial number of these banking customers are reluctant to use traditional outlets (Luo et al., 2010:222; Coelho & Easingwood, 2003:23). Banking transactions can be performed anytime anywhere (Shah & Clarke, 2009:4; Chavan, 2013:22). Hu and Liao (2011:3764) state that bank customers can engage in financial service transactions using a bank's website during or after working hours where Internet access is accessible. Bank customers will be able to attain instant and interactive services twenty-four hours a day anywhere (Aboelmaged & Gebba, 2013:35). The shift towards digital banking is strongly influenced by the convenience to do banking 24/7 without having to physically visit an outlet (ABSA Online 2015; Sayar & Wolfe, 2007:129). This sentiment around the importance of convenience in driving digital adoption is supported by Redlinghuys and Rensleigh (2010:2). Yuan et al. (2010:4) found that "the implementation of Internet banking eliminated the constraints associated with time and place". Digital banking allows customers to access their accounts from any remote location as long as Internet connectivity is available (ABSA Bank, 2011:1).

According to Brogdon (1999:4), the biggest benefit of digital banking is convenience; it is not limited to a specific time or place. Digital banking can be used to perform a variety of banking transactions which include but is not limited to transferring funds, checking balances and pay bills without visiting a physical outlet (FNB, 2011:2). Digital banking offers consumers easy access, twenty-four hours a day, to information on a variety of products and services which subsequently increase their ability to choose between service providers without having to visit physical outlets (Padachi et al., 2007:559). Walker (2017) states that banks are investing large amounts of money into digital banking, not only to make it easier for customers to do banking but also to reach previously unbanked individuals. Digital banking offers customers convenience and greater satisfaction by reducing transactional cost and eliminating travel time to visit a physical outlet (Cracknell, 2004:9). Studies revealed that customers are recognising digital banking services as an attraction based on the benefits and convenience it offers (Salehi, Ali & Zhila, 2008:36).

2.8.2 Consumer attitudes towards digital banking

A customer's attitude is simply the positive or negative response towards a specific object and/or person in a given situation (Gibson, Ivancevich & Donnely, 2000:65). This is often influenced by the actual customer experience in a given situation.

2.8.3 Infrastructure

Infrastructure related concerns play an integral part in digital readiness as depicted in figure 1.2 of this study on page 6. One of the most pertinent inhibitors of digital innovation in the rural areas according to April and Cradock (2000) is the limited access to hardware as well as Internet access. The absence and/or inadequacy of infrastructure is a huge challenge and often prevent people in rural areas of South Africa from gaining online banking access (Ramavhona & Mokwena, 2016:2). Ramavhona and Mokwena (2016:2) note that even though there has been an improvement in telecommunication infrastructure which, supported by growth in mobile phone usage, offering some opportunities it is still not accessible to most customers in the rural milieus. With the high cellular telephone growth rate and increasing usage percentage of cellular telephones amongst the South African population, mobile banking seems to be the future platform local banks should use to drive digital banking adoption (Fisher-French, 2006:1). Despite the opportunities to deliver a service in a cost-effective manner to rural communities, lack of infrastructure, inflexibility to adopt new technology and awareness remains a huge challenge to overcome (Maumbe, 2006:74). In developing countries like South Africa which is characterised by poverty and a lack of sufficient infrastructure, the broad-based delivery of Internet-based service platforms continues to be a challenge (Kenny, 2002:144). Imboden (2005:73) stresses the fact that digital access to financial services holds the key to empower communities in rural areas.

2.8.4 Risk and trust

The Internet is known as an open system with substantial security risk components with regards to financial transactions. Even though major progress has been made through hardware and software enhancements risk remains a concern for a large component of potential adopters (Chibonda, 2014:18). According to Al-Jabri and Sohail (2012:382) "risk perception by customers usually arises due to the doubt related to the degree of inconsistency between customers' judgement and real behaviour, and technologies are failing to deliver its anticipated outcome and its consequent loss". It is pivotal to understand and manage perceptions of risk to minimise the impact on the newly deployed

technology and subsequent adoption. The current literature points out that there is a positive correlation between perceived trust and the decision to adopt and use digital banking (Delafrooz, Paim & Khatibi, 2011b:2839; Yousafzai et al., 2010:1181). Lack of trust in a specific system or institution truly inhibits adoption and usage (Maduku, 2014:80). A study conducted by Hong et al., (2013:29) reveal how wary, not only potential, but also current users are of fraud and information privacy when it comes to digital banking. Trust is and will remain a serious challenge for banks to deal with when striving to optimise digital banking adoption (Yousafzai et al., 2010:1181). The awareness of risk in the digital banking environment becomes more important as a result of privacy and security-related fears (Luarn & Lin, 2005:887). A second concern that poses a security risk to customers is the loss of the PIN codes (Kuisma, Laukkanen & Hitunen, 2007:81).

A further fear, related to the previous concern, raised by individuals is that their accounts might be hacked (Poon, 2008:66). Coursaris, Hassanein and Head (2003:69) mention that fear as a result of the physical theft of digital devices and the subsequent loss of confidential data and banking information hamper individuals of adopting digital banking. According to the Wallis report (1997), the level of security is a critical factor in determining digital banking adoption amongst consumers. It is stated by Al-Jabri and Sohail (2012:382) that the apparent risk involved in digital banking will have a negative impact on individual adoption. In the rural areas of South Africa, digital banking security is highlighted as the most important aspect potential consumers contemplate when considering digital banking. The South African banks do offer customers security in the form of a PIN to protect digital banking users from criminals and prevent illegitimate access to accounts (Martins, Martins & Olivier, 2001:32). The South African banking sector has also introduced a one-time pin (OTP) as added security to combat online fraud (Pather, 2007). According to Masocha et al. (2011:1859) banks are currently using sophisticated authentication technologies to safeguard customers using digital services. Some other technologies implemented and not previously mentioned include symmetric encryption, digital signatures and certificates, ciphertext as well as spoofing. Risk and trust pose noteworthy challenges which have a direct bearing on successful digital adoption (Suh & Han, 2002:248). Laforet and Li (2005:371) found security to be the predominant factor that drives adoption amongst the Chinese people. The researchers, in line with previous studies, also found risk, awareness, computer literacy and technological skills to be stumbling blocks for digital adoption. Risk in the context of this study refers to the amount of risk taken in trying out digital innovation (Ram & Sheth,

1989:6). Trust is probably one of the most researched factors as far as digital adoption behaviour is concerned. Potential adopters fear that perpetrators and other individuals will be able to get access to their personal information and funds electronically (Alsajjan & Dennis, 2006:262). In studying the South African financial institution milieu Berndt et al. (2010) picked up a “degree of pessimism” amongst customers with regards to digital adoption. The root cause of the pessimism was traced back to trust and lack of control issues. Aboelmaged and Gebba (2013:36) mentioned perceived risk in the same breath as perceived usefulness and compatibility as defining indicators of digital adoption.

A major concern raised by Matt Bishop (2017) at a seminar, which will potentially have a serious impact on risks and trust for banks and their customers, is with regards to mobile phone banking. Mobile phone banking, unlike Internet banking, can bypass firewalls created by financial institutions as illustrated in Figure 2.5 below.

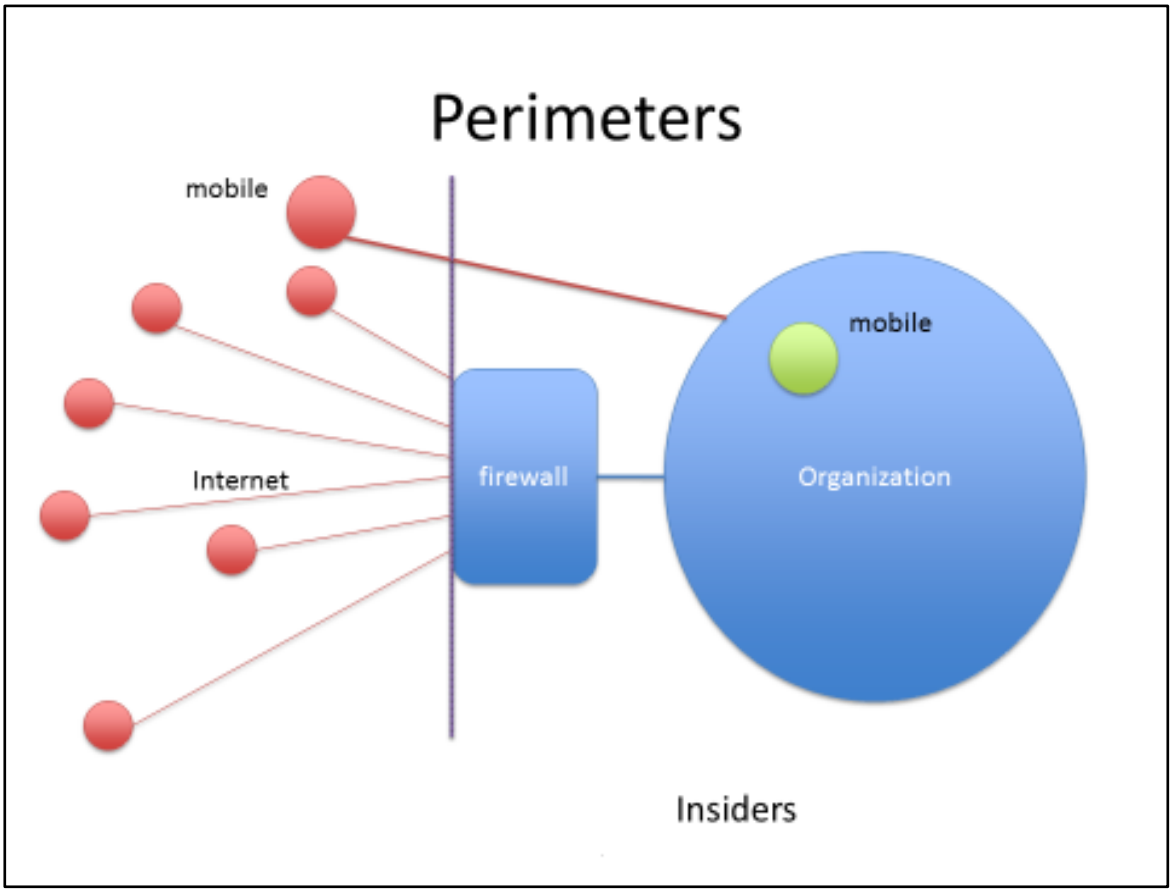

Figure 2.5: Perimeters

Source: Bishop (2017:28)

Banks will have to address this concern as a matter of urgency by putting measures in place to curb the risk and instill trust amongst customers.

2.8.5 Awareness

It is important and obvious that people need to know the facts and benefits of digital banking for them to consider adopting it (Sohail & Shanmugham, 2003:211). Awareness is often raised as a concern and obstacle for digital banking adoption (Maduku, 2014:80). Customers are often unaware of the opportunities, benefits and facts related to digital banking. Several studies state that, a large percentage of bank customers have not been exposed to digital banking hence the negative impact of the lack of awareness on their perceptions and adoption behaviour (Al-Somali, Gholami & Clegg, 2009:137; Pikkarainen et al., 2004:225; Sathye, 1999:325). Kenny (2002:145) states that for broad-based digital adoption to take place, awareness creation in conjunction with education need to be implemented on a large scale. Awareness also plays a major role when it comes to diffusion of innovations such as digital banking. Several studies done previously, indicate that the decision to adopt or reject digital banking are strongly influenced by awareness

and knowledge levels (Polatoglu & Ekin 2001; Rogers & Shoemaker 1971; Sathye, 1999). Kim, Kang and Cha (2013:1229) mention that awareness creation through information sharing and education can play a pivotal role in alleviating digital banking risk and security concerns. This is particularly relevant when considering that two of the most influential factors when considering the adoption of new technology in the financial services industry are security and trust (Brown et al., 2003:388). Lowering the risk involved with digital banking transactions will improve adoption rates (Shambare, 2011:4). Digital banking security refers to the risks and threats associated with fraud and identity theft current users, and potential adopters are exposed to (Kalakota & Whinston, 1997). Banks not only have the responsibility to create awareness and educate customers on the benefits and uses of digital banking but should also create economies of scale as quickly as possible to drive their return on investment (Clarke, 2002:324). Banks need to create awareness and drive numbers by offering incentives to customers who change from traditional over-the-counter banking to digital banking (Sohail & Shanmugham, 2003:215). The researchers also stress the importance of information brochures on digital banking, in-house demonstrations to create awareness and comfort around using digital banking as well as self-service areas equipped with the necessary devices.

2.8.6 Facilitating conditions

This concept includes support from digital infrastructure providers as well as from financial institutions (Brown et al., 2003:389). There is substantial growth in the number of people having access to mobile phones and utilising these devices as digital banking terminals. The mobile phone penetration rates in developing countries, which include South Africa is 89% (ITU, 2013). This rapid growth in mobile phones creates an ideal platform to drive digital adoption in future. Improved facilitating conditions will have a positive impact on digital adoption behaviour (Shambare, 2011:4). Certain institutions like government, local and international standardisation organisations and industry allies all play a critical part in enabling infrastructure for digital banking adoption (Chibonda, 2014:21). The researcher also emphasised the critical role information infrastructure play in supplying telecommunications as well as wireless connections to enable digital banking. Shih and Fang (2004:220) highlight the importance of support industries' readiness to drive digital banking adoption from a consumer's point of view and to create economies of scale. The essential infrastructure elements include devices, software, telecommunication networks as well as connection platforms for the Internet. There is a strong positive correlation between the availability of the above elements and digital banking adoption (Dholakia &

Kshetri, 2004:317). Research conducted in developing countries on digital banking adoption recognised uncertainty, and insufficient operational facilities like telecommunication and electricity supply as major hindrances (Chibonda, 2014:21). Collaboration between telecommunication role-players and the government is of utmost importance to establish an efficient telecommunication infrastructure in support of digital developments (Chibonda, 2014:25). Mainly due to cost the majority of websites are using the English language to communicate information to individuals which are often a hindrance for less educated people from non-English speaking backgrounds (Chibonda, 2014:23).

2.8.7 Demographic features

Demography is the study of features like gender, age, race, income and level of education impacting consumer needs and ability to acquire products and services (Loudon & DellaBitta 1993:35). According to Karjaluoto (2002:359), the majority of people using digital banking is well educated, has good jobs and earn higher incomes than non-users. According to Palani and Yasodha (2012:266) income, education and gender have a big impact on customer's perceptions regarding digital banking adoption.

2.8.8 Subjective norm

Riquelme and Rios (2010:330) identified social norms, social risk and perceived usefulness as some of the most important factors determining digital banking adoption. Venkatesh and Davis (2000:426) altered the original model to include subjective norm as a construct and renamed it TAM2. Subjective norm is described as the social forces impacting an individual's behaviour to adopt an innovation or not (Ajzen, 1985:15). These social influences can come from individuals operating in the same social circles as the prospective adopter or from family and friends. Pedersen (2005:211) established that subjective norm could play a pivotal role in predicting an individual's decision to use digital banking.

2.8.9 Self-efficacy

The construct of self-efficacy refers to self-reliance and confidence levels of individuals to start utilising innovations like digital banking (Taylor and Todd, 1995:146). The more comfortable individuals are with a digital solution, the higher the uptake levels will be (Shambare, 2011:4). Torkzadeh & Van Dyke (2002:494) realised the importance of self-efficacy in driving the understanding, implementation and use of Information Technology.

Self-efficacy plays an essential role in impacting potential adopters behaviour intentions (Chau & Ngai, 2010:49). Tan and Teo (2000:27) confirm that people with high levels of self-confidence in their abilities to use digital solutions are more likely to adopt digital banking. Venkatesh et al. (2003:468) found, after experimental tests, that self-efficacy did in fact not have a direct influence on innovation adoption behaviour. Later studies conducted by Venkatesh and Zhang (2010:22) as well as Püschel et al. (2010:404) confirmed these previous findings. Luarn and Lin (2005:884); Sripalawat, Thongmak and Ngramyarn (2011:73); Dasgupta et al. (2011:21) however differed from these findings and claimed that self- efficacy does, in fact, impact individual digital banking adoption intentions. An empirical study done by Yu (2012:115) concurred with findings from Venkatesh et al. (2003) and several other earlier findings that self-efficacy, in fact, does not have a defining impact on digital adoption behaviour.

2.9 ADOPTED RESEARCH FRAMEWORK

This research study uses a combination of TAM variables in conjunction with IDT constructs as illustrated in figure 2.6 to gain an understanding of digital adoption constraints in the rural areas of South Africa. The aim is to study the motivational components of TAM concepts while using IDT as a related theory. In this study, the researcher aims to make the potential reasons for failure to adopt digital banking more comprehensive by combining TAM with certain IDT characteristics.

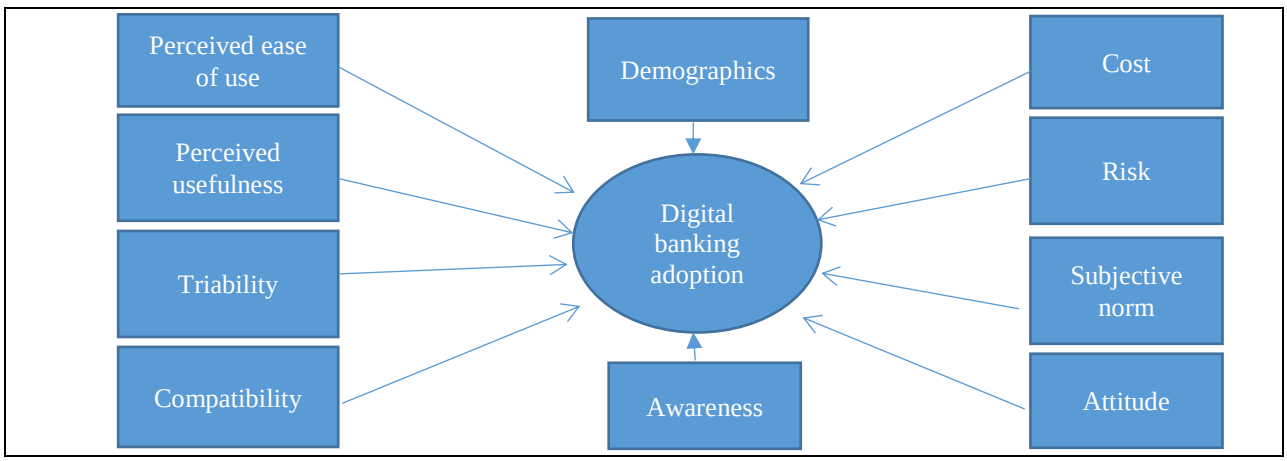

Figure 2.6: Adopted research framework

It is, however, important to note that in theory, no unambiguous relationship exists between the IDT perspective and TAM other than the sharing of certain key constructs (Moore & Benbasat, 1991:201). Examples of these similarities include the relative advantage concept of IDT and the idea of PU measured by TAM as well as complexity

measured through IDT compared to the PEU construct of TAM. Both of these theoretical foundations are in agreement that intention of an individual to adopt a particular innovation is partially impacted by the how complex the new technology innovation is to comprehend and use (Davis et al., 1989:996; Rogers, 1995:5). Observability and compatibility are viewed as external features which have a direct bearing on the concepts of the technology acceptance model (Lee et al., 2011:126). Up to now various studies have incorporated IDT into TAM successfully to determine innovation technology acceptance or adoption behaviour amongst individuals (Hardgraves, Davis & Riemenschneider, 2003; Wu & Wang, 2005; Chang & Tung, 2008).

2.10 THEORY OF WORKAROUNDS

Alter (2014:1044) defines workaround as “a goal-driven adaptation, or other changes to one or more aspects of an existing work system in order to overcome, bypass or minimise the impact of obstacles, exceptions, anomalies, mishaps, established practices, management expectations or structural constraints that are perceived as preventing that work systems or its participants from achieving a desired level of efficiency, effectiveness, or other organisational or personal goals”. According to certain scholars’ workarounds is a familiar but understudied concept (Azad & King, 2008; Safadi & Faraj, 2010). It might be necessary to implement workarounds in cases where processes are not available, slow or inadequate, technologies are not working or performance are hampered by situational restrictions (Alter, 2014:1042). Figure 2.7, known as the “Five voices of workarounds” aims to align the different but applicable aspects relating to workarounds found in existing literature.

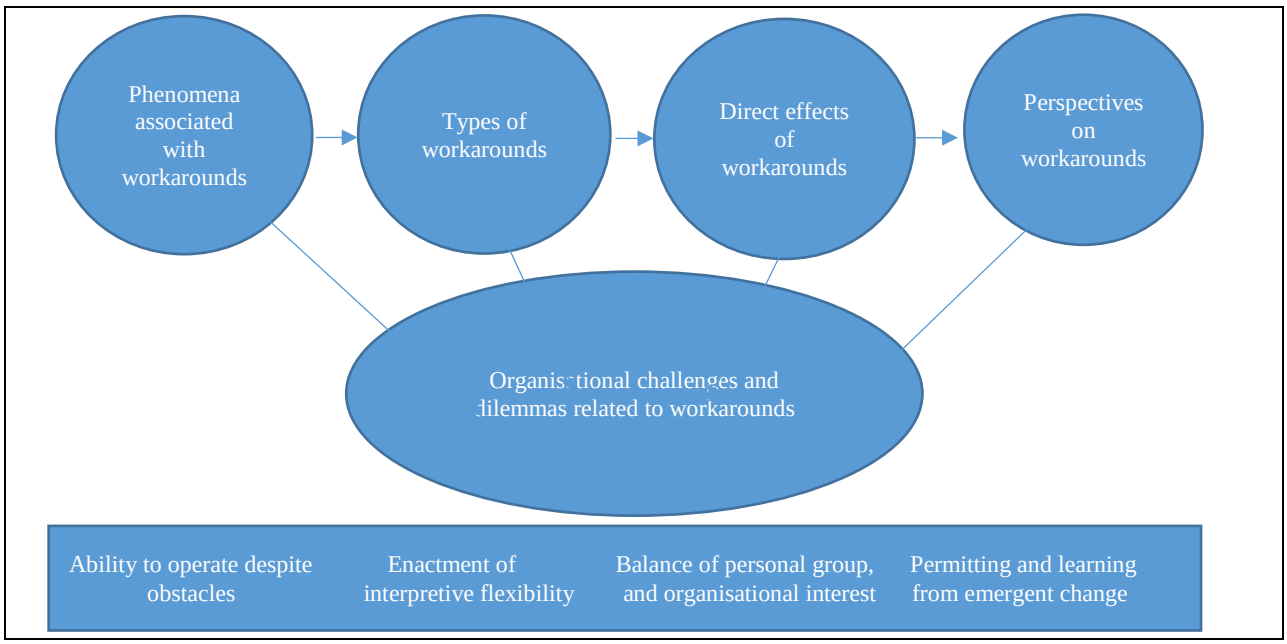

Figure 2.7: Five "Voices" of workarounds

Source: Alter (2014:1048)

It is important to note that all the workaround examples mentioned and highlighted in previous research studies can be linked or related to at least one of the themes in the five voices respectively.

2.11 CONCLUSION

It can be derived from the literature study conducted that financial institutions need to adapt and align their digital adoption strategies to stay relevant. Even though most of the banks in South Africa have embraced digital banking, it is still uncertain as to whether the strategies they employ are inclusive enough to create the needed economies of scale. The literature pointed out that people in rural areas are still reluctant to take up the available digital solutions. Financial institutions face considerable challenges to change the mind-sets of individuals from traditional brick and mortar to digital platforms. It is also evident from the literature study that digital banking has possible benefits for the financial institutions as well as for the customer. The challenge for the financial institutions is to find a way to remove obstacles preventing potential customers to adopt digital banking in urban as well as rural areas. Banks can only optimise their benefits if they manage to get the vast majority of their customers move to a digital banking platform. The available literature indicated the possibility of cost saving, improved efficiencies and service delivery as well as convenience. Finally, the literature study looked at some theoretical foundations and technology innovation models explaining possible factors impacting

digital acceptance. The information gained from studies utilising these models as well as additional ad hoc factors was used to develop a research framework and questionnaire for this study. Banks or financial institutions can only make a success and employ successful digital banking on boarding strategies if they understand the digital readiness of their customers.

2.12 CHAPTER SUMMARY

The chapter starts with a short overview of the importance of digital banking and the necessity to understand factors impacting adoption. The next section covered digital banking introduction into South Africa and what is currently transpiring. Terminology regarding what digital banking, adoption of digital banking and specific changes it brought about in the financial services industry is covered to create understanding and clarity. The possible benefits digital banking adoption hold for the bank is discussed to emphasise the importance of digital adoption for the specific financial institution. The second last section of the chapter focussed on identifying potential obstacles to digital banking adoption. Several technology innovation models were covered to explain existing and possible digital adoption patterns followed by ad-hoc factors that might also impact digital banking adoption. The information gathered from these models, and previous literature was used by the researcher to develop a research framework for this study. The final section looked at the theory of workaround as an alternative approach where obstacles cannot be overcome currently.

CHAPTER 3: RESEARCH METHODOLOGY AND ANALYSIS

3.1 INTRODUCTION

The literature study in the previous chapter gave an overview of digital banking, benefits and factors that can prevent digital banking adoption. To address the objectives on page 7, this chapter gives a brief description of the research methodology, techniques used and guideline values applied to get the required data from the sample of banking customers in the rural areas of central South Africa. The process the researcher followed to choose the sample, collect the data as well as ensure validity and reliability of the study are also covered extensively in this section. The final section in this chapter deals with the findings of the study as well as recommendations. A great deal of care went into ensuring the sample was representative of the target population. The researcher used judgemental sampling in deciding which bank branches to use and a convenient sample to choose the respondents in the selected bank branches. A standard questionnaire was used to gather the required data. The study questionnaire was tested to ensure validity and levels of understanding. The eventual questionnaire consisted of three phases, and the researcher used three types of questions to gather the data. The analysed data were presented in frequency and descriptive tables, validity tables, reliability tables as well as several correlation tables. In the final section of the chapter, the data gathered was interpreted and analysed. Frequencies and correlations were analysed and investigated to conclude support of the primary and secondary objectives of the study. The Statistical Consultation Services at the Potchefstroom campus of the North West University were used for the all the statistical analysis in this study.

3.2 RESEARCH APPROACH

A quantitative approach was used for the study since the aim was to investigate certain variables to answer the formulated research question. This quantitative study aims to identify a managerial framework to manage the challenges with regards to digital adoption in rural areas. “A quantitative study, consistent with the quantitative paradigm, is an inquiry into a social or human problem, based on testing a theory composed of variables, measured with numbers, and analysed with statistical procedures, in order to determine whether the predictive generalisations of the theory hold true” (Babbie & Mouton, 2002:646). According to Maree (2011:145), a quantitative approach objectively uses numerical information and data to generalise outcomes for a selected population. Du Plessis and Rousseau (2007:21) added that the numerical data gathered through a

quantitative approach is also easily quantifiable and potentially extremely accurate. The above benefits, as well as the cost and time benefits of this approach, were determining factors in the researcher's decision to use a quantitative approach. A quantitative approach is also reliable and objective, and it indicates the cause and effect relationship between the variables. This approach will limit the number of variables in an often difficult problem. Finally, it is believed that a quantitative study is more objective and in this case, because it is easily understood and accepted by people, will be beneficial in a rural environment.

3.3 RESEARCH DESIGN

Data was gathered at a specific point in time which indicates a cross-sectional method was used (Bailey, 1987:460). It is almost like taking a picture of what is happening in a group at a specific, single point in time. In this study, we can look at different variables at once to supply the information needed to determine how they interact and ultimately answer the research question. This is a cost-effective method to ensure enough primary data is gathered to address the research objectives. The individuals used for this study included customers older than 16 years with bank accounts. Information from cross-sectional studies can be used to guide further more advanced studies to give more in-depth answers on selected related issues. This study yielded 487 usable questionnaires out of 560 distributed which is well in line with the generalised scientific standards for sample sizes illustrated in Table 3.1 below (Sekaran, 2003:293).

Table 3.1: Sample size for a given population size

N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Source: Sekaran (2003:294)

According to table 3.1, an acceptable sample size for the number of questionnaires distributed would have been between 226 and 234.

3.4 RESEARCH METHOD

3.4.1 Research participants

The unit of analysis is the core entity that you will analyse and base your study on (Trochim, 2006). This well-defined collection of individuals or objects is known to have similar characteristics – these individuals or objects often have a common binding characteristic or trait. In this study, the bank clients in the rural areas of central South Africa shared these common characteristics and formed the unit of analysis. It is from this accessible population that the researcher collected data for the study. The unit of analysis comprised of individual bank clients who visited selected rural branches in the North West, Northern Free State and selected branches of the Northern Cape over a month-end period. The timing was particularly relevant because over month ends the majority of clients visit these branches which contributed towards the accuracy of the information and ultimately ensured a fair representation of the rural bank population. The branches

were selected in such a way that it is representative of the rural communities in the selected areas. The study aimed to get an adequately representative sample of the population which comprised of individuals from different demographic backgrounds (gender, age group, education level, income level etc.). A non-probability convenience sample to try and ensure the sample consisted of individuals who use digital banking as well as those individuals who do not use digital banking. All respondents were required to have bank accounts though.

3.4.2 Measuring instrument

The context of this study is based on relevant literature content previously used in similar studies. A structured questionnaire (annexure 6) aligned to the rural milieus in South Africa was developed and used for the study since it offers the individual possible answers to choose from and according to Churchill and Lacobucci (2005:215) is simple to understand and reduce the margin for error. The self-completing questionnaire used by the researcher to gather the necessary data consisted of three segments. The questionnaire was drafted in simple English to ensure easy understanding for individuals from all educational backgrounds. The questions covered demographic information, general online banking and Internet usage information as well as perceptions regarding online banking as illustrated in Table 3.2.

Table 3.2: Summary of the questionnaire

Section	**Items**
Part 1 Demographic information	Gender, age income, qualification, occupation and home language
Part 2 General digital banking usage & habits	Digital banking access, usage, service and knowledge
Part 3 Individuals' attitudes and perceptions	Attitudes and perceptions regarding digital banking

- Part one of the questionnaire was developed to gather the demographic details of the respondents. Anonymity was guaranteed to encourage honest feedback from individuals. Multiple-choice and dichotomous questions were used in this section to gather information. The ranges for the different variables were constructed in such a way that the personal details respondents were required to disclose would not make them feel uncomfortable.

- Part two of the questionnaire covered the general digital banking usage and habits. This section determined the usage of the Internet for online banking, the frequency of use, willingness, type of transactions as well as suggestions for improvement. Multiple-choice and dichotomous questions were used to gather the relevant information.
- Part three of the questionnaire dealt with individuals' attitudes and perceptions towards digital banking. The 5-point Likert scale was used to define respondents' perceptions and attitudes towards digital banking. The Likert scale will range from 1 = strongly disagree to 5 = strongly agree.

A paragraph explaining the intention of the study and ethical issues as well as complete instructions were included in the questionnaire. The relationship between perceived ease of use, perceived usefulness, compatibility, tradability, accessibility, perceived cost, subjective norm, attitude and behavioural intentions, perceived risk, awareness and consumer demographics on digital adoption intention was investigated through the questionnaire. Lee (2009:139) stressed the impact of attitude in making decisions regarding online banking. The main reason why people might decide to take up e-banking is the result of its perceived usefulness (Frangos, 2009:157). Ndubisi and Sinti (2006:18) claim that perceived ease of use with regards to technical skills will play a major role in the uptake of e-banking. Delafrooz et al. (2011a:75) indicated that there is a positive correlation between online transacting and trust. A literature study revealed that there are major differences between different age, gender and income groups with regards to internet usage (Porter & Donthu, 2006:1004). Davis et al. (1989:986) claim that people often only use technology because they are expected to use it and to be socially accepted.

3.4.3 Research procedure

A specified quantity of copies of the questionnaires with an introductory message explaining the reason for the study, the process and the ethical factors were delivered to the respective delivery sites – branches as indicated earlier. Branch management will assist the researcher with distributing questionnaires to clients who enter the bank and/or use the bank's facilities. They will first get consent from the individual and then discuss the reason for the study, the process and ethical factors with the person before handing him/her the questionnaire to complete. Once completed they collected the questionnaire, thanked the participant and left it in a safe place till the researcher collected it. If the

person did not give consent, they moved to another client until they reached the prescribed quota. They also clarified any uncertainty regarding the questionnaire itself as well as the aim of the study.

3.5 SAMPLING DESIGN

According to Frazer and Lawley (2009:9) sampling is simply about deciding who in a certain population needs to be targeted for a specific study. Samples are needed where it is impractical to target a whole population (Chandra & Sharma, 2013:31). The following steps were followed during the sample design process:

- **Determine the target population**

  The population that was investigated and where the data was gathered can be classified as the target population. Welman, Kruger and Mitchell (2005:52) state that a potential set of participants from which a researcher can potentially draw a sample is known as a target population. A target population is a group of individuals possessing information the researcher needs to draw certain conclusions regarding a specific subject (Malhotra, 2010:372). The target population that was identified for this study included individuals from both genders, across age groups and with different income levels that have bank accounts and live in the rural areas of South Africa.

- **Decide on a sampling technique**

  According to McDaniel and Gates (2002:401), a sampling method can either be classified as probability or non-probability. The choice of sample techniques is often influenced by the researcher's ability to gain access to individuals or organisations. The choice of sampling technique must simply be feasible, reliable and support the researcher to answer his/her research question and be representative of the population. Non-probability sampling also called non-random sampling gives the researcher differentiated techniques to select samples and is often more subjective of nature. In some cases, a non-probability sample may be best suited and practical, although it may not always allow the magnitude of the problem to be apparent (Saunders, Lewis & Thornhill, 2009: 233). For this study, the researcher used a non-probability convenience sampling technique to identify respondents for his sample. It is practical, cost-effective and allows the researcher the opportunity to select a sample which is fit for purpose. The individuals earmarked for the study were also selected because they are fairly easily accessible for the researcher. The aim of a non-probability sample, in line with this

studies intention, is to secure adequate sample given monetary and time constraints (Bergi, 2007:198). The information applicable to the study and subsequent unit of analysis will, in fact, be in the public domain. A unit of analysis can be defined as probably the most elementary part of a scientific study or project. It includes who or what a researcher or analyst can use to form a general overview of the data (Long, 2004). The data gathered from these selected individuals will support the researcher to conclude the factors impacting digital banking usage in the rural areas of South Africa. All people older than 16 years in the above-mentioned areas using banking facilities were included in the study.

- **Determine the sample size**

  A sample size is described as the number of individual elements that form part of a specific study (Malhotra, 2010:374). Equation 3.1 is normally used to determine a sample size representative of the population in cases where random sampling is used in the study. The researcher in this study used a non-probability convenience sample which makes this equation absolute because not all members of the population had an equal chance of being selected (Welman *et al*., 2005:67).

Equation 3.1: Sample size

$$n = \frac{Z^2 \pi (1-\pi)}{e^2}$$

N = required sample size for set parameters

Z = number of standard deviations required for given accuracy

π = proportion of the sample of interest

e = error allowable (Levine *et al*., 2008:303)

It can be very difficult to determine the sample size for a specific study hence Malhotra (2010:374) suggests an average sample size of similar previous studies to be used in conjunction with possible resource and time constraints. Pallant (2013:185) suggests a minimum sample of 150 and a minimum ratio of five cases per variable for studies involving statistical procedures like factor analysis. For this study, the researcher distributed 560 questionnaires and managed to get a sample of 487 usable questionnaires of bank customers back. This not only exceeds the minimum ratio of five cases per variable required but it also exceeds the generalised scientific standards for sample sizes as illustrated in Table 3.1. The number is also well in line with previous studies on similar topics where a non-probability method was used as presented in Table 3.3.

Table 3.3: Sample sizes

Researcher/s	Year	Domain of measure	Sample
Bauer et al.	2004	Measuring the quality of e-banking portals	280
Pikkarainen et al.	2004	Consumer acceptance of online banking: An extension of technology acceptance model	268
Joseph et al.	2005	An exploratory study on the use of banking technology in the UK: A ranking of importance of selected technology on consumer perception of service delivery performance	300
Parasuraman et al.	2005	E-S-QUAL: A multiple-item scale for assessing electronic service quality	200
Ibrahim et al.	2006	Customers' perception of electronic service delivery in the UK retail banking sector	135
Kenova & Jonasson	2006	Quality online banking services	200
Màenpää et al.	2008	Consumer perceptions of Internet banking in Finland: The moderating role of familiarity	300
Researcher/s	**Year**	**Domain of measure**	**Sample**
Loonam & O'Loughlin	2008	Exploring e-service quality: A study of Irish online banking	20
Herington & Weaven	2008	E-retailing by banks: E-service quality and its importance to customer satisfaction	200
Ho & Lin	2009	Measuring the service quality of Internet banking: Scale development and validation	500
Llter et al.	2009	Who uses Internet banking in Turkey and why?	506

Table 3.3: Sample sizes (continued)

Hua,	2009	An experimental investigation of online banking adoption in China	110
Zahid et al.	2010	Consumer acceptance of online banking	220
Ombati et al.	2010	Technology and service quality in the banking industry: An empirical study of various factors in electronic banking services	120
Berndt et al.	2010	Readiness for banking technologies in developing countries	2475
Hu & Liao	2011	Finding critical criteria of evaluating electronic service quality of Internet banking using fuzzy multiple-criteria decision making	264
Kadir et al.	2011	Impacts of service quality on customer satisfaction: Study of online banking and ATM services in Malaysia	500
Ariff et al.	2012	Examining dimensions of electronic service quality for Internet banking services	256
Odumeru	2012	The acceptance of e-banking by customers in Nigeria	400
Gupta & Bansal	2012	Development of an instrument to measure Internet banking service quality in India	1350
Zhu & Chen	2012	Service fairness and customer satisfaction in Internet banking: Exploring the mediating effects of trust and customer value	331
Kumbhar	2012	Reliability of ―ebankqualǁ scale: Retesting in Internet banking service	219
Nimako et al.	2013	Customer satisfaction with Internet banking service quality in the Ghanaian banking industry	200
Maduku	2013	Predicting retail banking customers‘ attitude towards Internet banking services in South Africa	700

Source: Redda (2015:107)

As indicated earlier, the sample size is also in line with generalised scientific standards for sample sizes illustrated in table 3.1 (Sekaran, 2003:293).

3.6 DATA PREPARATION

To apply statistical methods or techniques to analyse raw data, it has to go through a process of preparation first (Kumar, Aaker & Day, 2002:356). Data preparation can be explained as the process whereby data gathered are transformed to be analysed (Hair et

al., 2008:392). Data preparation encompasses the editing, coding and tabulating the feedback from respondents into tables for analysis.

3.6.1 Editing

Editing can be seen as purifying the data to ensure the information is comprehensive, correct and appropriate for processing (Tustin et al., 2005:454). During the editing process all questionnaires were first examined for unanswered and/or incorrectly answered questions, and then suitability for further processing was checked. Unworkable questionnaires were not included in the study.

3.6.2 Coding

Coding is the process by which numeric values are allocated to specific responses to group them into limited categories for easier analysis (Cooper & Schindler, 2006:491). Coding according to these authors can take some different forms including colour coding, special abbreviations or numbers. For this study numbers/codes were allocated for all the individual questions included in the questionnaire. The researcher adhered to several principles recommended by Malhotra and Peterson (2006:407) during the coding process:

- A single unique number was allocated to every potential answer to a specific question, for example, a number 1 was allocated for males, and a 2 was the code for females
- The field of the record assigned to a specific variable was sufficient and included as many columns as was deemed necessary
- To ensure anonymity no identification number was allocated to respondents during this study as suggested by Malhotra and Peterson (2006:407)

The 5-point Likert scale, as well as dichotomous and multiple-choice questions, was used in the questionnaire to gather the data.

3.6.3 Entering Data

The numeric values assigned to questions were entered into a computer, using SPSS software, to statistically analyse the data and produce spreadsheets containing the scores for the relevant variables and constructs.

3.7 STATISTICAL ANALYSIS

The researcher made use of Statistical Consultation Services of the Potchefstroom campus of NWU which made use of the SPSS software programme to analyse the data. The first step was to use the frequency tables and descriptive statistics. After this confirmatory factor analysis was used to test for construct validity and Cronbach's Alpha for reliability. Al-Dujaili (2011:8) claims that the Coefficient alpha, also known as the Cronbach's alpha (α) is believed to indicate the reliability measuring a sole, uni-dimensional construct indirectly. The next step in the analysis process involved correlations. Spearman's rho was used to test correlations between the factors used in this study whilst contingency tables were used to test the association between the variables. Finally the research made use of Anovas to test the differences in averages with regards to demographic features.

3.7.1 Factor analysis

Factor analysis is a procedure predominantly used to reduce data for summarisation purposes. According to Hair et al. (2010:94) factor analysis is a technique used to explain the underlying structure and interdependence among the variables in the study. For this study the researcher used Bartlett's test of sphericity to test if the correlation between items were high enough, the determinant to test that these correlations were not too high, and the Kaiser-Meier-Olkin (KMO) measure for sampling adequacy. According to Pallant (2013:179) factor analysis can be either exploratory or confirmatory. In the early stages of this study the researcher used exploratory factor analysis (EFA) to get information and explore the relationships between sets of data variables. However confirmatory factor analysis (CFA) was used in this study to test the theoretical fit. The researcher used the following procedure recommended by Malhotra (2010:639) as a guideline during the study:

- Formulation of the problem
- Develop the correlation matrix
- Decide on the factor analysis methodology
- Define the amount or number of factors
- Rotation of elements
- Interpretation of the different factors
- Calculation of the scores for the different factors
- Define the model fit

Even though a principal component analysis (PCA), is the most widely used factor extraction method according to Pallant (2013:181), principle axes factoring have been used for this study.

3.7.2 Reliability

Hair et al. (2010:165) describes reliability as the ability of a specific scale to give comparable results in recurring trials under similar circumstances. It means that if a different researcher does a similar study the results should be fairly similar. According to Babbie (2013:188) reliability relates to the credibility of the findings and whether the same technique will yield similar results if applied to the same items on another occasion. Internal consistency reliability, the inter relatedness of the different questions in a given construct, has been used in this study. The set of questions in a specific scale should be consistent and internally related to each other (Hair *et al*., 2010:166). The coefficient Cronbach alpha which varies between zero and one was calculated to determine the reliability of the questionnaire's factors. Even though reliability is important it is also of utmost importance to test the validity of the data.

3.7.3 Validity

Validity according to Hair et al. (2013:166) is if an instrument actually measures what it is expected to measure. Validity is all about how accurate the findings of a given study reflect what is truly transpiring in a given situation (Wellman et al., 2005:142). Valid measures are critical for research since it is believed to be error free. In an effort to ensure validity of data in this study, the researcher aligned the questionnaires to TAM and IDT which has been extensively used in previous studies involving digital banking adoption.

3.7.3.1 Content validity

Content validity as well as face validity, is checked to ensure the information or items used in the scales for the different constructs are in fact relevant before it will be distributed to potential respondents (Hair et al., 2013:167). Even though the process is systematic it is subjective because the researcher with the help of others need to determine whether the different items in the measuring tool sufficiently covers all aspects of the construct it intends to measure (Malhotra, 2010:320). The questionnaire used to collect data for this study has been tested and certified by the researcher and the study leader to make sure that the identified constructs of the study were covered adequately and that it was understandable.

3.7.3.2 Construct validity

Construct validity which not only measures theoretical but also empirical work is quite complicated and tough to establish (Malhotra, 2010:321). Construct validity basically measures the empirical interrelatedness between a construct and other measures it is in theory related to (Blanche, Durrheim & Painter, 2006:151). According to Maree (2011:217) construct validity assists with standardisation and measures the alignment between the construct covered and other related items from other diverse groups. Higher correlation is achieved when two measures overlap in measuring the same concept or idea (Wellman et al., 2005:143). Construct validity comprises of convergent validity, discriminant and nomological validity (Malhotra, 2010:321). Discriminant validity according to Blanche, Durrheim and Painter (2006:151) requires lower levels of correlation between measures that shouldn't be related. Convergent validity, on the other hand, reflects the level of correlation between different measures focussing on the same construct. Nomological validity is described by Malhotra (2010:321) as the theoretical correlation levels between the scale and measures of other diverse yet related constructs. The construct validity used in this study was measured regarding discriminant, convergent as well as nomological validity. Clarke and Watson (1995:316) claim that a correlation average between items of 0.15 and 0.50 supports discriminant and convergent validity.

3.7.4 Descriptive statistics

Descriptive statistics is a term used to describe several statistical procedures applied to arrange, condense, interpret and sensibly present data (Churchill & Brown, 2004:545). The different measurement of descriptive statistics used for this study will be discussed briefly in the following sections. The descriptive variable table 3.4 below is a summary of the variables, the number of items as well as the mean and standard deviation of the data gathered for this study.

Table 3.4: Descriptive statistics variables and constructs

		N	Minimum	Maximum	Mean	Std. Deviation
Sec3.1_ABC	Perceived ease of use	430	1.00	5.00	3.9140	1.00971
Sec3.1_DE	Perceived ease of use	398	1.00	5.00	2.9284	1.07374
Sec3.2	Perceived usefulness (Relative advantage)	432	1.00	5.00	4.1640	0.83067
Sec3.3	Compatibility	432	1.00	5.00	4.0685	0.94171
Sec3.4	Perceived cost	418	1.00	5.00	2.8744	1.00543
Sec3.4D	Perceived cost	410	1.00	5.00	3.6780	1.05067
Sec3.5	Perceived risk	425	1.00	5.00	3.0980	0.90568
Sec3.5E	Perceived risk	412	1.00	5.00	3.5073	1.02402
Sec3.6	Subjective norm	417	1.00	5.00	3.8285	0.93102
Sec3.7	Attitude	423	1.00	5.00	4.0918	0.89667
Sec3.8	Awareness	432	1.00	5.00	3.9280	0.88895
Valid N (listwise)		364				

It can be concluded that perceived usefulness, compatibility and attitude had the biggest impact on digital adoption in rural areas while perceived cost and risk have a lower impact on adoption. The last section of the chapter on data analysis and interpretation will cover the above findings in more detail.

3.7.4.1 Measures of central tendency

Measures of central tendency include the mean, mode and median. The mean which is the most frequently applied measurement of central tendency can be calculated by simply dividing the number of scores from a specific test into the total sum of the elements (Neuman, 2014:399). The median is described by Chandra and Sharma (2013:34) as the value in the middle of the data distribution, irrespective of whether the data is presented in descending or ascending order. The mode is simply the value that is reflected in a specific distribution most frequently (Hair et al., 2013:269). For this study, the researcher also used the mean as a measure of central tendency.

3.7.4.2 Measures of variability

Variance and standard deviation, the square root of the variance according to Chandra and Sharma (2013:36), are statistical terms often used to define and measure the levels of variability in specific data sets. The gap between the actual observed value and the

mean is referred to as a deviation from the average value or mean (Malhotra, 2010:487). The author also indicates that variance measure the spread of the different scores in a specific data distribution. The average deviation of scores from the mean is depicted by the standard deviation (Hair et al., 2013:272).

3.7.5 Correlation analysis

Correlation analysis is widely used to measure the association between variables, how changes in variables impact each other (McDaniel & Gates, 2002:560). Spearman's rank order (rho) was used to measure the linear relationship between the variables because it is well suited where variables are measured using ordinal scales (Hair et al., 2013:320; Kumar et al., 2002:411). According to Chandra and Sharma (2013:34), a correlation coefficient value can vary between -1 and +1. A positive correlation or relationship is indicated by a value between 0 and 1 and means if the value of one variable increases or decreases the others increases or decreases in the same direction. On the other hand a value of 0 to -1depicts a negative correlation or relationship where variables will move in opposite directions if one increases the other one will decrease. There is no correlation between variable if r is equal to 0. According to Malhotra and Peterson (2006:497), the correlation coefficient is the predominant and most applied analysis to indicate the relationship between two variables. Correlation analysis was applied in the study to examine the relationships between certain demographic variable, perceived ease of use, perceived usefulness, compatibility, perceived cost, perceived risk, subjective norm, attitude and awareness on digital banking adoption.

3.8 ETHICAL ASPECTS

An ethical clearance certificate from the North-West University was obtained by the researcher even though no sensitive information was required from the respondents. The researcher also included a short paragraph on the first page, at the beginning of the questionnaire, introducing himself and stating the intention of the study.

3.9 ANALYSIS AND INTERPRETATION OF EMPIRICAL FINDINGS

The analysis below is based on the data gathered by the researcher to address the primary and secondary objectives.

3.9.1 Demographics

Table 3.5 is a summary of the demographic composition of this study.

Table 3.5: Sample demographic profile

Demographic variables		Frequency	Valid Percentage
Gender	Male	228	46.9
	Female	258	53.1
Age	16 to 25	76	15.6
	26 to 35	162	33.3
	36 to 45	124	25.5
	46 to 55	82	16.8
	56 and older	43	8.8
Gross monthly income	Less than R2000	73	15.2
	R2001 to R5000	108	22.5
	R5001 to R10000	121	25.2
	R10001 to R20000	123	25.6
	Over R20001	56	11.6
Highest qualification	Post Graduate	46	9.6
	Degree or Diploma	83	17.3
	Other tertiary	78	16.3
	Matric	208	43.3
	Some High School	50	10.4
	Other	15	3.1
Occupation type	Formally employed	336	70.0
	Unemployed	47	9.8
	Pensioner	22	4.6
	Self Employed	45	9.4
	Other	30	6.3
Home language	English	62	13.1
	Afrikaans	156	32.9
	Tswana	161	34.0
	Sotho	77	16.2
	Other	18	3.8

There was a good, fairly equal representation of male and female participants in the study. The majority of the respondents came from the age groups between 26 and 45 years (58.8%) while only a small percentage (8.8%) came from the older than 55 years age group. The study included respondents across all income groups with the lower end and

top end earners being slightly lower than the individuals earning between R2 001 and R20 000. Almost half of the participants in the study only had a matric qualification while less than 10% had a postgraduate qualification. Only 9.8 % of the people that took part in the study were unemployed. As expected the majority of the respondents are Tswana speaking while 32.9% speaks Afrikaans.

3.9.1.1 Gender composition

The gender for this sample, as illustrated in Figure 3.1 comprised of 46.9% male and 53.1% female respondents.

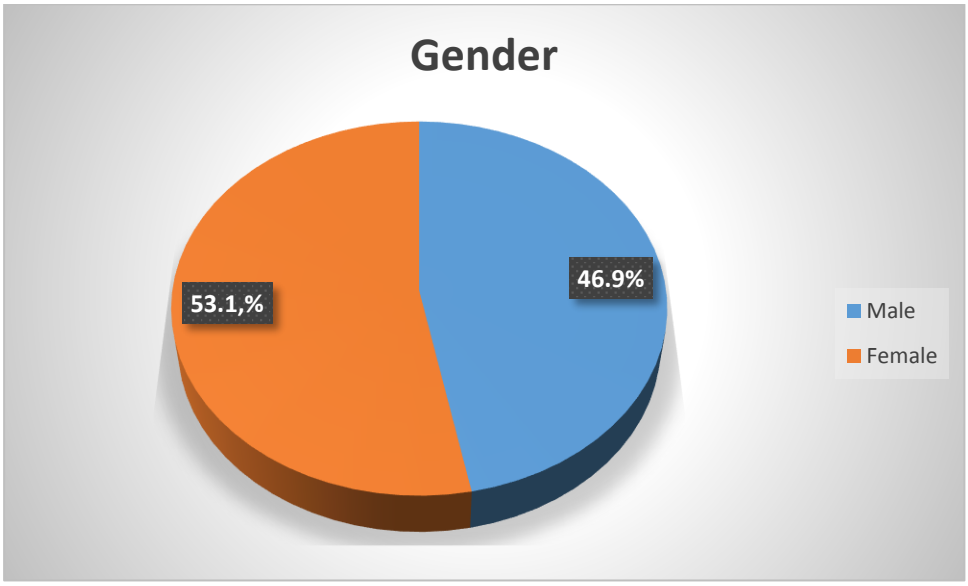

Figure 3.1: Gender composition

These numbers do not necessarily represent the customer profile of the individuals using digital banking since a convenience sample was used for this study. This however is an indication of the composition of customers who visited bank branches during the period of the interviews for the study.

3.9.1.2 Respondent's age

As illustrated in Figure 3.2 the majority of the respondents were between the ages of 26 and 35 while the age group 36 and 45 contributed the second highest number of respondents.

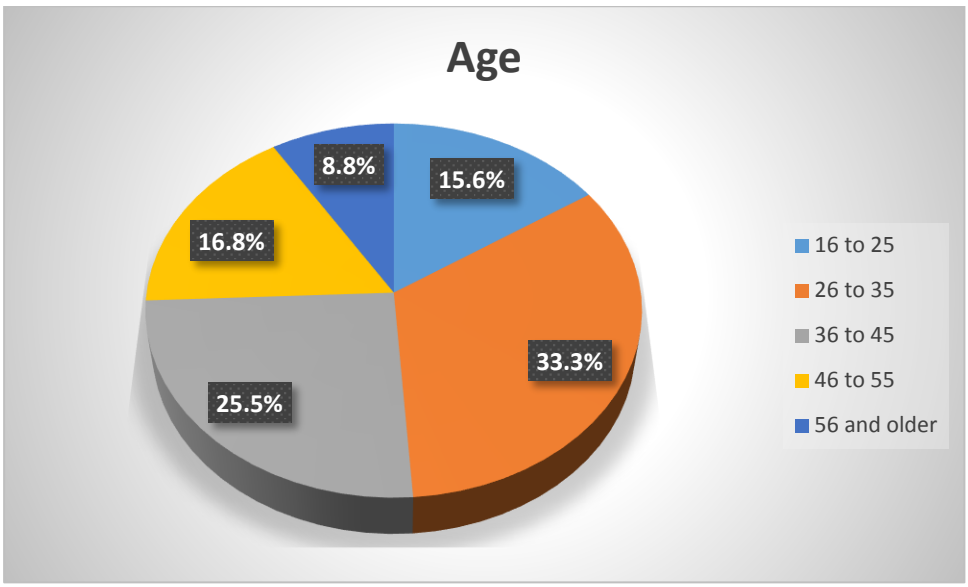

Figure 3.2: Age composition

It is interesting to note that the youngest cohort and the group of respondents between 46 and 45 contributed almost the same number of respondents, 15.6% and 16.8% respectively. The researcher is comfortable that the study is representative of individuals across all age groups which will assist in explaining the possible impact of age on digital adoption.

3.9.1.3 Gross monthly income

As indicated in Figure 3.3 the majority of people (25.6%) are earning between R10 001 and R20 000 closely followed by respondents earning between R5001 and R10 000.

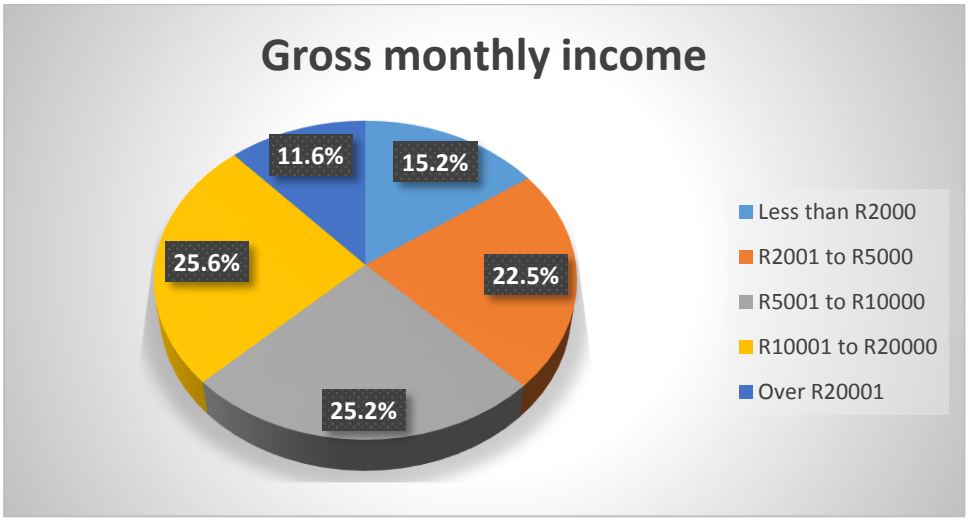

Figure 3.3: Gross monthly income composition

A fairly big percentage (15.2%) of the respondents earn less than R2000 while only 11.6% earn a monthly salary more than R20 001. These numbers are not surprising since salaries in the rural areas are generally lower than in metropolitan areas. The vast majority (88.9%) of the individuals interviewed earn salaries of R20 000 or less. The findings indicate that low-income earners are less likely to use digital banking.

3.9.1.4 Highest qualification

As presented in figure 3.4 and in line with expectations the majority of respondents in the rural areas only have a matric or less. The minority of respondents indicated that they hold some tertiary qualification. Only 17.3% of individuals who completed the questionnaires indicated that they have a degree or diploma while 16.3 indicated some tertiary qualification. Only 9.6% of the respondents had a postgraduate qualification which is according to previous studies concluded substantially lower than in metropolitan areas.

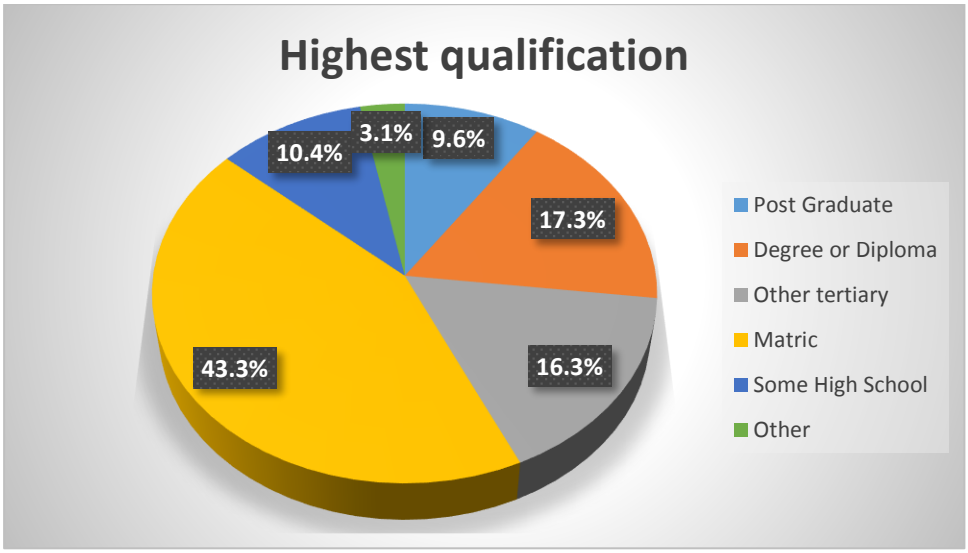

Figure 3.4: Qualification composition

This information suggests that people with higher qualifications are more likely to make use of digital banking services.

3.9.1.5 Occupational type

The high employment rate of 70%, as illustrated in figure 3.5 below, is expected since the study focused on people with bank accounts.

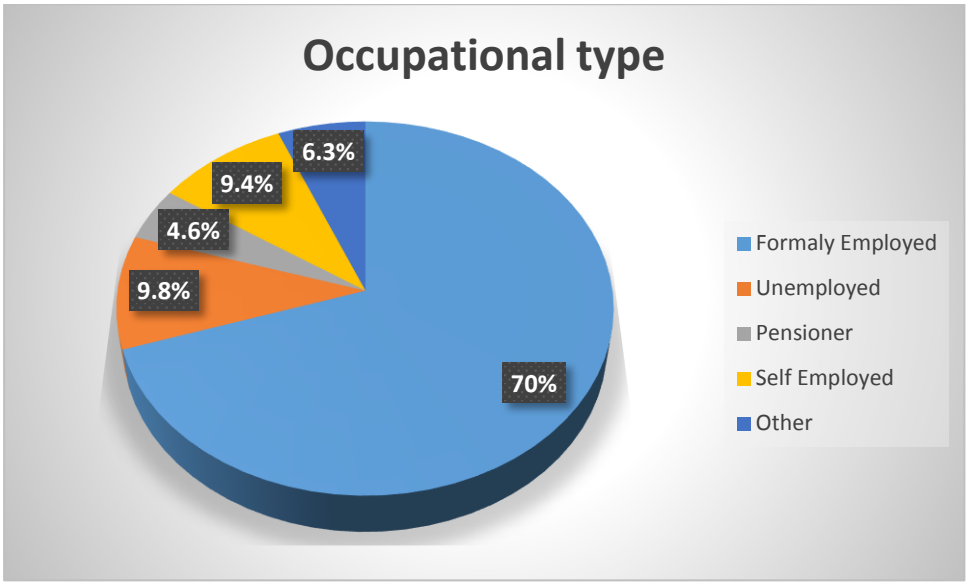

Figure 3.5: Occupational type composition

The number of self-employed (9.4%) and formally employed people (70%) make up the vast majority of the sample in line with expectations. The information gathered on the occupational type indicate, in line with expectations, that people are more likely to use digital banking if they are employed or self-employed.

3.9.1.6 Home language

As indicated in Figure 3.6, the highest percentage of respondents (34%) were Tswana speaking individuals.

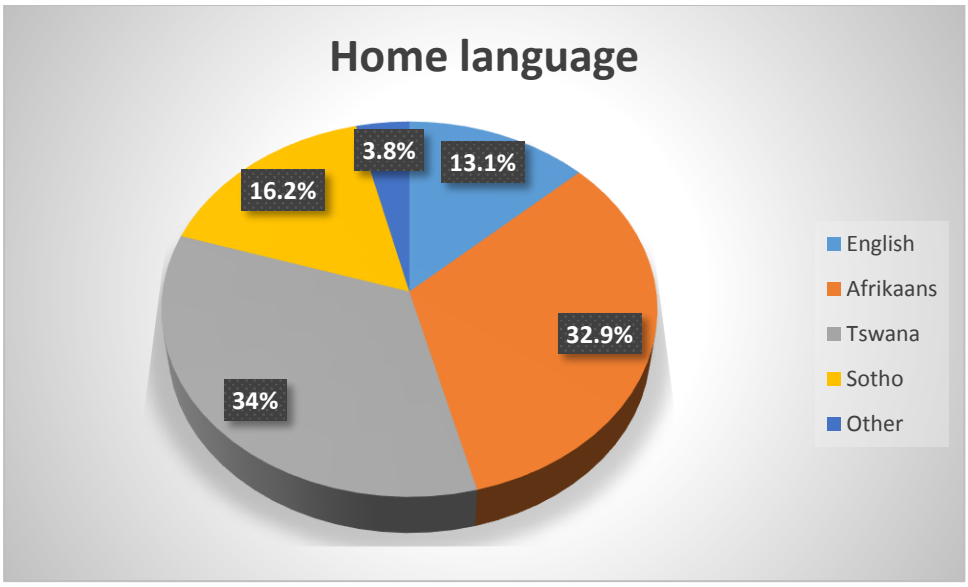

Figure 3.6: Home language composition

This is not surprising since the majority of the sample came from the North West province where the Tswana speaking people resides. It was interesting that a very high number of the respondents were Afrikaans speaking (32.9%) while only 13.1% of the people interviewed indicated that their home language was English. Figure 3.6 further reflected that the Sotho speaking people, mostly from the Free State, contributed 16.2% while a mere 3.8 % of respondents speak another language not mentioned.

3.9.2 Digital banking usage

3.9.2.1 Frequency of digital banking usage

In line with expectations as illustrated in Figure 3.7, a larger percentage of respondents (34.5%) in rural areas have never used digital banking. The most prominent reasons given by respondents for not using digital banking is the inability to access the internet (62.9%), No internet access at the respondents' place of residence (62.6%), fear to use digital banking (58.3%), no device to connect to the internet (57.5%), risk involved (56.1%) and high cost of internet access (54.1%). The fact that risk involved is not as prominent as in previous studies conducted elsewhere could be as a result of limited opportunity to access the internet as well as low education and awareness levels. The study indicated that just more than one third (34.3%) use digital banking more regularly, more than once a week and daily.

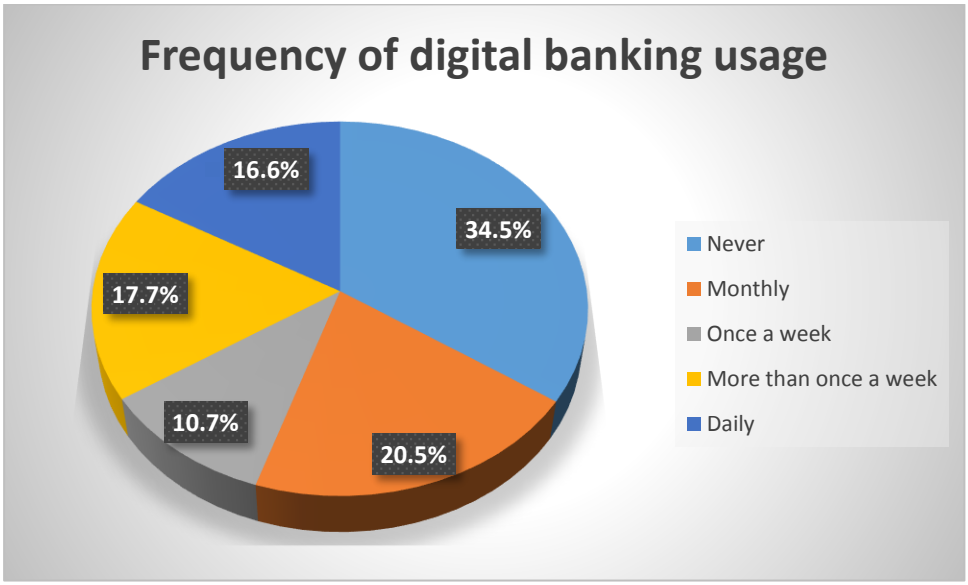

Figure 3.7: Digital banking usage

The results discussed above is indicative of the lack of infrastructure, poverty and low levels of education in rural areas.

3.9.2.2 Triability

A large majority of respondents (72.9%) however indicated, in line with the findings on fear of digital banking, that they will be willing to adopt it if they can test it first (70.4%) or see a demo first (68.3%) as shown in Table 3.6 below.

Table 3.6: Triability

	Valid percentage	
	Yes	No
If possible, I will adopt digital banking as soon as possible	**72.9%**	27.1%
I will use digital banking if I can see a demo first	**68.3%**	31.7%
I will use digital banking if I can test it first	**70.4%**	29.6%

This is positive news for banks who need to understand what is preventing digital adoption in the rural areas.

3.9.2.3 Access locations

As presented in Figure 3.8, 49.4% of the respondents who actually uses digital banking do so from home while another 23.2% use the facilities at work to do their digital banking at work.

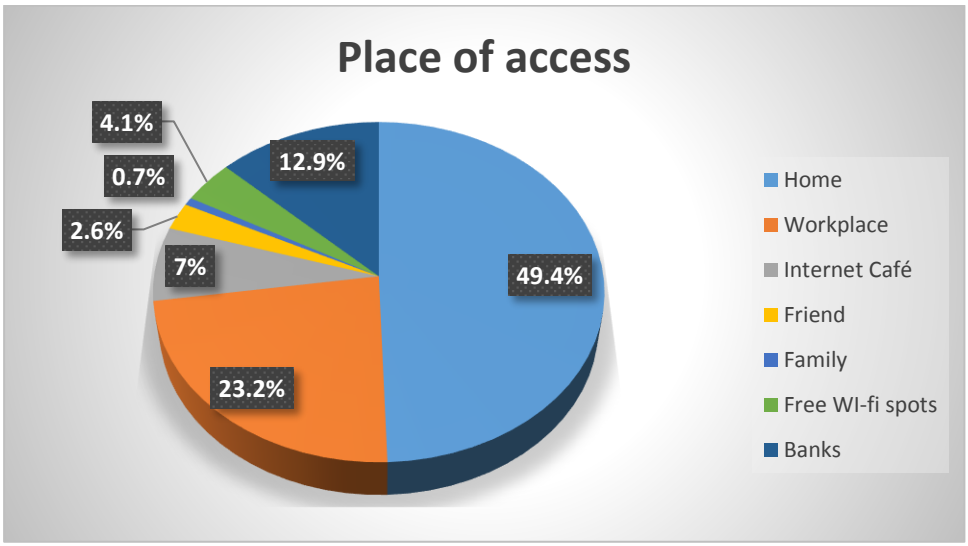

Figure 3.8: Access locations

The low levels of usage in other places might be an indication of risk awareness and the lack of privacy. The low uptake of banking facilities might offer opportunities for banks to create awareness and increase usage by assisting individuals in a secure environment.

3.9.2.4 Digital banking usage

As seen in Figure 3.9, a substantial number (45.5%) of the respondent who accesses digital banking is using it to make payments. Individuals also use digital banking to view account statements (19.7%), transfer funds from one account to another (16.9%), view account balances (10.7%) and getting information on bank products and services (7.3%).

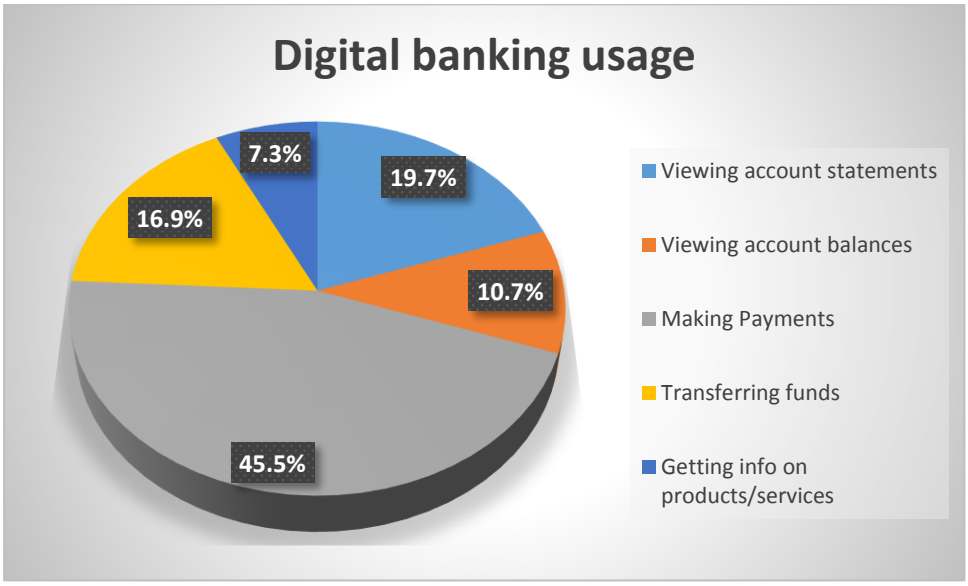

Figure 3.9: Digital banking services

The low percentage of people using digital banking for information on products and services might indicate a missed opportunities for banks to use this platform more effectively for marketing.

3.9.2.5 Suggestions for improvement

Respondents (93.4%) indicated that if banks want to improve digital banking services to their clients, they need to create awareness of the products and services offered via this platform as illustrated in Table 3.7 below.

Table 3.7: Suggestions for improvement

	Valid percentage	
	Yes	No
Create awareness of products and services	93.4%	6.6%
Provide training	81.9%	18.1%
Create an easy to understand website	86.5%	13.5%
Provide Internet facilities and free Wi-Fi	90.8%	9.2%
Improve security	91.5%	8.5%

This finding is in line with earlier findings where respondents indicate the low usage of digital banking for information on new products and services. Improved security (91.5%) is also an aspect the respondents felt the banks need to improve. This is in line with several other studies conducted previously and is not only applicable to rural areas. The high number of people highlighting training is an indication of people's willingness to adopt but also their fear of digital banking. A large portion of respondents (86.5%) also suggested that the banks simplify the digital banking process by creating an easy to navigate website. Finally, the individuals who took part in the research believes that banks should provide Internet and free Wi-Fi facilities for customers. This is in contradiction to early findings on the low uptake of these facilities where available. There is possibly an opportunity for banks to create awareness around these facilities and drive usage amongst customers which do not have secure facilities to access digital banking.

3.9.2.6 Initial awareness creation

A vast majority of respondents (92.6%) indicated that they learnt about digital banking from bank leaflets that were given to them while 85.3% heard about it from someone else as indicated in Table 3.8.

Table 3.8: Awareness creation

	Valid percentage	
	Yes	No
Bank leaflets/advertisements	**92.6%**	7.4%
Television/radio	**72.6%**	27.4%
Newspaper/magazines	**56.5%**	43.5%
Social media	**67.8%**	32.2%
Word-of-mouth	**85.3%**	14.7%
I don't know anything about digital banking	**35.2%**	64.8%

More respondents learnt about digital banking from television, radio and social media than from newspapers and magazines which might also indicate the preferred advertising mediums of people in rural areas. A substantial number of people (35.2%) admitted that they don't know anything about digital banking which offers a huge opportunity for banks to drive uptake through awareness and education.

3.9.3 Validity of this study

Validity according to Malhotra (2010:285) is how accurate the deviations in the scale scores reflect the actual measured differences between the features in the absence of random or systematic errors. Table 3.9 is a summary of the validity scores for this study.

Table 3.9: Validity of the constructs

Factor	KMO	Bartlett's test (p-value)	Determinant	Communality variance range	% Variance explained
Perceived ease of use	0.71	0.0001	0.32	0.591 - 0.913	86.38
Perceived usefulness	0.872	0.0001	0.004	0.592 - 0.913	82.415
Compatibility	0.858	0.0001	0.007	0.841 - 0.892	90.252
Perceived cost	0.723	0.0001	0.204	0.130 - 0.755	85.277
Perceived risk	0.77	0.0001	0.254	0.212 - 0.653	71.841
Subjective norm	0.794	0.0001	0.054	0.663 - 0.866	78.955
Attitude	0.843	0.0001	0.008	0.740 - 0.924	88.776
Awareness	0.834	0.0001	0.035	0.593 - 0.902	81.817

The results of the Kaiser-Meier-Olkin (KMO) measure of sampling adequacy used in table 3.5 can be interpreted as follows:

- < 0.5: not acceptable
- 0.5 – 0.7: medium
- 0.7 – 0.8: good amount of data
- 0.8 – 0.9: very good
- > 0.9: superb

The KMO measure for this study ranges from good to very good as reflected in table 3.5. This means that sufficient data was collected for the study. Secondly, the determinant scores for this study as reflected in table 3.5 ranges between 0.004 and 0.32 which indicates that the correlations are not too high. If the determinant is larger than 0.00001, there is no evidence of severe multicollinearity. Thirdly, for the correlation to be sufficient according to Bartlett's test, the p-value needs to be < 0.05. The p-values for all the constructs tested in this study as reflected in table 3.5 are below 0.05 which indicates sufficient correlation. Fourthly, the communalities reflected in table 3.5 indicates acceptable variance levels of the questions explained by the extracted factors, enough of the original information stay relevant. The communalities should be > 0.3 to be sufficient. The last measurement reflected in table 3.5 is the total variance. At least 50% of the total variance should be explained by the extracted factors. For this study, the lowest variance of 71.841% was substantially above the required rate of 50% which means that the variances are adequately explained by the extracted factors. A pattern matrix test is done to ensure that the item groupings make sense also yielded satisfactory reliability results. Except perceived ease of use, perceived cost and perceived risk where the respondents viewed isolated items as not being the same as other items in the respective construct, the rest were aligned.

3.9.4 Reliability

Reliability is the degree to which a scale give consistent results repeatedly under similar circumstances (Malhotra, 2010:281). Cronbach's alpha is used to test for reliability. Table 3.10 gives an overview of the reliability scores for this study.

Table 3.10: Cronbach's alpha values for selected constructs

Factor	Cronbach's alpha	Mean	Standard deviation
Perceived ease of use			
Component 1: Positive statements	0.948	3.914	1.00971
Component 2: Negative statements	0.745	2.9284	1.07374
Perceived usefulness	0.945	4.164	0.83067
Compatibility	0.964	4.0685	0.94171
Perceived cost	0.876		
Component 1: Negative statements		2.8744	1.00543
Component 2: Positive statement		3.678	1.05067
Perceived risk	0.804		
Component 1: Negative statements		3.098	0.90568
Component 2: Positive statement		3.5073	1.02402
Subjective norm	0.911	3.8285	0.93102
Attitude	0.958	4.0918	0.89667
Awareness	0.925	3.928	0.88895

The Cronbach Alpha values for this study, as depicted in table 3.10 varies between 0.745 and 0.964 which is substantially better than the acceptable value of 0.7. These numbers is a clear indication that reliability or internal consistency for this study is sufficient. As seen in Table 3.8, the majority of the scores are on the positive side of the 5-point Likert scale range which is the reason for the means being slightly higher than the median of 2.5. The highest mean recorded is for perceived usefulness while the lowest mean recorded is for the perceived cost items posted negatively. According to Hair et al. (2013:272), the standard deviation is the average deviation from the mean. The higher the standard deviation, the lower the agreement amongst respondents and the lower the standard deviation, the higher the agreement amongst respondents. The lower standard deviations as reflected in Table 3.8 suggests a greater level of agreement between respondents with regards to perceived usefulness, attitude, awareness, compatibility and subjective norm.

3.9.5 Construct frequency analysis

3.9.5.1 Perceived ease of use

The study, as indicated in Table 3.11, found that most respondents do not believe digital banking requires a lot of skills and will be easy to learn.

Table 3.11: Perceived ease of use

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Learning to use digital banking is easy	4.2%	7.8%	15.2%	39.4%	33.5%
Digital banking is user friendly	3.5%	7.7%	18.5%	37.4%	32.9%
Digital banking is easy	3.0%	7.0%	19.8%	35.4%	34.7%
Digital banking requires a lot of skills	10.7%	31.4%	25.5%	21.7%	10.7%
Digital banking can be frustrating	14.6%	23.0%	28.1%	23.3%	11.0%

The vast majority of the respondents also agree or strongly agree that digital banking is user-friendly and easy to use as indicated by the results shown in Table 3.9.

3.9.5.2 Perceived usefulness

The vast majority of the respondent in the study is of the opinion that digital banking is useful as shown in Table 3.12. They indicated that digital banking makes their lives easier, is convenient, saves time and money as well as give them more control over their finances.

Table 3.12: Perceived usefulness

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Digital banking makes it easier to do banking activities	1.4%	4.6%	11.8%	38.2%	44.0%
Digital banking saves me time	1.5%	3.4%	11.8%	36.2%	47.0%
Digital banking is a convenient way to do banking transactions	1.2%	3.2%	14.5%	36.2%	44.9%
Digital banking is cost effective	1.3%	6.0%	17.6%	37.9%	37.2%
Digital banking gives me greater control over my finances	2.0%	2.0%	19.0%	35.8%	41.3%

The results in table 3.10 also indicate that more than 75% of the respondents believe digital banking is cost effective and give them better control over their finances.

3.9.5.3 Compatibility

From the frequency Table 3.13, it is evident that the respondents find digital banking extremely useful and it has a positive effect on their productivity, lifestyle as well as a good fit with their style of work.

Table 3.13: Compatibility

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Digital banking suits my lifestyle	2.9%	6.8%	11.4%	38.0%	40.9%
I find digital banking useful in doing my banking	2.2%	5.2%	13.6%	36.8%	42.2%
Using digital banking increase my productivity	1.8%	4.0%	15.8%	39.7%	38.7%
Using digital banking to do my banking fits into my work style	1.7%	5.2%	16.1%	40.0%	37.0%

A large number of respondents (42.2%) strongly agreed that digital banking is a useful way of doing banking.

3.9.5.4 Perceived cost

Despite a neutral approach towards cost involved in digital banking the majority of respondents still believe it is a cost-effective way of doing banking. Just under a third of the respondents (32.9%) believe that telecommunication cost are expensive while 32.6% has raised the concern that hardware is expensive.

Table 3.14: Perceived cost

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Telecommunication cost to use digital banking is expensive	12.4%	26.0%	28.7%	25.2%	7.7%
Digital banking service fees are expensive	12.0%	32.3%	31.6%	18.8%	5.3%
Hardware necessary to do digital banking is expensive	9.0%	26.9%	31.6%	24.4%	8.2%
Digital banking is cost effective	4.1%	8.5%	25.9%	38.3%	23.2%

Quite interestingly, according to the numbers in table 3.14, the digital banking service fees did not seem to be such a big concern to the respondents. More than 61% of the respondents also believe that digital banking is a cost-effective way to conduct banking matters.

3.9.5.5 Perceived risk

In line with expectations, almost half of the respondents (48.2%) still believe it is safer to visit a physical branch to conduct their financial transactions as illustrated in table 3.15 below.

Table 3.15: Perceived risk

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
It is safer to go to the bank to do my banking business	6.5%	19.9%	25.4%	30.9%	17.3%
Digital banking is a risky way of doing banking	11.1%	33.2%	24.9%	23.9%	6.8%
Information about transactions on digital banking can be tampered with	5.0%	22.1%	37.8%	28.1%	7.0%
Information about digital banking transactions may be known to others	7.8%	24.7%	29.3%	29.5%	8.6%
Digital banking has enough safeguards	3.6%	11.7%	32.3%	35.2%	17.2%

This finding is in line with the earlier reasons given for not using digital banking. The uncertainty expressed on most items is a clear indication that the respondents do not feel comfortable to use online banking. The indications are that they believe the information is not confidential and it can be tampered with. Although a large percentage of respondents don't see digital banking as being a risky way of doing banking and believe there are enough safeguards in place, information security remains a big concern.

3.9.5.6 Subjective norm

The study confirmed that subjective norm plays a pivotal role in the respondents' opinions about digital adoption as shown in Table 3.16.

Table 3.16: Subjective norm

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
My family think I can use digital banking	2.3%	8.1%	15.6%	42.1%	32.0%
My family think I should use digital banking	3.4%	10.2%	19.1%	39.2%	28.2%
People whose opinions I value think I should use digital banking	2.9%	8.8%	18.2%	43.4%	26.8%
People who influence my decisions think I should use digital banking	4.4%	12.2%	18.5%	38.3%	26.6%

More than two-thirds of the respondents in the study indicated that opinion leaders, family as well as people who influence their lives believe they should, and can use digital banking.

3.9.5.7 Attitude

According to Table 3.17 it is evident that a large majority of the respondent have a positive attitude towards digital banking.

Table 3.17: Attitude

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Using digital banking is a good idea	2.2%	5.4%	11.3%	43.0%	38.1%
Using digital banking will be good for me	2.1%	5.9%	12.4%	42.8%	36.9%
Digital banking makes it easier to do my banking	1.3%	6.0%	12.3%	40.4%	40.1%
Digital banking is a convenient way to manage my finances	2.6%	5.4%	14.1%	38.6%	39.4%

The majority of respondents believe digital banking is good and will make their lives easier and add convenience in managing their finances.

3.9.5.8 Awareness of digital banking

It is a bit surprising to note that most respondents believe they receive sufficient information regarding digital banking from their bank as indicated in Table 3.18 below.

Table 3.18: Awareness

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I receive enough information from my bank about the benefits of digital banking	3.1%	8.8%	14.6%	44.9%	28.6%
I receive enough information from my bank on using digital banking services	2.0%	9.1%	17.0%	44.8%	27.1%
I receive information regarding digital banking services from my bank	2.3%	8.5%	16.3%	45.2%	27.6%
I am aware of digital banking and what it can do for me	2.5%	4.9%	12.5%	46.6%	33.6%

This is however in line with earlier findings of this study where the majority of respondents indicated that they learned about digital banking through bank leaflets and advertising material. The challenge for the banks as indicated in previous answers seem to be digital banking training and availing sufficient facilities to customers.

3.9.6 Correlations

3.9.6.1 Nonparametric correlations between constructs

Spearman's rho was used in this study to determine the practical and/or statistical significant relationships between the respective constructs as illustrated in Table 3.19. The correlation coefficients below were used to classify practical relationships between constructs:

- ~ 0.1 – small, no practical significant relationship
- ~ 0.3 – medium, practical visible relationship
- ~ 0.5 – large, practical significant relationship

A guideline value of $p < 0.05$ were used to identify statistically significant relationships.

Table 3.19: Nonparametric correlations

Spearman's rho	Sec3.1_ABC (PEU)	Correlation Coefficient	1.000	-.125*	.754**	.730**	-.184**	.367**	-.209**	.390**	.585**	.692**	.547**
		Sig. (2-tailed)		0.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
		N	430	394	427	427	411	408	415	406	406	412	421
	Sec3.1_DE (PEU)	Correlation Coefficient	-.125*	1.000	-.144**	-.140**	.245**	-.127*	.328**	-.112*	-0.084	-.115*	-0.078
		Sig. (2-tailed)	0.013		0.004	0.005	0.000	0.012	0.000	0.027	0.106	0.025	0.126
		N	394	398	396	395	393	390	394	387	376	379	389
	Sec3.2 (PU)	Correlation Coefficient	.754**	-.144**	1.000	.835**	-.220**	.462**	-.240**	.349**	.617**	.749**	.528**
		Sig. (2-tailed)	0.000	0.004		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
		N	427	396	432	430	415	409	418	407	410	415	423
	Sec3.3 (Compatibility)	Correlation Coefficient	.730**	-.140**	.835**	1.000	-.172**	.429**	-.199**	.384**	.659**	.768**	.542**
		Sig. (2-tailed)	0.000	0.005	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000
		N	427	395	430	432	416	410	417	406	408	416	425
	Sec3.4 (Perceived cost)	Correlation Coefficient	-.184**	.245**	-.220**	-.172**	1.000	0.014	.301**	-.104*	-.166**	-.215**	-.128**
		Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.776	0.000	0.039	0.001	0.000	0.009
		N	411	393	415	416	418	398	411	396	396	402	411
	Sec3.4D (Perceived cost)	Correlation Coefficient	.367**	-.127*	.462**	.429**	0.014	1.000	-.147**	.297**	.372**	.443**	.312**
		Sig. (2-tailed)	0.000	0.012	0.000	0.000	0.776		0.003	0.000	0.000	0.000	0.000
		N	408	390	409	410	398	410	401	398	388	395	404
	Sec3.5 (Perceived risk)	Correlation Coefficient	-.209**	.328**	-.240**	-.199**	.301**	-.147**	1.000	-0.059	-.109*	-.195**	-.147**
		Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.003		0.237	0.028	0.000	0.003
		N	415	394	418	417	411	401	425	399	404	410	417
	Sec3.5E (perceived risk)	Correlation Coefficient	.390**	-.112*	.349**	.384**	-.104*	.297**	-0.059	1.000	.408**	.428**	.358**
		Sig. (2-tailed)	0.000	0.027	0.000	0.000	0.039	0.000	0.237		0.000	0.000	0.000
		N	406	387	407	406	396	398	399	412	392	398	405
	Sec3.6 (Subjective norm)	Correlation Coefficient	.585**	-0.084	.617**	.659**	-.166**	.372**	-.109*	.408**	1.000	.698**	.529**
		Sig. (2-tailed)	0.000	0.106	0.000	0.000	0.001	0.000	0.028	0.000		0.000	0.000
		N	406	376	410	408	396	388	404	392	417	415	413
	Sec3.7 (Attitude)	Correlation Coefficient	.692**	-.115*	.749**	.768**	-.215**	.443**	-.195**	.428**	.698**	1.000	.638**
		Sig. (2-tailed)	0.000	0.025	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
		N	412	379	415	416	402	395	410	398	415	423	420
	Sec3.8 (Awareness)	Correlation Coefficient	.547**	-0.078	.528**	.542**	-.128**	.312**	-.147**	.358**	.529**	.638**	1.000
		Sig. (2-tailed)	0.000	0.126	0.000	0.000	0.009	0.000	0.003	0.000	0.000	0.000	
		N	421	389	423	425	411	404	417	405	413	420	432

The research indicates strong positive relationships between perceived ease of use perceived usefulness (0.754) and compatibility (0.730). There is also substantial positive correlations between perceived ease of use, subjective norm (0.585), attitude (0.692) and awareness (0.547). There is strong evidence of significant statistical relationships between PEU and all the other constructs in the study. The study also found significant practical correlations between perceived usefulness, compatibility (0.835), perceived cost (0.462), subjective norm (0.617), attitude to use digital banking (0.749) and awareness (0.528). The study also found strong evidence of a significant statistical relationship between PU and all the other constructs measured. Compatibility shows additional positive, practical significant relationships with perceived cost, subjective norm attitude and awareness. The strongest correlation, however, is with perceived usefulness (0.835) as mentioned earlier. The study also indicates significant statistical relationships with all other constructs. The study indicates that perceived cost and perceived risk has the least number of practical significant relationships with the other constructs. The correlation coefficient values for these two constructs are also slightly lower in general as seen in Table 3.8. Perceived cost never the less do show a significant positive correlation with perceived usefulness (0.462), compatibility (0.429) and attitude (0.443). The study found a significant statistical relationship between perceived cost and the other constructs.

Perceived risk only have significant practical relationships with subjective norm (0.408) and attitude (0.428). As per previous constructs a significant statistical relationship exists between perceived risk and the rest of the constructs. Subjective norm according to this study also has strong positive practical relationships with attitude (0.698) and awareness (0.529). The study indicated a significant statistical relationship between subjective norm and all the other constructs. The last significant positive correlation not mentioned yet is between attitude and awareness (0.638). It is also important to note that a significant statistical relationship also exists between attitude and awareness and the other constructs tested in this study. All the significant correlations extracted from the data were positive where constructs move in the same direction if one increases the other one also increases. The correlation coefficient for the few negative relationships, where constructs move in opposite directions (if one increases the other one decreases and vice versa) were not practically significant.

3.9.6.2 Cross-tabulation

The following Phi values and Pearson's Chi-Square were used to indicate the effect of specific demographics on digital banking usage:

- 0.1 – practical non-significant association or small effect
- 0.3 – practical visible significant association or medium effect
- 0.5 – practical significant association or large effect

$p < 0.05$ – statistical significant association

Tables are only shown for cross-tabulations with practical visible and practical significant effect sizes – see Tables 3.20 to 3.25. More in-depth analysis were also restricted to effect sizes in the medium and large categories. The effect of age, income and qualifications were analysed.

3.9.6.2.1 Age

According to this study age has a small to medium effect (0.223) on the respondent's digital banking usage. The largest number of respondents who have never used digital banking comes, as can be expected, from the 16 to 25-year-old age group (45.7%) and the older than 56 year age group (53.7%). The highest number of regular users (more than once a week and daily) of digital banking comes from the 26 to 35-year-old age group. The p-value indicated that there is not a statistically significant association between age and digital banking usage.

Age, according to this study has a practical non-significant association with triability. Respondents in the age groups 26 to 35 and 36 to 45 are surprisingly more willing to adopt online banking as soon as possible than the younger and older age groups. The largest percentage of respondents wanting to see a demo first and/or test digital banking before adopting also came from these age groups. The study also found that there is no statistically significant association between age and any of the items tested under triability. The study found a practical non-significant association between the age of respondents and the reasons for not using digital banking. What did come out during the study is that the 56+ age group has by far the highest inability to use the Internet and is also afraid to use digital banking. Age had a small to medium effect on how banks can improve digital banking services to customers. The effect of age on creating awareness around products and services, providing training, create an easy to understand website and improve security were all low while It had a medium effect on the provision of Internet facilities and free Wi-Fi. The largest percentages of respondents who believed the bank should supply Internet facilities and free Wi-Fi came from the age group 26 to 55.

3.9.6.2.2 Income

The results of the study indicate that income has a practical significant association or large effect (0.487) on digital banking usage. Higher income groups as illustrated in table 3.20, not only use digital banking but also use it more frequently than lower income earners. The study also indicates the existence of a statistically significant association.

Table 3.20: Cross tabulation of income and digital banking usage

		Never	Mostly	Once a week	More than once a week	Daily	Total
Less than R2000	Count	48	9	3	4	3	67
	% within Q1N3	71.6%	13.4%	4.5%	6.0%	4.5%	100.0%
R2001-R5000	Count	49	21	9	7	11	97
	% within Q1N3	50.5%	21.6%	9.3%	7.2%	11.3%	100.0%
R5001 - R10 000	Count	24	35	13	19	25	116
	% within Q1N3	20.7%	30.2%	11.2%	16.4%	21.6%	100.0%
R10 001 - R20 000	Count	25	23	17	31	24	120
	% within Q1N3	20.8%	19.2%	14.2%	25.8%	20.0%	100.0%
R20 001+	Count	8	5	7	20	13	53
	% within Q1N3	15.1%	9.4%	13.2%	37.7%	24.5%	100.0%
	Count	154	93	49	81	76	453
	% within Q1N3	34.0%	20.5%	10.8%	17.9%	16.8%	100.0%

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	0.487	0.000
	Cramer's V	0.244	0.000
N of Valid Cases		453	

As expected, income had a medium to large effect on respondents not using digital banking as a result of the cost involved and affordability. The number of high-income earners which has never used digital banking is insignificant to the low-income earners. High-income earners did not have a problem with costs relating to Internet access and devices. The study also found that income has a medium effect on confidence to use digital banking. Individuals earning salaries below R5000 do not use Internet banking because they are afraid of it. Gross monthly income, as expected, had a practical visible significant association (0.309) with the willingness to adopt digital banking as soon as possible – see Table 3.21.

Table 3.21: Cross tabulation of income and willingness to adopt digital banking

		Adopt online banking a.s.a.p.		
		Yes	No	Total
Less than R2 000	Count	22	22	44
	% within Q1N3	50.0%	50.0%	100.0%
R2 001 - R5 000	Count	40	19	59
	% within Q1N3	67.8%	32.2%	100.0%
R5001 - R10 000	Count	51	10	61
	% within Q1N3	83.6%	16.4%	100.0%
R10 001 - R20 000	Count	37	6	43
	% within Q1N3	86.0%	14.0%	100.0%
Over R20 001	Count	12	2	14
	% within Q1N3	85.7%	14.3%	100.0%
	Count	162	59	221
	% within Q1N3	73.3%	26.7%	100.0%

Symmetric Measure			
		Value	Approximate Significance
Nominal by Nominal	Phi	**0.309**	0.000
	Cramer's V	0.309	0.000
N of Valid Cases		221	

The higher the gross monthly income, the higher the intention to adopt digital banking. Income also had a medium effect (0.332) on the respondents' preferences to test digital banking before adopting it – see table 3.22. The study also found that there is a statistical significant association between gross monthly income and the opportunity to test it before adoption (triability).

Table 3.22: Cross tabulation of income and opportunity to test it before adoption

		Opportunity to test digital banking first		
		Yes	No	Total
Less than R2 000	Count	22	25	47
	% within Q1N3	46.8%	53.2%	100.0%
R2 001 - R5 000	Count	45	15	60
	% within Q1N3	75.0%	25.0%	100.0%
R5001 - R10 000	Count	25	10	35
	% within Q1N3	71.4%	28.6%	100.0%
R10 001 - R20 000	Count	31	3	34
	% within Q1N3	91.2%	8.8%	100.0%
Over R20 001	Count	7	2	9
	% within Q1N3	77.8%	22.2%	100.0%
	Count	130	55	185
	% within Q1N3	70.3%	29.7%	100.0%

Symmetric Measures			
		Value	Approximate Significance
Nominal by Nominal	Phi	0.332	0.000
	Cramer's V	0.332	0.000
N of Valid Cases.		185	

Gross monthly income had a medium to low effect on the ways banks can improve digital banking service delivery.

Table 3.23: Cross tabulation of income and the necessity of an easy to navigate website

		Create an easy to navigate website		
		Yes	No	Total
Less than R2 000	Count	14	8	22
	% within Q1N3	63.6%	36.4%	100.0%
R2 001 - R5 000	Count	47	5	52
	% within Q1N3	90.4%	9.6%	100.0%
R5001 - R10 000	Count	61	1	62
	% within Q1N3	98.4%	1.6%	100.0%
R10 001 - R20 000	Count	57	12	69
	% within Q1N3	82.6%	17.4%	100.0%
Over R20 001	Count	31	5	36
	% within Q1N3	86.1%	13.9%	100.0%
	Count	210	31	241
	% within Q1N3	87.1%	12.9%	100.0%

Symmetric Measures			
		Value	Approximate Significance
Nominal by Nominal	Phi	0.285	0.001
	Cramer's V	0.285	0.001
N of Valid Cases		241	

Income had the biggest effect (0.285) on the creation of an easy to understand and navigate website – see table 2.23 above. A staggering 98% of respondents earning between R5001 and R10 000 though that this was a good idea. 86.1% of the top income earners also believe that this was a necessity to improve digital adoption. A statistical significant associations also existed in this case.

3.9.6.2.3 Qualifications

This study also indicated that qualification type has a large effect on why respondents never used digital banking before. The number of well-educated people who have never used digital banking is substantially lower than the respondents with lower qualifications – see Table 3.24.

Table 3.24: Cross tabulation of qualifications and digital banking usage

		Never	Mostly	Once a week	More than once a week	Daily	Total
Post graduate	Count	9	11	2	7	10	39
	% within Q1N4_reocode	23.1%	28.2%	5.1%	17.9%	25.6%	100.0%
University/Technicon degree/diploma	Count	15	11	14	20	23	83
	% within Q1N4_reocode	18.1%	13.3%	16.9%	24.1%	27.7%	100.0%
Other tertiary qualification	Count	14	14	9	26	12	75
	% within Q1N4_reocode	18.7%	18.7%	12.0%	34.7%	16.0%	100.0%
Matric	Count	75	51	20	25	25	196
	% within Q1N4_reocode	38.3%	26.0%	10.2%	12.8%	12.8%	100.0%
Some high school	Count	33	4	3	2	3	45
	% within Q1N4_reocode	73.3%	8.9%	6.7%	4.4%	6.7%	100.0%
	Count	146	91	48	80	73	438
	% within Q1N4_reocode	33.3%	20.8%	11.0%	18.3%	16.7%	100.0%

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	0.432	0.000
	Cramer's V	0.216	0.000
N of Valid Cases		438	

People with a limited high school qualification reflected the highest non-user percentage. The study also found, as expected, that qualification has a large effect on the respondents' ability to access digital banking. A much higher percentage of lower qualified individuals indicate that they are struggling with accessing digital banking than people with higher qualifications. There is also a visible similarity between the effects of income and qualification on digital banking usage. Qualifications have a practical visible significant association (0.386) with liability and the willingness to adopt digital banking as soon as possible – see Table 3.25.

Table 3.25: Cross tabulation of qualification and willingness to adopt digital banking

		Willingness to adopt digital banking a.s.a.p.		
		Yes	No	Total
Post graduate qualification	Count	19	2	21
	% within Q1N4_reocode	90.5%	9.5%	100.0%
University/Technicon degree/diploma	Count	29	7	36
	% within Q1N4_reocode	80.6%	19.4%	100.0%
Other tertiary qualification	Count	36	2	38
	% within Q1N4_reocode	94.7%	5.3%	100.0%
Matric	Count	62	23	85
	% within Q1N4_reocode	72.9%	27.1%	100.0%
Some high school	Count	13	19	32
	% within Q1N4_reocode	40.6%	59.4%	100.0%
	Count	159	53	212
	% within Q1N4_reocode	75.0%	25.0%	100.0%

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	0.386	0.000
	Cramer's V	0.386	0.000
N of Valid Cases		212	

As expected people with a tertiary qualification were more willing to adopt digital banking than people with an only matric or some high school education. It is interesting to see that 94.7% of people with other tertiary qualifications are willing to adopt digital banking as soon as possible if possible. These respondents were also in favour of seeing a demo on or testing digital banking before adopting it. From this study, it is evident that a statistical significant association exists between qualifications and triability of digital banking. According to the findings of this study, qualifications had a very small effect on how banks should improve digital service delivery to customers. There is also no evidence of a statistically significant relationship between qualification and expectancy on digital banking service delivery improvements. This study also found limited evidence of a practical significant association between home language and triability as well as between home language and the expectancy of banks to improve service delivery.

3.9.6.3 Correlations between demographics and constructs

This section established the impact of demographics on the constructs and digital banking usage. Effect sizes were used to indicate the practical significance of differences. The following guidelines were used:

~ 0.2 – small, no practically significant difference

~ 0.5 – medium, practically visible difference

~ 0.8 – large, practically significant difference

P-values were used to indicate if there is a statistically significant difference between the means. A guideline of p< 0.05 was used to indicate the existence of a statistically significant difference between the means.

3.9.6.3.1 Age

The only practical visible difference in the averages of digital banking usage is between the 26 to 35 year and the 56 and older age groups (0.46) as illustrated in Table 3.26.

Table 3.26: Impact of age on digital banking adoption

	Age	N	Mean	Std. Deviation	Effect Sizes			
					1 with ….	2 with ….	3 with ….	4 with ….
Digital banking usage	16 to 25	70	2.33	1.491				
	26 to 35	153	2.90	1.518	0.37			
	36 to 45	118	2.57	1.522	0.16	0.22		
	46 to 55	76	2.61	1.415	0.19	0.19	0.02	
	56 and older	41	2.20	1.520	0.09	**0.46**	0.24	0.27
	Total	458	2.61	1.510				

The average usage of the digital banking was the highest for individuals between 26 and 35 years old while the lowest usage average was the older than 56 category. The results of this study indicate low usage amongst the younger as well as, the older age groups. The p-value of 0.025 is an indication that a statistically significant difference between the means of the current digital banking usage exists across the different age groups. The results indicate that age groups between 26 and 45 have the highest averages on perceived ease of use – see Table 3.27.

Table 3.27: Impact of age on perceived ease of use

	Age	N	Mean	Std. Deviation	Effect Sizes			
					1 with ….	2 with ….	3 with ….	4 with ….
Perceived ease of use	16 to 25	64	3.7552	1.00482				
	26 to 35	148	4.0304	0.98822	0.27			
	36 to 45	110	4.0045	1.08259	0.23	0.02		
	46 to 55	72	3.9028	0.88181	0.15	0.13	0.09	
	56 and older	36	3.4630	1.00563	0.29	**0.56**	**0.50**	0.44
	Total	430	3.9140	1.00971				

The individuals in the 26 to 45 age group agreed that it is easy to use digital banking whilst the age group of 56 and older was neutral on ease of use. The results of the study indicated a practical visible difference between the 56 and older age groups and the 26 to 45 age groups. The p-value of 0.020 is an indication that a statistically significant difference between the means of perceived ease of use exists across the different age groups. On perceived usefulness, the study found a similar trend to perceived ease of use where a medium difference is visible between the older than 56 and younger age groups as shown in Table 3.28.

Table 3.28: Impact of age on perceived usefulness

	Age	N	Mean	Std. Deviation	Effect Sizes			
					1 with ….	2 with ….	3 with ….	4 with ….
Perceived usefulness	16 to 25	63	3.9444	0.87709				
	26 to 35	149	4.3047	0.82579	0.41			
	36 to 45	111	4.2279	0.80115	0.32	0.09		
	46 to 55	73	4.1881	0.77812	0.28	0.14	0.05	
	56 and older	36	3.7194	0.77416	0.26	**0.71**	**0.63**	**0.60**
	Total	432	4.1640	0.83067				

There is a practically visible difference between the 56 and older age groups and the three age groups between 26 and 55 years. The older and younger age groups have lower means on the benefits of digital banking than the 26 to 55 year age groups. The p-value of 0.0001 is an indication that a statistically significant difference between the means of perceived usefulness exists across the different age groups. The study indicated a practically visible to a significant difference in averages between the 56 year and older age groups and the three age groups between 26 years and 55 years with relation to compatibility as illustrated in Table 3.29.

Table 3.29: Impact of age on compatibility

	Age	N	Mean	Std. Deviation	Effect Sizes			
					1 with ….	2 with ….	3 with ….	4 with ….
Compatibility	16 to 25	63	3.8452	0.89738				
	26 to 35	151	4.1937	0.96141	0.36			
	36 to 45	111	4.1952	0.85992	0.39	0.00		
	46 to 55	71	4.0728	0.88729	0.25	0.13	0.14	
	56 and older	36	3.5347	1.06428	0.29	**0.62**	**0.62**	**0.51**
	Total	432	4.0685	0.94171				

The results indicate that people between 26 and 55 agree that digital banking is compatible with their work and lifestyles. The p-value of 0.0001 is an indication that a statistically significant difference between the means of compatibility exists across the different age groups. The 56 and older age group shows a practical visible difference with the three age groups between 26 and 55 years with regards to digital banking safeguards as seen in Table 3.30.

Table 3.30: Impact of age on perceived risk

	Age	N	Mean	Std. Deviation	Effect Sizes			
					1 with ….	2 with ….	3 with ….	4 with ….
Perceived risk (e)	16 to 25	61	3.3934	1.06894				
	26 to 35	141	3.6667	0.99043	0.26			
	36 to 45	107	3.5234	1.08459	0.12	0.13		
	46 to 55	69	3.4928	0.91753	0.09	0.18	0.03	
	56 and older	34	3.0294	0.96876	0.34	**0.64**	**0.46**	**0.48**
	Total	412	3.5073	1.02402				

The older people are neutral on whether there are enough digital banking safeguards while the different age groups between 26 and 55 agree that there are sufficient safeguards in place. The p-value of 0.443 is an indication that no statistical significant difference exists between the means of digital banking safeguards across the different age groups. The only practical visible difference indicated in the subjective norm averages (0.57) is between the 56 years and older age group (3.439) and the 26 to 35-year-old age group (4.0325) as shown in Table 3.31.

Table 3.31: Impact of age on subjective norm

	Age	N	Mean	Std. Deviation	Effect Sizes			
					1 with ….	2 with ….	3 with ….	4 with ….
Subjective norm	16 to 25	61	3.6339	0.92812				
	26 to 35	146	4.0325	0.82120	0.43			
	36 to 45	101	3.9051	0.95511	0.28	0.13		
	46 to 55	71	3.6678	0.96748	0.04	0.38	0.25	
	56 and older	38	3.4539	1.01651	0.18	**0.57**	0.44	0.21
	Total	417	3.8285	0.93102				

The age group between 26 and 35 years has the highest mean of respondents who agree that people in their environment influence and support their decisions regarding digital banking adoption. The p-value of 0.0001 is an indication that a statistically significant difference between the means of subjective norm exists across the different age groups. The only practical visible differences in attitude towards digital banking adoption are between the 56 years and older age group and the three age groups between 26 and 55 years old as seen in Table 3.32.

Table 3.32: Impact of age on attitude

	Age	N	Mean	Std. Deviation	Effect Sizes			
					1 with ….	2 with ….	3 with ….	4 with ….
Attitude	16 to 25	61	3.8648	0.91580				
	26 to 35	147	4.2653	0.79877	0.44			
	36 to 45	106	4.2052	0.87205	0.37	0.07		
	46 to 55	70	4.0798	0.87934	0.23	0.21	0.14	
	56 and older	39	3.5064	1.02996	0.35	**0.74**	**0.68**	**0.56**
	Total	423	4.0918	0.89667				

The three age groups between 26 and 35 years has a positive attitude towards digital banking whilst the 56 year and older age group is neutral. The 26 to 35 year old age group has the highest mean on the attitude which indicates a positive attitude towards the adoption of digital banking. The p-value of 0.0001 is an indication that a statistically significant difference between the means of attitude exists across the different age groups. There were no practical visible differences in awareness between the different age groups although the 26 to 35-year-old age group's mean was the highest – see Table 3.33.

Table 3.33: Impact of age on awareness

	Age	N	Mean	Std. Deviation	Effect Sizes			
					1 with ….	2 with ….	3 with ….	4 with ….
Awareness	16 to 25	62	3.6331	0.97375				
	26 to 35	148	4.0659	0.83113	0.44			
	36 to 45	110	3.9629	0.93994	0.34	0.11		
	46 to 55	72	3.9271	0.80867	0.30	0.17	0.04	
	56 and older	40	3.7813	0.86637	0.15	0.33	0.19	0.17
	Total	432	3.9280	0.88895				

This group agreed that they received sufficient information on digital banking from the bank. Even though the mean for the age group between 16 and 25 was the lowest, they also indicated that they receive sufficient information on digital banking from their banks. The p-value of 0.020 is an indication that a statistically significant difference between the means of awareness exists across the different age groups.

3.9.6.3.2 Income

The study indicates a large, practically significant difference in averages of digital banking usage between the higher income groups and those who earn R5000 and below as illustrated in Table 3.34.

Table 3.34: Impact of income on digital banking adoption

	Gross monthly income	N	Mean	Std. Deviation	Effect Sizes			
					1 with ….	2 with ….	3 with ….	4 with ….
Digital banking usage	Less than R 2000	67	1.58	1.117				
	R2 001 to R5 000	97	2.07	1.386	0.35			
	R5 001 to R10 000	116	2.88	1.469	**0.88**	**0.55**		
	R10 001 to R 20 000	120	3.05	1.449	**1.01**	**0.68**	0.12	
	Over R20 001	53	3.47	1.367	**1.38**	**1.01**	0.40	0.29
	Total	453	2.63	1.511				

The average differences between the top income earners and the bottom earners were as high as 1.38 which is extremely high. The results of this study indicate much lower usage amongst the lower income earners which can be related to cost. The p-value of 0.0001 is an indication that a statistically significant difference between the means of the current digital banking usage exists across the different income groups. The results further indicated that the respondents earning more than R5000 a month agreed that it is easy to use digital banking. This can also be attributed to alignment between income and education. The study indicated a medium to the large visible difference in averages

between the people earning above R5000 and those earning below R5000 with regards perceived ease of use as shown in Table 3.35.

Table 3.35: Impact of income on perceived ease of use

	Gross monthly income	N	Mean	Std. Deviation	Effect Sizes			
					1 with ….	2 with ….	3 with ….	4 with ….
Perceived ease of use	Less than R 2000	54	3.4167	1.05596				
	R2 001 to R5 000	92	3.5634	1.03800	0.14			
	R5 001 to R10 000	111	4.1351	0.94509	**0.68**	**0.55**		
	R10 001 to R 20 000	115	4.1681	0.88674	**0.71**	**0.58**	0.03	
	Over R20 001	53	4.1258	0.86535	**0.67**	**0.54**	0.01	0.05
	Total	425	3.9278	0.99975				

The income groups above R5001 had very similar averages. The p-value of 0.0001 is an indication that a statistically significant difference between the means of perceived ease of use exists across the different income groups. On perceived usefulness the study found a similar trend to perceived ease of use although the practical differences were large between the two lower income groups and the three income groups above R5001 – see Table 3.36.

Table 3.36: Impact of income on perceived usefulness

	Gross monthly income	N	Mean	Std. Deviation	Effect Sizes			
					1 with ….	2 with ….	3 with ….	4 with ….
Perceived usefulness	Less than R 2000	53	3.5509	0.86015				
	R2 001 to R5 000	93	3.8129	0.89336	0.29			
	R5 001 to R10 000	111	4.4216	0.68389	**1.01**	**0.68**		
	R10 001 to R 20 000	116	4.4009	0.65255	**0.99**	**0.66**	0.03	
	Over R20 001	54	4.3988	0.77934	**0.99**	**0.66**	0.03	0.00
	Total	427	4.1724	0.82892				

Although the lower income groups also agreed that there is a relative advantage to use digital banking the higher earners averages bordered on strongly agree that digital banking holds huge benefits for them. The p-value of 0.0001 is an indication that a statistically significant difference between the means of perceived usefulness exists across the different income groups. The results of the study indicated a practically significant visible difference in averages between the individuals earning R5000 and less and the people who earn an amount more than R5001 with regards to compatibility as indicated in Table 3.37.

Table 3.37: Impact of income on compatibility

	Gross monthly income	N	Mean	Std. Deviation	Effect Sizes			
					1 with ….	2 with ….	3 with ….	4 with ….
Compatibility	Less than R 2000	55	3.3591	1.09477				
	R2 001 to R5 000	93	3.6559	0.96114	0.27			
	R5 001 to R10 000	110	4.2742	0.84029	**0.84**	**0.64**		
	R10 001 to R 20 000	116	4.3980	0.67451	**0.95**	**0.77**	0.15	
	Over R20 001	53	4.4670	0.72563	**1.01**	**0.84**	0.23	0.10
	Total	427	4.0792	0.93886				

Once again no practically significant difference is visible between the three higher income groups as well as between the two lower income groups. The high means of people earning above R5001 per month indicate that they believe digital banking suits their work and lifestyle. The p-value of 0.0001 is an indication that a statistically significant difference between the means of compatibility exists across the different income groups. The study indicated no real significant differences on averages between the different income levels regarding the cost involved to do online banking as shown in Figure 3.38.

Table 3.38: Impact of income on perceived cost

	Gross monthly income	N	Mean	Std. Deviation	Effect Sizes			
					1 with ….	2 with ….	3 with ….	4 with ….
Perceived cost (d)	Less than R 2000	53	3.0755	1.03495				
	R2 001 to R5 000	85	3.5765	1.02790	**0.48**			
	R5 001 to R10 000	105	3.8000	1.04145	**0.70**	0.21		
	R10 001 to R 20 000	112	3.8304	1.04742	**0.72**	0.24	0.03	
	Over R20 001	50	3.9400	0.91272	**0.84**	0.35	0.13	0.10
	Total	405	3.6840	1.05251				

As expected the mean for the lower income earners were slightly higher than the mean of the people earning higher monthly incomes. There was, however, a large significant difference between the individuals earning R5001 and people earning less than R2000 regarding the cost-effectiveness of digital banking. The higher income groups agreed that it was cost effective while the group earning less than R2000 was neutral. Interestingly enough the results also indicated a medium visible difference between people earning R2001 to R5000 and individuals earning below R2000. Although the average was still lower than the people earning R5001 and more, they also agreed that it is cost effective. The p-value of 0.0001 is an indication that a statistically significant difference exists between the means of digital banking perceived cost across income groups. The results of the study indicated only a practically visible difference between the means of the different age groups with regards to perceived risk as indicated in Table 3.39.

Table 3.39: Impact of income on perceived risk

	Gross monthly income	N	Mean	Std. Deviation	Effect Sizes			
					1 with ….	2 with ….	3 with ….	4 with ….
Perceived risk	Less than R 2000	54	3.3519	0.89279				
	R2 001 to R5 000	90	3.3519	0.91208	0.00			
	R5 001 to R10 000	108	3.0440	0.83080	0.34	0.34		
	R10 001 to R 20 000	115	2.9043	0.94050	**0.48**	**0.48**	0.15	
	Over R20 001	53	2.9387	0.87693	**0.46**	**0.45**	0.12	0.04
	Total	420	3.0980	0.90900				

Only the R10001 to R20000 and R20001 and more income groups showed a medium practical difference in means compared to the R5000 and below age category. In general, the means for perceived risk across all age groups were mostly neutral with slightly higher averages amongst the lower income earners. The p-value of 0.001 is an indication that a statistically significant difference exists between the means of digital banking perceived risks across income levels. The practical significant differences in subjective norm averages relating to income are between the people earning R2000 and less and individuals earning R5001 and more as illustrated in Table 3.40.

Table 3.40: Impact of income on subjective norm

	Gross monthly income	N	Mean	Std. Deviation	Effect Sizes			
					1 with ….	2 with ….	3 with ….	4 with ….
Subjective norm	Less than R 2000	53	3.3255	0.92584				
	R2 001 to R5 000	92	3.4402	1.02132	0.11			
	R5 001 to R10 000	109	4.0872	0.83251	**0.82**	**0.63**		
	R10 001 to R 20 000	110	4.0871	0.75591	**0.82**	**0.63**	0.00	
	Over R20 001	48	4.0399	0.77832	**0.77**	**0.59**	0.06	0.06
	Total	412	3.8392	0.92167				

A medium practical difference in subjective norm means exists between people earning R5001 and more and people earning between R2001 and R5000. The respondents from the three income groups above R5001 agree that subjective norm influences their decision regarding digital adoption while the income groups below R5000 remained neutral. The p-value of 0.0001 is an indication that a statistically significant difference between the means of subjective norm exists across the different income groups.

There is a practically significant difference in attitude averages between the respondents earning an income above R5001 and the below R2000 income earners with regards to attitude as shown in Table 3.41.

Table 3.41: Impact of income on attitude

	Gross monthly income	N	Mean	Std. Deviation	Effect Sizes			
					1 with ….	2 with ….	3 with ….	4 with ….
Attitude	Less than R 2000	55	3.4773	1.08789				
	R2 001 to R5 000	92	3.7772	0.94160	0.28			
	R5 001 to R10 000	109	4.3417	0.78518	**0.79**	**0.60**		
	R10 001 to R 20 000	112	4.3199	0.73611	**0.77**	**0.58**	0.03	
	Over R20 001	50	4.3600	0.60221	**0.81**	**0.62**	0.02	0.05
	Total	418	4.1001	0.89654				

The study also indicated a practical visible difference in attitude between the individuals earning above R5001 and those earning between R2001 and R5000. The means for the three higher income groups are above 4.3 while the R2000 and below and R2001 to R5000 groups are on 3.5 and 3.8 respectively. The higher income earners had a more positive attitude towards digital banking adoption than the lower income earners. The p-value of 0.0001 is an indication that a statistically significant difference between the means of attitude exists across the different income groups. The research found a medium practically significant difference in the averages of individuals earning R5001 to R20 000 and respondents earning R5000 and below with regards to awareness as shown in Table 3.42.

Table 3.42: Impact of income on awareness

	Gross monthly income	N	Mean	Std. Deviation	Effect Sizes			
					1 with ….	2 with ….	3 with ….	4 with ….
Awareness	Less than R 2000	54	3.6173	0.91065				
	R2 001 to R5 000	93	3.6004	0.92695	0.02			
	R5 001 to R10 000	110	4.1977	0.73813	**0.64**	**0.64**		
	R10 001 to R 20 000	117	4.1004	0.86482	**0.53**	**0.54**	0.11	
	Over R20 001	53	3.9575	0.82295	0.37	0.39	0.29	0.17
	Total	427	3.9377	0.88154				

The individuals earning more than R5001 showed higher average awareness of digital banking than the people earning less than R5000. The p-value of 0.0001 is an indication that a statistically significant difference between the means of awareness exists across different qualification levels.

3.9.6.3.3 Qualifications

As expected the study indicates a large, practically significant difference in the averages of digital banking usage between respondents with some high school qualification and individuals with tertiary and postgraduate qualifications as indicated in Table 3.43.

Table 3.43: Impact of qualifications on digital banking adoption

	Highest qualification	N	Mean	Std. Deviation	Effect Sizes			
					1 with	2 with	3 with	4 with ....
Digital banking usage	Post graduate	39	2.95	1.572				
	Degree or diploma	83	3.30	1.463	0.22			
	Other tertiary qualification	75	3.11	1.391	0.10	0.13		
	Matric	196	2.36	1.423	0.38	**0.65**	**0.53**	
	Some high school	45	1.62	1.211	**0.84**	**1.15**	**1.07**	**0.52**
	Total	438	2.64	1.506				

There is also a practical visible difference between individuals with some high school background and people with a matric qualification. The individuals holding a university degree or technicon diploma had the highest mean while the average usage for individuals with some high school education had a substantially lower average. The p-value of 0.0001 is an indication that a statistically significant difference between the means of the current digital banking usage exists across different qualification levels.

The results indicated that the respondents with a tertiary qualification had the highest mean for perceived ease of use. There is a practically significant difference between the average of the people with some high school qualification and the group with a tertiary qualification as shown in Table 3.44.

Table 3.44: Impact of qualifications on perceived ease of use

	Highest qualification	N	Mean	Std. Deviation	Effect Sizes			
					1 with	2 with	3 with	4 with ....
Perceived ease of use	Post graduate	42	3.9206	1.05425				
	Degree or diploma	80	4.0167	1.10095	0.09			
	Other tertiary qualification	74	4.3378	0.80048	0.40	0.29		
	Matric	179	3.8473	0.97213	0.07	0.15	**0.50**	
	Some high school	38	3.3421	0.95070	**0.55**	**0.61**	**1.05**	**0.52**
	Total	413	3.9290	1.00608				

The study also revealed a medium practically visible difference in the means of the group with some high school education and all the other groups. All the groups except the people with only some high school qualification agreed that digital banking is easy to use. The p-value of 0.0001 is an indication that a statistically significant difference between the means of perceived ease of use exists across the different qualification levels. On perceived usefulness, the study found a similar trend to perceived ease of use although the practical differences on averages were large between the individuals with some high school qualification and all the other groups (postgraduate, university degree or technicon diploma, other tertiary qualification and matric) as shown in Table 3.45.

Table 3.45: Impact of qualifications on perceived usefulness

	Highest qualification	N	Mean	Std. Deviation	Effect Sizes			
					1 with ….	2 with ….	3 with ….	4 with ….
Perceived usefulness	Post graduate	42	4.2738	0.84711				
	Degree or diploma	82	4.2870	0.90393	0.01			
	Other tertiary qualification	73	4.5233	0.64947	0.29	0.26		
	Matric	180	4.1106	0.77880	0.19	0.20	**0.53**	
	Some high school	37	3.4514	0.76362	**0.97**	**0.92**	**1.40**	**0.85**
	Total	414	4.1759	0.83210				

Except the respondents with some high school qualifications, the rest of the individuals had means above 4. This by implication means that they agree on the usefulness and relative advantage of digital banking adoption. The p-value of 0.0001 is an indication that a statistically significant difference between the means of perceived usefulness exists across the different education levels. The results of the study indicated a practically significant difference in averages between the individuals with some high school qualification and the respondents with higher qualifications with regards to compatibility as seen in Table 3.46.

Table 3.46: Impact of qualifications on compatibility

	Highest qualification	N	Mean	Std. Deviation	Effect Sizes			
					1 with ….	2 with ….	3 with ….	4 with ….
Compatibility	Post graduate	42	4.2143	0.94767				
	Degree or diploma	81	4.3045	0.87809	0.10			
	Other tertiary qualification	73	4.4315	0.72320	0.23	0.14		
	Matric	179	3.9744	0.90777	0.25	0.36	**0.50**	
	Some high school	38	3.3947	0.96848	**0.85**	**0.94**	**1.07**	**0.60**
	Total	413	4.0910	0.92327				

The respondents with some tertiary qualification and higher reflected means of above 4.2 which indicate they believe digital banking is compatible with their work and lifestyle. Individuals with a matric reflected an average of 3.9 which is also a good indication of their compatibility with digital banking. The group with some high school education, with a mean of 3.4 is neutral with regards to compatibility of digital banking. The p-value of 0.0001 is an indication that a statistically significant difference between the means of compatibility exists across the levels of education. The study indicated no real significant differences in averages between the different levels of education and perceived cost as illustrated in Table 3.47.

Table 3.47: Impact of qualifications on perceived cost

	Highest qualification	N	Mean	Std. Deviation	Effect Sizes			
					1 with ….	2 with ….	3 with ….	4 with ….
Perceived cost (d)	Post graduate	41	3.6829	1.21324				
	Degree or diploma	78	3.6410	1.19495	0.03			
	Other tertiary qualification	68	3.8382	1.00164	0.13	0.17		
	Matric	172	3.7093	0.97172	0.02	0.06	0.13	
	Some high school	36	3.3889	0.87105	0.24	0.21	**0.45**	0.33
	Total	395	3.6861	1.04356				

The only practically visible difference was between the averages of respondents with some high school education and individuals with other tertiary qualifications. The means were al below 4. The p-value of 0.177 is an indication that no statistically significant difference exists between the means of digital banking perceived cost across qualification levels. The results of the study indicated only a practically visible difference between the means of the respondents with some high school education and individuals with tertiary qualifications as well as university degrees and technicon diplomas with regards to perceived risk as shown in Figure 3.48.

Table 3.48: Impact of qualifications on perceived risk

	Highest qualification	N	Mean	Std. Deviation	Effect Sizes			
					1 with ….	2 with ….	3 with ….	4 with ….
Perceived risk	Post graduate	44	3.2519	1.06847				
	Degree or diploma	80	2.9938	0.81561	0.24			
	Other tertiary qualification	69	3.0664	0.92350	0.17	0.08		
	Matric	177	3.0523	0.89971	0.19	0.07	0.02	
	Some high school	38	3.5000	0.83626	0.23	**0.61**	**0.47**	**0.50**
	Total	408	3.1064	0.90920				

The individuals with some high school education reflected a substantially higher average than the other groups which is an indication that perceived risk is more prevalent amongst them. The p-value of 0.036 is an indication that a statistically significant difference exists between the means of digital banking perceived risks across qualification levels. The study found practically significant differences between the averages of respondents with only some high school education and the individuals with postgraduate qualifications (0.87), university degrees or technicon diplomas (0.83) as well as other tertiary qualifications (0.84) with regards to the subjective norm as shown in Table 3.49.

Table 3.49: Impact of qualifications on subjective norm

	Highest qualification	N	Mean	Std. Deviation	Effect Sizes			
					1 with ….	2 with ….	3 with ….	4 with ….
Subjective norm	Post graduate	38	4.1294	0.86985				
	Degree or diploma	77	4.0866	0.80528	0.05			
	Other tertiary qualification	70	4.0976	0.74630	0.04	0.01		
	Matric	176	3.7206	0.93031	0.44	0.39	0.41	
	Some high school	39	3.1795	1.08965	**0.87**	**0.83**	**0.84**	**0.50**
	Total	400	3.8431	0.92895				

A medium practical difference is also reflected between the means for individuals with some high school education and respondents with matric as a highest qualification. People with post graduate qualifications, degree or diplomas as well as other tertiary qualifications reflect substantially higher means in the subjective norm construct than the people with matric and people with some high school education. This is an indication that people with higher qualifications agree that people who is important in their lives will support them to adopt digital banking. The p-value of 0.0001 is an indication that a statistically significant difference between the means of subjective norm exists across qualification levels. The results of the study reflect a practically significant difference in averages between individuals with some high school qualification and respondents with postgraduate, degree, diplomas and other tertiary qualifications with regards to attitude as shown in Table 3.50.

Table 3.50: Impact of qualifications on attitude

	Highest qualification	N	Mean	Std. Deviation	Effect Sizes			
					1 with ….	2 with ….	3 with ….	4 with ….
Attitude	Post graduate	38	4.1908	0.90501				
	Degree or diploma	80	4.2781	0.78655	0.10			
	Other tertiary qualification	71	4.4765	0.53770	0.32	0.25		
	Matric	176	4.0028	0.92350	0.20	0.30	**0.51**	
	Some high school	39	3.5256	1.01760	**0.65**	**0.74**	**0.93**	**0.47**
	Total	404	4.1122	0.88466				

A medium practical difference also exists between people with some high school education and respondents with matric. Except individuals who only have limited high school education all other qualifications all had means more than 4. This is an indication that the higher qualified individuals have a more positive attitude towards digital banking adoption. The p-value of 0.0001 is an indication that a statistically significant difference between the means of attitude exists across the different income groups. The study indicated a practically visible difference in means between individuals with some high

school qualifications and individuals with post-graduate, degrees, diplomas and other tertiary qualifications with regards to awareness as illustrated in Table 3.51.

Table 3.51: Impact of qualifications on awareness

	Highest qualification	N	Mean	Std. Deviation	Effect Sizes			
					1 with ….	2 with ….	3 with ….	4 with ….
Awareness	Post graduate	42	4.0357	0.86879				
	Degree or diploma	81	3.9938	0.90569	0.05			
	Other tertiary qualification	72	4.1250	0.85991	0.10	0.14		
	Matric	179	3.8780	0.86918	0.18	0.13	0.28	
	Some high school	40	3.6125	0.92326	**0.46**	0.41	**0.56**	0.29
	Total	414	3.9340	0.88686				

3.9.6.3.4 Home language

No practical significant differences were found between the means and effect sizes that warranted special mention.

3.10 CONCLUSION

3.10.1 Frequencies

The study found a fairly equal split between people who have never used digital banking (34.5%) and individuals using digital banking more than once a week (34.3%). The high number of people not using digital banking in conjunction with a high number of people willing to adopt digital banking if possible (72.9%) offer huge opportunities for banks to increase the number of digital banking users in rural areas. The data analysed further indicates that only 4.1% of the respondents use free Wi-Fi spots for digital banking while the majority use digital banking at home or the office. A very high percentage of respondents (90.8%) also suggested that banks improve the availability of Internet and Wi-Fi facilities. This is in line with findings from Ramavhona and Mokwena (2016:2) which states that absence or inadequacy of infrastructure prohibits people in rural areas from using digital banking. Creating facilities will enable banks to not only assist their current customers but also attract new customers who might not have the infrastructure or who are simply too afraid to use digital banking. The study found that a very small percentage (7.3%) use digital banking to get information on products. When considered that 93.4% of the respondents suggested that banks need to create awareness of products and services, it offers huge opportunities for banks to market products and services better using this platform. It is no surprise that 91.5% of the respondents suggested that banks improve digital banking security. This is in line with findings of previous studies. Risk according to Chibonda (2014:18) remains a big concern for a large number of potential

adopters. Banks need to improve risk and create awareness around digital banking risk if they want people to adopt it. The results indicated that bank leaflets and advertising brochures (92.6%) and word-of-mouth (85.3%) are the most successful mediums to create awareness around digital banking. There is an opportunity for the banks to increase the visibility of digital banking options on social media which will be less cost-effective than brochures and leaflets. Good support for potential adopters and current users will ensure word-of-mouth remains a successful channel for awareness creation. The majority of the respondents agreed that digital banking is easy to learn and use and will make their lives easier. This creates a huge opportunity for banks to drive adoption since previous studies indicate that perceived ease of use and perceived usefulness determine whether an individual will adopt digital banking or not (Lada & Anis, 2008:44). The data analysed also indicated that the vast majority of respondents believe digital banking is compatible with their lifestyle and work style. The individuals indicated that digital banking is useful and increase their productivity. This is in line with findings that compatibility has a positive impact on digital banking adoption (Koenig-Lewis *et al*., 2010:423). Banks need to take cognisance of these factors when marketing digital banking in a fast-paced world.

The study found that even though people believe digital banking to be cost effective, the access cost remains a concern, especially in rural areas where income tends to be lower than in metropolitan areas. According to the findings, cost can prevent people from adopting digital banking. The Wallis report (1997) also states that cost can be a deciding factor when it comes to digital banking adoption. Banks need to consider innovative ways to assist lower income earners also to get access to digital banking platforms. The results of the study indicated that although the respondent's feel digital banking has enough safeguards almost 48.2% still believe it is safer to go to the bank to conduct business. The individuals interviewed highlighted information security as a concern which is in line with findings from Luarn and Lin (2005:887). Banks need to get an understanding as to why people still prefer brick and mortar branches if they believe digital banking has enough safeguards. The study indicated in line with previous findings (Delafrooz et al., 2011b:2839) a negative correlation between the attitude towards digital banking and risk it is in the best interest of banks to reduce the risk to increase adoption. More than two-thirds of respondents in the study indicated that individuals they associate with think they can and should use digital banking which positively influences the digital adoption. This supports the importance of subjective norm in digital adoption as also indicated in

previous studies (Riquelme & Rios, 2010:330). The vast majority of respondents, with a mean of more than 4, had a positive attitude towards digital banking adoption. The study indicated that respondents think it is a good idea which will make their lives easier. This indicates that banks need to use convenience to market digital adoption to potential adopters. The respondents in the study believe they get enough information on digital banking. This is perhaps an indication that even though sufficient awareness is created the opportunity to adopt lacks. Banks need to create the opportunity for individuals to put their knowledge to the test by possibly creating a demo model.

3.10.2 Nonparametric correlations

The research indicates a strong positive relationship between perceived ease of use and perceived usefulness. This finding is in line with previous studies (Davis *et al*., 1989:985). Perceived ease of use, on the other hand, had a small negative correlation with perceived cost and perceived risk which is an indication that banks need to reduce risk and cost to onboard additional digital banking customers. Perceived usefulness and compatibility had a practical significant relationship while a small negative practical relationship existed between perceived usefulness and perceived risk. The negative correlation indicates that perceived risk needs to decrease to increases the perceived usefulness and ultimately adoption. This is relevant since banks need to reduce risk to drive digital adoption. Although perceived cost and perceived risk had no practical significant relationships with most of the other construct, it is important to note that most of these correlations were negative. This implied that if these two constructs can be reduced, it will increase the others and increase digital adoption. According to the correlation, analysis banks will benefit if they can devise strategies to lower risk and cost to increase digital adoption. In general, the nonparametric correlation information discussed in this chapter can be used by financial institutions to understand better how the constructs impact one another and use that to develop a better strategy for digital banking adoption.

3.10.3 Crosstabulation

3.10.3.1 Demographics and digital banking usage

The study investigated the impact of age, income and qualification on general digital banking adoption and usage as well as on the eight constructs. The study found age has a small to medium effect on digital banking usage. The majority of people who have never used digital banking came from the younger and older age groups. This information should assist banks to identify the correct age groups to target through specific digital

adoption strategies. In line with a previous study which indicated that price is one of the major determinants of digital banking adoption (Iqbal et al., 2003:55) this study indicates a practical significant association between income as and digital banking usage as a result of the cost involved and affordability. Income also has a medium effect on triability. People with a higher income are more willing to adopt digital banking if possible. There is a substantial increase in the respondents earning R2001 to R5000 to adopt digital banking if they can test it first which indicate fear and a possible lack of knowledge with regards to digital banking adoption. The study also found qualification type has a large effect on digital banking adoption and usage. This finding corresponds with findings from Shah and Clarke (2009:4) that digital banking attracts people with higher income and better qualifications. Higher qualified individuals were more prone to adopt digital banking on a regular basis. Banks should invest in training and development programmes for individuals with lower qualifications to get them to adopt digital banking with confidence.

3.10.3.2 Demographics and constructs

Except subjective norm and awareness, the study found practically visible differences between the 56 year and older age group and the age groups between 26 and 55 years in all constructs. The 56 year and older age group had the lowest mean in all the constructs which indicate, in line with the findings, that these individuals are less likely to adopt digital banking. The study also found that this age group believes digital banking is risky and is afraid to use it. Banks need to develop their strategies with this in mind to increase digital adoption within the older age group. The study found medium to large practical differences between higher and lower income groups across all the constructs. Respondents earning higher salaries are more inclined to take up digital banking than lower income earners. The means for the R5001 to R20 001 and higher income groups are substantially higher than for the people earning less than R5000. The study indicated that this could be attributed to the cost of digital banking, access as well as hardware to activate the Internet. Another reason highlighted by this study is the fear of digital banking. Banks need to look at innovative ideas to supply resources and training for people who cannot afford digital banking. The results of the study also indicated a substantial difference in averages between the people with some high school education and the higher qualified individuals with regards to perceived ease of use, perceived usefulness, compatibility, perceived risk, subjective norm, attitude as well as awareness. The respondents with a matric or a higher qualification are more likely to see the benefits of digital banking and adopt it. The study further highlighted, as expected, low qualified

individuals inability to access digital banking which directly contributes to low adoption. Banks need to put education plans in place to give people confidence to adopt and use digital banking. Since banks are spending astronomic amounts of capital on developing the digital banking platform, it is imperative that they use the information from studies like this one to ensure they maximise the returns on their investments. If they manage to increase their economies of scale, they can reduce costs for the institutions as well as their customers.

3.11 SUMMARY

This first section of the study focused on available literature regarding research methodology. The research approach, design and method, as well as sampling method used, were discussed in detail. This was followed by data preparation and literature regarding the statistical analysis of the gathered data. The importance of editing and coding of data were discussed to ensure accurate and easy analysis. The portion of statistical analysis included factor analysis, reliability, validity, descriptive statistics and correlation analysis. Ethical aspects regarding the study concluded the first section. The second section of the chapter covered all aspects with regards to the analysis, interpretation and empirical findings with regards to the data gathered for this study. The first part of this section looked at the demographic composition of the respondents as well as general digital banking usage. The demographic variables included gender, age, income, qualification, occupation type and home language. The validity and reliability of the data gathered for this study were discussed in detail using the relevant measurement instruments. The last part of section two is dedicated to constructing analysis, nonparametric correlations, cross tabulations as well as correlations between demographic factors and the selected constructs.

CHAPTER 4: CONCLUSIONS AND RECOMMENDATIONS

4.1 INTRODUCTION

As stated in chapter one, the primary objective of this study was to introduce a framework for improving strategic managerial decision making and profit by identifying the challenges with regards to the digital adoption of banking products and services in rural areas. To achieve the primary objective, it was imperative to realise the secondary objectives. The study had to first understand the levels of technology readiness in the rural banking sector, ascertain the existing state of technology acceptance and adoption in rural areas, identify the most pertinent factors and possible patterns that impact digital adoption in rural areas, ascertain the impact levels of the identified variables on digital adoption and how it can benefit the institution, its staff and the customer, determine the role of technology and digital adoption in creating a competitive advantage. Secondly, the study aimed to examine how the information that was gathered can improve the understanding of the role and benefits of technology as well as how it can improve customer service delivery and satisfaction. The final secondary objective deals with the application of the information gathered to devise a rural adoption strategy in support of organisations triple bottom line. The first section of the literature study concluded covered the background of digital banking, digital banking adoption as well as changes in the banking sector necessitated by changing technology, cost pressures and consumer demands. Secondly, the literature covered the possible benefits of digital banking for financial institutions and customers. The final section of the literature study covered the factors influencing digital banking adoption as well as the adopted research framework for the empirical study. The empirical study was based on the content of the literature study. This chapter will cover the conclusions and recommendations based on the literature study as well as empirical findings from this study will be presented in support of improving strategic managerial decision making and profit by identifying the challenges with regards to the digital adoption of banking products and services in rural areas. The chapter finally makes provision to discuss possible limitations of this study as well as recommendations for further studies.

4.2 CONCLUSIONS REGARDING CHALLENGES WITH DIGITAL ADOPTION IN RURAL AREAS

The literature study as well as the empirical study results gives a good indication of the existing state of technology acceptance and adoption in rural areas. The findings of this

study show similarities with previous literature study findings with regards to the impact of age, income and levels of education on digital adoption. The information in the study will assist financial institutions to gain a better understanding of the role digital banking plays in the banking environment, and the potential benefits of digital adoption. The study succeeded in identifying the most pertinent factors and established patterns that impact digital adoption specifically in rural areas. The study found that access to digital banking as a result of cost and awareness to be the biggest stumbling blocks for digital banking adoption in rural areas. The patterns were most evident in the different demographical groups. Age, income and qualification had a significant impact on general digital banking adoption as well as on the constructs believed to be impacting digital banking adoption. The study managed to determine the impact levels of the different digital banking adoption constructs. Although there was a lot of similarities and alignment with the results of previous literature studies on digital banking adoption some of the findings of this study showed subtle differences. The findings can most definitely benefit institutions, customers and staff going forward if it is incorporated in the strategic approach of financial institutions.

If organisations incorporate the findings and recommendations of this study into their strategic business plans, it could have a positive effect on the triple bottom line, social, environmental and financial benefits. Higher levels of digital adoption can potentially have a positive impact on the environment as a result of reduced paper usage, the customers as a result of time and cost savings as well as the bank's cost-to-income ratio. The results of the study give financial services organisations an indication of factors influencing digital banking adoption as well as information on emerging patterns within selected demographical groups. The bank that manages to address the concerns and opportunities highlighted in this study will be able to create economies of scale by attracting higher numbers of digital banking customers. Not only will these higher numbers allow them to reduce costs for customers as well as the bank but it will also improve resource allocation to improve service delivery in the right areas. Attracting more customers, saving cost by reducing certain expensive resources and improving customer service across all market segments will give the institution a competitive advantage in the market. Finally, the outcomes of the study will give a more holistic and better understanding of the digital readiness of customers in rural areas. This additional insight can be used by financial services institutions to build workable strategies which will address concerns and capitalise on opportunities within the digital environment. The only

noteworthy deviation from the literature study is the emphasis on risk as a determinant for digital banking adoption. According to the literature study (Laforet & Li, 2005:371; Aboelmaged & Gebba, 2013:36) risk is one of the predominant reasons why people will not adopt digital banking whilst in this study the people were neutral with regards to their responses and even indicated that digital banking has enough safeguards – see Table 3.15. It is, however, important to note that despite this neutral response on the perceived risk construct, the respondents agree that privacy and security-related fears are huge concerns – see Table 3.15. Previous findings confirm the above (Luarn & Lin, 2005:887). The implication of this change in strategic thinking, banks need to focus awareness creation on privacy and security related concerns and not risk in general.

4.2.1 Final comments

There was a fairly equal distribution between male and female respondents. The majority of the individuals taking part in the study were between 26 years and 45 years. The study showed a fairly equal distribution of income but as expected a lower percentage of high-income earners. Qualifications indicated that the largest percentage of respondents only had matric or some high school education. These results indicate as expected that, people in rural areas earn lower salaries and are not as educated as their counterparts in urban or metropolitan environments. Most of the respondents were formally employed and the number of unemployed people very low due to the convenience sample of people with bank accounts. The home language distribution is representative of the region but will differ from other rural areas where different ethnic groups reside. A large percentage of respondents, more than a third, indicated that they never used digital banking. *The study also indicated that this group primarily consisted of individuals between 16 and 25 as well as people older than 56 years*. According to the results of the study, the younger people did not see the need for digital banking whilee the 56 and older age group has low Internet connectivity and is afraid to use digital banking. A large percentage of the non-users, across the age groups, indicated that they would adopt digital banking as soon as possible if they can see a demo and/or test it first. This is in line with findings regarding the negative impact of uncertainty on digital adoption (Chibonda, 2014:21). Financial institutions should invest resources into creating opportunities for people to get acquainted with digital banking in a safe environment to increase adoption rates. It is not surprising that the study further found non usage to be the highest among people with lower qualifications and individuals earning lower salaries – see Tables 3.20 and 3.24. The main reasons why people earning low salaries have never used digital banking is

due to the cost of components and hardware to access the Internet. This correlates earlier findings from Dholakia and Kshetri (2004:317). It can be derived that the individuals earning lower salaries are also less educated resulting in their fear for as well as their inability to access and use digital banking. The individuals with some high school education also believe digital banking is risky which will also have a big influence on this group not adopting digital banking. The financial institutions need to take cognisance of this when devising strategies to improve their cost-to-income ratios. This study indicated that only a small number of respondents use the bank's and/or other free Wi-Fi facilities to do digital banking – see Figure 3.8. Banks need to ask themselves whether their digital banking facilities are sufficient. The results of the study also showed that only a small number of the individuals use digital banking to get more information on bank products and services. Thus it can be derived that this creates a platform for financial institutions' need to market the benefits of their products and services in a cost-effective manner.

The vast majority of the respondents in the study pointed out that if banks want to improve digital banking services to customers they need to create awareness around digital banking products and services, provide training on digital banking, create an easy to understand website, provide Internet facilities and free Wi-Fi as well as improve digital banking security – see Table 3.7. While most of the respondents indicate they have learnt about digital banking from bank leaflets and word-of-mouth more than one third indicates they know nothing about digital banking – see Table 3.8. Financial institutions can use this information to ensure they use the correct and most cost-effective marketing mediums to attract digital banking customers. The study found, in line with previous studies, perceived ease of use, perceived usefulness, compatibility, perceived cost, perceived risk, subjective norm, attitude and awareness to be important determinants for digital adoption – see Table 4.1 below. The table has been included in this chapter for ease of reference.

Table 4.1: Descriptive analysis

	N	Minimum	Maximum	Mean	Std. Deviation
Perceived ease of use (Pos)	430	1.00	5.00	3.9140	1.00971
Perceived ease of use (Neg)	398	1.00	5.00	2.9284	1.07374
Perceived usefulness	432	1.00	5.00	4.1640	0.83067
Compatibility	432	1.00	5.00	4.0685	0.94171
Perceived cost (Neg)	418	1.00	5.00	2.8744	1.00543
Perceived cost (Pos)	410	1.00	5.00	3.6780	1.05067
Perceived risk (Neg)	425	1.00	5.00	3.0980	0.90568
Perceived risk (Pos)	412	1.00	5.00	3.5073	1.02402
Subjective norm	417	1.00	5.00	3.8285	0.93102
Attitude	423	1.00	5.00	4.0918	0.89667
Awareness	432	1.00	5.00	3.9280	0.88895

The study found medium to large positive correlations between all constructs except perceived cost and perceived risk – see Table 3.19. Although there was a medium positive correlation between these two constructs, they had small negative correlations with the other constructs. Banks need to note that if perceived risk and perceived cost increases the other constructs will decline which will impact negatively on potential digital banking adoption. The respondents in the study indicated that digital banking is easy to learn, user-friendly and easy to use – see Table 3.11. Age did not have a significant impact on perceived ease of use whilee income, and qualification had a substantial effect on perceived ease of use – see Tables 3.35 and 3.44. The respondents with higher incomes and higher levels of education had substantially higher averages on the items in the construct than the low-income earners and people with lower levels of education. The study found that most respondents agreed that digital banking is useful, it is a more convenient way of doing banking, saves time and money as well as gives greater control over finances.

The 65 years and older age group showed a significantly lower average on perceived usefulness than the other age groups in the study – see Table 3.28. Individuals in the higher income groups and with higher qualifications had substantial higher averages on the items within the perceived usefulness construct than lower income earners and lower qualified people – see Tables 3.36 and 3.45. The compatibility results indicated a high overall mean (4.1640). This indicates that the respondents agree that digital banking suits

their work and lifestyle as well as increase their overall productivity. Once again the 65 years and older age group, the lower income earners and the individuals with low qualifications had substantially lower averages than the other respondents indicating that they are less positive about the compatibility benefits of digital banking than the rest of the individuals in those demographic groups – see Tables 3.29, 3.37 and 3.46. The results of the study indicate that the respondents are somewhat indecisive on the perceived cost of digital banking. There was interestingly enough no significant difference in the averages of the different income groups regarding the perceived cost of digital banking. People agreed that digital banking is a more cost-effective way to do banking while the lowest income earners were neutral on this – see Table 3.38. All factors tested in this study, in line with previous literature, indicate that cost has a major impact on digital adoption. The impact of cost on digital banking adoption is in line with findings from Iqbal *et al*. (2003:55). Although respondents agree that digital banking has enough safeguards they are neutral with regards to the risk of digital banking and especially information security – see Table 3.15. The study indicated no significant differences between age groups with regards to perceived risk. The 65 years and older age group did, however, indicate they are not in agreement with other age groups on the safeguards of digital banking and neutral as to whether enough safeguards are in place for digital banking – see Table 3.30.

The study further showed that the people with a monthly income above R10 000 are more neutral on perceived risk which indicates that lower income earners are more concerned about the perceived risk and are more in agreement that it is risky – see Table 3.39. The study indicated no practically significant differences with regards to perceived risk between the different qualification levels. The findings that risk remains a concern for a large component of potential adopters corresponds with earlier findings from Chibonda (2014:18). The study pointed out that subjective norm plays a significant role in digital banking adoption. Except the 65 years and older age groups who were neutral regarding subjective norm, the rest all agreed that people who influence their decisions believe digital banking is good thing – see Table 3.31. The study also found that people earning higher incomes and who is more educated is more in agreement with regards to the subjective norm than people earning lower salaries and with lower levels of education – see Tables 3.40 and 3.49. The study indicated that the respondents showed a positive attitude towards digital banking; they believe that digital banking is a good idea which will make their lives easier – see Table 3.17. The only significant practically visible difference

recorded with regards to attitude were between the 65 years and older age group and the rest of the age groups. The 65 year and older age group were neutral on attitude towards digital banking adoption while the rest agreed that it would be beneficial to them – see Table 3.32. The study further pointed out that higher earning individuals as well as higher qualified individuals displayed a positive attitude towards digital banking while the lowest qualified individuals and lowest income earners were more neutral – see Tables 3.41 and 3.50. The mean for awareness indicated that most of the respondents in this study believe they receive sufficient information regarding digital banking benefits and services – see Table 4.1. Age had no significant impact on awareness – see Table 3.33. From the results, it is evident that the middle income as well as higher income earners agree that they receive sufficient information on digital banking while the lower income groups are slightly less convinced – see Table 3.42. Qualifications, in general, show small practical differences with regards to awareness. The only practically visible difference was between the individuals with some high school education and the people with some tertiary qualification which is incidentally the group with the highest mean for awareness – see Table 3.51. From the above results, it is clear that banks need to focus in general on individuals with lower income and qualification levels as well as individuals older than 65 years with regards to their attitudes about digital banking adoption.

4.3 RECOMMENDATIONS TO IMPROVE MANAGERIAL DECISION MAKING REGARDING DIGITAL ADOPTION BY APPLYING LEARNINGS FROM THIS STUDY

Given the fact that financial institutions in South Africa have spent a significant amount of capital and resources in developing digital banking it is critical for them to secure a return on investment through improved economies of scale. It is imperative for banks to create economies of scale to increase profits. Economies of scale will determine the success rate of digital banking adoption in financial institutions. Understanding the factors the current state of technology acceptance and the factors impacting adoption will assist banks to develop strategies to increase profits. Therefore, banks need to use the important strategic information of this study and other supporting literature regarding the factors influencing digital banking adoption to enhance service delivery and adoption rates. As indicated in chapter 2, despite the efforts of banks to promote digital banking, customers in rural areas are still reluctant to accept and take up new technological banking solutions (Ramavhona & Mokwena, 2016:3). Previous studies indicated that digital banking adoption is substantially lower in rural areas than in urban areas (Masocha

et al., 2011:1858). This study also indicated in line with previous research (Munusammy, 2012:2) that a large percentage of customers in rural areas still prefer the traditional way of banking which have a negative impact on margins and profitability. Management in the financial services industry needs to use studies on digital adoption to ensure they market the service more effectively to increase the adoption rate and ultimately profit.

4.3.1 Managerial implications of recommendations

The managerial implications of the literature study and empirical findings are fairly similar. As indicated previously there is a slight difference in the findings with regards to the role risk plays in determining digital adoption. The empirical study however highlighted subtle, very important, differences based on demographic factors which will impact the digital adoption strategies of financial institutions. While the literature studies also failed to give an accurate indication of current digital banking adoption trends and numbers in rural areas, the empirical findings were able to supply the details. Financial institutions will only be able to increase digital adoption and their triple bottom line if they revisit their current business and marketing strategies to include a focused approach to digital banking adoption – see Figure 4.1. Digital adoption requires a substantial degree of digital readiness which will be negatively impacted by insufficient levels of digital readiness in rural areas. The strategies thus need to focus on ways to make digital banking technology user-friendly and non-intimidating to ensure improved adoption rates. To increase digital adoption amongst individuals in rural areas banks can enhance their digital banking platforms to include all the official languages. This will encourage lower qualified individuals and people who are not fluent in English to also adopt digital banking. Banks also need to focus on digital banking efficiency to stay competitive and relevant. The digital banking system needs to be fast and reliable with ongoing enhancements to reduce risk. Banks need to ensure responsiveness and address breakdowns and problems immediately.

One of the biggest challenges that banks need to address to increase digital banking adoption and usage is the perceived as well as the actual risk associated with online banking. It will be beneficial for financial services institutions to display visible concern for customers' views by addressing the challenges expressed in their business and marketing strategies. The banks need to demonstrate reliability in their ongoing efforts to come up with innovative solutions to continually improve secure digital banking systems, particularly with regards to the personal information security concerns highlighted. It is of

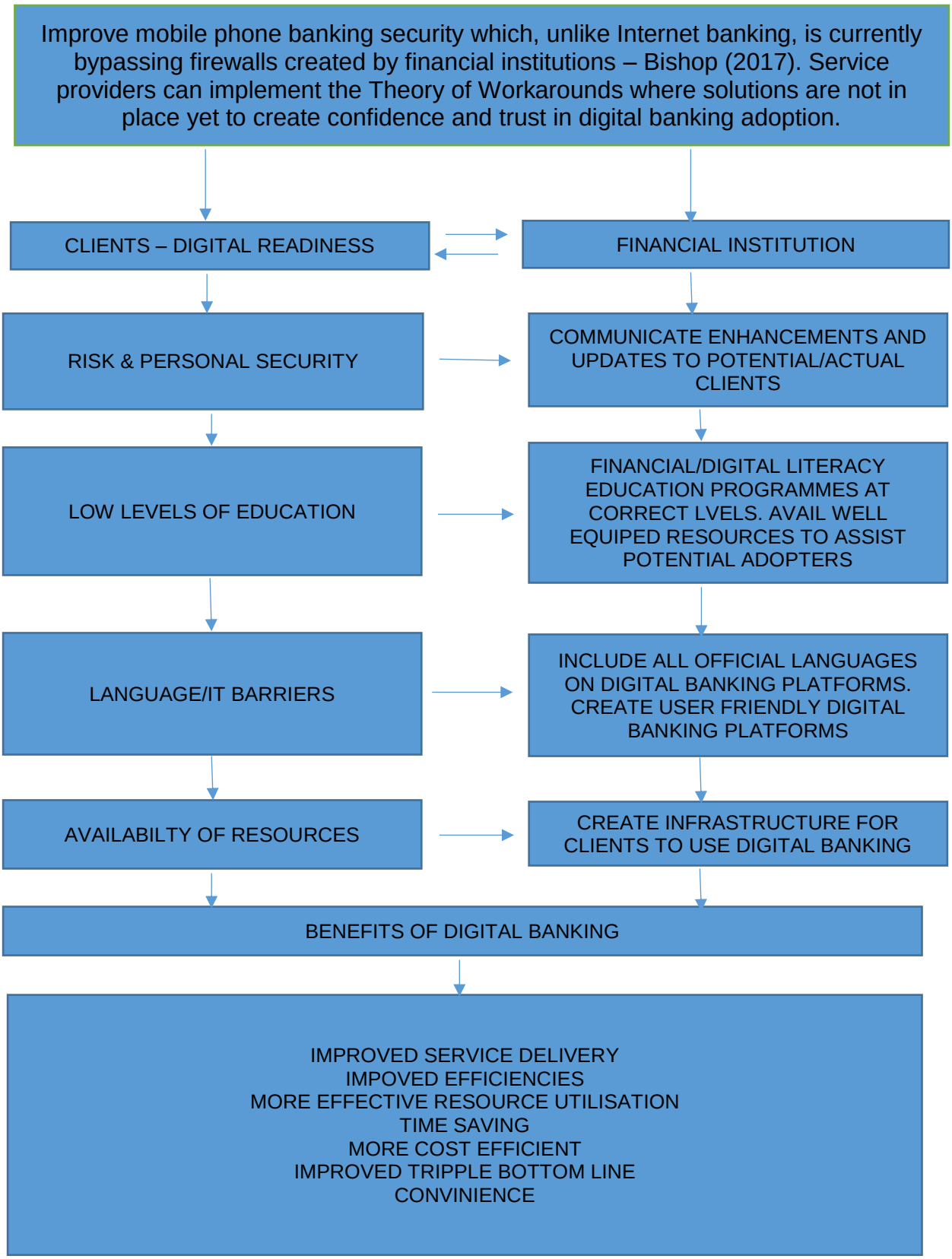

Figure 4.1: Managerial Framework

utmost importance for banks to ensure these improvements are communicated to customers as well as potential adopters via the most suited and utilised media platforms. In developing solutions banks also need to take cognisance of concerns raised in this study regarding cellular phone banking security (Bishop, 2017:28) when it comes to the bank's firewalls – see Figure 2.5. Since risk is such a big concern under potential digital banking adopters banks in South Africa also need to encourage the government to put the necessary legal structures in place to enforce regulation with regards to digital banking fraud. This and internal state-of-the-art internal security systems to combat digital banking crime will enhance digital banking adoption across all market segments. Banks can also ensure that customers and potential adopters have access to digital banking devices especially in poor rural communities where individuals indicated they don't have the necessary infrastructure to access the Internet. Banks need to enhance the current infrastructure to accommodate more people with digital banking access. In their strategies, they could look at potential partnerships or alliances with third parties to supply the necessary infrastructure to a wider audience. This will not only increase adoption numbers but will also enhance convenience in rural areas.

To drive digital adoption, banks need to invest resources and capital into developing financial literacy and education programs which include the benefits of digital banking in the curriculums. The demographic information in this study can be used to ensure the program is pitched at the right audiences and levels, where adoption is low. Programs need to address cost benefits, highlight convenience as well as create a platform to use digital banking systems. Such programs will assist banks also to close the digital divide between rural and urban customers as well as between diverse demographical groups highlighted in the study. The more customers are educated, the more they will understand the benefits of digital banking, not only from a cost point of view but also from a convenience point of view. If resources are a problem bank can make use of third parties to deliver this service. To ensure return on investment banks will have to move the large numbers of low contributing customers to a digital alternative which is more cost-effective for both parties. Since this study found, in line with previous research (Cloete & Ramburn, 2006) that levels of education have a big impact on digital adoption the financial service institutions will be well advised to address this in their strategies. Banks should ensure that, besides having easy to understand programs and websites, their staff should also be well trained and equipped to assist clients in understanding digital banking. Understanding the product will alleviate fears and give customers across all market

segments confidence to adopt digital banking. This which will ultimately lead to customer onboarding at all levels. It is imperative that banks have easy to reach professionals to assist people with service failures. Banks need to re-allocate resources to be available to assist potential digital banking adoption clients in the branches. The banks need to ensure they spend funds on increasing in branch facilities for potential adopters to see demonstrations and test the system. If individuals increase their self-efficacy and get confidence, there is a good chance that they will adopt digital banking. Another important aspect of digital adoption, as indicated in this study, is proper communication strategies. Banks need to developed innovative ways of communicating the benefits of digital banking to customers in rural areas while at the same time alleviate concerns with regards to the perceived and actual risks involved. Customers will only gain confidence and make informed decisions if they have all the facts and understand the benefits of digital banking. Cost benefits for the customer need to be communicated and demonstrated, especially to less educated individuals in rural areas. Banks thus need to introduce awareness programs and create platforms for two-way communication; the potential adopters need to be able to ask questions. Banks also need to use communication platforms created to ensure they keep customers and potential adopters informed regarding new development and changes.

This will mean that banks need to avail human resources who are well equipped to communicate with potential adopters. The information sharing needs to take place at the appropriate levels to ensure understanding. Banks need to ensure the digital service they provide to their customers are of the highest standards so that they can get positive social media publicity and positive sentiments through word-of-mouth marketing. Financial institutions need to implement a service measurement system for digital banking to ensure that high standards of service are maintained, and areas of concern identified and rectified. Banks also need to invest in increasing digital banking visibility through above the line marketing campaigns. These campaigns need to focus on addressing concerns and opportunities highlighted in this study. The marketing campaign needs to support the training and communication strategies discussed previously in this chapter. The study also highlighted the high success rate of bank pamphlets in creating awareness. Banks can use this medium to give product knowledge and offer incentives for people to change from over-the-counter to digital banking. This might motivate individuals who are unsure or scared to use digital banking to start using it.

The findings of this study can assist management of financial institutions to make informed decisions and build strategies to increase digital adoption by overcoming the obstacles.

4.4 LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

This study has some limitations that can be addressed in future research. Firstly, the factors used in this study to determine their influences on digital adoption are by no means exhaustive. Future studies can include different and more factors from previous literature associated with digital readiness and adoption. Secondly, the sample consisted of individuals from only a few selected rural areas in three provinces of South Africa. A suggestion for further studies is to use a probability sample and include a much wider variety of rural areas across South Africa. Thirdly, the study made use of a non-probability convenience sample which means the results cannot be generalised. Future studies can use a probability sample to improve the generalisability of the outcomes. Fourthly, the results of the study are based on a snapshot data which is not reflecting changes or movement in constructs with changed circumstances and experience levels. Future studies may consider a qualitative approach for a more holistic understanding of the results of this study. Finally, comparative studies between the different digital banking options such as cellular phone banking and Internet banking can be conducted in rural areas in future to ensure a more holistic understanding of digital banking adoption behaviour. This will also assist companies to fine-tune their strategies for digital adoption further by having an even more focused approach.

4.5 CONCLUSION

It is imperative for banks to stay relevant and completive in the fast-changing financial services industry. Banks can improve their cost-to-income ratios and profit by convincing the more customers to use their more cost-effective digital platforms. If they can get more low-value customers to start using digital banking, they will need fewer people in the branches or rather apply these expensive human resources in a more cost-effective way. Reduction in frontline staff will result in a direct cost saving while the re-allocation of staff into more productive areas will be an indirect cost saving. Migrating people from bricks and mortar to digital will not only be beneficial to the bank but also the customers, lower transaction costs as well as reduced transportation cost too often travel substantial amounts to the bank. Cost is often a huge determining factor for individuals earning meagre salaries or incomes, and banks need to find means to keep costs low if they want

to increase digital banking numbers and decrease branch attendant costs substantially. It is important for bank management to address the concerns and opportunities highlighted in their strategies to increase digital banking adoption. By possibly adopting and implementing some of the suggestions made in this study regarding communication, awareness creation, benefits and risk reduction banks will be able to substantially increase their digital banking numbers and positively affect their cost-to-income ratio and overall profitability.

4.6 SUMMARY

In this chapter, the most important empirical findings of this study as well as the literature review were summarised and aligned to primary and secondary objectives. The conclusions were used to create context and make recommendations to financial services organisations regarding the improvement of digital banking adoption in rural areas. The recommendations primarily focused on practical suggestions to improve digital banking adoption and the potential benefits. The impact of the inclusion of these recommendations in the strategic managerial framework of banks were also highlighted in this section. The final section of this chapter looked at the limitations of the study and recommendations for future research.

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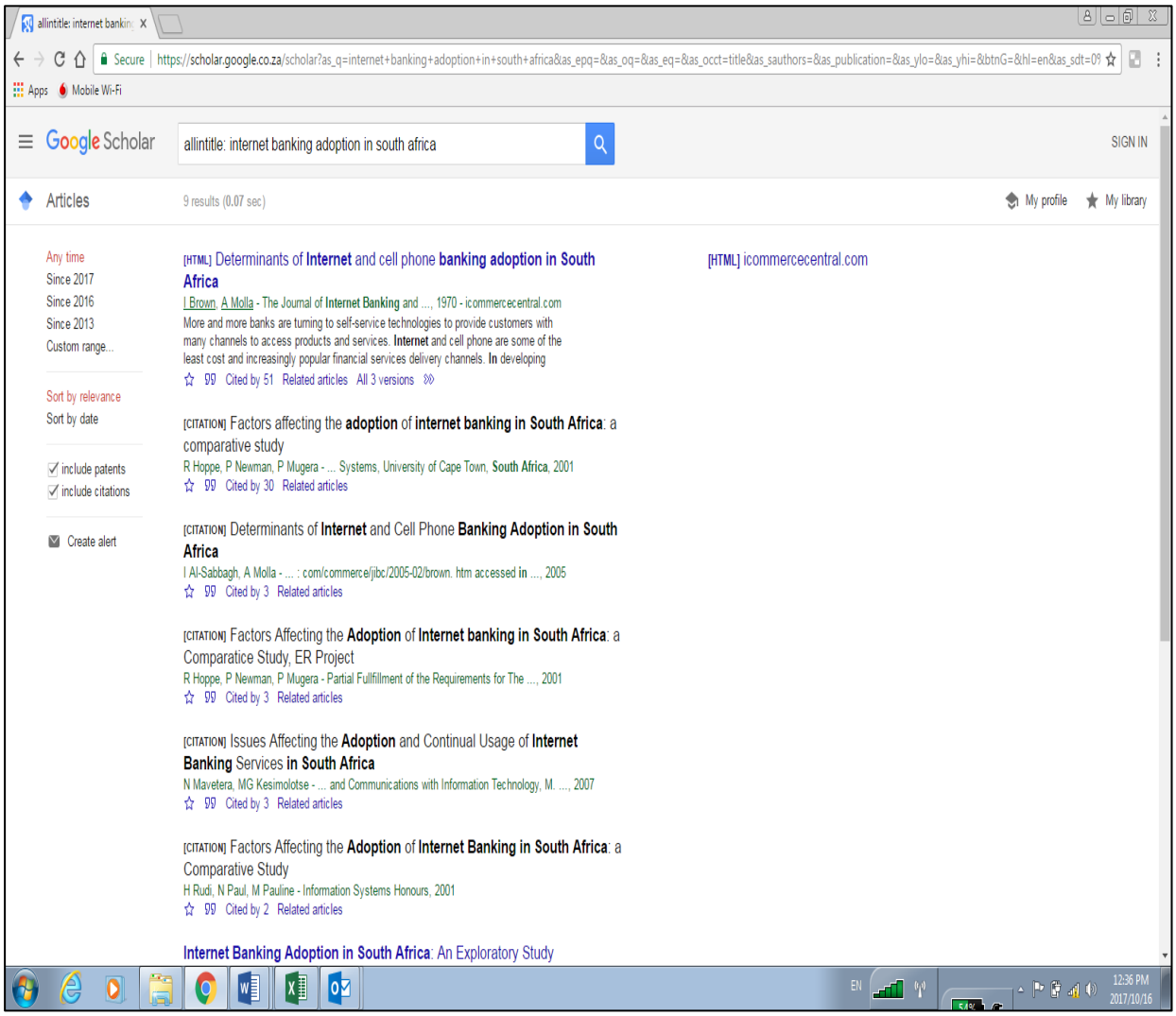
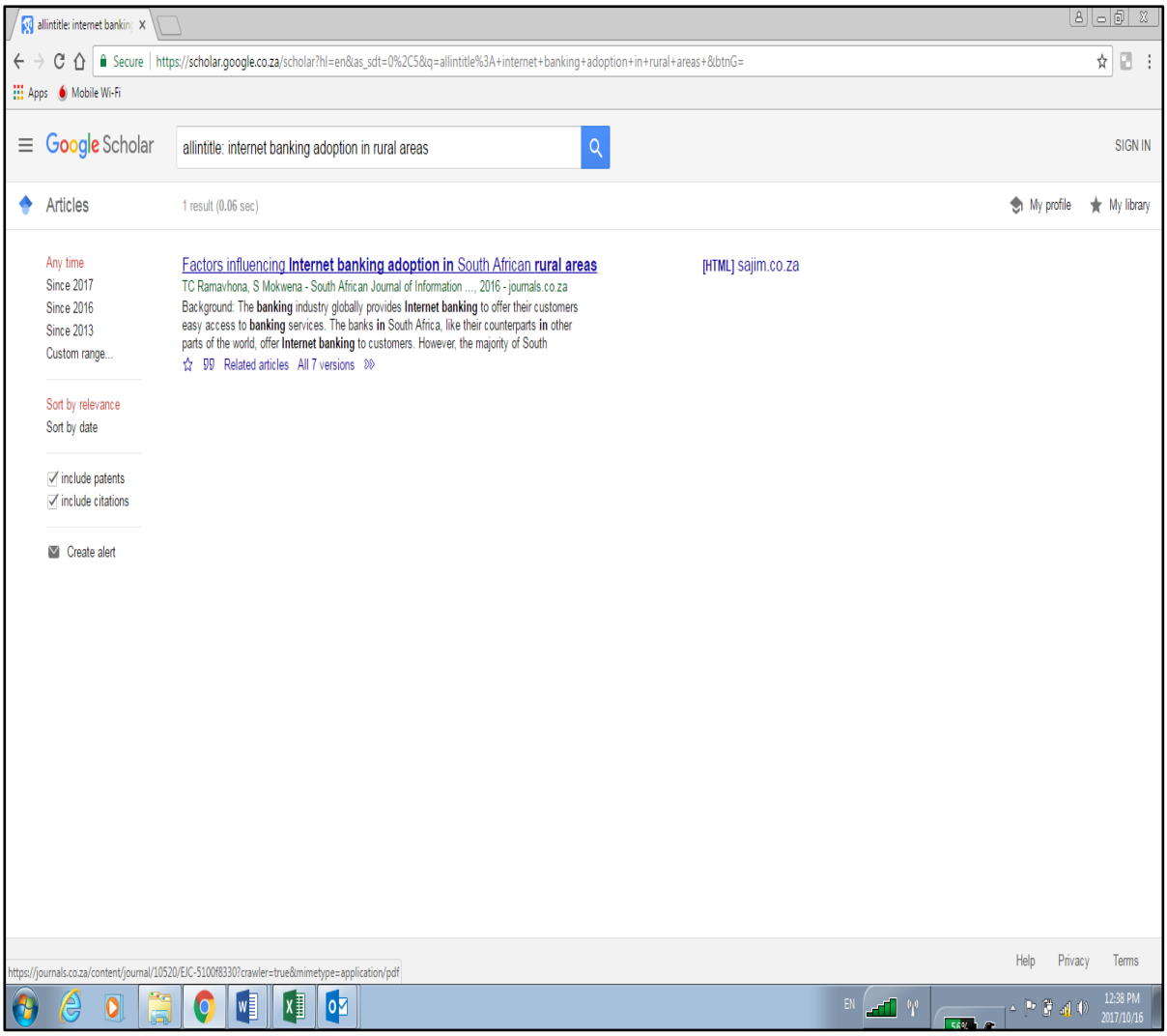
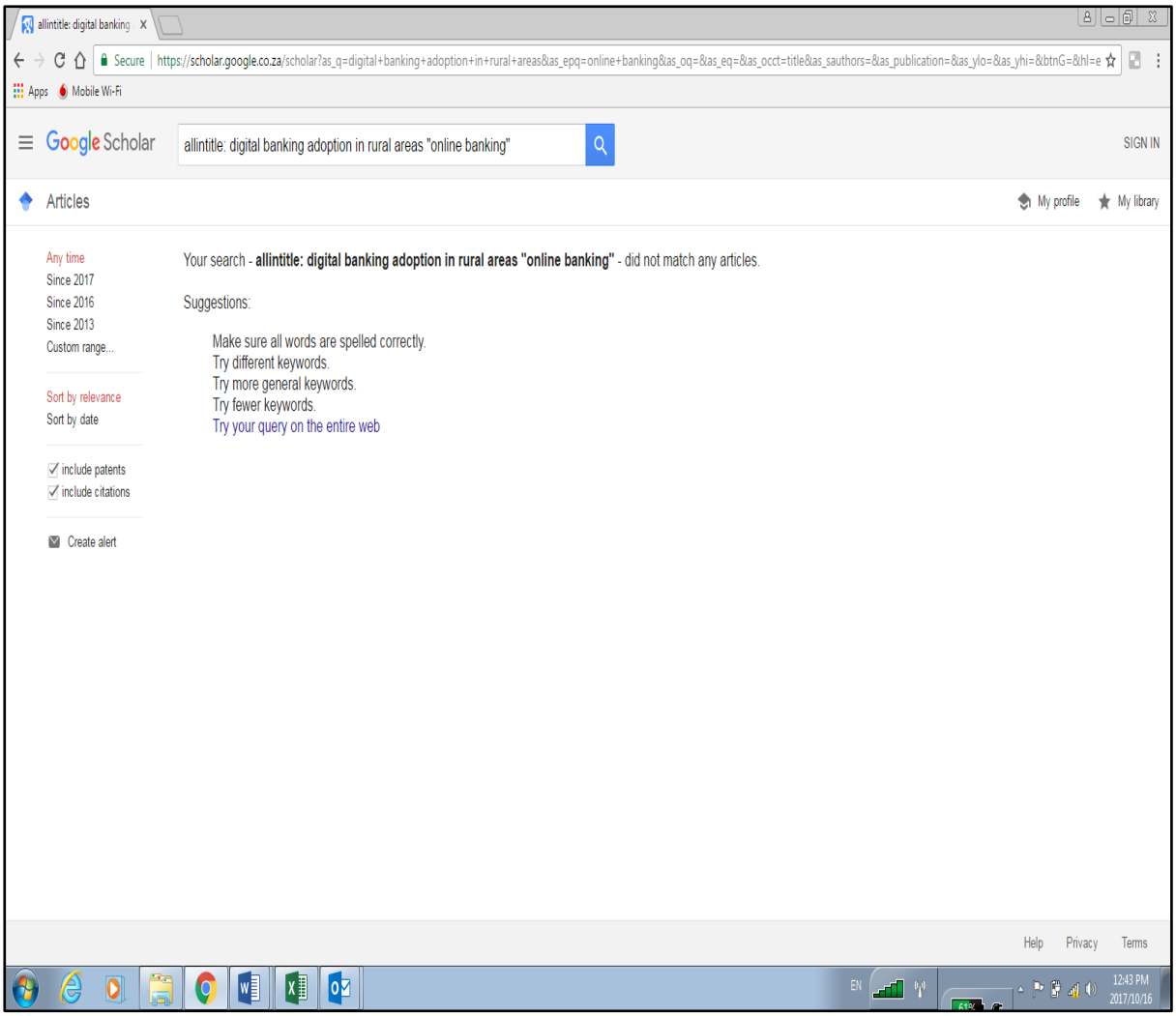
ANNEXURE 1: LITERATURE SEARCH



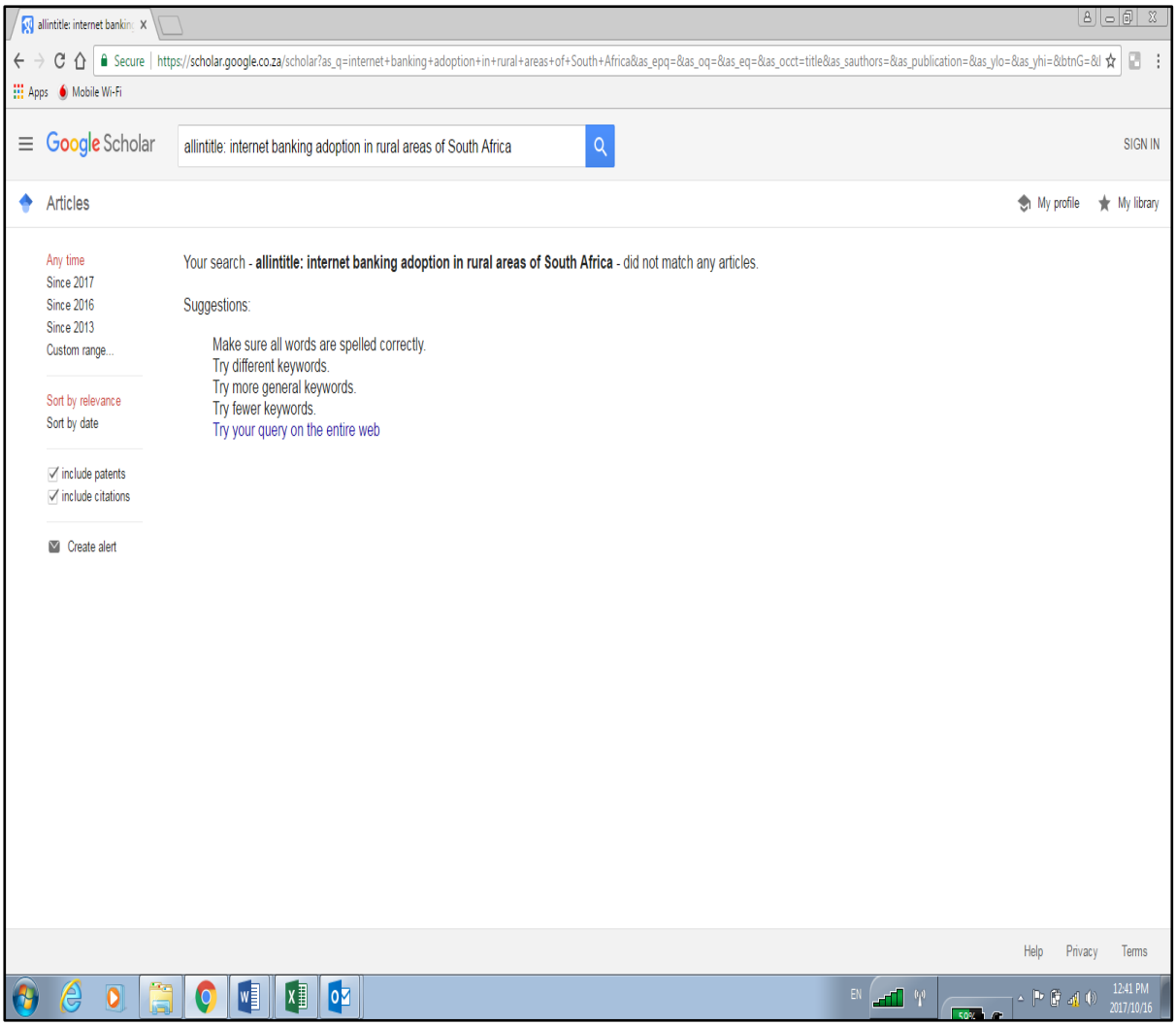
ANNEXURE 2: LITERATURE SEARCH



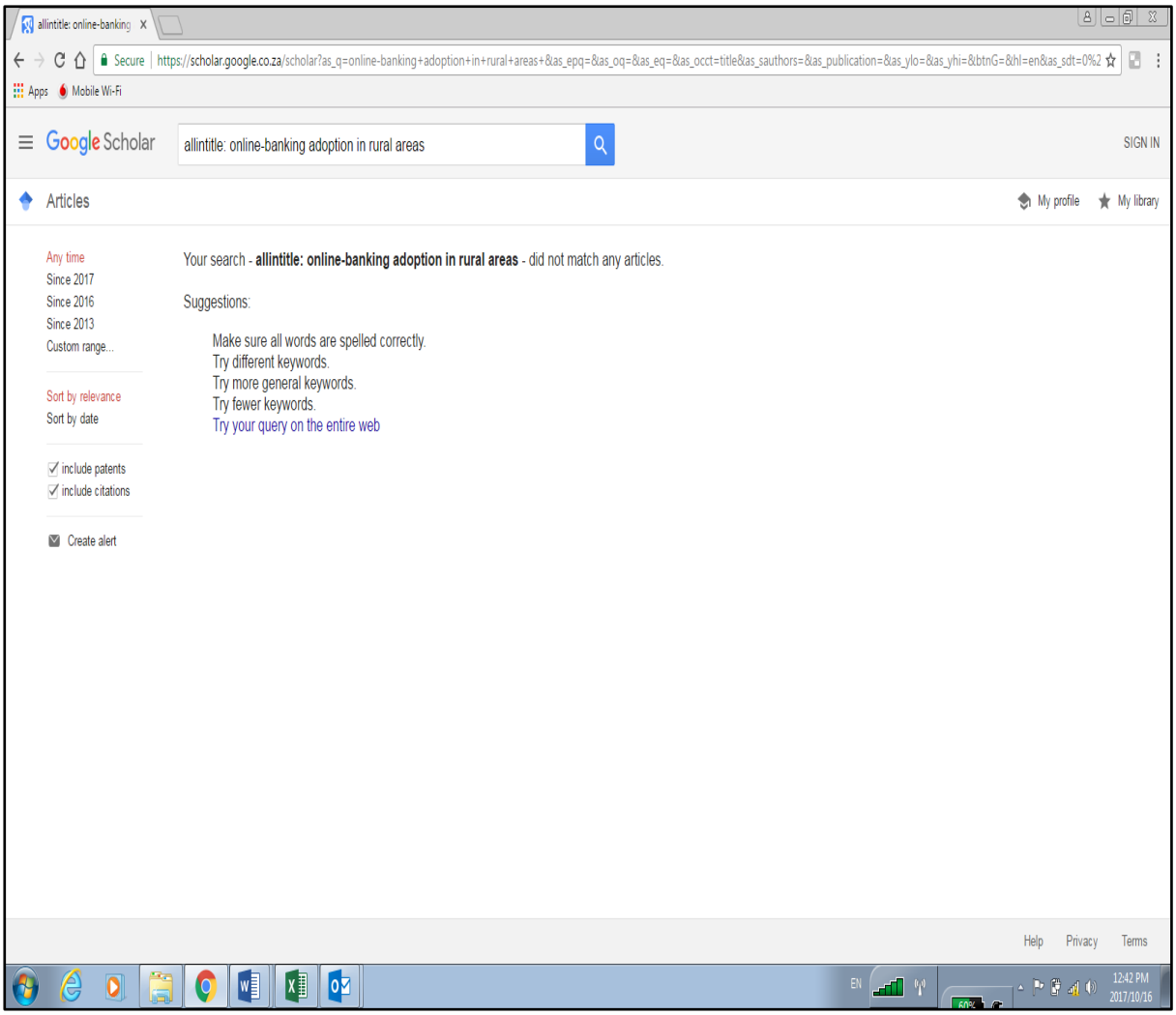
ANNEXURE 3: LITERATURE SEARCH



ANNEXURE 4: LITERATURE SEARCH



ANNEXURE 5: LITERATURE SEARCH



ANNEXURE 6: SELF-COMPLETING QUESTIONNAIRE

The researcher, Dirk le Roux is conducting research for his MBA degree at the NWU School of Business & Governance. The aim of this questionnaire is to identify challenges with regards to the uptake of online banking products and services in rural areas. In order to gather relevant and reliable data it would be appreciated if you could complete a short 10 minute questionnaire. The information provided will be treated confidentially and your participation will be highly appreciated. Your contribution and answers will assist the bank to improve service delivery to all its customers. By completing the questionnaire you give permission for your data to be used in this study. If you have any questions regarding the questionnaire please feel free to contact the researcher.

D Le Roux
018 – 406 1000

1. Demographic details

Please tick the applicable box

1.1 Gender

Male	1
Female	2

1.2 Age category

16 to 25	1
26 to 35	2
36 to 45	3
46 to 55	4
56 and older	5

1.3 Gross monthly personal income

Less than R2000	1
R2001 to R5000	2
R5001 to R10 000	3
R10 001 to R20 000	4
Over R20 001	5

1.4 Highest qualification

Post graduate qualification	1
University/Technicon degree/diploma	2
Other tertiary qualification	3
Matric	4
Some high school	5
Other (Specify)	6

1.5 Occupation type

Formally employed	1
Unemployed	2
Pensioner	3
Self employed	4
Other (Specify)	5

1.6 Home language

English	1
Afrikaans	2
Tswana	3
Sotho	4
Other (Specify)	5

Please note that the term online banking is the same as digital banking and in this questionnaire refers to Internet and/or cell phone banking

2. General online/digital banking usage

Please tick the applicable option

2.1 How often do you use the Internet for online banking?

Never	Monthly	nce a wee	than once a	Daily

o Other, please specify: _____

2.2 If never, why not?

	Yes	No
o No Internet access (no connection where I stay)		
o No device to connect to the Internet		
o Inability to access the Internet		
o High cost of Internet access		
o Risk involved		
o Afraid to use online banking		
o No Need		

2.2.1 Online banking adoption (Trialability)

	Yes	No
o If possible I will adopt online banking as soon as possible		
o I will use digital banking if I can see a demo first		
o I will use digital banking if I can test it first		

2.3 If you use the Internet , where do you *mainly* use it?

o Home	1
o Work place	2
o Internet café	3
o Friend	4
o Family	5
o Free WiFi spots	6
o Banks	7

2.3.1 What do you *mostly* use online banking for?

o Viewing account statement	1
o Viewing account balances	2
o Making payments	3
o Transferring funds	4
o Getting information on products/services	5

2.3.2 How can the bank improve online banking service to customers?

	YES	NO
o Create awareness of services and products		
o Provide training		
o Create an easy to understand website		
o Provided internet facilities and free WI-FI		
o Improve security		

2.3.3 Where did you learn about digital banking?

	YES	NO
o Bank leaflets/advertisements		
o Television/radio		
o Newspaper/magazines		
o Social media		
o Word-of-mouth (friends, family etc.)		
o I don't know anything about online/digital banking		

3 Online/digital banking perception

Please read each statement and then put a score in the box, which best indicates your view.

3.1 Perceived ease of use

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
a. Learning to use online banking is easy	1	2	3	4	5
b. Online banking is user friendly	1	2	3	4	5
c. Using online banking is easy	1	2	3	4	5
d. Online banking requires a lot of skills	1	2	3	4	5
e. Online banking can be frustrating	1	2	3	4	5

3.2 Perceived usefulness (Relative advantage)

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
a. Online banking makes it easier to do banking activities	1	2	3	4	5
b. Online banking saves me time	1	2	3	4	5
c. Online banking is a convenient way to do banking transactions	1	2	3	4	5
d. Online banking is cost effective	1	2	3	4	5
e. Online banking gives me greater control over my finances	1	2	3	4	5

3.3 Compatibility of online banking

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
a. Online banking suits my lifestyle	1	2	3	4	5
b. I find online banking useful in doing my banking	1	2	3	4	5
c. Using online banking increases my productivity (by allowing me to do several transactions at once)	1	2	3	4	5
d. Using online banking to do my banking business fits into my work style	1	2	3	4	5

3.4 Perceived Cost

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
a. The telecommunication cost to use online banking is expensive	1	2	3	4	5
b. Online banking service fees are expensive	1	2	3	4	5
c. Hardware necessary to do online banking is expensive	1	2	3	4	5
d. Online banking is cost effective	1	2	3	4	5

3.5 Perceived risk

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
a. It is safer to go to the bank to do my banking business	1	2	3	4	5
b. Online banking is a risky way of doing banking	1	2	3	4	5
c. Information about transactions on online banking can be tampered with	1	2	3	4	5
d. Information about online banking transactions may be known to others	1	2	3	4	5
e. Online banking has enough safeguards	1	2	3	4	5

3.6 Subjective norm

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
a. My family think I can use online banking	1	2	3	4	5
b. My family think I should use online banking	1	2	3	4	5
c. People whose opinions I value believe I should use online banking	1	2	3	4	5
d. People who influence my decisions think I should use online banking	1	2	3	4	5

3.7 Attitude

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
a. Using online banking is a good idea	1	2	3	4	5
b. Using online banking will be good for me	1	2	3	4	5
c. Online banking makes it easier to do banking	1	2	3	4	5
d. Online banking is a convenient way to manage my finances	1	2	3	4	5

3.8 Awareness of online banking services

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
a. I receive enough information from my bank about the benefits of online banking	1	2	3	4	5
b. I receive enough information from my bank on using online banking services	1	2	3	4	5
c. I receive information regarding online banking services from my bank	1	2	3	4	5
d. I am aware of digital banking and what it can do for me	1	2	3	4	5

ANNEXURE 7: LETTER OF CONSENT

2nd Flour
Absa Klerksdorp
91 OR Tambo Avenue
Klerksdorp 2571

To: Lourens Hills

SUBJECT: LETTER OF CONSENT TO INTERVIEW CUSTOMERS

I, Dirk le Roux, am an employee at Absa bank and a registered student: MBA at the NWU School of Business & Governance. I am currently engaged in research for my master's degree. The topic of this research is on factors influencing the adoption of online/digital banking in rural areas. The study aims to develop certain guidelines, a managerial framework, for financial institutions in line with rural customer's attitudes and perceptions with regards to online/digital banking.

The researcher will require Absa customers in various rural towns in the North West, Northern Free State and Northern Cape to complete questionnaires. A copy of the completed research document will be made available to the bank on request.

I hereby request your consent and support in the selected branches in conducting this research by requesting a set number of Absa rural customers to complete a questionnaire. The information gathered will be treated as confidential and only used for research purposes.

Thanking you

Dirk le Roux

ANNEXURE 8: ETHICAL CLEARANCE

NWU School of Business & Governance
North-West University
Private Bag X6001, Potchefstroom
South Africa 2520

Prof CJ Botha
Tel: (018) 299 1672
Email: christoff.botha@nwu.ac.za

25 April 2017

ETHICAL CLEARANCE

This letter serves to confirm that the research project of **LE ROUX, DC** has undergone ethical review. The proposal was presented at a Faculty Research Meeting and accepted. The Faculty Research Meeting assigned the project number **EMSPBS16/11/25-01/32**. This acceptance deems the proposed research as being of minimal risk, granted that all requirements of anonymity, confidentiality and informed consent are met. This letter should form part or your dissertation manuscript submitted for examination purposes.

Yours sincerely

Prof CJ Botha

Manager: Research - NWU Potchefstroom Business School

Original details: Wilma Pretorius(12090298) C:\Documents and Settings\Administrator\My Documents\Briewe MBA\2017\

ANNEXURE 9: LETTER FROM LANGUAGE EDITOR

Dynamic Language & Translation Specialists

Antoinette Bisschoff
71 Esselen Street, Potchefstroom
Tel: 018 293 3046
Cell: 082 878 5183
antoinettebisschoff@mweb.co.za
CC No: 1995/017794/23

Tuesday, 14 November 2017

To whom it may concern,

Re: Letter of confirmation of language editing

The dissertation **Applying a managerial framework to encourage digital adoption of banking products in rural areas** by **DC Le Roux (10649913)** was language and technically edited. The referencing and sources were checked as per NWU referencing guidelines. Final corrections remain the responsibility of the author.

Antoinette Bisschoff

Officially approved language editor of the NWU since 1998
Member of SA Translators Institute (no. 100181)

Precision ... to the last letter