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Comparative analysis of mobile and online banking use in South Africa

Ntsimane, Mpho

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Comparative analysis of mobile and online banking use in South Africa

By

Mpho Ntsimane

A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Business Administration

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ABSTRACT

Online and mobile banking are both channels with potential to make banking accessible to the majority of people, and in particular in South Africa where there is a high uptake of mobile communication usage. Yet the adoption of both these channels has been very low, especially when one compares the rate at which mobile communication devices continue to grow.

The purpose of this study was to identify and compare the factors that influence the adoption of mobile and online banking in South Africa using the Theory of Acceptance and Use of Technology (UTAUT) and to develop a deeper understanding of the antecedent factors that influence the adoption of one service over the other in South Africa. The aim was to understand these factors and test and verify these factors in the South African context.

The research data was collected by using self-administered questionnaires that were distributed to mobile and online banking customers and prospective customers, and in addition, interviews were conducted with both digital banking experts and thought leaders. A total of 215 responses was collected from the survey questionnaire administered with 177 usable responses. A further 6 interviews were conducted with digital banking experts and thought leaders in order to cross-examine the quantitative results from the surveyed population.

The demographic information as well as technology usage is useful to understand the type of customer profile that the banks have to focus their marketing efforts on in order to improve on the adoption of both online and mobile banking services. Principal component analysis was applied on the

surveyed data to test whether the proposed factors are applicable in the South African context.

The factors that were identified to influence the adoption of mobile and online banking are performance expectancy, effort expectancy, social influence and facilitating conditions as per the unified theory of acceptance and use of technology (UTAUT) model. Effort expectancy was not an influential factor in online banking contrary to the UTAUT model. Furthermore, the study tested how factors like age and gender moderate some of these factors in order to further understand the adoption influence across some groupings.

In comparison, the identified factors were more influential on online banking than mobile banking, highlighting the relationship that might exist between factors and the product lifecycle. The study further showed that there are multiple factors that influence the adoption of technologies. Some of the factors are more influential than others under certain circumstances; and some of the factors could even be more influential to certain technologies than others. It is therefore important for organisations to continuously study these factors throughout the technology lifecycle as this will enhance decision-making and increase successful technology implementation.

DECLARATION

I, Mpho Hendrick Ntsimane, declare that this research report is my own unaided work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Mpho Hendrick Ntsimane

Signed at ……

On the ……..day of …… 2013

DEDICATION

This research report is dedicated to my mother, Maloto; my son Omolemo; and my late grandmother, Lentheng. Thank you for making me the person that I am today and for all the love and support that you have given me.

ACKNOWLEDGEMENTS

I wish to thank, and express my sincere gratitude and appreciation to, the following people:

- My supervisor, Rabelani Dagada, for the support, guidance and the patience that you have always provided to me throughout this research. I am truly grateful and it would not have been possible without you.

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CHAPTER ONE
INTRODUCTION

1.1 PURPOSE OF THE STUDY

The purpose of this study was to identify and compare the factors that influence the adoption of mobile and online banking in South Africa and to develop a deeper understanding of the antecedent factors that influence the adoption of one service over the other.

1.2 CONTEXT OF THE STUDY

Mobile phone usage in South Africa had grown to over 100% connections by the end of 2008 and continues to enjoy robust growth according to Deon Liebenberg, Regional Director for Sub Saharan Africa at Research In Motion (RIM) (cellular-news.com 2009). On the other hand, South Africa has just over 6,8 million internet users in a population of over 49 million people as at end December 2012 compared to 2,4 million users in December 2000 (internetworldstats.com 2012). Thus internet penetration stands at just over 13.8% in South Africa.

There is also a continued growth of smartphone usage and according to Gartner, Inc., smartphone sales grew 96% in the United States, from the third quarter of 2010, and accounted for 19.3% of overall mobile phone sales in the third quarter of 2010 (Tudor and Pettey 2010). The demand for smartphones continues to be stimulated by a continued low retail pricing and widespread adoption of applications such as web browsing, e-mail, Twitter, Facebook, Global Positioning System (GPS) and games (Pettey and Stevens 2011). The rate at which smartphones have continued to grow, Nielsen expected more smartphones sales in the United States' market than feature phones (Entner 2010). This was

eventually realised at the end of June 2011 with smartphones accounting for 55% of new handsets bought in that period (Liu 2011).

South Africa has recently seen a roll-out of fibre-optic cable network connecting several major centres and able to carry more data and voice with improved connectivity and faster speed, suitable for wireless internet connectivity in both mobile and computer networks (SAinfo 2011). An increase in the number of undersea data cables linking South Africa to the rest of the world, as well as the process of market liberalisation, has seen a shake-up in local internet access (SAinfo 2011). The Seacom submarine fibre-optic cable system was commissioned in July 2009, while the East African Submarine Cable System started service in August 2010 (SAinfo 2011). The West African Cable System, which is a 14 000 kilometre undersea fibre-optic cable linking South Africa to the United Kingdom along the West African coast has started operating (Odendaal 2012). These developments could reduce the prices of broadband connectivity and make it cheaper for South Africans to access internet.

According to (Goldstuck 2011), 37% of South Africans in urban and rural areas aged 16 and above now use cellphone banking. This number is much higher than the people that have access to internet in South Africa. (Goldstuck and Dagada 2009) contends that cellphone banking adoption will surpass the uptake of internet banking before the end of 2011 due to the pace of cellphone banking registrations compared to that of internet banking.

Mobile banking which is classified under m-commerce is different from online banking which is classified under e-commerce and the two should therefore be distinguished. E-Commerce signifies an "*anytime access*" to business processes managed by computer-mediated networks which is accessible when stationary and the services are not available independent of the geographic location (Hohenberg and Rufera 2004)cited by (Tiwari

and Buse 2007). M-Commerce signifies an "*anytime and anywhere access*" to business processes managed by computer-mediated networks that are accessible using mobile communication networks, making the availability of these services independent of the geographic location of the user (Hohenberg and Rufera 2004)cited by (Tiwari and Buse 2007).

1.2.1 Mobile banking

Mobile banking was first introduced in South Africa in 2002 by ABSA Bank (Goldstuck and Dagada 2009). Mobile banking in South Africa is constituted in three formats i.e. Wireless Application Protocol (WAP), Wireless Internet Gateway (WIG), and Unstructured Supplementary Service Data (USSD). Goldstuck and Dagada (2009) found that WAP is the most popular technology known by consumers. Since WAP requires internet connection on the mobile device and 37% of South Africans are able to browse the internet on their phones, it therefore becomes an attractive platform for banks to advance this self-service platform and get customers to adopt it in order to reduce queues at the branches and reduce costs for servicing customers. In July 2012, FNB launched a mobile banking application in addition to the three technologies discussed above (Alfreds 2011).

Gartner Inc. predicts that by 2015, companies will generate 50% of web sales via their social presence and mobile applications, implying that companies will be faced with the challenge of seeking to generate new sales and sales leads through new mobile and social channels and are reinvesting in e-commerce capabilities (Tudor and Pettey 2010). This expectation makes it imperative for South African banks to position their digital offerings in such a way that they can take advantage of these impending opportunities.

(Hobbs, Whitehouse, Bauer, Mahdi and Weggemans 2011) argues that digital is crucial in addressing changing customer behaviour and a successful digital offering in banking implies the provision of high quality online and mobile banking access. They further argue that amongst considerations for banks to invest in a robust digital offering, there are changing customers' attitudes and behaviours and Generation Y (broadly referring to those people born in the 1980s and 1990s), who are now at the point of choosing their primary financial services provider and cite digital as an important factor in this decision. (Hobbs et al. 2011) found that for Generation Y, the quality of the digital offering is an important factor in their decision-making process and banks have a real imperative to act now to attract these customers and thereby lock in future value. Their study further found that the propensity of Generation Y to use mobile channels was higher than any other consumer segment, with 67% of respondents in this segment saying that they were either using or considering using the mobile channel.

1.2.2 Online banking

Absa was the first South African bank to offer access to personal banking details online (Goldstuck and Dagada 2009) back in 1996. Internet banking offers many benefits to banks including cost savings, reaching new segments of the population, efficiency, enhancement of the bank's reputation and better customer service and satisfaction (Jayawardhena and Foley 2000) cited in (Karjaluoto 2002).

Gartner Inc. predicts that by 2014, over 3 billion of the world's adult population will be able to transact electronically via mobile or internet technology and the majority of the adults that will gain the ability to transact electronically for the first time will come from emerging economies (Tudor and Pettey 2010). In countries such as Kenya and South Africa, (Rao 2011) found that users have a higher propensity to make e-

commerce and m-commerce transactions, with 46% and 43% of customers in these respective countries having made remote purchases via mobile internet, fixed internet and telephone. Companies seeking to take advantage of the increase in electronic commerce capabilities will need to pay close attention to the consumer payment, commerce and remittance culture of each country that they are targeting (Gammage, Plummer, Thompson, LeHong, Karamouzis, Da Rold et al. 2009).

1.3 PROBLEM STATEMENT

1.3.1 Main problem

Although technology has become an integral part of doing business for many enterprises, it appears that the benefits sought by the champions of technology are not always fully realized (Curran and Meuter 2005). This results in companies investing heavily on technology, often with poor returns on their investments.

South Africa in particular has over 100% penetration on mobile communication yet has a relatively low number of internet connections, which suggests that the marketing and delivery of mobile and online banking services technologies would be different. Added to that, South Africa has a high level of unbanked population and is characterised by disparities in the education and socioeconomic contexts which should make it a unique challenge to educate customers to adopt self-service banking technologies such as online and mobile banking.

It is therefore important to determine the antecedent factors of technology adoption for each of these technologies in order to increase their implementation success. This study will therefore assess some of the critical variables that contribute to consumer adoption of both mobile and online banking technologies.

1.4 SIGNIFICANCE OF THE STUDY

There have been some studies aimed at addressing the factors that affect mobile phone banking adoption in South Africa, notably by (Sankar 2009; Mthethwa 2011). (Hoppe, Newman and Mugera 2001; Le Roux 2009; Hadebe 2010) focused on internet banking adoption whilst (Wu 2005) focused on factors that influence the adoption of internet banking in the eThekwini region of South Africa. No significant study has been undertaken to explore the factors that influence both online and mobile banking and the current disparities between the adoption of these two banking channels.

The significance of the Gartner Inc. predictions as discussed makes it important for banks to develop a deeper understanding of the antecedent factors that influences the adoption of one technology over the other in order to focus the marketing efforts on the relevant factors regarding each of these technologies. (Curran and Meuter 2005) found that there are multiple antecedent beliefs to customer attitudes that must be considered when introducing technology into the service encounter and that these relevant beliefs may not be constant across all technologies, or could possibly change over time.

A large South African population remains unbanked and mobile banking in particular could offer a cheaper and more viable option to draw this population to mainstream banking due to its potential of greater reach and lower cost to the customer. On the other hand, an online banking channel offers enough flexibility and functionality to compete with branch and ATM banking at a lower cost to both the consumers and the banks.

Crime levels in South Africa also provide an incentive to draw more people to these channels due to their convenience as (Goldstuck and Dagada

2009) argued that the crime level in South Africa is pushing people into digital banking products since people would have to be very sceptical to go around with a lot of cash in the South African streets. Gartner Inc. predicts that by 2015, companies will generate 50% of web sales via their social presence and mobile applications (Tudor and Pettey 2010). This implies that companies will be faced with the challenge of seeking to generate new sales and sales leads through new mobile and social channels and re-investing in m-commerce capabilities (Tudor and Pettey 2010). The current m-commerce providers will find advantage in developing unique value propositions that are based on the specific dimensions of "*always on*", location-centric, convenience, customization, and identifiability (Mahatanankoon, Wen and Lim 2005).

The shift from traditional branch banking to online and mobile banking, the continuous evolution of technology, the declining broadband prices and the rapidly increasing penetration rate of mobile phones are the motivators of this study. The study will further provide an insight for banking institutions to have an understanding of the factors that influence the adoption of both these technologies and the degree of each factor. In addition, with a better understanding of the digital banking customer, this research could be useful in identifying further areas of research.

1.5 DELIMITATIONS OF THE STUDY

The study was conducted in the Gauteng Province of South Africa and might have not reached a more representative population due to time and resources that would be required to perform the study on a wider representative sample.

1.6 DEFINITION OF TERMS

Mobile banking: The provision and availability of banking and financial services with the help of mobile telecommunication devices (Tiwari, Buse and Herstatt 2007). For the purposes of this study, mobile banking will specifically refer to accessing the banking services through a cellphone. The term will be used interchangeably with the term 'cellphone banking' and M-banking, which is short for mobile banking.

Smartphone: A device that allows telephone calls, but also adds in features that would normally be found only on a personal digital assistant or a computer - such as the ability to send and receive e-mail and edit office documents (Cassavoy 2010).

Online banking: A channel where bank customers could perform their financial transactions electronically via their banks' Web sites (Alsajjan and Dennis 2006). For the purposes of this study, online banking will specifically refer to accessing the banking services through a computer. The term will be used interchangeably with the term 'electronic banking' or 'e-Banking'.

Unstructured Supplementary Service Data (USSD): A global system for mobile (GSM) communication technology used to send messages between a mobile phone and an application server in the network. It is similar to short message system (SMS), but USSD is session oriented as well as interactive (Gupta 2010).

Wireless Application Protocol (WAP): The first universal open standard providing the users with wireless access and the value-added services and enables easy fast delivery of relevant information and services to mobile

users with wireless terminals with limited displays and data transfer capabilities (Paukkunen 1999).

Wireless Internet Gateway (WIG): is a technology available on the GSM network that enables a network operator to effect wireless GSM-based payment instructions to financial institutions. The WIG enables the usage of an easy-to-use application language, called the Wireless Markup Language (WML), for implementing SIM Application Toolkit based mobile services, where messages are carried over the USSD or SMS channels (Van der Merwe 2003). The customer typically downloads an application from the WIG gateway to their SIM and once downloaded the customer is able to transact securely with an application service hosted by the wireless application service provider.

1.7 ASSUMPTIONS

There are no assumptions which, if they do not hold, will influence the outcome of the research.

CHAPTER TWO
LITERATURE REVIEW

2.1 INTRODUCTION

The review of the literature will help the reader to become acquainted with the basic terminology used in this study and to better understand the problem under review. For the purposes of this study, mobile banking refers to the provision and availability of banking and financial services with the help of mobile telecommunication devices (Tiwari et al. 2007). Online banking refers to the channel where bank customers could perform their financial transactions electronically via their banks' websites (Alsajjan and Dennis 2006) using a computer. Through the mobile and online banking channels, customers cannot perform certain functions such as cash withdrawal since these functions would require the customer to visit a branch or an ATM or other channels with the ability to dispense cash to the customers.

The aim of this study is to understand the factors that influence the adoption of mobile versus online banking in South Africa. It is classified as a descriptive study. The Unified Theory of Acceptance and Use of Technology (UTAUT) will be the foundation of this study and propositions will be based on this theory.

2.2 MOBILE BANKING TECHNOLOGIES

Mobile banking was first introduced in South Africa in 2002 by ABSA with over 31 000 customers (Goldstuck and Dagada 2009). Since then FNB, Standard Bank and Nedbank have followed suit and also introduced their cellphone banking offerings (Goldstuck and Dagada 2009). Mobile banking connects the customer's phone to the bank though mobile

communications networks and enables users to directly complete a variety of financial management business tasks by mobile phone interface (Gong, Pei and Yi 2010). Mobile banking offer customers the convenience of self-service with "*anytime-anywhere*" advantage over traditional channels such as ATM and branch banking. Some of the traditional banking channels like branch banking have disadvantages such as inconvenient operating hours and location. (Beckett, Hewer and Howcroft 2002) cited in (Laforet and Li 2005) concluded that consumers prefer a mix of options rather than any one single delivery channel. (Patricio, Fisk and Cunha 2003) cited by (Laforet and Li 2005) argue that it would be highly important for service providers to understand and improve each channel within the overall service offering rather than concentrating efforts on improving one delivery channel in isolation.

It should, however, be noted that various mobile banking technologies require certain levels of user technology knowledge and these technologies are thus not uniformly applicable to all users, as argued by (Goldstuck and Dagada 2009). WAP technology, for instance, requires the user to have a more sophisticated handset whilst WIG and USSD could be accessed in most of the handsets (Goldstuck and Dagada 2009). WAP browser implementation is also not consistent across mobile device manufacturers, therefore supporting the various browsers, transport layers, and physical device properties such as screen size, soft key, and keypad constraints may be challenging to the service providers (Van 2009). WIG and USSD are often aimed at the lower end of the market whilst Java-based applications and WAP are aimed at the higher end of the market due to cost associated with data (Van 2009).

The South African banks offer mobile banking through various mobile banking technologies including the Wireless Internet Gateway (WIG), Wireless Application Protocol (WAP), Mobile Applications (often referred to

as apps) and Unstructured Supplementary Service Data (USSD) amongst others.

2.2.1 Wireless Application Protocol

The Wireless Application Protocol (WAP) is probably the most common technology used by banks, with the four major banks adopting this technology. The WAP technology is an open global standard to communicate the digital mobile phone, internet and other personal digital assistants (PDA) with computer applications (Gong et al. 2010). WAP supports the data load of dynamic stretching, does not have restrictions on the service ranges, can realize strong interactive business, and can realize most functionalities of online banking (Gong et al. 2010).

2.2.2 Unstructured Supplementary Service Data

The Unstructured Supplementary Service Data (USSD) technology is connection-oriented that provides transparent interactive sessions based on the short messaging system of GSM (global system for mobile communications) and has a data transmission rate that is faster than the SMS (Gong et al. 2010). It is embedded in cellphone technology regardless of the handset make and the year it was manufactured. ABSA, Nedbank and FNB have extended this technology for their mobile banking.

2.2.3 Wireless Internet Gateway

The Wireless Internet Gateway (WIG) technology enables users to have secured cellphone banking because its security is enhanced by the encryption of the transactions (Goldstuck and Dagada 2009). WIG is a Short Message Service (SMS)-based service, in which a menu of available banking options is initially downloaded from the bank to the Subscriber Identity Module (SIM) card in the cell phone, and presented to the user

through the phone's menu (Brown, Cajee, Davies and Stroebel 2003). This technology is more accessible by users at the lower economic levels as it does not require an expensive and sophisticated cellphone handset (Goldstuck and Dagada 2009).

2.2.4 Mobile Applications

Mobile applications are applications that are built specifically for individual smartphone platforms. They are downloaded to the device and would normally require internet connection to access the functions that they are designed for (Hu 2010). Java 2 Micro Edition (J2ME) is intended to build applications running on mobiles and other embedded devices and allows the device to run small, user-installable software applications written especially for mobile devices such as phones (Krugel 2007). After the customer has downloaded and installed the application on the phone, the application would use General Packet Radio Service (GPRS), USSD or SMS to carry the consumer data or instruction from the device to the service provider (Krugel 2007). In South Africa, First National Bank (FNB) was the first to launch the mobile banking application for smartphones and tablet computer devices in July 2012 (Alfreds 2011).

2.3 ONLINE BANKING TECHNOLOGY

Absa was the first South African bank to offer access to personal banking details online in October 1996, followed by Nedbank which became the first South African bank to allow online transactions in February 1997 (Goldstuck and Dagada 2009). FNB, Standard Bank and Absa followed in allowing online transactions between March and July 1997 (Goldstuck and Dagada 2009).

South African financial institutions incorporate the latest and most advanced security mechanisms and use advanced verification and

authentication principles, incorporated with technologies such as Short Message Service (SMS) to ensure that the user's internet banking experience is safe and secure (Redlinghuis and Rensleigh 2010).

When the customer has a personal computer (PC) with network connection, the most common way to communicate with the bank is via a web browser and the standard protocol for communication between the browser and the bank's web server is then used (Claessens, Dem, De Cock, Preneel and Vandewalle 2002). This protocol is often referred to as *https*, which is the Hypertext Transfer Protocol commonly known as http protocol on top of a security layer where http is the communication language of the World Wide Web (Claessens et al. 2002). Providing a secure communications channel from a client to an authenticated bank is only part of a secure electronic banking system and many electronic banking systems still rely on a fixed password to authenticate the client (Claessens et al. 2002).

2.4 UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY (UTAUT) MODEL

Research in explaining user acceptance of new technology has resulted in several theoretical models, with roots in information systems, psychology, and sociology (Venkatesh, Morris, Gordon and Davis 2003). The Unified Theory of Acceptance and Use of Technology (UTAUT) has been developed to integrate the fragmented theory and research on individual acceptance of information technology into a unified theoretical model that captures the essential elements of eight previously established models (Venkatesh et al. 2003).

These models as applied in the technology acceptance research field are the Model of Personal Computer Utilization (MPCU) (Triandis 1977); Technology Acceptance Model (TAM) (Davis 1985); Social Cognitive

Theory (SCT) (Bandura 1986); Theory of Reasoned Action (TRA) (Davis, Bargozzi and Warshaw 1989); Theory of Planned Behaviour (TBP) (Ajzen 1991); Motivational Model (MM) (Davis, Bagozzi and Warshaw 1992); Combined Technology Acceptance Model and Theory of Planned Behaviour (C-TAM-TPB) (Taylor and Todd 1995); and the Innovation Diffusion Theory (IDT) (Rogers 1995). These models seek to understand usage as the dependent variable in understanding technology adoption and usage. In this study, the UTAUT model will be used as the base to examine South African adoption of both mobile and online banking services. As depicted below, Figure 1: The UTAUT Model (Venkatesh et al. 2003) is a diagrammatic representation of the Unified Theory of Acceptance and Use of Technology.

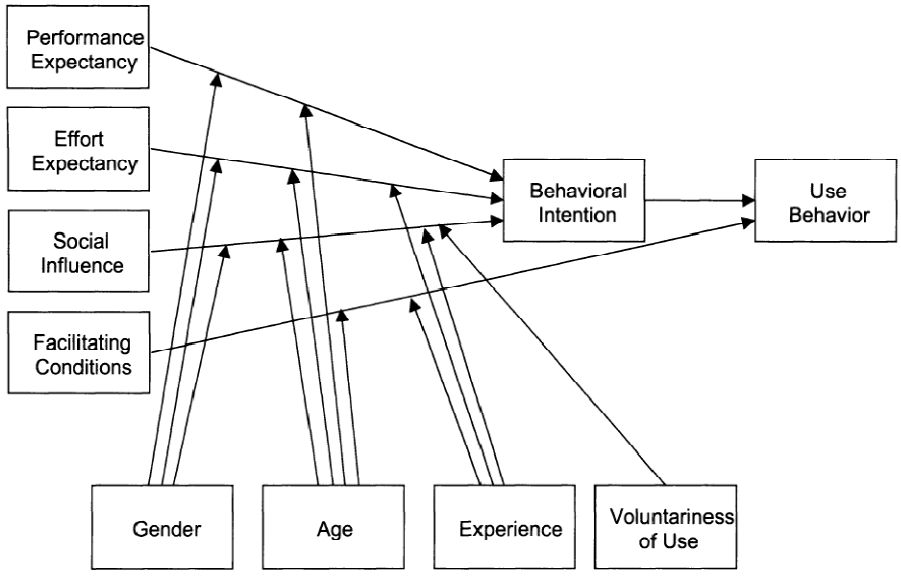


Figure 1: The UTAUT Model (Venkatesh et al. 2003)

Seven constructs appeared to be significant direct determinants of intention or usage in one or more of the individual models and of these, Ventkatesh et al (2003) theorizes that four constructs will play a significant role as direct determinants of user acceptance and usage behaviour, namely performance expectancy, effort expectancy, social influence, and facilitating conditions. Attitude towards using technology, self-efficacy, and anxiety are theorized not to be direct determinants of intention. Gender, age, experience and voluntariness of use are identified as key moderators (Venkatesh et al. 2003). Voluntariness of Use is defined as the degree to which use of the innovation is perceived as being voluntary, or of free will (Moore and Benbasat 1991).

2.5 PERFORMANCE EXPECTANCY

Performance expectancy is defined as the degree to which an individual believes that using the system will help him or her to attain gains in job performance (Venkatesh et al. 2003). The five constructs from the different models that pertain to performance expectancy are perceived usefulness (TAM/TAM2 and C-TAM-TPB), extrinsic motivation (MM), job-fit (MPCU), relative advantage (IDT), and outcome expectations (SCT). Some of the important factors which make mobile and online banking superior to other traditional channels is their convenience of “anywhere-anytime” and “anytime” capabilities respectively, and ease of usage by customers.

The features under this factor include speed of transaction, congestion-free, ease of use, ease of contact, customer-friendly website, and easy accessibility (Agarwal, Rastogi and Mehrotra 2009). (Agarwal et al. 2009) highlights that a major factor responsible for making internet popular as a medium for conducting business and transactions among people has been the convenience since customers can conduct business of any type at any time and from anywhere. Customers will turn to the e-banking of banking

only if they find it less cumbersome and more convenient than traditional banking (Agarwal et al. 2009).

(Hong, Thong and Tam 2006) argues that due to the limited system resources to deliver the contents of mobile internet service (such as small screen, small and inconvenient input method, limited memory), users often need to make extra effort to access or update the contents (such as more navigations, extra steps within the service menu). Inconvenient input methods used and limited memory on cellphones are more likely to affect the performance of any system and this could be particularly applicable to South Africa where more feature phones are sold compared to smart phones.

Based on the literature review in the above section, the following propositions are put forward:

2.5.1 Proposition 1A

The influence of performance expectancy on behavioural intention will be moderated by gender and age, such that the effect will be stronger for men and particularly for younger men.

2.5.2 Proposition 1B

The influence of performance expectancy on behavioural intention will be significantly higher for online banking services as compared to mobile banking services.

2.6 EFFORT EXPECTANCY

The South African banks offer mobile banking through various mobile banking technologies including the Wireless Internet Gateway (WIG),

Wireless Application Protocol (WAP), Mobile Applications (often referred to as apps), and Unstructured Supplementary Service Data (USSD), amongst others.

Effort expectancy is defined as the degree of ease associated with the use of the system (Venkatesh et al. 2003). Three constructs from the existing models capture the concept of effort expectancy: perceived ease of use (TAM/TAM2), complexity (MPCU), and ease of use (IDT). The technology characteristics of both mobile and online banking will affect effort expectancy. As explained by (Tiwari and Buse 2007), the ubiquity and immediacy of m-commerce allows the user to perform urgent tasks in an efficient manner, such as fast reaction to stock market developments irrespective of his current geographic location and is also useful in emergency situations.

Furthermore, compared with the complex interfaces of online banking, which provides many functions, mobile banking has fewer functions and clearer interfaces (Zhou, Lu and Wang 2010). This, according to (Zhou et al. 2010), may simplify user operations and an ordinary user can easily use mobile banking. These advantages will affect the user's effort expectancy (Zhou et al. 2010). (Hong et al. 2006) argues that due to the limited system resources to deliver the contents of mobile internet service (for example, small screen, small and inconvenient input method, limited memory), users often need to make extra effort to access or update the contents (such as more navigations, or extra steps with service menu). In the case of the mobile phone, the small screen with a limited amount of information makes the device very difficult to navigate through the menus in order to use the required function. (Laukkanen 2007) found that the respondents claimed that the visual display is insufficient and they are not able to see the entire bill on the screen. (Laukkanen 2007) concluded that this contributes to perceived inconvenience and led to an increase of uncertainty in service consumption.

Based on the literature review in the above section, the following proposition is made:

2.6.1 Proposition 2A

The influence of effort expectancy on behavioural intention will be moderated by gender and age, such that the effect will be stronger for women, particularly younger women.

2.6.2 Proposition 2B

The influence of effort expectancy on behavioural intention will be significantly higher for online banking services compared to mobile banking services.

2.7 SOCIAL INFLUENCE

Social influence is defined as the degree to which an individual perceives it to be important that others believe he or she should use the new system (Venkatesh et al. 2003). The three constructs related to social influence are subjective norm (TRA, TAM2, TPB/IDTPB, and C-TAM-TPB); social factors (MPCU); and image (IDT). Social influence reflects the effect of environmental factors such as the opinions of a user's friends, relatives, and superiors on user behaviour (López-Nicolás, Molina-Castillo and Bouwman 2008) as cited by (Zhou et al. 2010).

Compliance, internalization and identification are the three mechanisms where social influence impacts on individual behaviour (Venkatesh et al. 2003). Compliance is described by an individual adopting the induced behaviour not because she or he believes in its content but with the expectation of gaining rewards or avoiding punishments (Malhotra and

Galletta 1999). Identification refers to an individual accepting influence because she wants to establish or maintain a satisfying self-defining relationship to another person or group (Malhotra and Galletta 1999). Internalization describes an individual accepting influence because it is congruent with her or his value system (Malhotra and Galletta 1999).

Based on the literature review in the above section, the following proposition is made:

2.7.1 Proposition 3A

The influence of social influence on behavioural intention will be moderated by gender and age, such that the effect will be stronger for women, particularly older women.

2.7.2 Proposition 3B

The effect of social influence on behavioural intention for both online and mobile banking services will not be significantly different.

2.8 FACILITATING CONDITIONS

Facilitating conditions are defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system (Venkatesh et al. 2003). This definition captures concepts embodied by three different constructs: perceived behavioural control (TPBI DTPB, C-TAM-TPB), facilitating conditions (MPCU), and compatibility (IDT). Each of these constructs is operationalized to include aspects of the technological and/or organizational environment that are designed to remove barriers to use (Venkatesh et al. 2003).

Since customer satisfaction with these aspects is a reflection of customers' belief that an organizational and technical infrastructure exists to support use of the system, dissatisfaction regarding these parameters indicates that customers do not really believe that the banks have necessary measures in place to ensure the safety and privacy of customer data (Venkatesh et al. 2003).

(Bergeron, Rivard and De Serre 1990) cited in (Venkatesh et al. 2003) argues that in fact the effect is expected to increase with experience as users of technology find multiple avenues for help and support throughout the organization, thereby removing impediments to sustained usage. Organizational psychologists have noted that older workers attach more importance to receiving help and assistance on the job (Hall and Mansfield 1975)in (Venkatesh et al. 2003). This is further underscored in the context of complex IT use given the increasing cognitive and physical limitations associated with age (Venkatesh et al. 2003).

Based on the literature review in the above section, the following proposition is proposed:

2.8.1 Proposition 4A

The influence of facilitating conditions on the usage of mobile or online banking will be moderated by age, such that the effect will be stronger for older customers.

2.8.2 Proposition 4B

The difference in the influence of facilitating conditions on the usage between online and mobile banking services will not be significant.

2.9 THE UTAUT IN THE SOUTH AFRICAN CONTEXT

This section seeks to map the findings of some of the research previously undertaken in South Africa relative to the adopted model in this study. The adopted model is the Unified Theory of Acceptance and Use of Technology (UTAUT) Model and some of the previous research was done using the theories that the UTAUT model seeks to consolidate such as TAM, TAM2, and C-TAM-TPB. This research will thus validate some of the findings of previous research using the UTAUT model. This section will highlight some of the existing findings in relation to the UTAUT model.

2.9.1 Performance Expectancy

The five constructs from the different models that pertain to performance expectancy in the UTAUT model are perceived usefulness, extrinsic motivation, job-fit, relative advantage, and outcome expectations as described in the previous section.

(Sankar 2009) found that a South African person believes that the perceived value is one of the influential factors in leading to the adoption of cellphone banking in South Africa. (Hadebe 2010) observed that users perceived that internet banking makes their life more convenient whereas non-users do not. The findings by (Hadebe 2010) concurs with research findings discussed previously, in that the customers perceive internet banking to have an advantage over other banking channels. (Le Roux 2009) indicated that relative advantage, coupled with how compatible the technology is with an individual's lifestyle, appears to be amongst the most important promoting factors with regard to internet banking.

2.9.2 Effort Expectancy

Three constructs from the existing models capture the concept of effort expectancy — perceived ease of use, complexity, and ease of use. Hadebe (2010) found that internet banking users perceived internet banking as not involving complex procedures and users perceived the service to be easier, less complex and simpler than non-users did. In contrast, (Mthethwa 2011) found that complexity and cell phone experience did not appear to have any influence on cell phone banking adoption.

2.9.3 Social Influence

The three constructs related to social influence from the previous models are subjective norm, social factors, and image. (Hadebe 2010) found that adoption is not affected by social influences. In other words, opinions of friends, parents or colleagues are not considered an important factor when deciding whether to adopt internet banking service (Hadebe 2010). (Le Roux 2009) found that relative advantage, coupled with how compatible the technology is with an individual's lifestyle, appears to be the most important promoting factor with regard to internet banking.

2.9.4 Facilitating Conditions

Facilitating conditions captures the concepts embodied by three different constructs: perceived behavioural control, facilitating conditions and compatibility. Le Roux (2009) found that relative advantage coupled with how compatible the technology is with an individual's lifestyle, appears to be the most important promoting factor with regard to internet banking, whereas Mthethwa (2011) found that compatibility did not have any influence on cellphone banking adoption.

2.10 ONLINE BANKING TECHNOLOGY

Research on consumer attitudes and adoption of electronic banking showed there are several factors predetermining a consumer's attitude towards online and mobile banking, such as a person's demographics, motivation and behaviour towards different banking technologies and individual acceptance of new technology (Laforet and Li 2005).

On demographics, (Howcroft, Hamilton and Hewer 2002) found that younger consumers value the convenience or time-saving potential of online and mobile banking more than older consumers and that they regarded the lack of face-to-face contact as less important than older consumers, as cited in (Laforet and Li 2005). The older consumers are considered as typical branch customers, whereas the younger consumer segment with higher education and a professional occupation are considered as typical users of electronic banking services (Karjaluoto 2002).

Jayawardhena and Foley (2000) demonstrated that time, privacy control, and economic issues are among the aspects that customers see as important in electronic banking. A study by (Karjaluoto 2002) indicated that consumers are becoming busier, and are seeking to carry out their banking transactions at times convenient to them.

In the South African context, the findings of (Hadebe 2010) concur with those of (Karjaluoto 2002) that a typical internet banking user in South Africa is between the age of 30 and 39 years at 66% and with over 51% being employed or working for themselves. Consistent with (Karjaluoto 2002), Le Roux (2009) found that 75,9% of his respondents amongst internet banking users were in the age range of 25 to 39 years with 83.79% of the respondents having exposure to some form of tertiary

education. An additional 5.03% had some form of post-matriculation qualification (Le Roux 2009).

(Sankar 2009) revealed that a mobile banking customer would be between the ages of 18 and 35 with at least a Matric qualification. (Govender 2010) found that 71.4% of mobile entertainment consumers were aged between 18 and 35 years and all his respondents had a minimum highest qualification of at least Matric.

Based on the literature review in the above section, the following proposition is made:

2.10.1 Proposition 5

A typical digital banking customer in South Africa is a professional or studying towards a professional career and is aged between 18 and 35.

2.11 CONCLUSION

There have been numerous studies around the adoption of information systems and particularly disruptive and innovative technologies such as online and mobile banking. A number of models and theories have been proposed to better predict the adoption factors and consumer behaviours regarding these services. However, it has highlighted that there is still a lot to be studied in this space, which is relatively new, and more attributes could be discovered as these technologies mature. To date, both online and mobile banking have received a lot of research attention, both internationally (Jayawardhena and Foley 2000; Karjaluoto 2002; Mahatanankoon et al. 2005) and locally (Hoppe et al. 2001; Wu 2005; Le Roux 2009; Sankar 2009; Hadebe 2010; Mthethwa 2011). It is, however, noted that these technologies have received attention individually and not enough comparative studies have been undertaken. The propositions

highlighted below will supplement a limited knowledge base, from a technology adoption framework, and highlight the areas that the major banks in South Africa should concentrate on to improve the usage of these cost-effective and efficient digital channels. Previous research specifically used the TRA, the TAM theory (Davis 1989) and the TPB. This research will use the UTAUT model to highlight the key adoption factors that are relevant to the South African context and that will address the research problem from a broad perspective.

2.11.1 Proposition 1A

The influence of performance expectancy on behavioural intention will be moderated by gender and age, such that the effect will be stronger for men and particularly for younger men.

2.11.2 Proposition 1B

The influence of performance expectancy on behavioural intention will be significantly higher for online banking services as compared to mobile banking services.

2.11.3 Proposition 2A

The influence of effort expectancy on behavioural intention will be moderated by gender and age, such that the effect will be stronger for women, particularly younger women.

2.11.4 Proposition 2B

The influence of effort expectancy on behavioural intention will be significantly higher for online banking services as compared to mobile banking services.

2.11.5 Proposition 3A

The influence of social influence on behavioural intention will be moderated by gender and age, such that the effect will be stronger for women, particularly older women.

2.11.6 Proposition 3B

The influence of social influence on behavioural intention for both online and mobile banking services will not be significantly different.

2.11.7 Proposition 4A

The influence of facilitating conditions on the usage of mobile or online banking will be moderated by age, such that the effect will be stronger for older customers.

2.11.8 Proposition 4B

The difference in the influence of facilitating conditions on the usage between online and mobile banking services will not be significant.

2.11.9 Proposition 5

A typical digital banking customer in South Africa is a professional or studying towards a professional career and is aged between 18 and 35.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 INTRODUCTION

In this chapter, the chosen research methodology to address the research problem is described. This section of the document describes the approach and process for this descriptive study. In addition, the questionnaire design, the target population, the sampling method, the collection method, the data analysis tool and methodology are discussed. Finally, the validity and reliability of the chosen research methodology is discussed.

3.2 RESEARCH METHODOLOGY

The methodological approach in this study is descriptive and aims at increasing the understanding of the factors that influence the adoption of mobile versus online banking in South Africa. Triangulation is broadly defined by (Denzin 1978) as, “the combination of methodologies in the study of the same phenomenon”, as cited in (Jick 1979), and this approach can improve the accuracy of their judgments by collecting different kinds of data bearing on the same phenomenon (Jick 1979). Triangulation therefore seems to be the most suitable approach as (Campbell and Fiske 1959) cited by (Jick 1979) argued that more than one method should be used in the validation process to ensure that the variance reflected that of the trait and not of the method.

The research data was collected by using self-administered questionnaires that were distributed to mobile and online banking customers and prospective customers and in addition, interviews were conducted with both banking and industry experts and thought leaders. Therefore

quantitative and qualitative research method was employed to gather the required data to give in-depth understanding of the factors that influence the adoption of the two technologies under investigation.

3.2.1 The Quantitative Study

A quantitative study was conducted by self-administering questionnaires targeted at banking customers and an analysis was performed to verify the propositions posted using the questions attached in APPENDIX A: Actual research instrument - Quantitative section. This aim of the study was to establish the applicability of the UTAUT model in the South African context by testing the propositions developed in the literature section.

3.2.2 The Qualitative Study

A qualitative research approach, with semi-structured interview protocol as attached in APPENDIX B: Actual research instrument - Qualitative section was conducted to give in-depth understanding of the factors that influence the adoption of both these technologies and the differences thereof. Semi-structured interviews allow for variation in the line of questioning within a general framework to explore important information revealed during the interview (Ross 2008). The reason for including the qualitative approach was to allow the respondents to provide more information that could constitute rich and valuable data further to the quantitative data obtained above.

3.3 RESEARCH DESIGN

The study was performed using a self-administered survey questionnaire which is attached in APPENDIX A: Actual research instrument - Quantitative section. This was done to test the propositions established in the literature review, and the responses were measured on a seven-point

Likert Scale. The questionnaire comprised groups of questions to establish the validity of each proposition and to ensure a better flow of the questionnaire. In order to cross-examine the quantitative results from the surveyed population, semi-structured interviews were conducted using the guide attached in APPENDIX B: Actual research instrument - Qualitative section.

3.4 POPULATION AND SAMPLE

3.4.1 Population

For the purposes of this study, the population is defined as any person who uses or would potentially use either mobile and/or online banking channels at a bank within the borders of South Africa. The defined population is not likely to influence the results of this study in favour of, or disadvantage one bank over the other banks in any way.

3.4.2 Sample and sampling method

The survey was conducted using convenience sampling of banked and potential banking customers based in the Gauteng Province of South Africa. The items on each construct were measured using a seven-point Likert scale questionnaire ranging from (1) ‘strongly disagree’ to (7) ‘strongly agree’. Demographic data including age, sex, education, race and industry involvement of the respondents was also collected for description purposes. The targeted response was between 150 - 250 usable questionnaires completed for analysis and respondents were guaranteed of confidentiality in the questionnaire. For qualitative data, six (6) digital banking experts and thought leaders were interviewed to draw information about their personal experiences and first-hand observations.

3.5 THE RESEARCH INSTRUMENT

A survey generally refers to the selection of a relatively large sample of people from a pre-determined population, followed by the collection of a relatively small amount of data from those individuals where the researcher uses information from a sample of individuals to make some inference about the wider population (Kelley, Clark, Brown and Sitzia 2003). The disadvantages of using a self-administered questionnaire survey method include a significantly high level of non-completion rates and they therefore carry the risk of more missing data (Kaplan, Sieber and Ganiats 1997).

On the positive side, self-administered modes tend to be one of the least expensive modes and also tend to elicit the most accurate responses to sensitive questions (Fricker and Schonlau 2002). The reason for conducting a survey on this study is primarily due to the costs involved in other modes. In addition, the survey was anonymous, thus reducing the risk of non-response to items that could be perceived to be sensitive. For this study, the questionnaire was distributed to corporate offices via contacts who were briefed on the purpose of the study and how to help the respondents to complete the survey. The contacts were allocated a particular number of questionnaires in order to avoid bias against certain organizations in the analysis, thus reducing over-representation of certain organizations. A sample of the survey that was distributed has been attached in APPENDIX A: Actual research instrument - Quantitative section.

3.6 PROCEDURE FOR DATA COLLECTION

Data collection was conducted through self-administered questionnaires at specific locations such as work locations. Permission was sought through contacts to visit their office locations where the respondents were asked to

complete the questionnaire. In addition, a few contacts were asked to help distribute the questionnaire at their offices where respondents were encouraged to complete the questionnaire for this study.

Banking and industry experts as well as thought leaders were interviewed in order to enrich the qualitative data collected above. Interviews with experts and thought leaders were semi-structured and were conducted at the work locations so as to maintain a business environment.

3.7 DATA ANALYSIS AND INTERPRETATION

The study used self-administered questionnaires to test the propositions made as per literature review on the population regarding the factors that affect the adoption of mobile versus online banking. The aim was to determine whether there is enough evidence and to conclude whether the claims made in the theory are reasonable in the South African context.

For sections A and B of the questionnaire, descriptive pie and column charts were used to describe, analyse and interpret the data collected. For section C of the questionnaire, in order to ensure internal consistency and reliability, Cronbach's Alphas were analysed to ensure that the constructs are measuring the same thing. In addition, factor analysis was performed using a principal component analysis (PCA) alongside Varimax with Kaiser Normalization rotation method. The purpose of principal component analysis is to reduce a number of observed variables into a relatively smaller number of components and thus identify factors that are significant to the study.

In order to test propositions 1A, 1B, 2A, 2B, 3A and 4A, the binary logistic models were developed to test for the significance of the predictor variables at 5% level of significance. Statistical Package for Social Sciences (SPSS) is the statistical package that was used for this analysis.

In order to test propositions 3B and 4B, t-statistic test was used since the aim was to test whether the means of mobile banking and online banking are not significantly different. For this analysis, the Number Cruncher Statistical System (NCSS) package was used.

3.8 LIMITATIONS OF THE STUDY

The study was conducted in the Gauteng Province of South Africa due to time and resources constraints that would be required to collate more representative data from across the whole of South Africa. This is not, however, expected to affect the results as the sample should be representative of the industry.

3.9 VALIDITY AND RELIABILITY

3.9.1 External validity

External validity deals with the issue of generalizability of the results found to other populations, settings, and so forth (Campbell and Stanley 1963) as cited in (Winer 1999). Realism looks at whether the research study was realistic and, therefore, the results likely to be generalised to a more natural environment (Winer 1999). The sample should be representative of both mobile and online banking customers and potential customers of both channels in South Africa and the results should therefore be general to the South African environment since Gauteng is the largest province with the most representative population as compared to other provinces.

3.9.2 Internal validity

Internal validity means that the study measured what it set out to and invalidity could be due to selection bias, information bias, and/or confounding (Grimes and Schulz 2002). Selection bias stems from an

absence of comparability between groups being studied whilst information bias results from incorrect determination of exposure, outcome, or both (Grimes and Schulz 2002). Confounding is a mixing or blurring of effects: a researcher attempts to relate an exposure to an outcome but actually measures the effect of a third factor (the confounding variable) (Grimes and Schulz 2002). The propositions are based on constructs as outlined in an established theory that encompasses various theories in the technology adoption domain.

3.9.3 Reliability

According to Joppe (Joppe 2000) as cited by (Alolayyan, Ali and Idris 2011), reliability is the extent to which results are consistent over time and an accurate representation of the total population under study. A research instrument can be considered to be reliable if the result of a study can be reproduced under a similar methodology; that is the ability of the instrument to be replicable and repeatable, and stability of measurement over time (Kirk and Miller 1986) cited in (Alolayyan et al. 2011). The theory on which the propositions are based is well established and has proved to be reliable as used in research such as (Kholoud 2009; Chen, Kuan, Lee and Huang 2011; Huang and Qin 2011). To ensure reliability, the questionnaire was piloted on 10 respondents at a selected site for a quick turnaround time. Improvements and enhancements to the questionnaire were then made to ensure that the questionnaire addresses what it had intended to measure before it was distributed to the targeted population.

CHAPTER FOUR
PRESENTATION OF RESULTS

4.1 INTRODUCTION

This chapter presents the results obtained from the survey questionnaires that were administered as well as the interview data from the experts and thought leaders in the digital banking space. The first part of the chapter discusses the number of respondents obtained as compared to the required sample, as indicated in Chapter 3. The second part is the presentation of the data obtained in part C of the survey questionnaire using principal component analysis (PCA) and logistic regression using SPSS. The t-statistic test output is also used to test some of the propositions using the NCSS package.

4.2 DEMOGRAPHIC PROFILE OF RESPONDENTS

The study targeted a usable sample size of at least 150 respondents. A total of 215 responses was collected from the survey questionnaire administered with 177 usable responses. A total of 38 responses was discarded because they were either incomplete or had some vital information missing. A summary of the study sample has been summarised below in Table 1: Research Respondents' Demographics.

Table 1: Research Respondents' Demographics

	Number	Percentage
Gender		
Female	75	42.4
Male	102	57.6
Race		
Asian	3	1.69
Black	108	61.01
Coloured	13	7.34
Indian	8	4.52
White	42	23.72
Other	3	1.69
Age Groups		
Under 17	0	0.00
17 – 25	23	12.99
26 – 35	88	49.72
36 – 45	45	25.42
Over 46	21	11.86
Education Levels		
High School or Less	27	15.25
Degree or College	103	58.19
Postgraduate Education	47	26.55

4.2.1 Industry Breakdown of Respondents

In terms of industry breakdown of the respondents, the finance and technology industries had representations of 68 and 56 respondents respectively. Government, services and engineering had 25, 13 and 11 respondents respectively. Regarding the industry breakdown, it should be noted that respondents were able to indicate multiple selections since they

could be coming from organisations involved in multiple industries. Figure 2: Industry Involvement of the Sample shows a detailed representation of the respondents' industries.

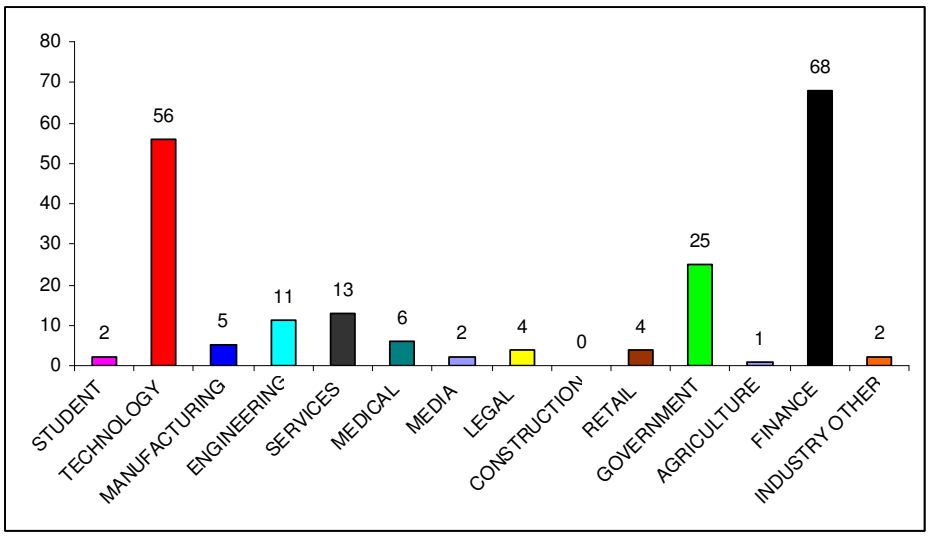


Figure 2: Industry Involvement of the Sample

4.2.2 Mobile Banking Technology Usage and Knowledge

Regarding mobile banking technology usage and knowledge, 70 respondents indicated that they are using a banking application from their banks; 41 respondents were using USSD technology while 60 respondents indicated using WAP-based technology. Only 6 respondents were using WIG technology and 8 respondents indicated that they were not sure what mobile banking technology they were using. In this section, respondents were able to indicate multiple selections since customers could be using multiple mobile banking technologies. Figure 3: Mobile Banking Technology Usage and Knowledge shows a numeric representation of the respondents' knowledge and usage of mobile banking technologies.

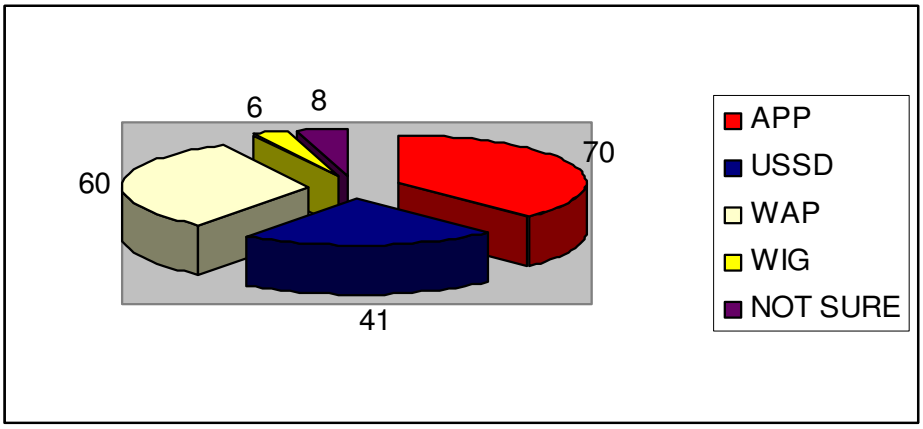


Figure 3: Mobile Banking Technology Usage and Knowledge

4.2.3 Banking Details of Respondents

The banking details of the respondents are summarised in Figure 4: Banking Details of the Respondents, where 86 of the respondents had accounts at ABSA, FNB had 68, Standard Bank had 41, Nedbank had 22, Capitec had 12, and 4 respondents had indicated other banks. Respondents were also able to indicate multiple selections since customers could be using services from more than one bank or have their main accounts elsewhere whilst accessing digital banking services at a different bank.

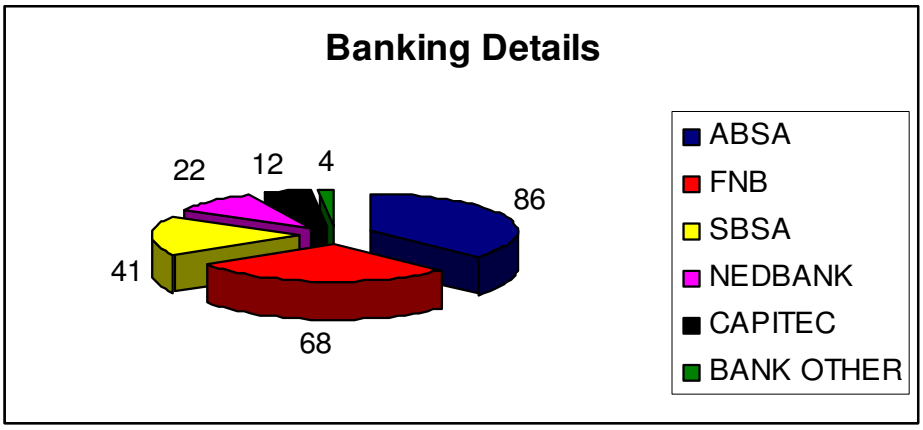


Figure 4: Banking Details of the Respondents

4.2.4 Digital Banking Access

From the surveyed sample of 177, all 123 respondents who were registered for mobile banking used their own mobile devices to access mobile banking. Only 4 respondents were comfortable using other people's devices as depicted in Figure 5: Mobile Banking Services Access.

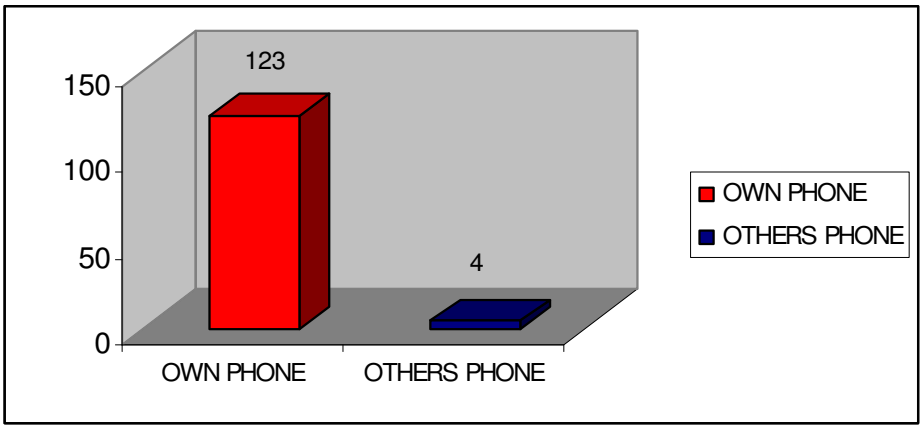


Figure 5: Mobile Banking Services Access

In order to access online banking services, 118 of the 164 respondents used their home personal computers and 139 of the respondents indicated that they access online banking services using their work computers. A further 17 respondents would access online banking services at their banks using kiosks. Only 7 respondents indicated that they access online banking elsewhere like internet cafes, their friends' homes, etc as shown in Figure 6: Online Banking Services Access.

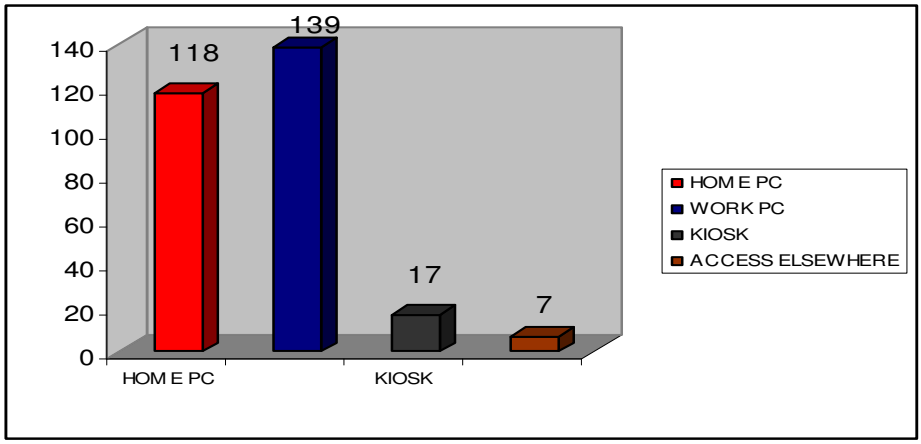


Figure 6: Online Banking Services Access

4.2.5 Intention to use Digital Banking Breakdown

Of the 13 respondents who are not yet online banking services customers, 2 had intended to register within the next year, 5 had no intention to register in the next year and 6 respondents were not yet sure if they will register or not. Regarding mobile banking services, 15 of the 51 respondents who are not yet users indicated their intention to register within the next year, 18 were intending to register and 20 were not yet sure if they will register within the next year or not. A summary of the intention to use digital banking is included in Figure 7: Intention to use Digital Banking. In the figure below, OBI and MBI implies the intent to use online and mobile banking services by the respondents respectively with Y denoting Yes, N as No and M as Maybe.

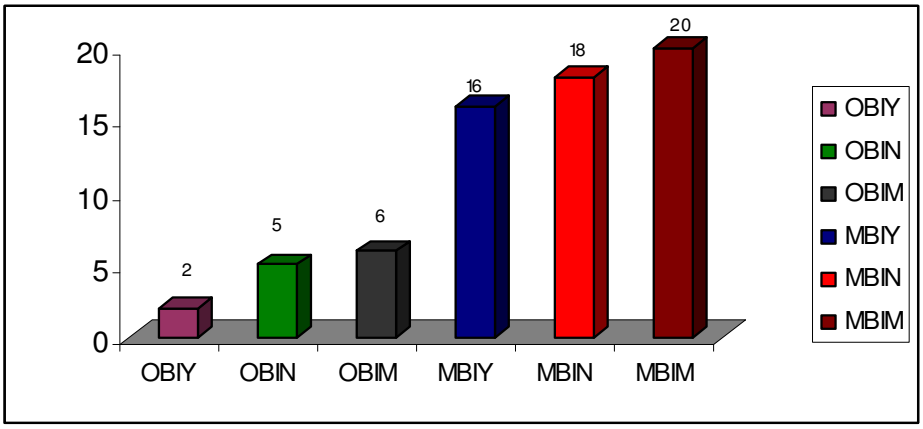


Figure 7: Intention to use Digital Banking

4.2.6 Digital Banking Usage Breakdown

The current usage of both online and mobile banking services is summarised in Table 2: Mobile and Online Banking Usage. Of the surveyed population, 164 (92.66%) respondents are currently using online banking. There were 123 (69.49%) respondents currently using mobile banking services and only 8 (4.52%) of the respondents who were not registered for either of the services under analysis. In total, 118 (66.67%) of the respondents were registered for both services; only 5 (2.82%) of the respondents were registered for mobile banking services only; and 46 (25.99%) of the respondents were registered for online banking services only.

Table 2: Mobile and Online Banking Usage

	Number	Percentage (%)
Current Usage		
Currently Use Online	164	92.66
Currently Use Mobile	123	69.49
Have Never Used Either	8	4.52
Usage Breakdown		
Online Banking Service	46	25.99
Mobile Banking Service	5	2.82
Both Services	118	66.67

4.3 FACTORS AFFECTING ADOPTION OF THE TECHNOLOGY

This section presents the results on factors that affect the adoption of online and mobile banking technologies as proposed by the UTAUT model by (Venkatesh et al. 2003). Correlation analysis was performed on the items to test for reliability and internal consistency and to ascertain that they are measuring in concert. Factor Analysis was then used to test the propositions and whether a relationship between the observed variables and their underlying latent construct(s) exists as (Suhr and Colorado 2006) advises.

4.3.1 Reliability and Internal Consistency

In order to determine internal consistency and reliability of the items, an analysis was conducted and Cronbach's Alphas analysed. Cronbach's Alpha determines the internal consistency or average correlation of items in a survey instrument to gauge its reliability (Santos 1999). The Cronbach's Alpha analysis was performed using the NCSS package.

The measured alpha values on mobile banking were high, with the highest alphas measuring on the touch point relating to social influence on mobile banking ('colleagues and friends expect me to have/use cellphone/mobile banking') at a value of .86 (rounded from 0.8641) whilst the lowest measured touch point was at performance expectancy on mobile (PEM) banking services ('mobile banking improves the way in which I do my banking'), at a value of .85 (rounded from 0.8465). A summary of the Cronbach's Alpha values are reflected in Table 3: Cronbach's Alpha Values for Mobile Banking Services.

Table 3: Cronbach's Alpha Values for Mobile Banking Services

Reliability Section							
	--------- Item	----------	R 2				
		Standard	Total	Total	Coef	Corr	Other
Variable	Mean	Deviation	Mean	Std.Dev.	Alpha	Total	Items
PEM_1	5.887006	1.291889	56.15819	11.28897	0.851	0.6102	0.5171
PEM_2	5.502825	1.477576	56.54237	11.08847	0.8465	0.6644	0.6127
PEM_3	5.079096	1.80103	56.9661	10.92479	0.8487	0.6178	0.4967
EEM_1	5.480226	1.492749	56.56497	11.11753	0.8483	0.6351	0.5567
EEM_2	5.553672	1.484274	56.49152	11.31879	0.8569	0.4937	0.3407
EEM_3	5.40113	1.716431	56.64407	10.95201	0.8472	0.6387	0.5255
SIM_1	5.542373	1.37744	56.50283	11.26445	0.8519	0.584	0.4538
SIM_2	4.700565	1.782379	57.34463	11.29007	0.8641	0.4041	0.3555
SIM_3	5.112994	1.476598	56.93221	11.40454	0.8604	0.4354	0.3299
FCM_1	5.022599	1.640935	57.0226	11.21279	0.8566	0.5024	0.3581
FCM_2	4.175141	1.760634	57.87006	11.22244	0.8606	0.4521	0.3896
FCM_3	4.587571	1.730234	57.45763	11.04946	0.852	0.5707	0.4947
Total			62.0452	12.12052	0.8643		
Cronbach's Alpha 0.864315		Std. Cronbachs Alpha 0.867962					

The measured alpha values on online banking were also high with the highest alphas measuring on the touch point relating to social influence on online banking ('colleagues and friends expect me to have/use mobile banking') at a value of .86 (rounded from .8645) whilst the lowest measured touch point was on Facilitating Conditions Online Expectancy ('I trust banks with my information when using online banking'), at a value of .84 (rounded from .8489). A summary of the Cronbach's Alpha values for

online banking services are shown in Table 4: Cronbach's Alpha Values for Online Banking Services.

Table 4: Cronbach's Alpha Values for Online Banking Services

Reliability Section							
	--------- Item	----------	R 2				
		Standard	Total	Total	Coef	Corr	Other
Variable	Mean	Deviation	Mean	Std.Dev.	Alpha	Total	Items
PEO_1	6.457627	1.097342	64.12994	10.0719	0.8548	0.6084	0.7686
PEO_2	6.548023	0.9707126	64.03955	10.13957	0.8552	0.627	0.7919
PEO_3	5.915254	1.551628	64.67232	9.845105	0.857	0.5487	0.421
EEO_1	5.937853	1.458354	64.64972	9.836817	0.8534	0.5997	0.5139
EEO_2	6.050848	1.370431	64.53672	10.0346	0.8603	0.4917	0.3092
EEO_3	6.129943	1.461652	64.45763	9.79678	0.8515	0.6279	0.5542
SIO_1	6.18644	1.222069	64.40113	10.13615	0.861	0.4788	0.4202
SIO_2	5.542373	1.62357	65.0452	9.946916	0.8645	0.4495	0.4418
SIO_3	6.090395	1.104108	64.49718	10.19198	0.8607	0.4888	0.4641
FCO_1	5.819209	1.365597	64.76836	9.867158	0.852	0.626	0.4759
FCO_2	4.762712	1.787001	65.82486	9.736754	0.8607	0.5201	0.5468
FCO_3	5.146893	1.648313	65.44068	9.614628	0.8489	0.6606	0.6362
Total			70.58757	10.77478	0.8671		
Cronbach's Alpha 0.867092		Std. Cronbachs Alpha 0.873726					

The procedure had an overall raw alpha of .86 (rounded from .8643) for mobile banking services and .87 (rounded from .8671) for online banking services. (Nunnally 1978) cited in (Santos 1999) argues for a Cronbach Alpha value of 0.7 to be an acceptable determination of reliability, and thus all the items were retained as they were all above 0.7. Therefore, the instruments that measure intention to adopt mobile and online banking services were concluded to be reliable.

4.3.2 Factors affecting the adoption of mobile banking

The study performed factor analysis using a principal component analysis (PCA) alongside Varimax with Kaiser Normalization rotation method until the eigenvalue of each factor was equal to 1 or more. A scree plot gives a rough bar plot of the eigenvalues and enables the researcher to note the

relative size of each eigenvalue. Both Varimax with Kaiser Normalization rotation method and the scree test were used to decide which components are retained in the PCA.

The purpose of principal component analysis is to reduce a number of observed variables into a relatively smaller number of components and any component that displays an eigenvalue greater than 1.00 is accounting for a greater amount of variance than had been contributed by one variable; such a component is therefore accounting for a meaningful amount of variance, and is worthy of being retained (Hatcher 1994). With the scree test, the components that appear before the break on the plot of eigenvalues are assumed to be meaningful and are retained (Fadare, Babatunde, Ojo, Iyanda and Sangogboye 2011).date (2011)

The Principal Component Analysis (PCA) results for mobile banking are shown in Table 5: Principal Component Analysis Output for Mobile Banking Services and show factor loadings (rotated components) with an absolute value greater than 0.4 for mobile banking. Component 1 is defined by pem_1, pem_2, eem_1 and eem_3. Component 2 is defined by fcm_1, fcm_2 and fcm_3. Component 3 is defined by sim_2, and sim_3. This indicates that the factors that contribute to the adoption of mobile banking are, 'colleagues and friends expect me to have use cell phone/mobile banking' and this is in line with the UTAUT model by (Venkatesh et al. 2003). The other factors are, 'I trust banks with my information when using mobile banking', and recent studies conducted by (Luo, Li, Zhang and Shim 2010) found that user's perception of risk is a crucial driver to determine innovative technology acceptance. The findings show that perceived risk has a negative significant relationship with behavioural intention on mobile banking adoption.

Table 5: Principal Component Analysis Output for Mobile Banking Services

```
. rotate, horst blanks(0.4)
Principal components/correlation                  Number of obs    =        177
                                                  Number of comp.  =          3
                                                  Trace            =         12
    Rotation: orthogonal varimax (Kaiser on)      Rho              =     0.6232
```

Component	Variance	Difference	Proportion	Cumulative
Comp1	3.50792	1.43492	0.2923	0.2923
Comp2	2.07299	.176086	0.1727	0.4651
Comp3	1.89691	.	0.1581	0.6232

Rotated components (blanks are abs(loading)<.4)

Variable	Comp1	Comp2	Comp3	Unexplained
pem_1	0.4240			.3829
pem_2	0.4807			.2532
pem_3				.4398
eem_1	0.4648			.299
eem_2				.648
eem_3	0.4021			.3662
sim_1				.4698
sim_2			0.6600	.2622
sim_3			0.6116	.3386
fcm_1		0.4624		.4616
fcm_2		0.5822		.3645
fcm_3		0.6038		.2364

Component rotation matrix

	Comp1	Comp2	Comp3
Comp1	0.7823	0.4674	0.4118
Comp2	0.0201	-0.6796	0.7333
Comp3	-0.6226	0.5653	0.5410

The scree plot for mobile banking is depicted below in Figure 8: Scree Plot for Mobile Banking. In this plot, the graph is almost flat from the fourth factor which has an eigenvalue below 1. This implies that each successive factor is accounting for smaller and smaller amounts of the total variance. Therefore the first 3 components in this plot are retained and the rest are discarded.

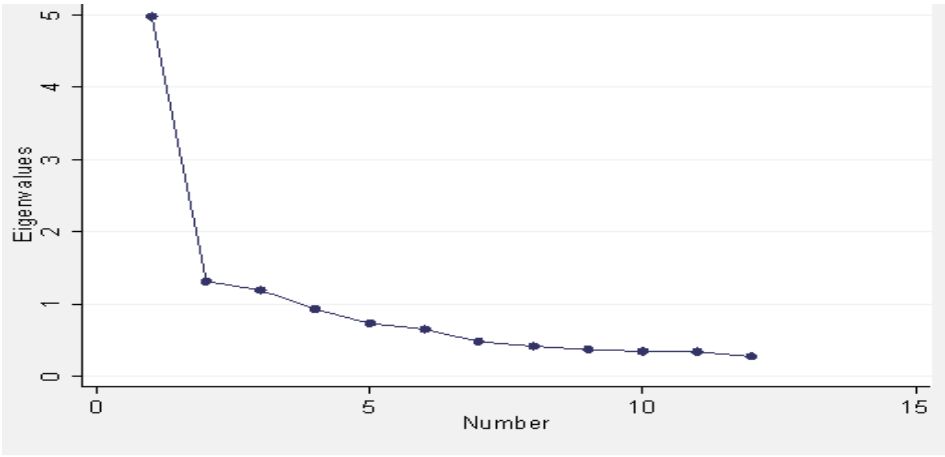


Figure 8: Scree Plot for Mobile Banking

The factors that affect mobile banking services are therefore Component 1 (performance expectancy and effort expectancy), Component 2 (facilitating conditions) and Component 3 (social influence).

4.3.3 Factors affecting the adoption of online banking

The Principal Component Analysis (PCA) results for online banking are summarised in Table 6: Principal Component Analysis Output for Online Banking Services. Component 1 is defined by peo_2 and peo_1. Component 2 is defined by fco_1, fco_2 and fco_3. Component 3 is defined by sio_2, sio_1 and sio_3. The most contributing factors (factors with highest loadings) that affect adoption of online banking are fco_2 ('I don't foresee any risk in accessing my banking account from a computer'). Recent studies conducted by (Luo et al. 2010) found that user's perception of risk is a crucial driver to determine innovative technology acceptance. The findings show that perceived risk has a negative significant relationship towards behavioural intention on mobile or online banking adoption. The other factors that affect the adoption of mobile banking are sio_2 ('colleagues and friends expect me to have/use online banking') which is in line with the UTAUT model by (Venkatesh et al. 2003).

Table 6: Principal Component Analysis Output for Online Banking Services

Principal components/correlation — Number of obs = 177; Number of comp. = 3; Trace = 12; Rho = 0.6628

Rotation: orthogonal varimax (Kaiser on)

Component	Variance	Difference	Proportion	Cumulative
Comp1	3.29578	.736057	0.2746	0.2746
Comp2	2.55972	.462021	0.2133	0.4880
Comp3	2.0977	.	0.1748	0.6628

Rotated components (blanks are abs(loading)<.4)

Variable	Comp1	Comp2	Comp3	Unexplained
peo_1	0.5160			.2173
peo_2	0.5278			.1886
peo_3				.4538
eeo_1				.4464
eeo_2				.6173
eeo_3				.3591
sio_1			0.5469	.3425
sio_2			0.5798	.2911
sio_3			0.5771	.2795
fco_1		0.4248		.3957
fco_2		0.6117		.2449
fco_3		0.5645		.2106

Component rotation matrix

	Comp1	Comp2	Comp3
Comp1	0.7058	0.5806	0.4059
Comp2	-0.6101	0.2070	0.7648
Comp3	0.3600	-0.7874	0.5004

The scree plot for online banking is attached in Figure 9: Scree Plot for Online Banking Services. In this plot, the graph is almost flat from the fourth factor which has an eigenvalue below 1. This implies that each successive factor is accounting for smaller and smaller amounts of the total variance. Therefore the first 3 components in this plot are retained and the rest are discarded.

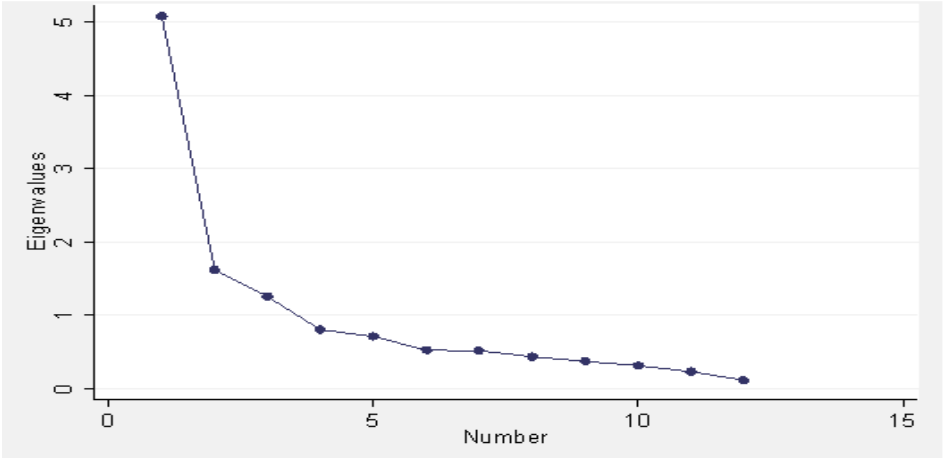


Figure 9: Scree Plot for Online Banking Services

The factors that affect online banking services are therefore Component 1 (performance expectancy), Component 2 (facilitating conditions) and Component 3 (social influence).

4.3.4 Performance Expectancy

The performance expectancy items influence both the adoption of mobile and online banking services are described and classified into components in this section. Component 1 for mobile banking is defined by pem_1 ('mobile banking is useful for doing banking'), perm_2 ('mobile banking improves the way in which I do my banking'), eem_1 ('learning to use the mobile banking at my bank was easy for me') and eem_3 ('I am very comfortable in using mobile banking'). This component thus includes the items in both performance expectancy (PEM) and effort expectancy (EEM) on mobile banking. Regarding online banking, there is Component 1 that is defined by peo_2 ('online banking makes it easier to do banking') and peo_1 ('online banking is useful for doing my banking'). This component could be labelled as performance expectancy on online banking (PEO). The implication of this is that performance expectancy is an important predictor of adoption in both online and mobile banking services.

4.3.5 Effort Expectancy

As discussed with regard to performance expectancy, there was an overlap of items that formed Component 1 on mobile banking and therefore that component could be classified under both performance expectancy (PEM) and effort expectancy (EEM). The items on effort expectancy on mobile banking that defines EEM are eem_1 ('learning to use the mobile banking at my bank was easy for me') and eem_3 ('I am very comfortable using mobile banking'). None of the effort expectancy items contributed to any component on online banking and therefore the

conclusion could be that effort expectancy is not an important predictor of adoption of online banking.

4.3.6 Social Influence

The social influence items that affect the adoption of mobile and online banking services are described and classified into components in this section. Component 3 is defined by sio_2 (‘colleagues and friends expect me to have/use online banking’), sio_1 (‘some of the successful people I know use online banking’) and sio_3 (‘I often see people using online banking’) and therefore labelled social influence on online banking (SIO). Component 3 is defined by sim_2 (‘colleagues and friends expect me to have/use cellphone/mobile banking’), and sim_3 (‘I often see people using cellphone/mobile banking’) and therefore labelled social influence on mobile banking (SIM). The implication of this is that social influence is an important predictor of adoption in both online and mobile banking services.

4.3.7 Facilitating Conditions

The facilitating conditions items that affect the adoption of mobile and online banking services are described and classified into components in this section. Component 2 is defined by fco_1 (‘I have enough information regarding my bank’s online banking services’), fco_2 (‘I don’t foresee any risk in accessing my banking account from a computer’) and fco_3 (‘I trust banks with my information when using online banking’) and therefore labelled facilitating conditions on online banking (FCO). Component 2 is defined by fcm_1 (‘I have enough information regarding my bank’s mobile banking services’), fcm_2 (‘I don’t foresee any risk in accessing my banking account from a cellphone’) and fcm_3 (‘I trust banks with my information when using mobile banking’) and therefore labelled facilitating conditions on mobile banking (FCM). The implication of this is that

facilitating conditions is an important predictor of adoption in both online and mobile banking services.

4.4 PERFORMANCE EXPECTANCY

Performance expectancy has been identified as an important predictor of adoption in both online and mobile banking services. The discussion with experts and thought leaders on digital banking has identified some of the performance factors that both the customers and banks look at in relation to online and mobile banking. These factors are discussed below.

4.4.1 Performance expectancy on mobile and online banking

The performance factors that influence the adoption of mobile banking include, amongst others, the speed at which the customers are able to perform banking, simplicity and availability of the system, the convenience of being able to perform banking, information on the systems and manageability or facilitation of banking. A cognitive map that summarises these factors is presented in Figure 10: Cognitive Mapping of Performance Factors that influence the adoption of Online and Mobile Banking.

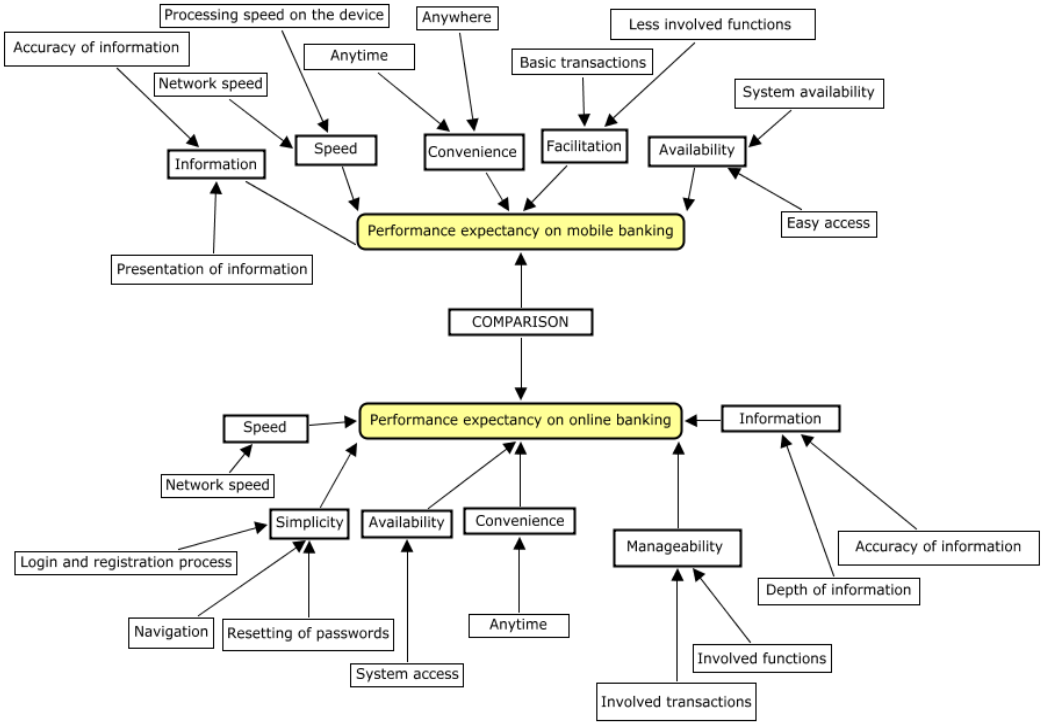


Figure 10: Cognitive Mapping of Performance Factors that influence the adoption of Online and Mobile Banking

There are two propositions regarding performance expectancy's influence on the intention to use technology. The results related to these two propositions are presented in this section.

4.4.2 Results pertaining to proposition 1A

Proposition: The influence of performance expectancy on behavioural intention will be moderated by gender and age, such that the effect will be stronger for men, and particularly for younger men.

The analysis dealt with determining the interaction of age and gender with performance expectancy as moderating factors as per the proposition. This was determined by creating categories of moderating factors as summarised in Table 7: The Categorical Coding Table for Proposition 1A. The categorical coding table shows that male gender is given a value of

one and female gender is given a value of zero. Age group 17 - 25 years is given a value of 1 and 26 - 35 years is given a value of 2 and so forth.

Table 7: The Categorical Coding Table for Proposition 1A

		Parameter coding		
	Frequency	**(1)**	**(2)**	**(3)**
GENDER				
Male	65	0.00		
Female	38	1.00		
AGE GROUP				
17 - 25 Years	14	1.00	0.00	0.00
26 - 35 Years	52	0.00	1.00	0.00
36 - 45 Years	28	0.00	0.00	1.00
Over 46 Years	9	0.00	0.00	0.00

This was followed by running a logistic regression and the output of that is shown in Table 8: The Logistic Regression Output for Proposition 1A. The results of the binary logistic regression model shows that influence of performance expectancy on behavioural intention is moderated by younger men of the age group 26 - 35 years. The interaction of male gender and age group between 26 - 35 years is significant at 5% level of significance with a p-value of 0.055 as shown in the variables in the equation output table. For example, the EXP (B) value associated with age group is .074, hence when age group is raised by one unit, the odds ratio is .074 times likely to belong to the mobile banking group.

Table 8: The Logistic Regression Output for Proposition 1A

Variables in the Equation							
		B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**
Step 1[a]	AGE_GROUP * AVPEM * AGE_GROUP(1)	-1.786	1.504	5.883 1.410	3 1	.117 .235	.168
	by AVPEM by AGE_GROUP(2)	-2.603	1.354	3.695	1	.055	.074
	by AVPEM by AGE_GROUP(3)	-14.645	16.570	.781	1	.377	.000
	by AVPEM by AGE_GROUP * AVPEO * AGE_GROUP(1)	1.326	1.279	5.350 1.075	3 1	.148 .300	3.766
	by AVPEO by AGE_GROUP(2)	2.718	1.449	3.518	1	.061	15.146
	by AVPEO by AGE_GROUP(3)	15.152	17.387	.759	1	.383	3.807E6
	by AVPEO by Constant	2.305	.524	19.31	1	.000	10.023

[a]. Variable(s) entered on step 1: AGE_GROUP * AVPEM * GENDER, AGE_GROUP * AVPEO * GENDER.

The classification table attached in Table 9: The Classification Table for Proposition 1A shows that 100% of those responses who adopted mobile banking first were predicted correctly. The overall rate of correctly classifying cases correctly is 93.2%.

Table 9: The Classification Table for Proposition 1A

Classification Table [a]					
	Observed		Predicted		
			Banking Technology Adoption		Percentage Correct
			Mobile	Online	
Step 1	Banking Technology Adoption	Mobile	2	7	22.2
		Online	0	94	100.0
	Overall Percentage				93.2

[a] The cut value is .50

The conclusion on this proposition is influence of performance expectancy on behavioural intention will be moderated by gender and age, such that the effect will be stronger for men and particularly for younger men, as suggested in the UTAUT model.

4.4.3 Results pertaining to proposition 1B

Proposition: The influence of performance expectancy on behavioural intention will be significantly higher for online banking services as compared to mobile banking services.

The results of the binary logistic regression model shows that the influence of performance expectancy on behavioural intention is significantly higher for online banking services (p value is .072) as compared to mobile banking (p value is .174).

Table 10: The Logistic Regression Output for Proposition 1B

Variables in the Equation							
		B	S.E.	Wald	Df	Sig.	Exp(B)
Step 1[a]	AVPEM	.605	.445	1.847	1	.174	.546
	AVPEO	.910	.505	3.243	1	.072	2.484
	Constant	.200	3.337	.004	1	.952	1.221

The conclusion on this proposition is that the influence of performance expectancy on behavioural intention is significantly higher for online banking services when compared to mobile banking services as suggested in the proposition.

4.5 EFFORT EXPECTANCY

Effort expectancy has been identified as an important predictor of adoption in mobile banking but was not important for online banking. The discussion with experts and thought leaders on digital banking has identified some of the effort factors that both the customers and banks look at when it comes to online and mobile banking. Those factors are discussed in this section.

4.5.1 Effort expectancy on mobile and online banking

The factors that affect effort on both mobile and online banking include the security efforts from the customer, simplicity of the system in terms of design and support processes, costs effort as well as overcoming a psychological barrier to use. In addition to these, mobile banking adoption is influenced by other factors such as the screen size and keyboard designs of their devices. A cognitive summary of this discussion is presented in Figure 11: Cognitive Mapping of Effort Factors that influence the adoption of Online and Mobile Banking

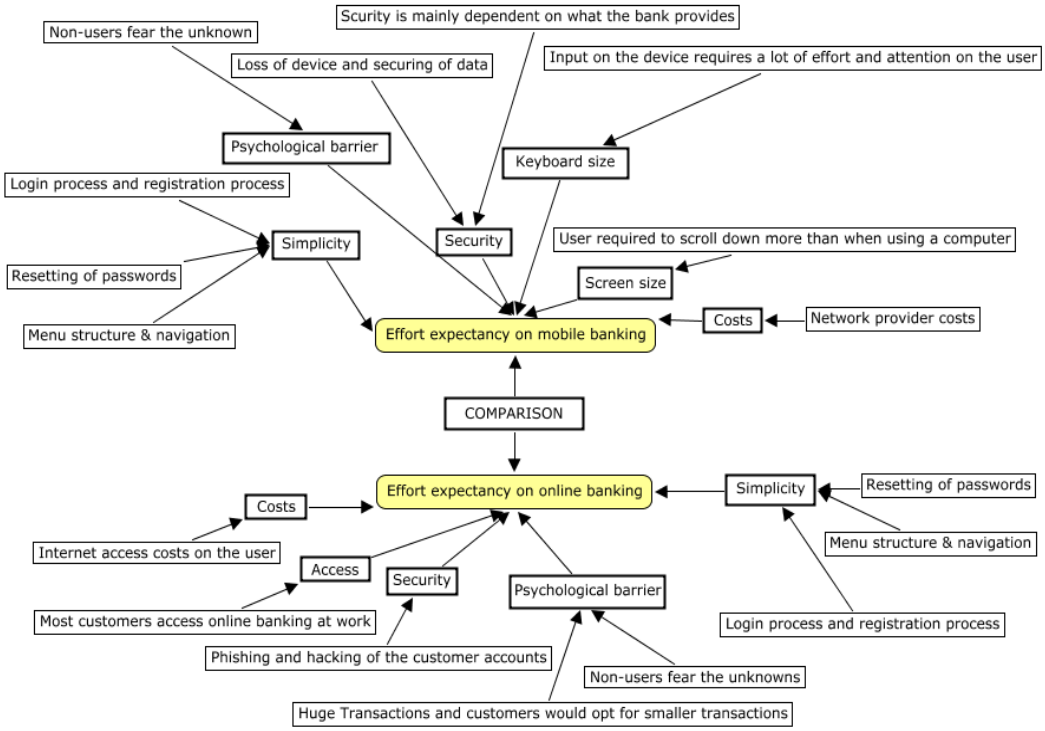


Figure 11: Cognitive Mapping of Effort Factors that influence the adoption of Online and Mobile Banking

There are two propositions regarding the influence of effort expectancy on the intention to use technology. The results related to these two propositions are presented in this section.

4.5.2 Results pertaining to Proposition 2A

Proposition: The influence of effort expectancy on behavioural intention will be moderated by gender and age, such that the effect will be stronger for women, particularly younger women.

The logistical regression output for this proposition is shown in Table 11: The Logistic Regression Output for Proposition 2A where gender (1) is female and age_group (1) represents 17 - 25 year old respondents. The logistic regression output shows that the influence of effort expectancy on behavioural intention is moderated by younger women. The interaction of

the age group 17 - 25 years, where gender is female and average expectancy effort is significant at 5% level of significance with a p value of 0.009 as shown in Table 11: The Logistic Regression Output for Proposition 2A. The EXP (B) value associated with age group is .686. Hence when age group is raised by one unit (e.g. from 17 – 25 to 26 – 35 years) the odds ratio is .686 times likely to belong to the online banking group.

Table 11: The Logistic Regression Output for Proposition 2A

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
AGE_GROUP(1) by AVEEO by GENDER(1)	.377	.144	6.887	1	.009	.686
AGE_GROUP(2) by AVEEO by GENDER(1)	.113	.216	.274	1	.601	1.120
AGE_GROUP(3) by AVEEO by GENDER(1)	3.229	2.004E3	.000	1	.999	25.266
Constant	2.474	.452	29.964	1	.000	11.870

[a]. Variable(s) entered on step 1: AGE_GROUP * AVEEO * GENDER.

Table 12: The Variables not in the Equation Table for Proposition 2A explain whether each independent variable improves the model. In this case, AGE_GROUP (2) by GENDER (1) for AVEEM is slightly better than the other variables, as the interaction is significant and if included would improve the predictive power of the model.

Table 12: The Variables not in the Equation Table for Proposition 2A

Variables not in the Equation [a]					
			Score	**df**	**Sig.**
Step 2	Variables	AGE_GROUP * AVEEM * GENDER	7.546	3	.056
		AGE_GROUP(1) by AVEEM by GENDER(1)	1.297	1	.255
		AGE_GROUP(2) by AVEEM by GENDER(1)	6.248	1	.012
		AGE_GROUP(3) by AVEEM by GENDER(1)	.000	1	.998

[a]. Residual Chi-Squares are not computed because of redundancies.

The classification table attached – Table 13: The Classification Table for Proposition 2A summarises the overall rate of correctly classifying cases and has an overall rate of 91.3%.

Table 13: The Classification Table for Proposition 2A

Classification Table [a]					
Observed			**Predicted**		
			Banking Technology Adoption		**Percentage Correct**
			MOBILE	**ONLINE**	
Step 2	Banking Technology Adoption	MOBILE	1	8	11.1
		ONLINE	1	93	98.9
	Overall Percentage				91.3

[a]. The cut value is .500

The conclusion regarding this proposition is that the influence of effort expectancy on behavioural intention will be moderated by gender and age, such that the effect will be stronger for women, particularly younger women.

4.5.3 Results pertaining to Proposition 2B

Proposition: The influence of effort expectancy on behavioural intention will be significantly higher for online banking services as compared to mobile banking services.

Binary logic regression was performed to determine the influence of effort expectancy on behavioural intention to use online and mobile services technology services. The results of the logistic regression model shows that influence of effort expectancy on behavioural intention is significantly higher for online banking services (p value is 0.011) as compared to mobile banking (p value is 0.020). The summary of this analysis in presented in Table 14: The Logistic Regression Output for Proposition 2B.

Table 14: The Logistic Regression Output for Proposition 2B

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	AVEEM	1.799	.776	5.376	1	.020	.166
	AVEEO	.834	.327	6.517	1	.011	2.303
	Constant	8.801	4.960	3.148	1	.076	6.642

The conclusion regarding this proposition is that the influence of effort expectancy on behavioural intention is significantly higher for online banking services as compared to mobile banking services, as suggested in the UTAUT model.

4.6 SOCIAL INFLUENCE

Social influence has been identified as an important predictor of adoption in both online and mobile banking services. The discussion with experts and thought leaders on digital banking has identified some of the social factors that influence the adoption of both online and mobile banking, and these are discussed further in the section below.

4.6.1 Social influence on mobile and online banking

The social factors that influence the adoption of both mobile and online banking include the social standing of the customer in the community, education and income levels, as well as peer pressure. A summary of these factors are presented in Figure 12: Cognitive Mapping of Social Factors that influence the adoption of Online and Mobile Banking.

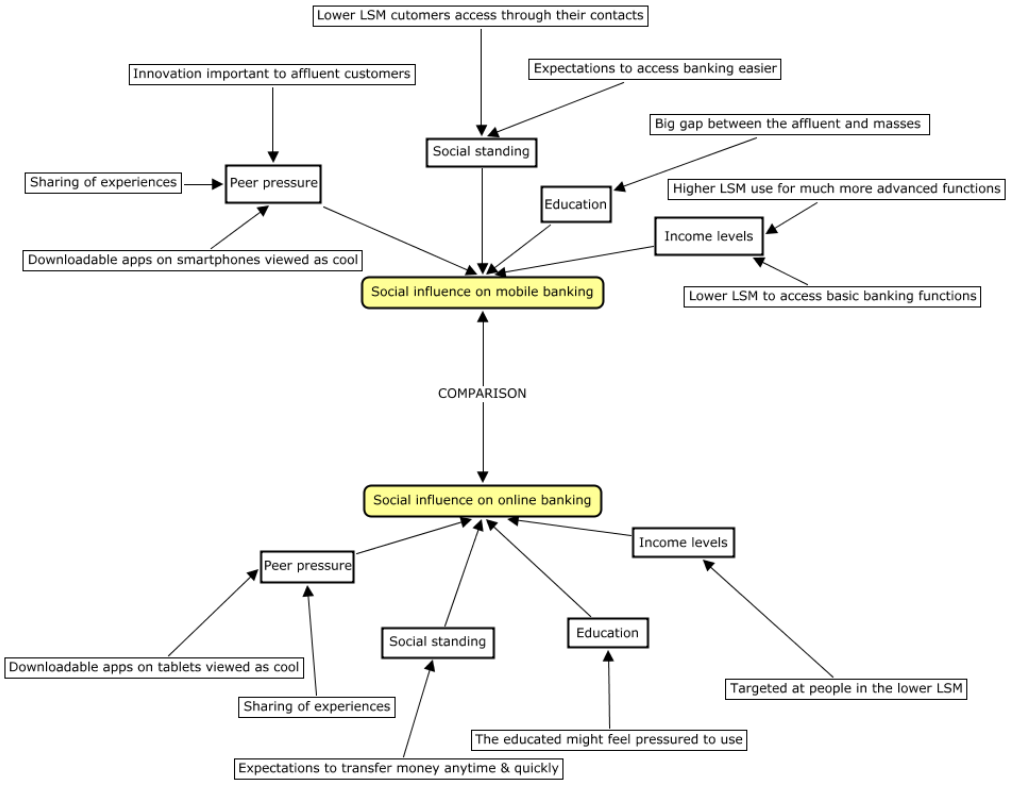


Figure 12: Cognitive Mapping of Social Factors that influence the adoption of Online and Mobile Banking

There are two propositions regarding how social influence impacts on the intention of the customer to use technology, and the findings on these two propositions are presented below.

4.6.2 Results pertaining to Proposition 3A

Proposition: The influence of social influence on behavioural intention will be moderated by gender and age, such that the effect will be stronger for women, particularly older women.

The analysis dealt with determining how gender and age interact with social influence as moderating factors. This was determined by creating categories of moderating factors as summarised in Table 15: The Categorical Coding Table for Proposition 3A. The categorical coding table

shows that gender female is assigned a value of (1) and gender is male is given a value of (0). Age group is 17 - 25 years and is given a value of 1 while 26 - 35 years is given a value of 2 and so forth.

Table 15: The Categorical Coding Table for Proposition 3A

Categorical Variables Codings					
		Frequency	Parameter coding		
			(1)	(2)	(3)
AGE_	17_25	14	1.000		
GROUP	26_35	52	.000	1.000	
	36_45	28	.000	.000	1.000
	Over 46	9	.000	.000	.000
GENDER	Female	38	1.000		
	Male	65	.000		

The binary logistic regression output shows that the influence of social influence on behavioural intention is moderated by younger women. This is not consistent with the proposition of (Venkatesh et al. 2003). The interaction shows age group of 17 - 25 years with gender as female and where average social influence is significant at 5% level of significance with a p value of .006 as shown in Table 16: The Logistic Regression Output for Proposition 3A. The EXP (B) value associated with age group is .626. Hence, when age group is raised by one unit (from 17 – 25 to 26 – 35 years) the odds ratio is .626 times likely to belong to the online banking group.

Table 16: The Logistic Regression Output for Proposition 3A

Variables in the Equation						
	B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**
AGE_GROUP(1) by AVSIO by GENDER(1)	.469	.170	7.590	1	.006	.626
AGE_GROUP(2) by AVSIO by GENDER(1)	.024	.171	.019	1	.890	1.024
AGE_GROUP(3) by AVSIO by GENDER(1)	3.730	2.199E3	.000	1	.999	41.680
Constant	2.566	.467	30.219	1	.000	13.015

[a]. Variable(s) entered on step 1: AGE_GROUP * AVSIO * GENDER.

Table 17: The Variables not in the Equation Table for Proposition 3A explains whether each independent variable improves the model. In this case, none of the independent variables would improve the model as none of them would add any significant interaction to the predictive power of the model.

Table 17: The Variables not in the Equation Table for Proposition 3A

Variables not in the Equation [a]					
			Score	**df**	**Sig.**
Step 2	Variables	AGE_GROUP * AVSIM * GENDER	1.519	3	.678
		AGE_GROUP(1) by AVSIM by GENDER(1)	1.210	1	.271
		AGE_GROUP(2) by AVSIM by GENDER(1)	.308	1	.579
		AGE_GROUP(3) by AVSIM by GENDER(1)	.000	1	1.000

[a]. Residual Chi-Squares are not computed because of redundancies

The classification table attached — Table 18: The Classification Table for Proposition 3A — summarises the overall rate of correctly classifying cases and has an overall rate of 92.2%.

Table 18: The Classification Table for Proposition 3A

Classification Table [a]					
			Predicted		
			Banking		Percentage
Observed			MOBILE	ONLINE	Correct
Step 2	Banking Technology Adoption	MOBILE	2	7	22.2
		ONLINE	1	93	98.9
	Overall Percentage				92.2

[a] The cut value is .500

The conclusion on this proposition is that the influence of social influence on behavioural intention is moderated by gender and age, such that the effect will be stronger for women, particularly younger women and not older women, as proposed in the UTAUT model.

4.6.3 Results pertaining to Proposition 3B

Proposition: The influence of social influence on behavioural intention for both online and mobile banking services will not be significantly different. The two sample t-test was conducted to determine if the two population means are equal. This t-test is appropriate for this proposition since the aim is to test the hypothesis that the mean of mobile banking and online banking is not significantly different. This procedure calculates the two-sample t-test, the Mann-Whitney U test, and the Kolmogorov-Smirnov test of data, either contained in two variables (columns) or in one variable indexed by a second (grouping) variable. For this analysis, the NCSS package was used. The Asp in-Wech Unequal Variance test section shows that the t-statistic is -4.045 and the corresponding two-tailed p-value is .000075.

Table 19: The t-statistic Output for Proposition 3B

Two-Sample Test Report

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Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95.0% LCL of Mean	95.0% UCL of Mean
AVSIM	103	5.265372	1.249278	0.123095	5.021214	5.509531
AVSIO	103	5.925566	1.087593	0.1071637	5.713007	6.138125

Note: T-alpha (AVSIM) = 1.9835, T-alpha (AVSIO) = 1.9835

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Reject H0 at .050	Power (Alpha=.050)	Power (Alpha=.010
Difference <> 0	-4.0451	0.000075	Yes	0.980571	0.924456
Difference < 0	-4.0451	0.000037	Yes	0.991497	0.954616
Difference > 0	-4.0451	0.999963	No	0.000000	0.000000

Difference: (AVSIM)-(AVSIO)

The conclusion on this proposition is that there is a difference in the extent of social influence on behavioural intention for both online and mobile banking services.

4.7 FACILITATING CONDITIONS

Facilitating conditions has been identified as an important predictor of adoption in both online and mobile banking services. The discussion with experts and thought leaders on digital banking has identified some of the facilitating factors that influence the adoption of both online and mobile banking. Those factors are discussed further in the section below.

4.7.1 Facilitating conditions on mobile and online banking

The facilitating factors that influence the adoption of both mobile and online banking include the access platform that the customer uses to access the service, the availability of help and requisite information, accessibility of both the access platform, as well as the education levels of

the customer. A summary of these factors is presented in Figure 13: Cognitive Mapping of Facilitating Factors that influence the adoption of Online and Mobile Banking

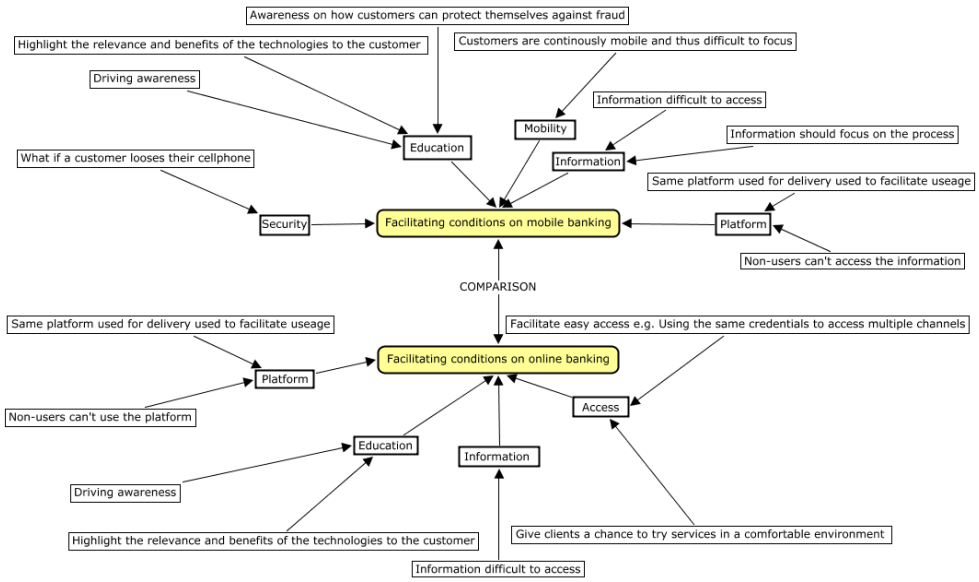


Figure 13: Cognitive Mapping of Facilitating Factors that influence the adoption of Online and Mobile Banking

There are two propositions regarding the influence of facilitating conditions on the usage of mobile and online banking. The findings regarding these two propositions will be presented in this section.

4.7.2 Results pertaining to Proposition 4A

Proposition: The influence of facilitating conditions on the usage of mobile or online banking will be moderated by age, such that the effect will be stronger for older customers.

The analysis dealt with determining how age interacts with facilitating conditions as a moderating factor in accordance with the proposition. This was determined by creating categories of moderating factors as summarised in Table 20: The Logistic Regression Output for Proposition

4A. The binary logistic regression output shows that the influence of facilitating is moderated by younger customers. The interaction shows age_group 17 – 25 years and average facilitating conditions is significant at 5% level of significance with a p value of *.035*. The EXP (B) value associated with age group is 2.586. Hence, when age group is raised by one unit (such as moving from 17 – 25 to 26 – 35 years) the odds ratio is 2.586 times more likely to belong to the online banking group.

Table 20: The Logistic Regression Output for Proposition 4A

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
AVFCM by age(1)	-.541	.429	1.588	1	.208	.582
AVFCM by age(2)	-.603	1.169	.266	1	.606	.547
AVFCM by age(3)	2.741	1.530E4	.000	1	1.000	15.505
AVFCO by age(1)	.950	.450	4.456	1	.035	2.586
AVFCO by age(2)	1.010	1.151	.770	1	.380	2.746
AVFCO by age(3)	1.121	1.532E4	.000	1	1.000	3.068
Constant	.789	.549	2.065	1	.151	2.201

a. Variable(s) entered on step 1: AVFCM * age, AVFCO * age

The classification table attached — Table 21: The Classification Table for Proposition 4A — summarises the overall rate of correctly classifying cases and has an overall rate of 92.2%.

Table 21: The Classification Table for Proposition 4A

Classification Table [a]					
			Predicted		
			Banking Technology Adoption		
Observed			Mobile	Online	Percentage Correct
Step 1	Banking Technology Adoption	Mobile	1	8	11.1
		Online	0	94	100.0
	Overall Percentage				92.2

a. The cut value is .500

The findings on this proposition is that the influence of facilitating conditions on the usage of mobile or online banking is moderated by age, such that the effect is stronger for younger customers. This is in contrast to the UTAUT model which suggests that facilitating conditions on the usage of mobile or online banking will be moderated by age, such that the effect will be stronger for older customers.

4.7.3 Results pertaining to proposition 4B

Proposition: The difference in the influence of facilitating conditions on the usage between online and mobile banking services will not be significant.

Table 22: The t-statistic Output for Proposition 4B shows the t-statistic results regarding the influence of facilitating conditions' influence on the usage of mobile and online banking technologies. The t-statistic is -1.86 with 203.78 and the corresponding two-tailed p-value is *.065035*, which is greater than .05. We fail to reject the null hypothesis at 5% level and conclude that there is statistical evidence that the influence of facilitating

conditions on behavioural intention on both mobile and online banking is not significantly different.

Table 22: The t-statistic Output for Proposition 4B

Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95.0% LCL of Mean	95.0% UCL of Mean
AVFCM	103	5.05178	1.26694	0.1248353	4.80417	5.29939
AVFCO	103	5.385113	1.311718	0.1292474	5.128752	5.641475

Note: T-alpha (AVFCM) = 1.9835, T-alpha (AVFCO) = 1.9835

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Reject H0 at .050	Power (Alpha=.050)	Power (Alpha=.010
Difference <> 0	-1.8550	0.065035	No	0.454820	0.230911
Difference < 0	-1.8550	0.032518	Yes	0.580832	0.314329
Difference > 0	-1.8550	0.967482	No	0.000238	0.000015

Difference: (AVFCM)-(AVFCO)

The conclusion on this proposition is that there is a difference in the influence of facilitating conditions on the usage between online and mobile banking services.

4.8 DIGITAL BANKING CUSTOMER DEMOGRAPHICS IN SOUTH AFRICA

This section is focussed on describing a digital banking customer in South Africa. There is one proposition regarding the demographics of a digital banking customer in South Africa and the findings on this proposition are presented below.

4.8.1 Results pertaining to Proposition 5

Proposition: A typical digital banking customer in South Africa is a professional or studying towards a professional career and is between the ages of 18 and 35 years.

A summary of the results pertaining to age breakdown of digital banking customer are presented in Table 23: Digital Banking Customer Age Breakdown. From a total of 177 respondents surveyed for this study, 110 (62.15%) were below the age of 35 years, of which 107 (60.45%) were digital banking customers of some form or the other, with a further 67 (37.85%) being over the age of 35 years. Furthermore, 79 (66.96%) of the respondents who use both online and mobile banking were below the age 35 years. In addition, only 15.25% of the respondents had a maximum of a matric or lower qualification as shown previously in Table 1: Research Respondents' Demographics.

Table 23: Digital Banking Customer Age Breakdown

	Number	**≤ 35 Years**	**%**	**35+ Years**	**%**
Mobile Only	5	4	80	1	20
Online Only	46	24	52.17	22	47.83
Both Online & Mobile	118	79	66.96	39	33.05
Neither	8	3	37.50	5	65.50
Total	177	110	62.15	67	37.85

This was in alignment with the proposition that a typical digital banking customer in South Africa is a professional or studying towards a professional career and is aged between 18 and 35 years.

4.9 SUMMARY OF RESULTS

The factors that have been identified to influence the adoption of mobile and online banking are performance expectancy, effort expectancy, social influence and facilitating conditions as per the model developed by (Venkatesh et al. 2003) of unified theory of acceptance and use of

technology. Effort expectancy was not an influential factor on online banking, contrary to the UTAUT model.

There were nine (9) propositions that were tested and a summary of the findings on these propositions are presented below.

Proposition 1A: The influence of performance expectancy on behavioural intention is moderated by gender and age, such that the effect is stronger for men, and particularly for younger men.

Proposition 1B: The influence of performance expectancy on behavioural intention is significantly higher for online banking services as compared to mobile banking.

Proposition 2A: The influence of effort expectancy on behavioural intention is moderated by gender and age, such that the effect is stronger for women, particularly younger women.

Proposition 2B: The influence of effort expectancy on behavioural intention is significantly higher for online banking services as compared to mobile banking services.

Proposition 3A: The influence of social influence on behavioural intention is moderated by gender, age, such that the effect is stronger for women, particularly younger women.

Proposition 3B: There is a difference in the extent of social influence on behavioural intention for both online and mobile banking services.

Proposition 4A: The influence of facilitating conditions on the usage of mobile or online banking was moderated by age, such that the effect is stronger for younger customers.

Proposition 4B: There was a difference in the influence of facilitating conditions on the usage between online and mobile banking services.

Proposition 5: A typical digital banking customer in South Africa was found to be a professional or studying towards a professional career and aged between 18 and 35 years.

CHAPTER FIVE
ANALYSIS OF THE FINDINGS

5.1 INTRODUCTION

This chapter discusses the results and findings of the results as presented in chapter 4 in relation to the literature that was discussed in chapter 2. The first part addresses the comparison between the results obtained from the demographic profiling and the results obtained from previous studies as discussed in chapter 2.

The second part of this report compares the factors that were found to influence the adoption of online and mobile banking as well as a comparison regarding the influence of these factors between online and mobile banking services.

5.2 DEMOGRAPHIC PROFILE OF RESPONDENTS

This section is focused on discussing the results pertaining to demographics of the respondents as set out in its influence on mobile and online banking adoption. The demographic profiling included gender, age groups, race, industry, education levels and banking details. This is critical for this study so that inferences could be applied to the general South African population.

Figure 14: Gender Profile of the Sample, shows that 57.63% of the respondents in the sample were men, with women accounting for the remaining 42.37%. This shows bias to men but it probably reflects the demographics of South Africa's corporate dynamics since there are more men than women in the working population.

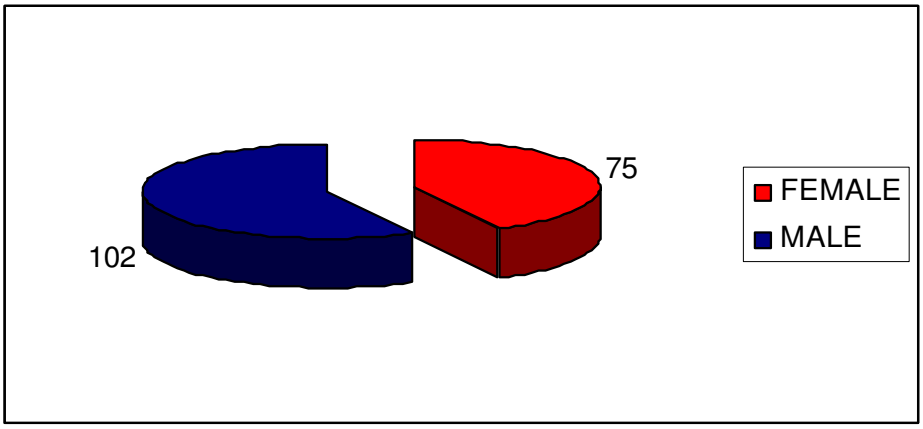


Figure 14: Gender Profile of the Sample

The industries involvement of the respondents is reflected in Figure 2: Industry Involvement of the Sample. A number of the respondents are involved in the technology and finance industries, probably due to the research focus since more people in those two industries were keen to participate. It should be noted, however, that for this profiling, respondents could make multiple selections when their organisation is involved in more than one industry.

Figure 15: Race Profile of the Sample reflects that more black people were included in the sample at 61.02%, probably due to the composition of the targeted companies as well as the demographics of the country. The government at 15%, as the largest employer in South Africa, would be likely to increase the black population due to their known nature of having more black people in their employment.

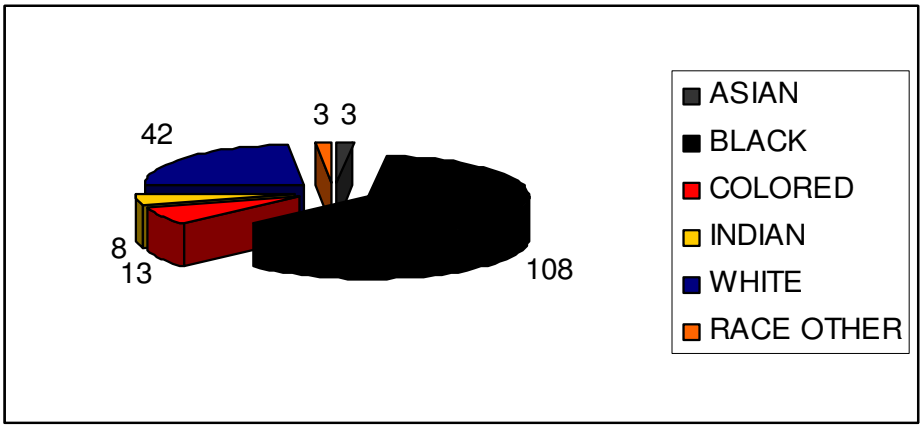


Figure 15: Race Profile of the Sample

With regard to education levels, there was a high level of respondents with university degrees and college diplomas as shown in Figure 16: Education Levels Profile of the Sample. This was not surprising due to the surveyed industries and their reliance on people with certain levels of education. Only 15.25% had a maximum of a high school Matric in the sample.

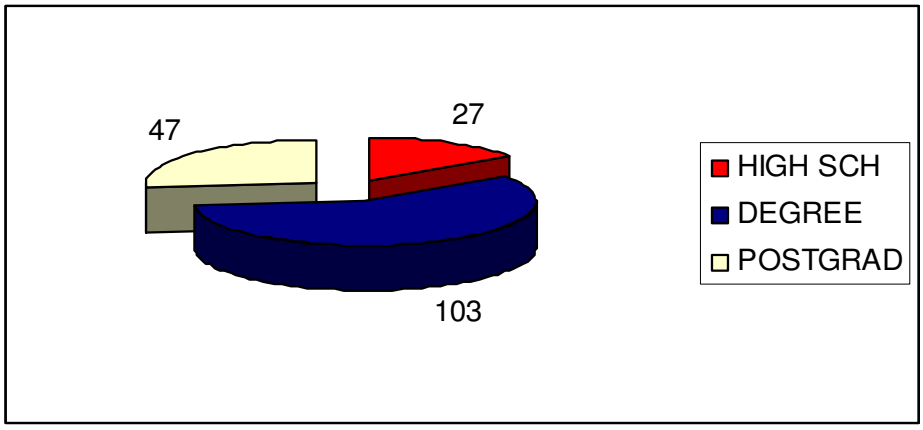


Figure 16: Education Levels Profile of the Sample

In relation to the demographics, a targeted number was achieved for this study and it reflects a more balanced view of the South African corporate demographics than most of the studies.

5.3 FACTORS INFLUENCING ADOPTION OF TECHNOLOGY

This section focuses on the results of the factors that influence the adoption of mobile and online banking services. These factors have been identified by (Venkatesh et al. 2003) as performance expectancy, effort expectancy, social influence, and facilitating conditions.

5.3.1 Performance Expectancy

Performance expectancy has been identified as an important predictor of adoption in both online and mobile banking services. The discussion with experts and thought leaders on digital banking has identified some of the performance factors that both the customers and banks consider with regard to online and mobile banking. The findings on this factor are I accord with the theory as presented in (Venkatesh et al. 2003).

5.3.2 Effort Expectancy

Effort expectancy has been identified as an important predictor of adoption in mobile banking but was not important to online banking. The discussion with experts and thought leaders on digital banking has identified some of the effort factors that both the customers and banks consider with regard to online and mobile banking. The findings on this factor align with the theory presented in (Venkatesh et al. 2003) for mobile banking but do not support the theory on online banking.

5.3.3 Social Influence

Social influence has been identified as an important predictor of adoption in both online and mobile banking services. The discussion with experts and thought leaders on digital banking has identified some of the social factors that influence the adoption of both online and mobile banking. .

The findings on this factor are in agreement with the theory as presented in (Venkatesh et al. 2003).

5.3.4 Facilitating Conditions

Facilitating conditions has been identified as an important predictor of adoption in both online and mobile banking services, and the discussion with experts and thought leaders on digital banking has identified some of the facilitating factors that influence their adoption.

5.4 PERFORMANCE EXPECTANCY

This section discusses the results performance expectancy pertaining to its influence on mobile and online banking adoption. Performance expectancy has been identified as an important predictor of adoption in both online and mobile banking services. The factors that affect this performance include, amongst others, the speed at which the customers are able to perform banking, simplicity and availability of the system, the convenience of being able to perform banking, information on the systems, and manageability and facilitation of banking. The findings on this factor align with the theory as presented in (Venkatesh et al. 2003).

In the South African studies conducted previously, this finding is consistent with the findings of (Le Roux 2009; Sankar 2009; Hadebe 2010), who found that perceived value, convenience and relative advantage to other channels appears to be amongst the most important promoting factors for both online and internet banking.

5.4.1 Performance expectancy on online banking

The convenience of being able to conduct banking activities from home or at work away from a branch is a major benefit of online banking. The other benefit is the ability of the customer to manage their banking activities very extensively and intensively. These activities include performing involved transactions such as loading beneficiaries, or viewing of longer transaction history, which are not easy to perform on a mobile device. System availability and simplicity in terms of menu structure and navigation, simpler registration process and resetting of password processes would also play a significant role in how the customers adopt the system. The network speed will influence whether the customers use the system since high speed will ensure that customers' sessions do not time out in the middle of performing transactions. The current improvements to broadband performance in South Africa should help improve the experience of customers and thus influence how the customers view the functioning of online banking.

5.4.2 Performance expectancy on mobile banking

The biggest attraction of mobile banking is convenience and being able to access banking anywhere and anytime, while the customer is away from a computer or nowhere near a branch. Customers who use mobile banking are able to perform basic functions such as paying beneficiaries, or viewing of mini statements, which they would have to otherwise obtain from a branch. The performance factors that influence the adoption of mobile banking include availability or uptime of the banking system and easy accessibility due to the fact that the customer requires only a mobile device in order to access banking. The speed, at which the customer's device is able to process, as well as the network speed at which they can connect, is also a significant factor since this affects time-outs and time that they spend on using the banking applications. The continued

improvements on the network such as upgrades to fourth generation (4G) network should help to improve the customer experience and therefore increase adoption.

The two propositions dealing with performance are discussed in the following two sections.

5.4.3 Discussion of results pertaining to Proposition 1A

Proposition: The influence of performance expectancy on behavioural intention will be moderated by gender and age, such that the effect will be stronger for men, and particularly for younger men.

The findings on this proposition is that performance expectancy on behavioural intention is moderated by younger men of the age group 26 - 35 years, particularly on mobile banking with a significance of .055 and online banking with a significance of .061. The findings on this proposition are consistent with the UTAUT model. (Venkatesh et al. 2003) noted that performance expectancy appears to be a determinant of intention in most situations and the strength of the relationship varies with gender and age such that it is more significant for men and younger workers. Research on gender differences indicates that men tend to be highly task-oriented (Minton, Schneider and Wrightsman 1980) and, therefore, performance expectancies which focus on task accomplishment are likely to be especially salient for men.

5.4.4 Discussion of results pertaining to Proposition 1B

Proposition: The influence of performance expectancy on behavioural intention will be significantly higher for online banking services as compared to mobile banking services.

The results of the binary logistic regression model shows that influence of performance expectancy on behavioural intention is significantly higher for online banking services (p value is .072) as compared to mobile banking (p value is .174). (Van 2009) argues that due to WAP browser implementation not being consistent across mobile device manufacturers, supporting the various browsers, transport layers, and physical device properties such as screen size, soft key, and keypad constraints may be challenging to the end-user. Regarding inconsistent browser implementation on various mobile platforms in particular, users will have different performance experiences depending on the type of mobile device that they use at any point in time. This is more likely to negatively affect their perceptions on the performance of mobile banking services. The findings could be argued baed on the fact that computers are generally better performing than mobile devices since mobile device technologies are based on computer technologies. In addition, the fact that the internet network is at a matured stage while the online network is still growing should tip the scales towards online banking.

5.5 EFFORT EXPECTANCY

This section focuses on the results effort expectancy pertaining to influence on intent to use mobile and online banking technologies. The factors that affect effort on both mobile and online banking include the security efforts from the customer, simplicity of the system in terms of design and support processes, cost efforts as well as overcoming a psychological barrier to use. In addition to these, mobile banking adoption is influenced by other factors such as the screen size and keyboard designs of their devices. The finding on this factor is in agreement with the theory presented in (Venkatesh et al. 2003) for mobile banking but does not support the theory on online banking.

In some of the previous studies conducted in South Africa, Hadebe (2010) found that internet banking users perceived internet banking as not involving complex procedures, and users perceived the service to be easier to use. Furthermore, Mthethwa (2011) established that complexity and cellphone experience did not show any influence on cellphone banking adoption. In accordance with the findings of this study, and the argument for computer technologies being better performers as compared to the mobile devices, it would be a reasonable finding that online banking is not strongly influenced by effort whereas mobile banking is strongly influenced.

5.5.1 Effort expectancy on mobile banking

Some of the major challenges the customers face in order to use mobile banking includes the design of the banking applications. Since the applications are designed for small phones which vary in size, the menus may be complicated and often the customer has to traverse through a complex menu in order to access the functions that they want to use. The registration processes as well as the login processes have also been highlighted as requiring a lot of effort from customers since customers are required to go to a branch in order to reset their password if they are locked out of the system. If such processes could be simplified, the extent of adoption could increase. There has also been a security concern as regards customers losing their mobile devices as well as the fact that mobile devices are not known to have anti-phishing and anti-virus software which could give customers some comfort that they are accessing a secured environment.

With regard to screen sizes for mobile devices, customers often have to scroll down in order to view all the information and that does not make it easier to use the banking applications. The keyboard size requires that the customer exercises extra care since mistakes become more likely. There

are also network costs associated with using mobile banking but this should not be a major factor since it is much cheaper compared to accessing banking from other channels such as visiting a bank.

5.5.2 Effort expectancy on online banking

Some of the major factors influencing the adoption of online banking with regard to effort that the customers need to make in order to effectively use online banking include mainly the designs of the banking applications. It is noteworthy that there has been a significant number of customers who have been introduced to online banking and only used the application once and then not used it again. This could be attributed to the fact that some of the customers feel overwhelmed when faced with internet applications. Furthermore, the password reset processes, login processes as well as registration processes could be simplified and that would make it easier for customers to adopt.

There is also a fear of the unknown for the non-adopters as well as a psychological fear for people to use certain functions such as high amounts in money transfers. The costs of internet access solely rests with the customers and the fact that most of the customers access their banking at work renders the banking application less efficient since it is marketed with anytime banking benefits. The known issues of phishing and account hacking requires that the customers need to be highly vigilant and this influences the adoption.

A plausible reason for higher online banking when compared to mobile banking could be due to the fact that it has been in existence for much longer and therefore the customers are better acquainted with online banking. In addition to that, most of the customers access online banking at work, and are thus not using their financial resources to access it. South African banks have continued to offer a good quality online experience

which could influence the effort that the customers believe they have to make in order to effectively use online banking services. Computers as the access platform to online banking have an advantage over mobile devices in terms of screen and keyboard size which make them easier to use. Furthermore, web browsers have an advantage of being better standardized compared to WAP browsers, which are implemented differently depending on the mobile device used by the customer.

The two propositions dealing with performance are discussed in this section.

5.5.3 Discussion of results pertaining to Proposition 2A

Proposition: The influence of effort expectancy on behavioural intention will be moderated by gender and age, such that the effect will be stronger for women, particularly younger women.

In this analysis, the binary logistic regression output shows that the influence of effort expectancy on behavioural intention is indeed moderated by younger women. The interaction of age group 17 - 25 years with gender classification of female and average expectancy effort is significant at 5% level of significance with a p value of .009. The classification rate on this proposition was 91.3%.

Prior research supports the notion that constructs related to effort expectancy will be stronger determinants of individual intention for women (Venkatesh and Morris 2000; Venkatesh et al. 2000) and for older workers (Morris and Venkatesh 2000).

5.5.4 Discussion of results pertaining to Proposition 2B

Proposition: The influence of effort expectancy on behavioural intention will be significantly higher for online banking services as compared to mobile banking services.

The results on this proposition showed that the influence of effort expectancy on behavioural intention is significantly higher for online banking services (p value is .011) as compared to mobile banking (p value is .020). The findings on this proposition are in agreement with various arguments that more effort will be required to use mobile technology as compared to computer technology. For instance, (Hong et al. 2006) argues that due to the limited system resources to deliver the contents of mobile internet service (small screen, small and inconvenient input method, limited memory), users often need to make an extra effort to access or update the contents (such as more navigations, or extra steps with the service menu).

(Van 2009) also argues that due to some of the mobile devices properties such as the screen size, poor screen resolution, and small keypad constraints, it may be challenging to the end-user and therefore this might negatively affect the customer's perception regarding the effort required to use the system. For instance, a user might find the process of keying in information using the small physical keyboard on a cellphone tedious. Given that these usability issues are closely related to perceptions of ease of using or learning a system, it is likely that perceived ease of use could have a greater influence on mobile internet users' post-adoption behaviour (Hong et al. 2006).

5.6 SOCIAL INFLUENCE

This section focuses on the results on social influence regarding the intent to use mobile and online banking technologies. The social factors that influence the adoption of both mobile and online banking include the social standing of the customer in the community, education and income levels, as well as peer pressure. Social influence has been identified as an important predictor of adoption in both online and mobile banking services as suggested by Venkatesh, et al. (2003).

In the South African studies conducted previously, (Hadebe 2010) found that adoption is not affected by social influences, and the opinions of friends, parents or colleagues are not considered an important factor when deciding whether to adopt internet banking service. (Le Roux 2009) established that relative advantage, coupled with how compatible the technology is with an individual's lifestyle, appears to be the most important promoting factor with regard to internet banking.

5.6.1 Social influence on mobile banking

The social standing of customers within their communities is amongst the factors that could influence the adoption of mobile banking, with high profile people in a particular community expected to be able to access banking services more easily at all times. People who are in the lower LSMs often access the service by going through their contacts and this is often the case with airtime purchases, where, if a customer knows someone with access to mobile banking, they would approach that particular person to purchase the airtime on their behalf. Education and income levels would also influence the adoption with people at higher LSMs being able to perform more advanced functions such as fund transfers, while the people at lower LSMs require more basic functions such as mini statements, airtime purchases, and balance enquiries. The

banks would feel that it is easier to sell mobile banking services to the more sophisticated clients rather than to the general population since the socio-economic and education levels in South Africa are more pronounced.

Peer pressure, whilst not such a pronounced factor, is expected to play an important role in the near future with downloadable applications (apps) that are suited for tablets and smart-phones since they could be viewed as a sign of high profile status and thus a sign of being “cool” by peers. Furthermore, due to innovations, customers are expected to share their experience as well as the apps ability to more or less perform the functions that can presently only be performed through online banking.

5.6.2 Social influence on online banking

The social standing of customers within their communities is amongst the most important factors that could influence the adoption of online banking. This is due to the fact that online banking has been in existence for a long while and higher profile people in communities are increasingly expected to be able to access banking services more easily. Furthermore, when compared to mobile banking, online banking is targeted at the more affluent customers and thus the better educated and higher income customers. Peer pressure, albeit not a significant factor in banking, is often a result of the “cool” factor and downloadable apps and sharing of experiences amongst customers would result in people with devices such as tablets to feel pressured by their peers to use online banking using apps.

The two propositions dealing with performance are discussed in this section.

5.6.3 Discussion of results pertaining to Proposition 3A

Proposition: The influence of social influence on behavioural intention will be moderated by gender and age, such that the effect will be stronger for women, and particularly older women.
Regarding the moderating factors, the binary logistic regression output shows that the impact of social influence on behavioural intention is moderated by younger women; this was not consistent with the findings of (Venkatesh et al. 2003).

A plausible explanation for a deviation from the proposition as suggested by the UTAUT model could derive from the fact that technology acceptance models originate from organizational contexts and it is questionable if they should be used in non-organizational contexts (Venkatesh et al. 2003). Since both the technologies under investigation are outside of organisations, the deviation might not come as a surprise.

5.6.4 Discussion of results pertaining to Proposition 3B

Proposition: The tested proposition is that the impact of social influence on behavioural intention for both online and mobile banking services will not be significantly different.

The t-statistic test indicates statistical evidence that social influence on behavioural intention on mobile and online banking services is significantly different. Social influence on online banking had a mean of 5.93 and on mobile banking the mean was 5.27, which suggests that social influence affects online more than mobile banking services.

A plausible explanation for the disparity between social factors affecting online and mobile banking in South Africa could relate to the varying education and socio-economic levels found in the society. (ITU 2004) cited

in (Crabbe, Standing, Standing and Karjaluoto 2009), based on a study in Ghana, found that while mobile banking had experienced considerable growth, it was mainly confined to certain socio-economic groups within the society. (Crabbe et al. 2009) found that the non-adopters felt that mobile banking was not within their reach and this perceived elitisation incorporates social influences which include superior influence, peer influence, and image building. Trust in the banks and technology infrastructure is also shaped by social factors and elitisation is therefore used as the primary factor that elucidates the impact of social and cultural issues, although the demographic factors of age, gender and economic status are also used to highlight social and cultural factors (Wixom and Todd 2005).

Although elitisation has been identified as an issue that can impact on adoption of technology, (Crabbe et al. 2009) further argues that it has not featured significantly in leading studies in Western countries where social and economic distinctions between groups in society may not be as pronounced as in a country such as Ghana. It is therefore possible that in South Africa, as in Ghana, social and economic distinctions between groups are very pronounced and the education levels are highly disparate, and therefore mobile banking services could be perceived to be targeted at the elite and not just seen as a complementary channel to online banking. South Africa and Ghana are similar in that both are viewed as developing economies.

5.7 FACILITATING CONDITIONS

The facilitating factors that influence the adoption of both mobile and online banking include the access platform that the customer uses to access the service, the availability of help and required information, accessibility of the access platform, and the education level of the customer.

These findings were consistent with (Le Roux 2009), in that relative advantage, coupled with how compatible the technology is with an individual's lifestyle, appears to be the most important promoting factor with regard to internet banking. (Mthethwa 2011) however, observes that compatibility did not exert any influence on cellphone banking adoption.

5.7.1 Facilitating conditions on mobile banking

The facilitation of the adoption of mobile banking is one of the major factors that the banks are struggling to address, since often the service that the banks are trying to sell to the customer is residing in the same platform that the banks are trying to sell. This often excludes the non-adopters because they have to be registered for the channel in order to access the information first. The mobility of the platform also makes it difficult to reach those customers since they are often not in one location. However, with education and awareness of how customers can secure themselves, and on the benefits of using mobile banking, this could be overcome.

The other criticism that the banks have to deal with relates to the packaging of information on the mobile banking platform since most commentators feel that not enough information is available to the customers. The criticism mainly faced by banks is that the available information does not address the existing processes for customers. In addition, customers feel that they should be allowed to use mobile banking in a much friendlier environment like a bank where they could more easily access the technical help needed to become competent and comfortable with using mobile banking.

5.7.2 Facilitating conditions on online banking

The facilitation of adoption of online banking is a major factor that the banks need to deal with, since often the service that the banks are trying to sell to the customer is residing on the same platform that the banks are trying to sell. This often excludes the non adopters because they have to be registered for the channel in order to access the information first.

Access is another important factor and the fact that most banks do not provide friendlier environments to enable customers to try out online banking creates difficulties for customers. Additionally, the fact that often customers need multiple user details to access various platforms creates a serious impediment to adoption. The banks need to make it easier for customers if they are to increase the uptake of online banking; education as well as information on online banking would be a vital tool to make it easier for the customers to test the new technology.

There are two propositions regarding the influence of facilitating conditions on the usage of mobile and online banking and the results pertaining to these two propositions are presented below.

5.7.3 Discussion of results pertaining to Proposition 4A

Proposition: The influence of facilitating conditions on the usage of mobile or online banking will be moderated by age, such that the effect will be stronger for older customers.

The binary logistic regression output shows that the age group 17 – 25 years is significant at 5% level of significance with a p value of .007. (Bergeron et al. 1990) as cited in (Venkatesh et al. 2003) argues that in fact, the effect is expected to increase with experience as users of technology find multiple avenues for help and support throughout the

organization, thereby removing impediments to sustained usage. Organizational psychologists have noted that older workers attach more importance to receiving help and assistance on the job (Hall and Mansfield 1975)in (Venkatesh et al. 2003). This is further underscored in the context of complex IT use given the increasing cognitive and physical limitations associated with age (Venkatesh et al. 2003).

A plausible explanation for a deviation from the proposition, in accordance with the UTAUT model, is that technology acceptance models originate from organizational contexts and it is questionable if they should be used in non-organizational contexts (Venkatesh et al. 2003). Technology usage facilitation conditions could be more strongly influenced within an organisation based on the experience of the employees. As regards outside usage, the younger customers could learn a system through trying-out as well as learning from peers, while the older customers could be much more reliant on the banks to learn the system. Since both the technologies under investigation are outside of organisations the deviation is to be expected.

5.7.4 Discussion of results pertaining to Proposition 4B

Proposition: The difference in the influence of facilitating conditions on the usage between online and mobile banking services will not be significant.

The t-statistic test shows that there is statistical evidence that facilitating conditions on the usage mobile and online banking services is significantly different. The t-statistic is -1.86 with 203.78 and the corresponding two-tailed p-value is .065; therefore we fail to reject the suggestion that there is a significant statistical difference in the influence of facilitating conditions on the usage between online and mobile banking services.

In this study, the items for this construct could be interpreted to include technical support from the banks as well as security from both the banks and their respective access platforms. The access platform would be described as a mobile device for mobile banking and a computer for online banking as well as bank help desks for the respective banking applications. The findings on this proposition suggest that the customers were able to distinguish the different technical support points depending on where they require assistance without any problem. The difference in the influence of online and mobile banking could stem from the fact that they are both at different stages in terms of product lifecycle, with online banking being at a more mature stage compared to mobile banking. This is more likely to propel online banking to a higher level since the customers are likely to know where to seek for help when required.

5.8 DIGITAL BANKING CUSTOMER DEMOGRAPHICS

This section is focussed on discussing the findings of this study on the demographics of a digital banking customer in South Africa. In addition, a comparison with previous studies regarding user demographics is discussed.

5.8.1 Discussion of results pertaining to Proposition 5

Proposition: A digital banking customer in South Africa could be described as a professional or studying towards a professional career and is aged between 18 and 35.

In comparison with the studies conducted in other countries, the description of a digital banking customer profile was quite similar. In this study, 60.45% are digital banking customers between the ages of 18 and 35. In addition, 88.70% of the respondents in the sample had a minimum of a college or university degree. For the purposes of this study, education

level groupings were organized such that a respondent with a Matric qualification would be grouped with respondents that did not attain Matric.

The findings of this study are consistent with other studies conducted in South Africa, namely (Sankar 2009) who revealed that a mobile banking customer would be in the age range of 18 - 35 years and have at least a Matric qualification. (Govender 2010) found that 71.4% of mobile entertainment consumers were aged between 18 and 35 years, and all his respondents had a minimum qualification of at least Matric.

5.9 CONCLUSION

The factors that have been identified as influencing the adoption of mobile and online banking are performance expectancy, effort expectancy, social influence, and facilitating conditions, as suggested by the Venkatesh et al. (2003) model of unified theory of acceptance and use of technology. Effort expectancy was not an influential factor in relation to online banking, contrary to the assertion of the UTAUT model.

There were nine (9) propositions tested and a summary of the findings on these propositions is presented below.

Proposition 1A: The influence of performance expectancy on behavioural intention is moderated by gender and age, such that the effect is stronger for men and particularly for younger men.

Proposition 1B: The influence of performance expectancy on behavioural intention is significantly higher for online banking services as compared to mobile banking.

Proposition 2A: The influence of effort expectancy on behavioural intention is moderated by gender and age, such that the effect is stronger for women, and particularly younger women.

Proposition 2B: The influence of effort expectancy on behavioural intention is significantly higher for online banking services as compared to mobile banking services.

Proposition 3A: The influence of social influence on behavioural intention is moderated by gender and age, such that the effect is stronger for women, particularly younger women.

Proposition 3B: There is a difference in the impact of social influence on behavioural intention for both online and mobile banking services.

Proposition 4A: The influence of facilitating conditions on the usage of mobile or online banking was moderated by age, such that the effect is stronger for younger customers.

Proposition 4B: There was a difference in the extent of facilitating conditions on the usage between online and mobile banking services.

Proposition 5: A typical digital banking customer in South Africa was found to be a professional or studying towards a professional career, and aged between 18 and 35.

Technology acceptance models originate from organizational contexts and it is questionable if they should be used in non-organizational contexts (Venkatesh et al. 2003).

CHAPTER SIX
CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

This chapter summarises the study findings, presents the conclusions and provides recommendations with regard to the adoption of mobile and online banking in South Africa and the differences in the factors thereof. Furthermore, recommendations and suggestions for future research are made that could add value to the focus area and provide further insights to this body of knowledge.

6.2 CONCLUSIONS OF THE STUDY

In conclusion, the findings of this study reaffirm the view that there multiple factors that influence the adoption of technologies. It is important to understand these factors thoroughly since some of the factors are more influential than others under given circumstances, or even more influential to certain technologies than to other technologies. This study further suggests that certain factors will influence technology adoption differently at various stages of the technology life cycle and it is therefore important to continuously study these factors throughout the product life cycle if technology is to be implemented successfully.

The era of delivering a technology product and hoping that it will be successful based on its attractiveness is long gone and banks in particular should be mindful of all the peripheral factors if they are to benefit from their investments and improve on the return on their investments. It is hoped that these research findings will help managers and banks to effectively plan and manage their introduction of self-service technologies

by focusing on the critical factors that impact customer intention to use a technology.

6.2.1 Factors that affect the adoption of online versus mobile banking

There were nine (9) propositions that were tested and a summary of the findings on these propositions was presented in chapter five.

The factors that have been identified to influence the adoption of mobile and online banking are performance expectancy, effort expectancy, social influence, and facilitating conditions, as suggested by Venkatesh et al (2003) in his model of unified theory of acceptance and use of technology. Effort expectancy was not an influential factor on online banking, contrary to the UTAUT model.

6.3 RECOMMENDATIONS

The factors that influence the adoption of online and mobile banking have been confirmed by the model of the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al. 2003) These factors are performance expectancy, effort expectancy, social influence, and facilitating conditions. Effort expectancy was, however, not an influential factor on online banking. This does not imply that banks can become complacent in relation to the use of online banking but rather they should continue to make their online banking applications more attractive to customers and raise the bar in terms of customer expectations.

Performance expectancy provides information on the performance factors that are important to customers. The findings that the influence of performance expectancy on behavioural intention is moderated by gender and age, such that the effect is stronger for men and particularly for

younger men implies that banks have to particularly emphasise their marketing on performance to younger males.

Effort expectancy issues are more important to younger people and in particular younger women. Social influence on the intention to use both online and mobile banking is more important to younger people and especially younger women. Facilitating conditions, on the other hand, is more important to younger customers. This thus suggests that when marketing and targeting various segments, it is important to know what factors are important to various customer groups in terms of age and gender and the marketing efforts have to be directed with this information in mind.

The last thing to consider is that, in terms of comparison between online and mobile banking, particularly performance and effort expectancy, online banking is clearly more widely accepted and used than than the mobile banking services. This therefore suggests that in order to increase the adoption of mobile banking, banks have to improve these factors to a higher level than at present. Additionally, though not tested by this research, social influence and facilitating conditions factors on mobile banking were also trailing online banking factors. Contrary to discussions that were conducted with experts and thought leaders, social influence and facilitating conditions factors are therefore important to consumers and should be improved in order to increase the adoption of both services.

Regarding demographic information, this would be useful to banks to better segment and target the customers who are more likely to use these two channels and thus improve the adoption. This would allow for more informed marketing and advertising campaigns focused at the correct segments where the most revenue could be utilised.

6.4 SUGGESTIONS FOR FURTHER RESEARCH

The factors that are identified as having an influence on the adoption of mobile and online banking are not exhaustive. Given the widespread adoption of mobile communication in particular, and the limited uptake of mobile and online banking, future studies targeted at non-adopters, in particular to determine the factors that contribute to non-adoption of both online and mobile banking might generate valuable information.

The sample used in this study represented mostly a young, educated, and comparatively more affluent sector of South African society, and thus the opinions of many outside of this profile were not represented. Future studies could therefore be targeted at a much more representative sample including those people outside of the Gauteng Province of South Africa and particularly the rural areas.

In addition, the researched technologies in this study are at different stages with regard to product life cycle. Further studies could be undertaken that identify how the influence of each of these factors changes as the technology evolves. This would give a clearer picture on how the adoption factors influence the adoption of a technology at different stages as well as the adoption factors' interaction with the moderating factors at different stages. A longitudinal study would be more suitable and the evidence obtained might enhance the understanding of the relationships that exist amongst these factors as well as enhance the understanding of the differences that exist.

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APPENDICES

APPENDIX A: ACTUAL RESEARCH INSTRUMENT - QUANTITATIVE SECTION

WITS BUSINESS SCHOOL

UNIVERSITY OF THE

WITWATERSRAND

2 St. David's Place

Parktown

2193

Dear Respondent,

Firstly, thank you very much for agreeing to participate in this survey. Your assistance is appreciated very much and means a lot to me.

I am an MBA student at the Wits Business School, and am currently busy completing the research component of my degree. The title of my thesis is ***"Comparative analysis of mobile and online banking use in South Africa"***. I need your assistance in completing a research survey and the estimated time to complete the survey is 12 minutes, so if you can spare sometime today it would be of great assistance to me.

Confidentiality will be observed throughout the thesis process and the final report will be for academic purposes only.

Thank you in advance for your anticipated assistance.

Yours Sincerely

Mpho Ntsimane Student Number: 296790

SA mobile: +27 82 704 8043

PLEASE NOTE

The information gathered through this questionnaire will be used for academic purposes only and will not be disclosed to third parties. This questionnaire is divided into three (3) sections to make it simpler and easy to follow as described below:

SECTION A – focuses on the demographic information of the respondents including their Age Group, Gender, Race and their Education Levels.

SECTION B – focuses on the banking information of respondents and the intention to use the digital banking services under investigation for those customers that are not using these services yet.

SECTION C – Measures the respondents' technology acceptance for mobile and online banking using The Unified Theory of Acceptance and Use of Technology (UTAUT) Model. A 7 point Likert scale will be used to measure the responses of customers as follows;-

1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = neither agree nor disagree, 5 = somewhat agree, 6 = agree, 7 = strongly agree

SECTION A: DEMOGRAPHIC DATA

The information collected in this questionnaire is confidential and will not be disclosed to third parties.

1. Please provide the following information ***(mark with an X)***;

Sex

Female	
Male	

Race

Asian	
Black	
Coloured	
Indian	
White	
Other	

Age (Years)

Under 17	
17 - 25	
26 - 35	
36 - 45	
Over 46	

Education Level

High School or less	
University or college Degree	
Postgraduate	

2. My organisation is involved in this **industry**

Student	
Technology	
Manufacturing	
Engineering	
Services	
Medical	
Media & Advertising	
Legal	
Construction & Real Estate	
Retail	
Government	
Agriculture	
Financial & Insurance	
Other **(Specify)** _	

SECTION B: BANKING INFORMATION AND INTENTION OF TECHNOLOGY USAGE

Please provide the following banking information:-

3. Which of the following banks are you currently banking with? (**Mark with an X where appropriate**)

ABSA	
FNB	
Standard Bank	
Nedbank	
Capitec	
Other	

4. Are you registered to any of the following banking services? (**Mark with an X where**

Online Banking		**Mobile Banking**	

5. If you are a registered for your bank's mobile banking services, which technology are you using? (**Mark with an X where appropriate**)

Smartphones Mobile Application	
USSD (e.g. *120*2272#)	
WAP (Internet through cellphone)	
WIG	
I am not sure	

6. If you are registered for **BOTH** Mobile and Online Banking Services, please answer the next question, else skip to **Question 7**.

   Please select the order of registration (1 = **First**, 2 = **Second**, State 1 if both at the same time), else skip this section.

Internet Banking	
Mobile Banking	
Don't Remember	

7. If you are registered as a **Mobile Banking Services** customer, please answer this question;

   How do you access **Mobile Banking Services**? Y*ou can select more than one* (**Mark with an X where appropriate**)

I use my cellphone	
I use other people's cellphones	

8. If you are registered as a **Online Banking** S**ervices** customer, please answer the following question;

   How do you access **Online Banking** S**ervices**? Y*ou can select more than one* (**Mark with an X where appropriate**)

Using my computer at home	
At work	
At a kiosk at my bank	
Elsewhere **(Specify)** _ _ _ _ _ _ _ _ _ _ _ _ _ _ _	

9. if you are not yet a **Mobile Banking** and/ or **Online Banking** customer please answer the following;

	Yes	**No**	**I don't know**
If you are not yet an online banking customer please answer this question, I intend using online banking within the next year			
If you are not yet a mobile banking customer please answer this question, I intend using mobile banking within the next year			

SECTION C: MOBILE & ONLINE BANKING ADOPTION

Please answer the following section by ticking under the correct box where **1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = neither agree nor disagree, 5 = somewhat agree, 6 = agree, 7 = strongly agree**.

PERFORMANCE EXPECTANCY	**1 = strongly disagree**	**2 = disagree**	**3 = somewhat disagree**	**4 = neither agree nor disagree**	**5 = somewhat agree**	**6 = agree**	**7 = strongly agree**
MOBILE BANKING							
Mobile banking is useful for doing banking							
Mobile banking improves the way in which I do my banking							
Mobile banking is a "must-have" for anyone							
ONLINE BANKING							
Online banking is useful for doing my banking							
Online banking makes it easier to do banking							
Online banking is a "must-have" for anyone							

EFFORT EXPECTANCY	**1 = strongly disagree**	**2 = disagree**	**3 = somewhat disagree**	**4 = neither agree nor disagree**	**5 = somewhat agree**	**6 = agree**	**7 = strongly agree**
MOBILE BANKING							
Learning to use the mobile banking at my bank was easy for me							
I find the mobile banking difficult to use							
I am very comfortable in using the mobile banking							
ONLINE BANKING							
Learning to use the Online banking at my bank was easy for me							
I find the online banking difficult to use							
I am very comfortable in using the online banking							

SOCIAL INFLUENCE	1 = strongly disagree	2 = disagree	3 = somewhat disagree	4 = neither agree nor disagree	5 = somewhat agree	6 = agree	7 = strongly agree
MOBILE BANKING							
Some of the successful people I know use cellphone/ mobile banking							
Colleagues and friends expect me to have use cellphone/mobile banking							
I often see people using cellphone/mobile banking							
ONLINE BANKING							
Some of the successful people I know use online banking							
Colleagues and friends expect me to have use online banking							
I often see people using online banking							

FACILITATING CONDITIONS	1 = strongly disagree	2 = disagree	3 = somewhat disagree	4 = neither agree nor disagree	5 = somewhat agree	6 = agree	7 = strongly agree
MOBILE BANKING							
I have enough information regarding my bank's mobile banking services							
I don't foresee any risk in accessing my banking account from a cellphone							
I trust banks with my information when using mobile banking							
ONLINE BANKING							
I have enough information regarding my bank's online banking services							
I don't foresee any risk in accessing my banking account from a computer							
I trust banks with my information when using online banking							

APPENDIX B: ACTUAL RESEARCH INSTRUMENT - QUALITATIVE SECTION

I am **Mpho Ntsimane** from the University if Witwatersrand's Wits Business School and I am studying toward a Master of Business Administration (MBA). My research topic is "**Comparative analysis of mobile and online banking use in South Africa**".

In this study **mobile banking technologies** include Wireless Internet Gateway (WIG), Unstructured Supplementary Service Data (USSD), Wireless Application Protocol (WAP) and mobile applications used in smartphones. **Online banking** is defined in terms of banking applications accessed through a desktop computers and laptop computers.

During the interview, I would like to discuss these factors as identified in the Unified Theory of Acceptance and Use of Technology (UTAUT) and these factors are ***performance expectancy, effort expectancy, social influence and facilitating conditions***.

Performance Expectancy

Main Questions	Additional Questions
• What are the benefits do you think customers get from online and mobile banking services as compared to other channels like ATM, branch, etc?"	• Do you think people of certain gender and age groupings have similar or different expectations regarding how mobile and online banking systems perform?
• How do mobile and online banking services compare in terms of what they are expected to do for their users/ customers?	

Effort Expectancy

Main Questions	Additional Questions
• In your view, to what extend are the mobile and online banking applications user friendliness or lack of thereof affect customers or adoption?	• In your opinion, how does an effort required to learn a system (i.e. in this case mobile and online banking) is related to gender and age?
• How does the effort that the customer requires to use online banking compare to using mobile banking?	

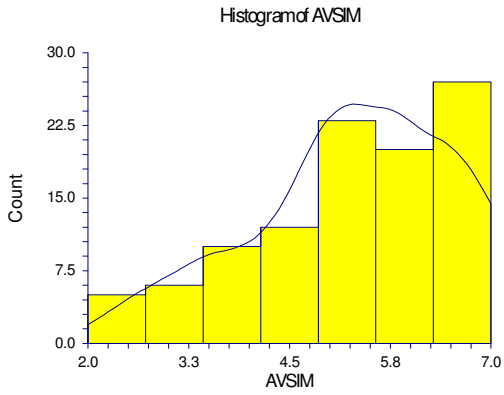
Social Influence

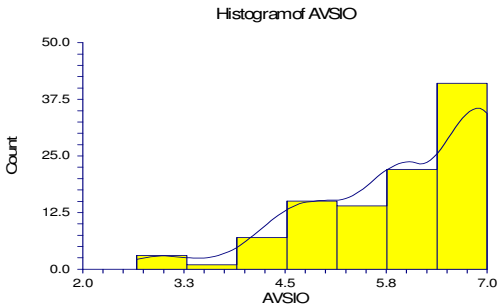
Main Questions	Additional Questions
• Do you think there are any social factors that could influence people to use mobile and online banking services?	• How do you think social influence is affected by gender and age?
• Can you compare those factors for mobile and online banking services?	

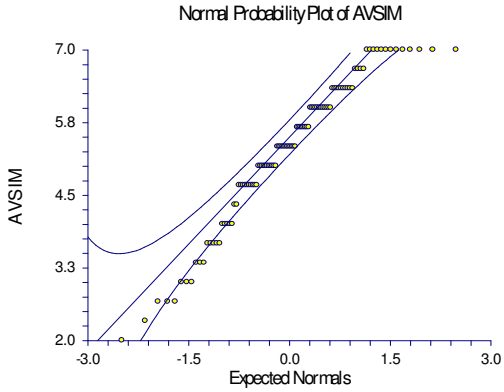
Facilitating Conditions

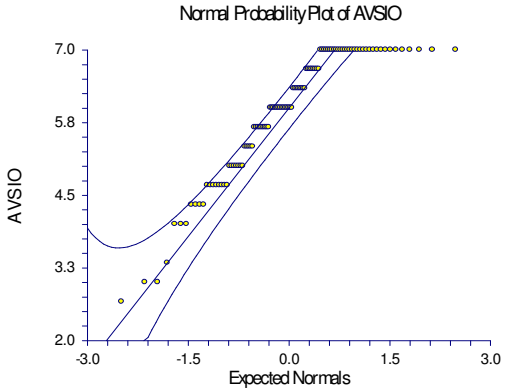
Main Questions	Additional Questions
• Which factors do you think could increase an uptake of both mobile and online banking services?	
• How do these factors compare?	

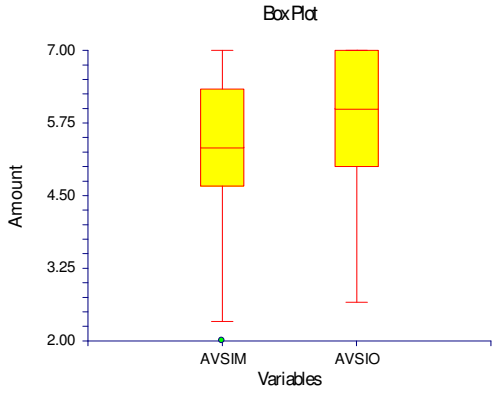
APPENDIX C: T-TEST OUTPUT FOR SOCIAL INFLUENCE











APPENDIX D: T-TEST OUTPUT FOR FACILITATING CONDITIONS

