

UNIVERSITY OF KWAZULU-NATAL

**INTERNET BANKING USAGE AMONG ACADEMIC STAFF
AT THE UNIVERSITY OF KWAZULU-NATAL**

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DECLARATION

This research has not been previously accepted for any degree and is not being currently considered for any other degree at any other university. I declare that this Dissertation contains my own work, except where specifically acknowledged.

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Signed

A handwritten signature in black ink, appearing to read 'Theresadevi', is written over a light grey rectangular background.

Date 21st October 2015

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ABSTRACT

Internet banking has become an important e-service, offering benefits to both customers and banking institutions. In spite of these benefits, many customers continue to resist the use of Internet banking for many reasons. In order to increase their customer base, it would be prudent for banks to ascertain factors that have a positive association with existing customers' Internet banking usage. In this study, the researcher determined whether four factors (constructs), namely, performance expectancy, effort expectancy, social influence and facilitating conditions from the Unified Theory of Acceptance and Use of Technology (UTAUT) model are associated with academics' Internet banking usage. Furthermore, the model was modified to include perceived risk (security risk) and trust as explored in previous studies, to explore their association with academics' behavioural intention to use Internet banking. Primary data was collected through a Web-based questionnaire from 272 academics at the University of KwaZulu-Natal (UKZN). The Statistical Package for Social Sciences (SPSS) was used to analyse the primary data collected. Descriptive and inferential statistics were used to address the research objectives comprising frequencies, percentages, Fisher's exact tests, correlation analysis and multiple regression analysis. The results revealed that, while performance expectancy, effort expectancy and facilitating conditions had a positive association with academics' Internet banking usage, it was not possible to find support for an association for social influence with academics' Internet banking usage. Secondly, while trust had a positive association with academics' behavioural intention to use Internet banking, it was not possible to reject the null hypothesis that perceived risk had no association with academics' behavioural intention to use Internet banking. The results from this study will likely provide valuable information to banks that are planning their Internet banking strategies.

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

The recent developments in Internet technology have influenced individuals to conduct Internet transactions, in particular Internet banking. Internet banking comprises systems that allow individuals or companies to view their account information, conduct business transactions, or acquire information on financial products and services (Suki, 2010). Internet banking plays a fundamental role in the e-payment area, offering an online platform to support online shopping, online auctions and Internet stock trading (Lee, 2009).

Synovate, a leading market research company, published a report in which they described online shopping and banking among Internet users in South Africa (Ipsos, 2010). An important finding that emerged from this report is that almost half the sample indicated that there was no need to bank online, while 36% of the sample cited the lack of security as the main reason for not making use of Internet banking (Ipsos, 2010). Al-Ghamdi (2008) maintained that banks should understand the factors that have a positive association with customers' Internet banking usage so that they can build and maintain solid relationships with both potential and existing customers. In this study, the primary focus is on whether four constructs, namely, performance expectancy, effort expectancy, social influence and facilitating conditions have an association with UKZN academics' Internet banking usage.

1.2 Research problem

Internet banking has turned out to be an increasingly significant service to customers in the cyber age (Dixit & Datta, 2010). Although many customers engage in Internet banking, the numbers are small when weighed against those who do not utilise Internet banking services (Brown et al., 2010). Even though numerous efforts have been made by banks to promote Internet banking, the adoption of this technology has remained slow (Muzividzi et al., 2013). Privacy and security fears often overshadow the benefits associated with the Internet banking service (Brown et al., 2010).

There has been an increasing amount of literature (for example, Song, 2010; Jalal et al., 2011; Okonkwo, 2012 and Mohan et al., 2013) published on the factors that positively influence the behavioural intention to use Internet banking – with fewer studies on the actual usage of Internet banking. Furthermore, the consumer market in these studies has largely comprised business executives, postgraduate students and retail users of Internet banking services. The Internet banking adoption literature reviewed in chapter three shows that few studies have been conducted on academics' Internet banking usage. Thus, this study focuses on a specific consumer market, academics, since their educational status and access to the Internet makes them an important market to tap into. The academics chosen by the researcher were employed at the University of KwaZulu-Natal (UKZN) in South Africa.

1.3 Objectives and hypotheses

In order to address the research problem, the study was guided by the following objectives, which is delineated in the form of research hypotheses (H_a) (also known as the alternate hypotheses in statistical tests) and the corresponding null (H_0) hypotheses.

The primary objective of this research was to determine the factors (constructs) that are associated with academics' Internet banking usage. Based in part on the Unified Theory of Acceptance and Use of Technology (UTAUT) model, the constructs, namely, performance expectancy (PE), effort expectancy (EE), social influence (SI) and facilitating conditions (FC) were investigated. In addition, the secondary objectives of this research were to determine whether:

- perceived risk (security risk) and trust are associated respectively with academics' behavioural intention to use Internet banking
- there are differences between users and non-users of Internet banking
- demographic factors are associated with academics' use and non-use of Internet banking

In order to meet the primary research objective and the first of the secondary research objectives, the following six hypotheses were proposed based on the model described in chapter three and literature which is described in detail in chapter three:

- H_{01} : Performance expectancy has no association with academics' Internet banking usage.

H_{a1}: Performance expectancy has an association with academics' Internet banking usage.

- H₀₂: Effort expectancy has no association with academics' Internet banking usage.

H_{a2}: Effort expectancy has an association with academics' Internet banking usage.

- H₀₃: Social influence has no association with academics' Internet banking usage.
H_{a3}: Social influence has an association with academics' Internet banking usage.

- H₀₄: Facilitating conditions have no association with academics' Internet banking usage.

H_{a4}: Facilitating conditions have an association with academics' Internet banking usage.

- H₀₅: Perceived risk has no association with academics' behavioural intention to use Internet banking.

H_{a5}: Perceived risk has an association with academics' behavioural intention to use Internet banking.

- H₀₆: Trust has no association with academics' behavioural intention to use Internet banking.

H_{a6}: Trust has an association with academics' behavioural intention to use Internet banking.

1.4 Significance of the research

Although Internet banking provides benefits for customers, there are still many customers resisting this service (Song, 2010). Since the population chosen for this study is sufficiently unique, the study is likely to provide the banking industry with additional information about Internet banking use among potential clients. A greater understanding of the association between the four constructs and Internet banking usage is vital to encourage innovative types of banking in the existing competitive market (Nasri, 2011). Customers always expect more and faster services with higher quality from their banks

(Ghalandari, 2012). Thus, results from this study may assist managers in attracting new customers and retaining current ones through efficient and effective management of Internet banking services.

1.5 Limitation of the research

Although the Web-based questionnaire was completely anonymous, some academics stated in e-mails that they would not be comfortable to disclose their personal information and thus opted not to participate in this research. As a result, the number of responses received was reduced. A higher number of responses may have added a greater degree of accuracy to the study's overall findings. However, this was beyond the researcher's control.

1.6 Outline of the research

The research comprises six chapters:

Chapter one introduces the concept of Internet banking, describes the research problem and significance of the research, and states the objectives of the research.

Chapter two describes the importance of the Internet and reviews the Internet growth statistics in South Africa. The Internet banking concept as well as the benefits and security risks associated with Internet banking are addressed. Furthermore, Internet banking adoption in South Africa and abroad are discussed.

Chapter three presents a review of the various theoretical frameworks and Internet banking adoption research conducted globally. The model and hypotheses described in this chapter are based in part on the constructs from the UTAUT model and relevant previous literature.

Chapter four focuses on explaining the research methodology employed such as sampling methods, the measurement instrument and the various statistical methods selected to analyse the research results.

Chapter five illustrates, examines and describes the research results by means of various statistics.

Chapter six summarises the findings and provides some recommendations for future research.

CHAPTER TWO

THE RISE OF INTERNET BANKING

2.1 Introduction

The use of Internet banking has dramatically increased in several countries and changed traditional banking practices (Musa et al., 2009). The innovative style of banking in the form of Internet banking is considered a trend among many customers (Safeena et al., 2011). Hence, user adoption of Internet banking has developed into an important measure of the success or usefulness of that technology. While Internet banking has developed rapidly, there is a lack of sufficient evidence concerning acceptance among customers (Safeena et al., 2011). The research to date has tended to focus on extending our understanding of user adoption of technology. However, far too little attention has been paid to academics as a primary target population in the adoption of Internet banking. It augurs well for banks to understand the needs of potential and existing Internet banking customers (Mohan et al., 2013), – in order to make strategic decisions regarding their resource allocations for improving business solutions.

The next section provides an overview of the Internet, reviewing its importance, its growth statistics' in South Africa, followed by the key aspect of this study, Internet banking in general. Security and privacy related to Internet banking as well as Internet banking adoption in South Africa and abroad is then considered.

2.2 The importance of the Internet

Technology has always been a key driver in bringing transformation and making tasks simpler and more timely (Zahid et al., 2010). The largest and most vital network of networks today is the Internet which has advanced into a large-scale information superhighway. Many homes, schools, businesses and higher education institutions have realised the importance of having access to the information superhighway (Omariba et al., 2012). The growth of the Internet has led to the creation of many beneficial services such as Internet banking and Internet marketing (Redelinghuis & Rensleigh, 2010). Several common applications of the Internet together with their benefits include (but are not limited to):

The World Wide Web (the web or WWW)

The World Wide Web (WWW), commonly known as “the web”, is a component of the Internet that is widely seen by users and consists of websites and a vast collection of web pages connected together via hypertext links (Shannon, 2012). Despite the several different layouts, the Web is the most commonly used service of the Internet and is accessed through a Web browser such as Internet Explorer, Google Chrome and Firefox. Web search engines enable a person to quickly locate what they require prior to making an important acquisition (Goessl, 2010). Requests for loans, scholarships, employment, taxes filed and other government procedures can be retrieved and sent online. Conducting teaching and learning online has developed at a rapid rate due to the use of new online learning tools. Online computer games are an additional sought after source of entertainment (Kumar, 2010).

There are several websites selling an assortment of merchandise online and a person merely chooses his product or service and payment for it can be performed instantly. Transfer of money is no longer a lengthy process and individuals can simply transfer funds to whichever place they desire. Students and parents are able to purchase and sell textbooks at a reasonable cost; virtual stores enable individuals to purchase from the comfort of their homes without the demands of a salesperson and online marketplaces provide an innovative and more convenient venue for the exchange of nearly all kinds of products and services (Morah, 2009). Together, businesses and customers have embraced online sales as an inexpensive and more convenient method to shop.

Electronic mail (E-mail)

Electronic mail (E-mail) operates in much the same way as traditional mail does which is labelled as ‘snail-mail’ (Shannon, 2012). Any individual is allowed to sign up for an e-mail address (Shannon, 2012). Individuals with an e-mail address can transfer messages and attach files from their computer and send them to another individual’s e-mail address. A message can now be sent to anyone in the world via a simple e-mail address and the message is circulated in a matter of seconds. With e-mail, students can make contact with other students worldwide, learning the same things they are (Deore, 2012).

File transfer protocol (FTP)

File transfer protocol (FTP) is used to send data from one computer to another computer over the Internet or through a network (Office of Academic Computing Services, 2007). In particular, FTP is a frequently used protocol for exchanging files over some network that maintains the transmission control protocol/Internet protocol (TCP/IP) such as the Internet or an intranet (Office of Academic Computing Services, 2007). Individuals can share files such as music and videos among each other and globally by uploading them to a server and enabling others to download them to their personal computers (Shannon, 2012).

Internet relay chat (IRC) and Usenet

Internet relay chat (IRC) services enable an individual to link up to their chosen channel and talk in real-time to other individuals with similar interests (Shannon, 2012). Usenet is a network of people who exchange articles or files tagged with common labels called newsgroups (Subramanian, 2015). Usenet has been around for many decades even before the Internet was born. Although Usenet has been around for many years, its popularity has been increasing in recent years. Usenet offers privacy through a secure sockets layer (SSL) connection and convenience as it integrates effortlessly with many applications, thus making an individuals' media centre fully automated (Subramanian, 2015).

There is no doubt that the various applications of the Internet have become an integral part of our lives.

2.2.1 Internet growth statistics in South Africa

From 2002 to 2007, Internet users in South Africa did not grow beyond 7% (Smith, 2010). In 2008, South Africa's online advertising increased by 32%, which was the steepest increase in the English-speaking world, while the number of Internet users nearly doubled in 2008 and continued to increase in 2009. Research conducted by World Wide Worx (2012), a technology and research strategy organisation, revealed that South African Internet users increased from 4.6 million in 2009 to 5.3 million in the same year. In 2010, South African Internet users further increased, exceeding 5.3 million – and continued to benefit from this strong growth (Smith, 2010). World Wide Worx indicated that the increase was due to regulatory modifications which allowed small Internet service providers to further penetrate the market with competitive packages, whereas

research conducted in 2010 by Internet Access in South Africa discovered that growth had been driven by small and medium organisations who changed from dial-up to broadband connectivity (Smith, 2010). Figure 2.1 as illustrated in Internet World Stats (2013) shows the top 10 Internet countries in Africa as at 31st December, 2013.

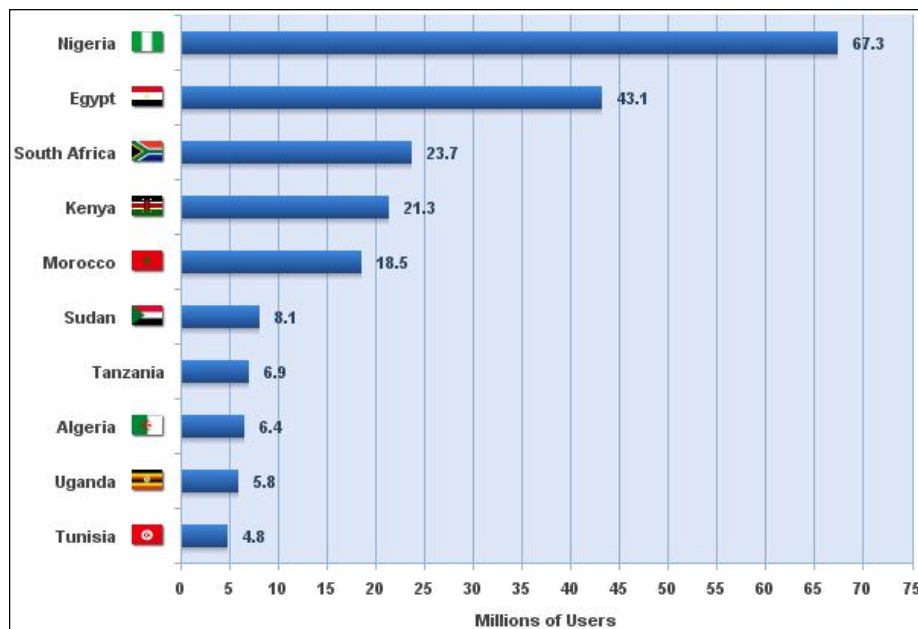


Figure 2.1: Top 10 Internet countries in Africa (Internet World Stats, 2013)

From Figure 2.1, it can be seen that there were 23.7 million Internet users, approximately 45.3% of the total population in South Africa towards the end of 2013 (Internet World Stats, 2013). The dramatic increase of Internet users in South Africa from 2012 onwards was due to the influence of smart phones and ordinary mobile phones (World Wide Worx, 2012). Demand is also increasing, partly because social networking sites such as Facebook and Twitter have gained considerable popularity from several consumer markets (Smith, 2010). South Africa's online market is enjoying the increase in the broadband division and the deployment of 3G mobile data services, which are currently competitors for asymmetric digital subscriber line (ADSL) offerings (Effective Measure, 2013).

As Internet users increase, the number of Internet banking users should logically increase (Foon & Fah, 2011). However, due to a range of reasons, not all Internet users are utilising Internet banking services (Brown et al., 2010). According to Zahid et al. (2010), consumers are mainly concerned about the security and privacy aspect of Internet

banking. Thus, it is challenging for financial institutions to demonstrate that utilising Internet banking will be both valuable and efficient (Green & Van Belle, 2003). Therefore, the researcher aims to provide greater insight into determining whether four constructs, namely, performance expectancy, effort expectancy, social influence and facilitating conditions, are associated with academics' Internet banking usage, in order to assist banks to be adequately prepared to attract potential customers and maintain their relationship with existing customers. Adequate preparation may allow banks to increase their global competitiveness (Wu, 2005).

2.2.2 The South African Internet market

The following data about the South African Internet market was obtained from Effective Measure and a report was generated for the DMMA in June 2013 (Effective Measure, 2013):

- Internet users are primarily using ADSL for their connection (48.73%) followed by mobile connectivity (36%).
- The location of primary Internet users is in the province of Gauteng, which has the highest traffic flow (above 46%) followed by the Western Cape (21.97%).
- South African Internet users are over 40 years of age (56%), are university educated (72%) and have children (64%).
- Their online spending includes purchasing books, event tickets and travel tickets.
- South Africans are increasingly using mobile devices as their access point since this allows them to keep abreast of breaking news and entertainment on the go.
- The typical profile of mobile users is that they are single and aged 30 to 39. Accessing their e-mail, conducting their banking transactions and seeking up-to-date news are their main online activities.

Figure 2.2 as reported in Effective Measure (2013) illustrates the top ten reasons for Internet use by South Africans in June 2013. It can be seen in Figure 2.2 that one of the top reasons for Internet use was banking. It would be interesting to determine what factors influence users and what concerns they have if any.

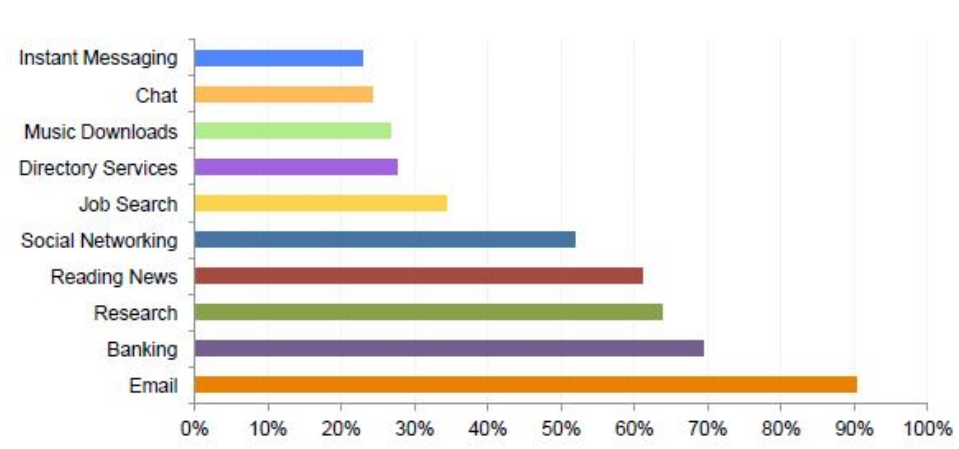


Figure 2.2: Top 10 reasons for Internet use by South Africans (Effective Measure, 2013)

2.2.3 Marketing via the Internet

In order for companies to be more successful in marketing their products, it is imperative that all companies obtain access to the Internet (Venpin et al., 2011). Internet marketing (IM), also referred to as online marketing and e-marketing, is a new way of marketing a product or service to the targeted market worldwide. It is a contemporary communication technology method used to convert the prospective market into a reality market (Meng, 2009) and entails marketing products or services through wireless media and e-mail. As a marketing tool, the Internet is used by advertisers and society to find the right combination of the marketing mix to best suit consumers' needs and wants. The marketing mix is an integration of diverse marketing decision variables and a set of controllable variables used by a company to market its products and services and motivate customers (Singh, 2012).

Electronic commerce incorporates communications, data management and security services to enable various functional areas within different organisations to automatically exchange information (Omariba et al., 2012). Electronic commerce comprises interconnected communication networks, advanced computer hardware and software tools and services and accepted security and privacy facilities (Omariba et al., 2012). According to Meng (2009), E-commerce and Internet marketing use similar basic technologies, such as Web technology, which all encompass similar business activities.

Customers who work long hours may be prone to stress because they have insufficient time for shopping and social activities (Venpin et al., 2011). Hence, Internet marketing is a convenient way for customers who have a busy lifestyle to conduct online shopping.

2.3 The Internet banking concept

The advancements in information technology that have been initiated by the emergence of telecommunications networks continue to shape the way banks and their business associations are structured worldwide (Takele & Sira, 2013). Banks are aware that the Internet opens up fresh prospects for them and shifts them from local to international frontiers (Safeena et al., 2011). Currently, the World Wide Web (WWW) offers increasing access to a range of online services (Sarma & Singh, 2010). Internet banking, which is growing rapidly, is a constituent of these online services (Sarma & Singh, 2010) and is regarded as an outstanding advancement in the banking sector (Bora, 2011). It has shown strong growth in several countries, bringing changes to traditional banking procedures (Musa et al., 2009). Customers are enjoying the benefit of using Internet banking services anytime to conduct account enquiries and loan applications, thus eliminating the time constraints associated with traditional banking (Yuan et al., 2010). Internet banking encompasses systems that allow bank customers to view their accounts and a range of other information about their banks' products and services through various devices (Sarma & Singh, 2010). It can be defined as the process of setting up a web page in order to get information about banks' products and services (Jouzbarkand et al., 2012). At a complex level, Internet banking allows individuals to view their account information, transfer funds to other accounts and choose from various investment options. Internet banking is the name used for the 'new age banking system' (Singhal & Padhmanabhan, 2008). Automated teller machines (ATM), Internet banking, telephone-banking, and the use of various cards for making payments have become valuable delivery tools for traditional banking products (Safeena et al., 2011). Banking online has allowed customers to complete their financial transactions effortlessly from home (Bora, 2011).

2.3.1 A brief history of Internet banking

Internet banking began in the 1980s; however, it was only in the mid-nineties that it was increasingly adopted by customers (Peterson, 2006). It is estimated that South Africa began using Internet banking in 1996 (Brown et al., 2010). Although the adoption of

Internet banking was fairly slow at the beginning, customers were able to see the merits of the ease of transacting online and the associated minimal costs with online banking (Jouzbankand et al., 2012). The last decade has seen a marked increase in Internet banking transactions (Peterson, 2006). During the 1990s, banks recognised that the increasing acceptance of the World Wide Web (WWW) provided them with an additional opportunity to publicise their services (Jouzbankand et al., 2012). At first, banks utilised the Web merely as a marketing tool, with no communication with the customer (Jouzbankand et al., 2012). Early Web sites featured photographs of the bank's officers or office blocks and supplied customers with maps of different bank branches and ATM locations, telephone numbers to call for further assistance and simple catalogues of products.

Although banks used various steps to implement Internet banking services during the mid-nineties, several customers were cautious about completing financial transactions on the Web (Jouzbankand et al., 2012). In spite of their reservations, customers have been known to use Internet banking when they experience frustration with regular processes and practices such as waiting in long queues at their traditional banks.

However, with Internet banking, there are no queues and customers can obtain detailed information about products and services and conduct their banking transactions at leisure (Redelinghuis & Rensleigh, 2010). In addition, the extensive acceptance of electronic commerce, based on the viability of popular companies such as America Online and Amazon.com, elicited the idea of making payments online. By the year 2000, 80% of United States banks offered Internet banking. Customers' access to Internet banking services is by means of personal computers (PC), personal digital assistants (PDA), automated teller machines (ATM) or even touch tone telephones (Suki, 2010).

2.3.2 Internet banking features

Internet banking features offered by South African banks encompass balance enquiries, funds transfer, downloading transaction information, loan requests and other significant services (Sarma & Singh, 2010).

Table 2.1 summarises some of the Internet banking features provided by one of the major retail banks in South Africa.

Table 2.1: Nedbank Internet banking features (Nedbank, 2014)

Features	Description of features
Balance enquiries	One can access latest balances on all accounts linked to one's profile.
Statement download	One can download one's statements to one's computer as either CSV (viewable in Excel, Access or Pastel Accounting).
Statement delivery options	Allows one to define e-mail or postal addresses where statements can be delivered.
Transfers	One can transfer funds between as many as 99 linked accounts.
Payments	One can make payments to beneficiaries loaded on one's profile or once off (once off payments requires SMS authorisation).
PIN and password	One can change one's profile PIN and password online.
Multiple payments and transfers	One can make up to 20 payments or transfers at a time.
View failed transactions	One can view all transactions done in the last 90 days which were unsuccessful.
Investment functionality	Will allow one to, apply for Investment account and/or re-invest fixed deposits and/or payout fixed deposits and/or maintain investments.

2.3.3 Benefits of Internet banking

The move from traditional face to face banking to Internet banking is increasing everyday among many customers because of convenience and flexibility (Patil, 2012). Thus, countries around the world are competing with one another to improve their Internet banking products and services. "Banks should have a clear and widely disseminated strategy that is driven from the top and takes into account the effects of Internet banking, together with an effective process for measuring performance against it" (Jouzbarkand et al., 2012). In this way banks may reduce the risk of losing customers to competitors. Today, many individuals, especially those who have busy lifestyles, use Internet banking (Patil, 2012). From the customer's perspective, Internet banking is less time consuming because customers can conduct their banking transactions or contact their banks faster,

anytime and anywhere (Nasri, 2011). From the bank's perspective, Internet banking is one of the most profitable distribution channels as it assists in reducing costs. Many researchers argue that Internet banking using a PC channel was the most advanced development during the last two decades, giving a significant competitive advantage to the banking industry, whereas a number of other researchers think that PC-based Internet banking is becoming outdated (Shannak, 2013). Internet banking is increasingly moving towards the use of mobile devices in performing banking transactions. As a result of the technological advancements in the smart-phone industry, experts anticipate that in the next five years mobile banking will develop into the key channel for providing several of the banking products and services (Shannak, 2013). From a customer's perspective, this will mean that Internet banking will be even simpler and more convenient for their busy lifestyles than traditional banking (Patil, 2012). The benefits of Internet banking include (but are not limited to):

Convenience and time saving

In an earlier study, Bora (2010) emphasised the convenience provided to customers by their being able to avoid long and frustrating queues at banks to request financial transactions and statements. Patil (2012) concurred that the most important benefit of Internet banking to account holders is the convenience it provides. In addition to the physical convenience online banking provides, banking transactions are faster, without the delays that occur when done manually. Fund transfers, both national and international, can take place instantly. In fact, account holders are even able to observe their account usage as transactions are conducted (Bora, 2010).

Accessibility

Shannak (2013) emphasises that Internet banking provides banking services 24 hours a day and 7 days a week since e-banks never close. As a result, customers can conduct their banking from any part of the world (Patil, 2012) and do not have to rely on banks being open to obtain information (Bora, 2010). In this way, customers can continuously observe their accounts and track their transactions, which may mean early detection and prevention of any fraudulent transactions from occurring. In addition to these benefits, customers can also perform stock trading and exchanging of bonds (Bora, 2010). A wide range of Internet banking benefits is provided by various banks. Thus, customers need to

evaluate the benefits of a range of banks before selecting the bank that meets their individual requirements.

2.3.4 Security risks and measures associated with Internet banking

From a customer's perspective, security is the ability to protect consumers' sensitive information from illegal use and theft in the Internet banking business (Zahid et al., 2010). Although South African financial institutions make every effort to use state-of-the-art security (Redelinghuis & Rensleigh, 2010), there is always room for improvement as hackers are incited by the challenge of finding and breaking a systems security. Banks utilise complex verification and authentication measures which are combined with technologies such as short message service (SMS). These technologies are used to provide users with a safe and secure Internet banking experience (Redelinghuis & Rensleigh, 2010). However, data and security theft are considered the main concerns for financial institutions. Research studies (for example, Vrincianu & Popa, 2010 and Omariba et al., 2012) have shown that the common difficulty affecting information security and privacy of customers is the absence of tighter security controls which results in possible loss of privacy, sometimes with dire consequences (Omariba et al., 2012). This loss of privacy may also create trust issues between the bank and the customer.

While the applications of the Internet and Internet banking have made life simpler for many people, there are other concerns that impact negatively on the use of the Internet. Due to the fact that information is freely available on the Internet, this information may become more vulnerable to theft and misuse. The use of the Internet for social networking, banking or other services makes an individual's personal information susceptible to theft (Pakhare, 2013). When purchasing products and services online, it can be very simple for an individual to intercept another individuals' personal information, such as debit or credit card numbers (Morah, 2009). Thus, Internet banking presents several challenges for customers as they are always vulnerable to new forms of security threats (Patil, 2012). Therefore, risk management is important in people's lives and enables individuals to identify, determine, monitor and control uncertainty to an extent. Although the common applications of the Internet and Internet banking provide its customers with a wide variety of advantages and prospects as described above, many customers believe that security threats are always present (Redelinghuis & Rensleigh, 2010). However, many threats can be minimised through different procedures. These

security risks or threats together with security measures to prevent or minimise these threats are discussed in more detail in the next sections.

2.3.4.1 Security risks

Brute force

There are no foolproof ways to protect bank account numbers, passwords, usernames, addresses, photographs and credit card numbers from being stolen or misused by dishonest websites and individuals (Pakhare, 2013). The most common type of password cracking is a brute force. Brute force attempts are used to crack an individual's bank account username and password by attempting to guess the password of a user (Shapland, 2012). If an Internet banking application does not have any security measures in place against this form of attack, it is likely that automated tools will submit thousands of password attempts in a few seconds, thereby making it easy for an attacker to beat a password-based authentication system. However, to prevent brute force attacks, South African banks have implemented an account lockout policy (Shapland, 2012). Thus, after three failed login attempts, the account is locked until a bank administrator unlocks it. The downside of the lockout policy is that several accounts can be locked out by one malicious user, thereby causing a denial of service (DoS) for victims and extra work for bank administrators. Internet banking users should create passwords comprising eight letters or more with some complexity (letters, numbers and a special character) since it is an excellent defence against brute force attacks (Shapland, 2012). While banking services need to create trust among customers, customers in turn need to be security-conscious when working online. Weak security awareness or education on the part of customers may affect their intention to use Internet banking.

Phishing and pharming

By planting phishing software, an individual's sensitive Internet banking information can be accessed by a hacker through insecure connections. Phishing attacks utilise e-mail or malicious websites to request personal account information from individuals by pretending to be the individual's financial institution (Vrincianu & Popa, 2010). For instance, an attacker may send an e-mail from a respectable financial institution that requests account information from a specific individual, often stating in the e-mail that there is a problem with their account. To rectify this problem, the contents of the e-mail

persuades the victim to click on a link that would direct them to a page where they would be required to enter their personal information. Once an individual enters the required information, attackers can use it to gain access to their accounts. South Africa is considered one of the most targeted countries worldwide with regards to phishing attacks (IT News Africa, 2014). One such phishing attack known as “spear phishing” is where an e-mail appears to be from a business of significant interest to the targeted individual but is actually not (IT News Africa, 2014). Spear phishing regularly has a high success rate as it dodges out-of-date security defences and exploits vulnerable software. Spear phishing can unleash major attacks on corporate security and once that is done, an attacker may gain access to e-mail systems, social media and banking details (IT News Africa, 2014). Pharming is a form of fraud that diverts the user’s Internet connection to a fraudulent Internet banking website. This means that even when the user types the exact address into his Web browser, he will still end up on the forged Internet banking website. Once the user types his account information on the forged Internet banking website, the fraudster gains full access to his bank account information, thereby allowing the fraudster to transfer funds, withdraw funds and even use these funds to make investments on the stock market with the purpose of acquiring a large return (Vrincianu & Popa, 2010). Pharming can be conducted by altering the hosts file on a victim’s computer or by taking advantage of a weakness in the domain name system (DNS) server software. Pharming and phishing are subversive ways for online identity theft thus making pharming a key concern for organisations hosting Internet banking websites (Vrincianu & Popa, 2010).

Viruses and port scanners

Virus programs are not easily seen and may be triggered simply by clicking a seemingly harmless link sent via e-mail (Pakhare, 2013). Computers connected to the Internet are highly prone to Internet protocol (IP)-targeted virus attacks that may cause the system to crash completely. When a virus is disguised as something else, it is called a *trojan*. Trojans can be utilised to filter data from several different clients, bank servers and database systems, thereby exposing the personal details of Internet banking customers. Trojan software is considered to be the most harmful due to its ability to secretly connect to an Internet banking system and access confidential banking information (Omariba et al., 2012). Attackers also use port scanners to determine access points into Internet banking systems and use different methods to steal customers’ banking information. The main aim of a port scanner is to obtain information related to the vulnerability of the

hardware and software of a system in order to draft a plan of attack against the system which may result in potential losses for Internet banking customers.

Keystrokes and keylogging

One of the most effective techniques of stealing a customer's bank account information is capturing keystrokes of an Internet banking customer (Vrincianu & Popa, 2010). A simple program captures everything the Internet banking customer is doing such as withdrawing funds from his account, transferring funds to another account and even making investments. A little more refined program known as keylogging programs captures text from windows and makes screenshots as well as records everything shown on the screen (Vrincianu & Popa, 2010), thereby exposing the Internet banking customers private information which may lead to a financial loss.

Denial of service (DoS) attacks

Denial of service (DoS) attacks are as a result of overload of network traffic or requests to a server, thus making the network service or resources such as e-mail temporarily unavailable (Omariba et al., 2012). When these resources become unavailable, the attacker may gain access to a bank's database which may result in huge losses for customers (Omariba et al., 2012). Such attacks include attempts to flood a network in order to stop valid network traffic and various attempts to interrupt the connections between two computers which can prevent access to a service or restrict individuals from accessing a service.

Repudiation and man-in-the-middle attack

Repudiation occurs when a person denies or rejects the identity of the source or the date of a transaction (Vrincianu & Popa, 2010) implying that parties to the transaction are not authenticated (i.e. the parties are not who they say they are). Repudiation attacks are prevalent when an Internet banking system does not implement strict controls to accurately track and record users' actions, thus allowing malicious manipulation or falsifying the identification of new actions. A man-in-the-middle attack is where an existing connection is interrupted by attackers in order for them to retrieve the exchanged data and replace the correct information with false information (Vrincianu & Popa, 2010). It may include listening in on a connection, interrupting into a connection, diverting messages, and selectively altering information. In this way, the man-in-the-

middle attack may enable an attacker to gain access to a user's bank account username and password in order to steal funds or perform other illegitimate acts.

The security threats addressed above have instilled a sense of fear in both service providers and users (Sherah et al., 2010). In order for Internet banking to be a secure form of delivery and continued future uptake, banks need to narrow the trust gap between online and traditional transacting by reducing customers' fears of the threats related to online banking (Wong et al., 2009).

2.3.4.2 Security measures

The security threats described in the preceding section are continuously changing, and often very quickly (Vrincianu & Popa, 2010). It can be inferred that there is no "one size fits all" plan that banks and customers could implement to reduce the various dangers threatening the online platforms constantly (Vrincianu & Popa, 2010). In order to ensure system security and safety of customers' personal interests, numerous banks (if they have not implemented already) could:

- communicate possible frauds to the customer on a daily basis
- safeguard the validation process from malicious actions that can damage the customer's station
- provide user-to-site verification plans which enable the customer to confirm that the connection is definitely established with the exact site
- implement verification factors that remove customer judgements from the verification process

Furthermore, biometrics which refers to automatic recognition of people based on their distinctive features such as face, fingerprint and iris is an enabling technology that has the potential to make society safer and reduce fraud, thus leading to user satisfaction (Sarma & Singh, 2010). This is due to the fact that biometrics connects the event to a specific individual (a password may not be used by anyone but the authorised user), is convenient (there are no passwords to remember), precise (it provides for positive identification) and can provide an audit trail should an unlikely event occur (Sarma & Singh, 2010). Biometric devices comprise a reader or scanning device, software that translates the information collected into digital form and a database that stores the biometric data for comparison with earlier records. There are two types of biometrics,

namely, behavioural and physical. Behavioural biometrics are used for verification while physical biometrics are used for either identification or verification (Sarma & Singh, 2010). Physical biometrics include analysing fingertip patterns, measuring facial characteristics, analysing blood vessels in the eye and measuring the shape of the hand while behavioural biometrics include analysing vocal behaviour, signature dynamics and measuring the time spacing of typed words. Therefore using biometrics for Internet banking can be convenient and substantially more precise than existing methods such as the utilisation of passwords or pins (Sarma & Singh, 2010).

Another important security measure is the use of public key infrastructure (PKI) – PKI is an encryption and authentication method used by small businesses and large organisations (Lawton, 2015) – banks are one of them. PKI is an encryption method where a pair of cryptographic keys, one public and one private, are used to encrypt and decrypt data. A user can provide someone their public key, which that sender uses to encrypt data while the owner then uses their private key to decrypt the data (Lawton, 2015). The keys will be signed by a Certification Authority (CA), a trusted company on the Internet responsible for verifying an organisation's identity (Dineen, 2013). Essentially, the PKI is a system for providing customers with confidence that the certificate their browser has downloaded verifies that the website they are viewing is owned and operated by their bank (Dineen, 2013). Examples of how PKI technology is used today include sending authenticated e-mail messages using technologies such as Open Pretty Good Privacy (OpenPGP), encryption of documents using the Extended Markup Language (XML) and authentication of users using smart card logins or client authentication using secure sockets layer (SSL) signatures or encryption (Lawton, 2015). A secure sockets layer (SSL) is a protocol that encodes data between the user's computer and the site's server. When an SSL-protected page is requested, the Web browser recognises the server as a reputable entity and initiates a handshake to pass encryption key information back and forth (Omariba et al., 2012). When there are subsequent requests to the server, the information flowing back and forth is encrypted so that a hacker attempting to access the network cannot read the contents.

In addition, customers need to ensure the security of their computer and personal information, such as the passwords, user names and pin numbers associated with their bank accounts. Customers should also install proper security software in their computers

to decrease the possibility of hackers gaining access to their personal information (Skotnicky, 2010). For example, a personal firewall assists in protecting a computer by restricting the types of traffic initiated by and sent to the computer. Although there is sophisticated encryption software available which is designed to safeguard a customers' personal information, no system is faultless (Koskosas, 2011). Accounts can still be vulnerable to attacks by hackers, phishing and various other illegal activities. Skotnicky (2010), in his study asserts that customers need to determine the security measures employed by their banks prior to opening an account with them. They can also communicate with the bank about what the bank would do should there be a security breach in their account.

2.3.5 Internet banking in South Africa

The international world has witnessed and continues to witness an increase in Internet usage and Internet banking adoption (Govender & Wu, 2013). Since 1996, Internet banking has gradually been increasing in South Africa because consumers are drawn to the ease and cost effectiveness associated with Internet banking (Redelinghuis & Rensleigh, 2010). However, the Internet banking adoption rate in South Africa has been small compared to developing countries since one of the hurdles facing South African consumers, when it comes to Internet banking, is the high cost of bandwidth (Govender & Wu, 2013). Govender and Wu (2013) compares South Africa to Egypt in their study, indicating that Internet usage costs in South Africa are over 475% more than in Egypt. However, they maintain that with a reasonably well formulated infrastructure, South Africa has great market potential for Internet banking. The established banking system in South Africa compares favourably with banking systems in many developed countries, such as the United States of America (USA) (Redelinghuis & Rensleigh, 2010). South Africa has four leading banks, namely the Amalgamated Bank of South Africa (ABSA), Standard Bank, Nedbank and First National Bank (FNB) and more recently two other banks, namely, Capitec Bank and Mercantile Bank. According to Singh (as cited in Redelinghuis & Rensleigh, 2010) ABSA was the first to provide services online, followed respectively by Nedbank, Standard Bank and FNB.

MyBroadband BusinessTech conducted a survey in 2012 which requested customers to score their banks according to levels of service, cost and convenience (Muller, 2012).

Table 2.2 represents the survey results as shown in Muller (2012).

Table 2.2: MyBroadBand BusinessTech survey results (Muller, 2012)

Bank	5	4	3	2	1	Average
FNB	260	109	18	10	4	4.52
Capitec	41	14	7	1	0	4.51
Nedbank	13	55	37	27	9	3.26
Standard Bank	23	41	85	39	18	3.06
ABSA	9	31	86	58	45	2.57

In this survey, users were required to rate their bank using the following five point scale (Muller, 2012), where:

- 5 – Excellent (much better than expected)
- 4 – Good (better than expected)
- 3 – Fair (exactly as expected)
- 2 – Bad (worse than expected)
- 1 – Pathetic (much worse than expected)

690 responses were collected from ABSA, FNB, Nedbank, Standard Bank and Capitec Bank customers who provided their views about how their banks could improve (Muller, 2012). In this survey, FNB was the leading bank with an average score of 4.52 out of 5, closely followed by Capitec Bank with an average of 4.51 out of 5, then Nedbank (3.26), Standard Bank (3.06) and, with the lowest rating, ABSA (2.57).

Synovate, a leading market research company, requested five hundred Internet users in various parts of South Africa to provide their views on Internet banking as an alternative to traditional banking (Ipsos, 2010). The results revealed that:

- Forty four per cent of customers interviewed use Internet banking
- The majority (35%) transact at least once a week

- The most popular Internet banking activities include viewing account balances (88%), payment of bills (73%), transferring funds into different accounts (63%) and controlling debit orders (36%)
- Twenty eight per cent of customers interviewed indicated that they would change their bank, based on what their bank was providing online

Customers were also requested to rate their Internet banking experience according to several other factors (Ipsos, 2010). The convenience of Internet banking obtained the highest rating (92%) which was followed by ease and user-friendliness of the service (82%). Providing superior customer service online and ease of opening or setting up an account online were also areas identified for improvement.

On the contrary, 44% of customers who do not use Internet banking, feel that there is ‘no need’ to use Internet banking, while 36% of the total surveyed cite security fears as a reason not to use Internet banking (Ipsos, 2010).

South African banking customers have gained access to Internet banking products and services, 24 hours a day over the past few years. While the South African banks utilise risk-management systems in line with governance frameworks to conduct their business, the potential for security invasion remains a concern among existing and potential customers. No security controls can mitigate cyber-criminals once and for all. Determining the effectiveness of the implementation of these systems and the governance frameworks in use is an important aspect of research, which is beyond the scope of this study.

2.3.6 Internet banking abroad

Internet banking services are being used at an increasing rate globally (Al-Smadi, 2012). A strong banking industry is essential in each country and can have a major effect on supporting economic development through effective financial services (Al-Hajri & Tattall, 2008). Internet banking globally provides banks with the chance to create services and processes that require few internal resources, resulting in lower costs (Al-Smadi, 2012). All banking and financial services in Malaysia are controlled by its Central Bank, Bank Negara Malaysia (BNM). In June 2000, Internet banking began in Malaysia after BNM enabled local banks to provide Internet banking services (Suki, 2010). In

2002, the Internet banking services were extended to foreign owned banks (Suki, 2010). In January 2008, there were 23 banks providing Internet banking services as well as their traditional services. Statistics show that there was positive adoption of Internet banking in Malaysia.

In Pakistan; City bank was one of the few banks to initiate online banking (Zahid et al., 2010). In 2003, several national and multinational banks were offering online banking services in Pakistan. In 2006, Pakistani commercial banks recorded an increase of 45% in opening new online banks in the second quarter of the financial year (Zahid et al., 2010). Although several counter-measures against fraud have been implemented by banks in the form of information encryption, firewalls and encoding, a lack of enthusiasm still exists towards online banking.

Nigeria initially experienced slow use of Internet banking but this is changing at a fast-pace for the better and Nigeria is known to be one of the fastest growing telecommunications nations in Africa (Ayo & Adesina, 2010). In 2003, a transformation began in the Nigerian banking system with the emergence of the Guideline of Electronic Banking by the Central Bank of Nigeria. An improvement exercise in June 2004 left Nigeria with 25 strong and dependable banks out of a total of 89 banks previously in existence (Ayo & Adesina, 2010). All members of the Nigerian banking industry have used information and communication technology (ICT) as a platform for conducting financial transactions effectively and efficiently.

Although there has been an increase in Internet banking globally, commercial banks in Ethiopia continue to perform several of their banking transactions through traditional techniques (Takele & Sira, 2013). Gardachew (as cited in Takele and Sira, 2013) believes that banking operations in Ethiopia are supported by low infrastructural development, absence of appropriate legal and regulatory structures, increased rates of illiteracy, regular power disruptions and security concerns. Furthermore, in Ethiopia, Internet banking is a new technology and requires substantial effort and resources before it can be adopted by customers.

2.4 Summary

Due to the advancements in information and communication technology (ICT) globally, there have been major developments in the business sector for the last 40 years (Muzividzi, 2013). Internet banking is becoming the primary focus as the number of Internet users increase worldwide (Foon & Fah, 2011). The rapid development of the Internet and Internet banking has added several benefits to individuals in terms of greater simplicity and convenience (Yuan et al., 2010). However, it should be noted that numerous security and privacy issues linked with the Internet and Internet banking could adversely affect people's lives. These security risks remain a major concern to customers (Sherah et al., 2010).

CHAPTER THREE

CONCEPTUAL FRAMEWORK

3.1 Introduction

Technology has remained a significant driver of transformation for decades. In the last two decades, individuals have observed and experienced several significant innovations and developments in the area of information and communication technology (ICT) (Sharma & Chandel, 2013). At present, people are increasingly requiring banking services that are faster and of higher quality than before (Ghalandari, 2012). Hence, attracting new customers and retaining existing ones need efficient management and effective information technology (IT) (Ghalandari, 2012).

An important aspect of information technology (IT) research is to assess whether a particular technology is valuable for individuals and to identify and understand the factors that create this value, in order for companies to successfully deploy their IT resources (Yousafzai et al., 2010). This valuable information will enable banks to develop realistic techniques for predicting how users will react to their technologies and improve user approval by changing specific parts of the technologies (Baraghani, 2007). Many theories have been developed to explain the adoption of technologies. The theoretical frameworks background and the framework used in this study are explained in the next sections.

3.2 Theoretical frameworks background

Since the inception of information systems (IS), the research community has been exploring the factors that influence individuals to accept and to utilise such systems (Vighio et al., 2012) and a variety of theories and models have been put forward to examine the factors predicting user acceptance of information systems and information technology. Identifying these factors is very important to organisations such as banks, which are required to understand the influencing factors on users' perceptions towards a given information system (IS). By collecting such information, system designers and developers are able to improve the acceptance potential of newly designed systems (Vighio et al., 2012). Models have been developed using either psychology-based

theories or information technology-based theories (Mursalin, 2012). The models that have been proposed include the Theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB), Decomposed Theory of Planned Behaviour (DTPB), Combined TAM-TPB (C-TAM-TPB), Technology Acceptance Model (TAM), Technology Acceptance Model 2 (TAM2), Motivational Model (MM), Model of PC Utilisation (MPCU), Innovation Diffusion Theory (IDT), Social Cognitive Theory (SCT) and recently, the Unified Theory of Acceptance and Use of Technology (UTAUT) (Cheng et al., 2011).

In 1975, Fishbein and Ajzen introduced the Theory of Reasoned Action (TRA) which is a well-known social psychological model that focuses on the determinants of consciously intended behaviours (Yousafzai et al., 2010). In the TRA, an individual's behaviour is determined by behavioural intention (Masrom, 2007). In 1991, Ajzen extended the TRA to form the Theory of Planned Behaviour (TPB) (Yousafzai et al., 2010). The TPB tackles the restrictions associated with the TRA by dealing with behaviours over which a person has incomplete volitional power. In 1995, Taylor and Todd extended the TRA and the TPB to develop a Decomposed Theory of Planned Behaviour (DTPB) (Govender, 2011). The DTPB proposes that behavioural intention is the major direct determinant of behaviour (Kripanont, 2007). In 1995, Taylor and Todd created a hybrid model by integrating the predictors of the TPB with the constructs from the TAM (Li, 2010). Hence, the combined TAM-TPB (C-TAM-TPB) model included attitude toward behaviour, adapted from the TRA/TPB, subjective norm, adapted from the TRA/TPB, perceived behavioural control, adapted from the TPB and perceived usefulness and perceived ease of use, adapted from the TAM (Lee, 2005).

The TRA and TPB have influenced the Technology Acceptance Model (TAM) and its extended models, where the primary focus is on the adoption and utilisation of information and communication technologies (ICT) (Kim & Crowston, 2011). This simple theory, developed by Davis in 1989, is expected to be appropriate across diverse technology behaviours, user genders and user groups (Wu et al., 2011). In comparison with the TRA, there are two extra constructs in the TAM which are: perceived usefulness (PU) and perceived ease of use (PEOU) (Wu et al., 2011). PU and PEOU have been regarded as vital factors in actual system use, together with attitude and intention (Al-Ghamdi, 2008). PU is the degree to which a person thinks that using a specific information technology or system will improve his or her job performance (Wu et al.,

2011). PEOU is the degree to which a person thinks that a specific information technology or system will be simple to use (Wu et al., 2011).

In 2000, Venkatesh and Davis used the TAM as a starting point to create the TAM2, which incorporated additional theoretical constructs consisting of social influence processes (subjective norm, voluntariness, image and experience) and cognitive instrumental processes (job relevance, output quality and result demonstrability) which were lacking in the original TAM. Hence, in the TAM2, social influences were studied in order to overcome the restrictions of the original TAM (Kim & Crowston, 2011). In 1992, Davis et al. applied motivational theory to learn about information technology adoption and usage (Li, 2010). The resulting model proposes that a person's behaviour is based on intrinsic and extrinsic motivations (Li, 2010). Intrinsic motivation can be defined as engaging in an activity for itself and for the enjoyment and fulfilment gained from partaking (Vallerand, 2004). When extrinsically motivated, individuals do not participate in the activity out of enjoyment but rather do so to gain particular kinds of incentives that are external to the activity itself (Vallerand, 2004). In 1991, Thompson et al. modified the Model of PC Utilisation (MPCU) which had been based on Triandis' 1980 theory of interpersonal human behaviour (Hakkarainen, 2013). The MPCU is used to explain how computer systems are used and adopted by knowledge workers. The MPCU consists of several general and conceptual variables (Wald & Alotaibi, 2012).

Since the 1950s, the Innovation Diffusion Theory (IDT) has explained the innovation-decision process (Kripanont, 2007). IDT consists of five significant innovation characteristics that influence the adoption of a technology, namely, relative advantage, compatibility, complexity, trialability and observability (Wu & Wang, 2005).

The TAM and IDT are similar in some constructs and complement each other in the way they investigate the adoption of information systems and information technology (Lee et al., 2011). The relative advantage construct in the IDT is similar to the perceived usefulness construct in the TAM, while the complexity construct in the IDT is similar to the perceived ease of use construct in the TAM (Wu & Wang, 2005).

Social Cognitive Theory (SCT) developed by Albert Bandura in 1977, proposes that human functioning should be observed as the result of a dynamic interaction of personal,

behavioural and environmental influences (Kripanont, 2007). SCT suggests that parts of an individual's information acquisition can be directly linked to watching others within the context of social relations, experiences and external media influences (Kim & Crowston, 2011).

3.2.1 Unified Theory of Acceptance and Use of Technology (UTAUT) model

In 2003, Venkatesh et al. developed the Unified Theory of Acceptance and Use of Technology (UTAUT) model (Oye et al., 2012). The purpose of the UTAUT model is to describe users' behavioural intention to use an information system and their subsequent usage behaviour (Cheng et al., 2011). The UTAUT model also provides an understanding of the factors that influence a significant innovative technology (Alzahrani & Goodwin, 2012). This model offers an improved view of how the determinants of intention and behaviour change over time (Kim & Crowston, 2011).

Figure 3.1 shows the ten existing information system (IS) and information technology (IT) adoption theories and technology acceptance models described in the previous section.

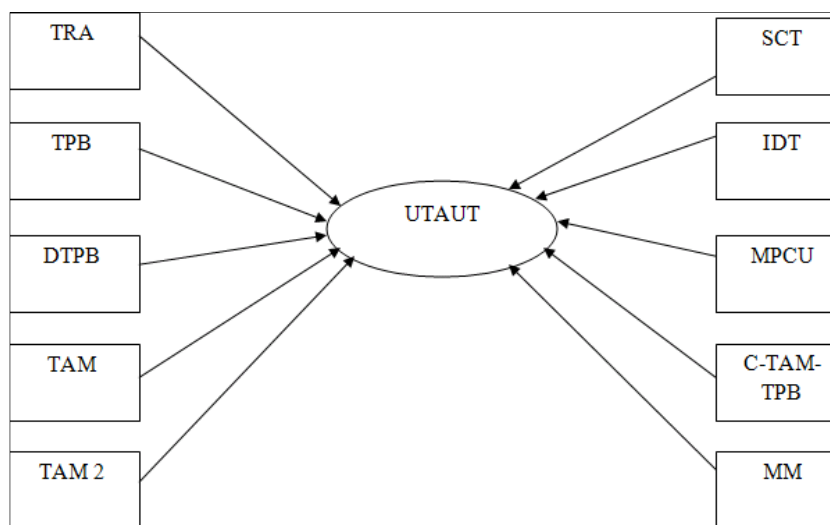


Figure 3.1: Ten models integrated to form the UTAUT model

The models shown in Figure 3.1 were combined to form the UTAUT model shown in Figure 3.2 (Alzahrani & Goodwin, 2012).

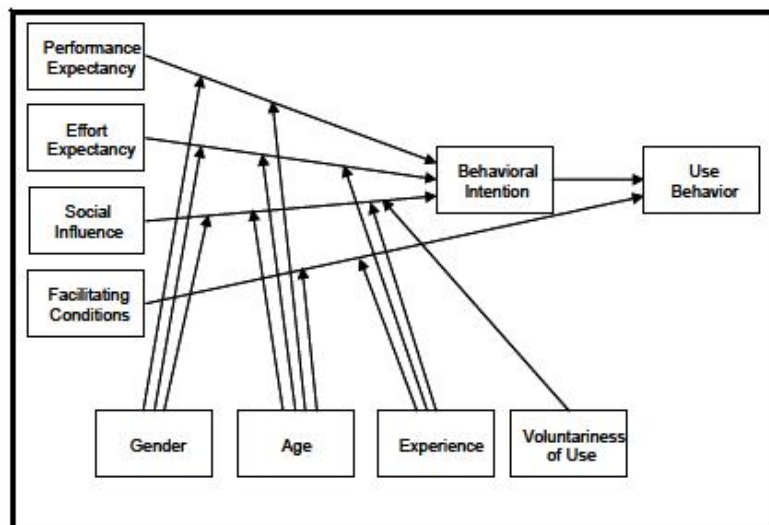


Figure 3.2: Unified Theory of Acceptance and Use of Technology (UTAUT) model (Venkatesh et al., 2003, p.447)

The UTAUT model shown in Figure 3.2 was based on the observed and conceptual similarities among the ten models shown in Figure 3.1 (Alzahrani & Goodwin, 2012).

These similarities are (Phichitchaisopa & Naenna, 2013):

- Performance expectancy (PE) uses similar determinants, such as perceived usefulness from the TAM, TAM2 and C-TAM-TPB; job fit from the MPCU; relative advantage from the IDT; extrinsic motivation from the MM; and outcome expectations from the SCT.
- Effort expectancy (EE) uses similar determinants, such as perceived ease of use from the TAM and TAM2; complexity from the MPCU; and ease of use from the IDT.
- Social influence is similar to subjective norm from the TAM2, TRA, TPB/DTPB and C-TAM-TPB; social factors from the MPCU; and image from the IDT. Facilitating conditions is similar to facilitating conditions from the MPCU, perceived behavioural control from the TPB/DTPB and C-TAM-TPB and compatibility from the IDT.

According to the UTAUT model, three core constructs (independent variables), namely, performance expectancy (PE), effort expectancy (EE) and social influence (SI) influence

behavioural intention (dependent variable) to use a technology, while behavioural intention and another core construct, namely, facilitating conditions, establish use behaviour (Venkatesh et al., 2012). Variables treated as influences are called independent variables, whereas variables treated as outcomes are known as dependent variables (Kent, 2001, p.28). According to Venkatesh (2014), behavioural intention is “the degree to which a person has formulated conscious plans to perform or not perform some specified future behaviour.” Table 3.1 provides definitions of the four core constructs in the UTAUT model.

Table 3.1: Definitions of the UTAUT core constructs (Venkatesh et al., 2003)

UTAUT core constructs	Definition
Performance expectancy (PE)	“The degree to which an individual believes that using the system will help him or her to attain gains in job performance” (p.447).
Effort expectancy (EE)	“The degree of ease associated with the use of the system” (p.450).
Social influence (SI)	“The degree to which an individual perceives that important others believe he or she should use the new system” (p.451).
Facilitating conditions (FC)	“The degree to which an individual believes that an organisational and technical infrastructure exists to support use of the system” (p.453).

Additionally the UTAUT model incorporates four moderators that influence the four core constructs, namely, gender, age, experience and voluntariness of use, from the perspective of social psychology (Phichitchaisopa & Naenna, 2013). The UTAUT model:

- has reduced the 32 variables used in the ten prior technology acceptance models into four major effects and four moderating factors (Oye et al., 2012)
- has displayed 70% accuracy in predicting user acceptance of information technology innovations (Moran et al., 2010)
- has integrated the different constructs and moderating factors which have raised the predictive efficiency to 70%, which is a significant improvement over prior TAM model ratings (Oye et al., 2012)
- is considered to be a superior technology acceptance model to the previous models since it predicts a notably higher percentage of technology innovation success (Moran et al., 2010)

- has the greatest capacity to describe behaviour intention and usage and it does this more fully than other theories, thus adding to a better understanding about the motivators of behaviour (Kripanont, 2007)

The UTAUT model has become rapidly popular and is the most comprehensive IT adoption model (Alzahrani & Goodwin, 2012). Hence the conceptual framework in this study is based in part on the UTAUT model.

3.3 Internet banking adoption research globally

Most studies on Internet banking conducted globally have concentrated on whether independent variables such as performance expectancy and effort expectancy have an influence on the dependent variable referred to as behavioural intention. In other words, more studies were based on behavioural intention than actual usage of Internet banking as the dependent variable, as described in the studies below and reflected in Table 3.2. Furthermore, majority of studies described below have not used academics as the target population.

In the majority of studies described below, perceived risk (PR) and trust (TR) were also included as independent variables, but rarely combined in a model with the four core constructs from the UTAUT model. Littler and Melanthiou (as cited in Wong et al., 2009), define perceived risk as the consumer's perceptions of the insecurity and potentially detrimental consequences associated with purchasing a product or service. The different forms of perceived risk are (but are not limited to) include (Lee, 2009):

- *Security/privacy risk* is defined as a possible loss as a result of fraud or a hacker compromising the security of an Internet banking customer.
- *Financial risk* is defined as the potential for losing money due to transaction errors or mismanagement of a bank account.
- *Social risk* refers to the possibility that utilising Internet banking may result in disapproval of an individual's family and friends. Sometimes, one's social standing may be improved or reduced depending on how Internet banking is viewed by family and friends. Some individuals have positive or negative perceptions of Internet banking that in turn affect their views of those that adopt it.

- *Time/convenience risk* may refer to losing time and experiencing inconvenience as a result of delays in receiving a payment or the difficulty of navigation such as locating the correct services and hyperlinks.
- *Performance risk* refers to losses incurred by malfunctions of Internet banking websites.

In this study, the researcher focused on the security risks within perceived risk due to the constant security attacks that customers may face when using Internet banking. These security attacks were described in chapter two.

The concept of trust is fairly complex to define since different individuals view the concept of trust in different ways (Redelinghuis & Rensleigh, 2010). In several cases, debates focus on two vital features of trust. Firstly, there are social conditions under which trust becomes a problem requiring attention. Secondly, there are different types of cognitive, affective and moral actions in which people engage when evaluating the trustworthiness of other individuals and organisations.

Gefen et al. (2003) defines trust as the degree to which a user trusts an organisation and expects that the organisation will not behave opportunistically by taking advantage of the situation. Extending this definition, Redelinghuis and Rensleigh (2010) asserts that some customers consider Internet banking to be trustworthy if the service received from their respective financial institutions was dependable and stable. The first test of an organisations' product or service plays an important role in building trust with customers. The effect of peer groups and the suggestions they provide about an organisations products or services are also imperative in creating trust (Redelinghuis & Rensleigh, 2010). However, due to vast exposure to technology, customers do not have to only listen or rely on their friends' and families' experiences, they also have their own exposure to Internet banking usage. To an extent, individuals trust banks and the products or services they provide, but not always the innovative channels that these services are offered in. When the relationship between a customer and financial institution are not managed efficiently during pre-purchase doubts, post-purchase reservations and customer's fear of the possibility of technology related risks, the trusting business relationship may be affected severely (Redelinghuis & Rensleigh, 2010). Thus, substantial resource investment is required to ensure that customers have a positive perception of their

financial institution's competence and skills which will in turn ensure a trusting relationship is developed.

Song (2010) surveyed business executives and postgraduate students in China to determine the factors that influence their acceptance of Internet banking and found that trust had a positive effect on behavioural intention, while perceived risk had a negative effect on behavioural intention. In a similar study on Internet banking among customers in Malaysia, Suki (2010) found that compatibility of Internet banking with one's lifestyle was an important determinant of Internet banking adoption.

In a more recent study, Jalal et al. (2011) explored the impact of selected factors on customers' intention to use Internet banking in Bahrain. Their results reveal that perceived usefulness and perceived ease of use had a positive effect on intention to use Internet banking. Rouibah et al. (2011, p.1) investigated the main factors which influence users' intention to adopt Internet banking in Malaysia and found that subjective norms, perceived behavioural controls, perceived usefulness and perceived ease of use had a direct, positive effect on behavioural intention. Similarly, Foon and Fah (2011) conducted a study among customers in Malaysia and found that social influence, facilitating conditions, performance expectancy, effort expectancy and trust were positively correlated with behavioural intention. Salari and Salajegheh (2011) assessed the factors that influence the acceptance of Internet banking among customers in Isafahan City. Their findings show that perceived usefulness and trust have a positive effect on willingness to use Internet banking. Amini et al. (2011) examined the determinants of Internet banking acceptance among individual customers' in Iran. Their results showed that perceived usefulness, perceived ease of use, perceived risk, computer self-efficacy, availability of access to the Internet and the quality of the Internet connection have a positive influence on behavioural intention.

Al-Smadi (2012) surveyed random banking customers in Jordan to determine and understand the factors that influence bank customers' use of Internet banking services. Their results reveal that perceived usefulness has a positive effect on behavioural intention but it is not significant while subjective norms and perceived behavioural controls have a significant positive effect on behavioural intention. Similarly, Ghalandari (2012) explored the effects of performance expectancy, effort expectancy, social

influence and facilitating conditions on the acceptance of Internet banking among customers in Iran. His results show that performance expectancy, effort expectancy and social influence have a significant positive effect on behavioural intention, while facilitating conditions have a significant positive effect on user behaviour. Okonkwo's (2012) study on customers' acceptance of Internet banking in Nigeria shows that performance expectancy, effort expectancy, facilitating conditions and trust have a positive influence on behavioural intention, while social influence has no influence on behavioural intention.

In a more recent study, Takele and Sira (2013) revealed positive relationships between perceived usefulness, perceived ease of use, perceived behavioural control and behavioural intention. Furthermore, a negative relationship was found between perceived risk and behavioural intention while there was no relationship between subjective norm and behavioural intention.

In order to identify the factors that influence individual intention towards Internet banking, Mohan et al. (2013) collected data from customers in Kuala Lumpur, Penang, Ipoh and Johor Baru and found that self-efficacy and trust are not positively related to intention towards online banking whereas perceived ease of use is positively related to intention. Rahmati et al. (2013) conducted a study to determine the factors affecting Internet banking adoption among customers in Iran and their results revealed that perceived usefulness had a positive effect on behavioural intention to use Internet banking, while subjective norms and perceived behavioural controls did not have an influence on behavioural intention. Al-Ajam and Nor's (2013) study aimed to identify the factors that influence Internet banking adoption among customers in Yemen. Their findings showed that two factors, namely, subjective norms and perceived behavioural controls have a positive influence on behavioural intention. In their analysis of the factors that influence Internet banking adoption among customers in Ghana, Annan and Perkins (2013), identified four aspects, namely, perceived usefulness, perceived ease of use, government support, trust and security as having an influence on the intention to adopt Internet banking. A similar study by Saibaba and Murthy (2013) was carried out in Hyderabad in India. They found that performance expectancy and social influence have an effect on behavioural intention, effort expectancy has no effect on behavioural intention and trust has a positive influence on behavioural intention.

In order to describe the behavioural intention and usage behaviour of Internet banking, Martins et al. (2013) collected data from students and ex-students of a University in Portugal. Their findings show that performance expectancy, effort expectancy and social influence have a positive and statistically significant relationship on behavioural intention, while facilitating conditions has no significant influence on usage behaviour. Perceived risk, consisting of privacy risk, financial risk and many other risks have a negative and statistically significant influence on behavioural intention, as described in several other studies above.

Santouridis and Kyritsi (2014) identified the most important factors that have an effect on Internet banking adoption among Internet users located in cities of Thessaly in Greece. They found that the determinants of behavioural intention to use are perceived usefulness and perceived ease of use.

Table 3.2 summarises the research models used in the studies above together with the independent variables that are similar to the UTAUT variables.

Table 3.2: Summary of research models and independent variables

Author(s) and year	Model(s) applied	Independent variables similar to UTAUT variables
Song (2010)	TAM integrated with trust, perceived risk and quality	Perceived usefulness (performance expectancy) Perceived ease of use (effort expectancy) Service quality and system quality (facilitating conditions)
Suki (2010)	IDT with perceived risk and perceived importance	Complexity (effort expectancy) Compatibility (facilitating conditions)
Amini et al. (2011)	Extended TAM	Subjective norm (social influence) Perceived usefulness (performance expectancy) Computer self-efficacy, availability of access to the Internet and quality of the Internet connection (facilitating conditions) Perceived ease of use (effort expectancy)
Jalal et al. (2011)	TAM with perceived credibility	Perceived usefulness (performance expectancy) Perceived ease of use (effort expectancy)

Rouibah et al. (2011)	TAM, TRA and TPB	Subjective norm (social influence) Perceived usefulness (performance expectancy) Perceived behavioural control (facilitating conditions) Perceived ease of use (effort expectancy)
Salari & Salajegheh (2011)	TAM with trust	Perceived usefulness (performance expectancy) Perceived ease of use (effort expectancy)
Foon & Fah (2011)	UTAUT with trust	Not applicable
Al-Smadi (2012)	TAM and TPB with culture and perceived risk	Subjective norm (social influence) Perceived usefulness (performance expectancy) Perceived behavioural control (facilitating conditions) Perceived ease of use (effort expectancy)
Ghalandari (2012)	UTAUT	Not applicable
Okonkwo (2012)	UTAUT with trust	Not applicable
Takele & Sira (2013)	TPB, TAM and previous studies	Subjective norm (social influence) Perceived usefulness (performance expectancy) Perceived behavioural control (facilitating conditions) Perceived ease of use (effort expectancy)
Mohan et al. (2013)	TAM and TRA	Self-efficacy (facilitating conditions) Perceived ease of use (effort expectancy)
Rahmati et al. (2013)	TAM and TPB	Subjective norm (social influence) Perceived usefulness (performance expectancy) Perceived behavioural control (facilitating conditions) Perceived ease of use (effort expectancy)
Al-Ajam & Nor (2013)	TPB	Subjective norm (social influence) Perceived behavioural control (facilitating conditions)
Annan & Perkins (2013)	TAM with government support, trust and security	Perceived usefulness (performance expectancy) Perceived ease of use (effort expectancy) Government support and security (facilitating conditions)

Saibaba & Murthy (2013)	UTAUT with attitude, trust, awareness and self-efficacy	Not applicable
Martins et al. (2013)	UTAUT with perceived risk	Not applicable
Santouridis & Kyritsi (2014)	TAM	Perceived usefulness (performance expectancy) Perceived ease of use (effort expectancy)

As can be seen in Table 3.2, several studies have used a variety of technology acceptance models in examining various systems' adoption in diverse contexts (Wald & Alotaibi, 2012). However, a very small number have utilised the constructs from the UTAUT model (Wald & Alotaibi, 2012). As mentioned initially, the majority of Internet banking adoption studies conducted worldwide have used behavioural intention as the dependent variable and mainly determined the influence of independent variables, such as performance expectancy, on behavioural intention to use rather than on actual usage. Moreover, academics were not the target population in the majority of studies globally. Given the fact that the majority of previous researchers have not used actual usage of Internet banking as a dependent variable, and also have not determined whether the independent variables such as performance expectancy and effort expectancy are associated with academics' Internet banking usage, the researcher took this fact into account in the next section when developing the model and hypotheses for this study.

3.4 Research model and hypotheses development

To suit the context in which this research was conducted, a model was developed using four core constructs from the UTAUT model including perceived risk and trust which were shown to be of great importance from the reviewed literature. The four core constructs from the UTAUT model are deemed to be suitable for the model developed in this study because the UTAUT model reviews and combines the main theories in the user acceptance of information technology (Wald & Alotaibi, 2012). Furthermore, in the majority of studies reviewed above, perceived risk and trust were rarely used together with the four core constructs from the UTAUT model.

Figure 3.3 shows the model developed for this study, which includes four core independent variables (performance expectancy (PE), effort expectancy (EE), social influence (SI) and facilitating conditions (FC) from the UTAUT model), two independent variables, namely, perceived risk (security risk) (PR) and trust (TR) from majority of previous studies, and two dependent variables (usage (U) and behavioural intention (BI)) (Mursalin, 2012). In this study, the dependent variable, usage (U) refers to academics who currently use Internet banking (Internet banking users) while the dependent variable, behavioural intention (BI) refers to academics who may use Internet banking in the future (Internet banking non-users).

It can be seen in Figure 3.3 that the four core independent variables (annotated line) flow towards the dependent variable, namely, behavioural intention (BI) since Internet banking users may have had the behavioural intention to use Internet banking at some point in their lives. This can be inferred from the fact that they are presently using Internet banking. Furthermore, the dependent variable, namely, behavioural intention (annotated line) flows towards the dependent variable, namely, usage (U) since Internet banking non-users may use Internet banking in the future. The annotated lines in the model merely indicate possible relationships between variables as indicated in the reviewed literature, but were not considered in this study. Thus, only hypotheses labelled as H_{a1} , H_{a2} , H_{a3} , H_{a4} , H_{a5} and H_{a6} in the model were considered in this study. Since the researcher's primary focus was on actual usage of Internet banking (reasons explained in the section on Internet banking adoption globally) rather than behavioural intention to use Internet banking, four of the six hypotheses labelled as H_{a1} , H_{a2} , H_{a3} and H_{a4} in the diagram were formulated to establish whether there is an association between the independent variables and academics' Internet banking usage. The remaining hypotheses labelled as H_{a5} and H_{a6} were formulated to establish whether there is an association between the independent variables and academics' behavioural intention to use Internet banking. Hence, the researcher could infer whether Internet banking users would continue to use Internet banking based on their perceptions of PE, EE, SI and FC and further infer whether Internet banking non-users would use Internet banking in the future based on their perceptions of PR and TR. Furthermore, determining the constructs that have a positive association with academics' Internet banking usage may be useful information for banks who are always attempting to attract potential customers and maintain their relationships with existing customers. The researcher decided to focus on academics as they seem to

be well-positioned to make use of Internet banking given their ease of access to Internet facilities and assumed competency of computing skills. In addition, most studies (for example, Foon & Fah, 2011; Amini et al., 2011 and Saibaba & Murthy, 2013) have focussed on other consumer markets as the target population. This has been reviewed in the previous section covering Internet banking adoption research conducted globally.

The moderating variables, age, gender, voluntariness of use and experience from the UTAUT model were not considered in the model developed for this study. The reasons for excluding these moderating variables were as follows:

- In the sample, most participants fell in the two age categories, (30 to 49) and (50 and over), hence age would not matter in this model.
- It is expected that all academics are exposed to and have access to Internet facilities and computing resources, thus education/experience was not considered as a moderating variable in the model. For the same reason, gender and voluntariness of use in computing in higher education was not considered in the model. All participants are given equal access to the Internet.

Thus, in the context of this research, moderating variables were not considered in the model.

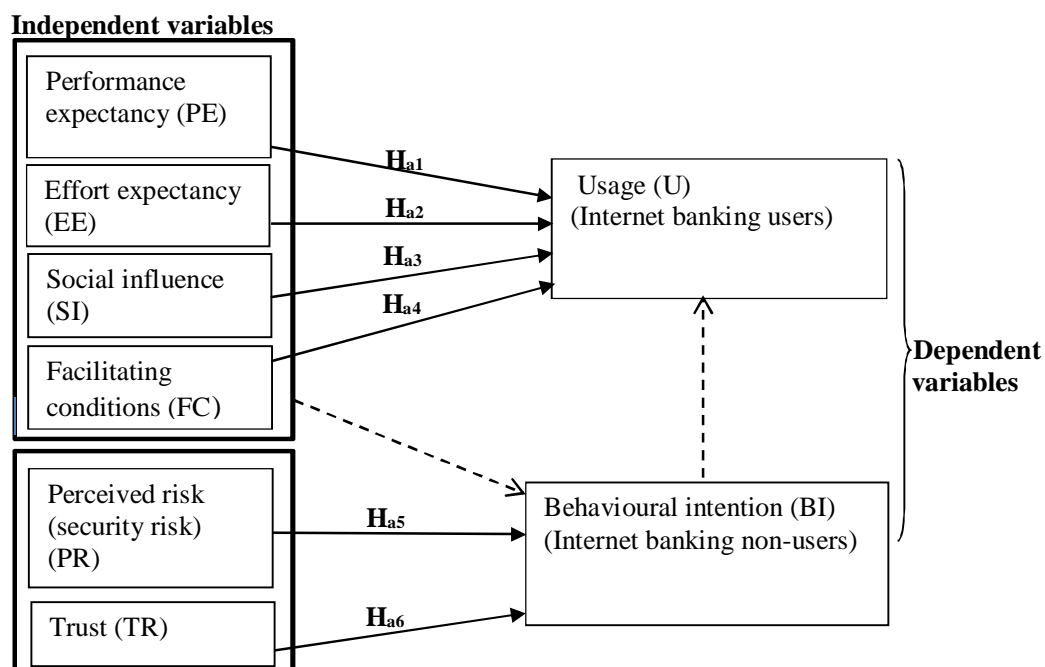


Figure 3.3: Model for Internet banking by academic staff

A hypothesis is a formal statement made by the researcher about the association between two or more variables to be tested (Kent, 2001, p.244). There are two types of hypotheses, namely, directional and non-directional. Directional hypotheses are those that hypothesise a relationship between two variables and states the direction of the relationship between two variables by using terms such as positive and negative (Sekaran & Bougie, 2013, p.84). In this study, non-directional hypotheses were used. Non-directional hypotheses are those that hypothesise a relationship between two variables but provide no indication of the direction of these relationships. Table 3.3 presents each of the proposed alternate hypotheses (H_a), with their corresponding null hypotheses (H_0). A null hypothesis is a hypothesis set up to be rejected in order to support an alternate hypothesis (Sekaran & Bougie, 2013, p.84). If the null hypotheses are rejected, then all permissible alternate hypotheses relating to the particular relationships tested could be supported. When used, the null hypotheses are presumed true until statistical evidence, in the form of a hypothesis test, indicates otherwise.

Table 3.3: Proposed hypotheses

Number	Hypothesis statement
H_{01}	Performance expectancy has no association with academics' Internet banking usage.
H_{a1}	Performance expectancy has an association with academics' Internet banking usage.
H_{02}	Effort expectancy has no association with academics' Internet banking usage.
H_{a2}	Effort expectancy has an association with academics' Internet banking usage.
H_{03}	Social influence has no association with academics' Internet banking usage.
H_{a3}	Social influence has an association with academics' Internet banking usage.
H_{04}	Facilitating conditions have no association with academics' Internet banking usage.
H_{a4}	Facilitating conditions have an association with academics' Internet banking usage.
H_{05}	Perceived risk has no association with academics' behavioural intention to use Internet banking.
H_{a5}	Perceived risk has an association with academics' behavioural intention to use Internet banking.
H_{06}	Trust has no association with academics' behavioural intention to use Internet banking.
H_{a6}	Trust has an association with academics' behavioural intention to use Internet banking.

3.5 Summary

As described in this chapter, the UTAUT model is capable of explaining 70% of the variance in usage intention, which is a significant improvement over any of the ten models used to develop the UTAUT model (Martins et al., 2013). This shows that UTAUT is the most comprehensive model to predict information technologies adoption. Hence, four core constructs from the UTAUT model were used in the model developed for this study. In most of the previous literature reviewed on Internet banking adoption, the four core independent variables in the UTAUT model, namely, performance expectancy, effort expectancy, social influence and facilitating conditions, have had a positive effect on behavioural intention. From previous studies, it was shown that perceived risk, had a negative influence on behavioural intention while trust had a positive influence on behavioural intention. From previous Internet banking studies conducted worldwide, it can be seen that little is known about whether performance expectancy, effort expectancy, social influence and facilitating conditions have a positive association with academics' Internet banking usage. Furthermore, perceived risk and trust from majority of previous studies have rarely been used together with the four core constructs from the UTAUT model. Thus, a model and hypotheses were developed using four core constructs from the UTAUT model and perceived risk and trust from previous studies to fill these gaps.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

Research involves obedience, careful examination and decisiveness (Ling & Bouma, 2004, p.14). Scientific research requires a person to collect evidence in such a way that other individuals can see why specific evidence was collected, how that evidence was collected, and what the results were, so that they can finalise their own conclusions, based on that evidence.

In the course of research, choosing qualitative or quantitative approaches depends on what researchers identify as a research problem and the questions to which they are seeking answers (Ling & Bouma, 2004, p.167). The quantitative approach utilises deductive reasoning or logic in which the researcher begins with a hypothesis and subsequently gathers data to test the null hypothesis (Shuttleworth, 2008). Thereafter, the null hypothesis is either rejected or not rejected. In contrast, the qualitative approach utilises inductive reasoning or logic in which the researcher initially plans a study and then develops a hypothesis or theory to describe the findings of the analysis.

In this study, a quantitative approach was followed in which the researcher:

- utilised deductive logic by beginning with several hypotheses and later gathered data to test the null hypotheses, after which, the null hypotheses were either rejected or not rejected (Shuttleworth, 2008)
- determined the relationship between one thing (an independent variable) such as performance expectancy, and another (a dependent variable) such as Internet banking usage (Hopkins, 2000)
- collected data through a Web-based questionnaire
- performed statistical analysis on the data collected which fulfilled the primary and secondary research objectives and legitimately described the findings (Shuttleworth, 2008)

4.2 Methodology

4.2.1 Target population

In scientific methodology, *population* refers to the objects of the research, such as humans, animals or lifeless objects, but it is impossible to include the whole target population in the research due to large numbers, cost and time (Fathalla & Fathalla, 2004, p.50). Instead, a component of the target population is researched, from which results or inferences are drawn.

The University of KwaZulu-Natal (UKZN), one of the largest universities in South Africa, consists of five campuses in two major cities, four in Durban and one in Pietermaritzburg. UKZN is one of the top five research-intensive universities in South Africa and the only merged institution to be in this group (Hlongwa et al., 2012). UKZN is ranked in the top five hundred worldwide and the top three nationally. Thus, the target population chosen by the researcher comprised academics from four colleges within UKZN. The four colleges (College of Humanities, College of Agriculture, Engineering and Science, College of Health Sciences and College of Law and Management Studies) consist of academics who encompass a diverse range of skills, knowledge and experience in tertiary education and knowledge production through research output. Their skills, knowledge and experience are acquired through continuous interaction with the Internet, reading books and publishing journal articles frequently.

4.2.2 Sample size

There are different formulas for computing the necessary sample size, based upon whether the data gathered is going to be of a categorical or quantitative nature (The Research Advisors, 2006). These formulas need familiarity of the variance in the population, the maximum desirable error, as well as the acceptable Type one error risk, such as confidence level. Although, when a researcher is given a population size, particular margin of error and desired confidence interval, it is possible to utilise one of these formulas to create a table that proposes the most favourable sample size (The Research Advisors, 2006). In order to determine the sample size from a given population, the sample size table (see Appendix 1) is used. This table shows the outcomes of one set of these calculations.

Krejcie and Morgan (1970) claim that the sample size table is appropriate to every defined population. This table can also be used to identify the correct sample size for nearly every research project (The Research Advisors, 2006) thus making it much easier to use the table than employing a formula.

In 2013, an e-mail received from UKZN's data management information (DMI) office confirmed that the total academic population within UKZN was 1353 (see Appendix 2). A sample size could then be calculated. It is better to make certain that the sample size represents the population, rather than making it unnecessarily large (Fathalla & Fathalla, 2004, p.52). Several researchers advise that the first column in the sample size table (confidence level equal to 95% and margin of error equal to 5%) should be adequate to determine a sample size (The Research Advisors, 2006). Based on the sample size table, the required sample size for UKZN's total academic population size was approximately 299 responses. However, 272 responses were returned for data analysis. Thus, a 91% response rate was achieved.

4.2.3 Sampling method

In this study, it is implicit from the title that the target population chosen was academics at UKZN. Thus, at the very outset, the sample used would be purposive. For this study, within the purposive sampled participants, a convenience sampling method was used since the sample chosen was accessible to the researcher, namely, academics at UKZN. Furthermore, the researcher considered this method to be easy, cost-effective and least time consuming (Castillo, 2009). The following process was used to gather data from the target population:

- The researcher e-mailed a Web-based survey to the total population of 1353 academics employed at UKZN, without the intention of using a census method. It was expected that not all academics will respond and hence it turned out to be a volunteer sampling – participants volunteer to be part of a survey, which is a common method for Web-based opinion surveys.
- Based on the total population size, the sample size required was 299 responses.
- Upon receiving 272 responses, the researcher stopped collecting data since a fairly good (91%) response rate was achieved.

4.3 Data collection

4.3.1 Primary data collection

To gather data, social scientists employ various data collection approaches (Hox & Boeije, 2005). Primary data are defined as data that the researcher initiated for the purpose of the current research (Mwamadzingo, 2011). Surveys are a well-known method of gathering primary data (MacDonald & Headlam, 2009). This study used the survey method to collect primary data and test its hypotheses. A Web-based questionnaire was designed to collect primary data because it enabled the researcher to:

- successfully communicate with respondents, especially academics who fit the profile of typical Internet users (Singh, 2004 and Wright, 2005)
- enhance data quality since validation checks were combined with prompts that alerted respondents when they did not provide answers to required questions (Gelder et al., 2010)
- view outcomes of responses in real-time (MacDonald & Headlam, 2009)
- administer the questionnaire in an efficient way, thus reducing the time it takes to get a survey into the field for data gathering (Mathur & Evans, 2005)
- send out several follow-up reminders through e-mail (Mathur & Evans, 2005)

Surveys are thus a valuable way of collecting primary data from businesses and society (MacDonald & Headlam, 2009).

Questionnaire design

According to Sekaran and Bougie (2013, p.147), a questionnaire is a “preformulated written set of questions” and statements to which participants record their responses. Questionnaires are one of the most accepted primary data collection tools, probably because many researchers believe that questionnaires are easy to design (Gray, 2009, p.188).

According to Gray (2009, p.188):

- Questionnaires are reasonably viable in terms of both time and money.
- The data analysis of closed ended questions is fairly simple, and questions can be coded swiftly.
- With questionnaires, respondents’ anonymity can be guaranteed.

Once a questionnaire has been created, the researcher requires the following approvals prior to data collection:

- **Ethical clearance:** Ethical clearance provides the researcher with permission to conduct the data collection.
- **Gatekeepers' letter:** A gatekeepers' letter grants permission to conduct data collection, provided that ethical clearance has been obtained in the first instance. The gatekeepers' letter ensures that the data collected is treated with confidentiality and anonymity.

The researcher obtained ethical clearance (reference number: HSS/0018/012M) from the Human and Social Sciences Department at UKZN (see Appendix 5(a) and (b)). Furthermore, gatekeepers' permission was granted by the Registrar at UKZN (see Appendix 4).

After obtaining all the necessary approvals, the researcher conducted pilot testing, or pre-testing, to confirm that the questions are unambiguous and that the responses will be consistent. Hence, before the questionnaire was ready for final data collection, the researcher pre-tested the questionnaire in the following way:

- The researcher requested eight academics to complete the questionnaire two weeks prior to the distribution of the final Web-based questionnaire.
- The questionnaire had a cover letter which clearly described the objectives of the research.
- The academics were requested to complete the questionnaire in the researcher's presence. This allowed the researcher to observe any hesitation, erasures or omitted questions.
- Upon completion of the questionnaire, the researcher requested verbal and written feedback on the academics' understanding of the questions to grasp whether the questions were ambiguous or inappropriate for this kind of research.

The pilot test enabled the researcher to specifically determine whether the instructions were followed correctly, whether the questionnaire was time-consuming, whether each question measured what it intended to measure and whether the questions posed to Internet banking users and non-users were suitable and comprehensible.

Following the academics' feedback, the questionnaire was modified to strengthen clarity, content and completeness (Yu, 2012). As a result, the final Web-based questionnaire comprised thirty questions covering Internet use, Internet banking habits, Internet banking perceptions of users and non-users and demographic information of Internet banking users and non-users (see Appendix 3).

The perceptions of Internet banking users were measured on a five point Likert scale which ranged from *strongly agree* to *strongly disagree*. Social influence (SI), one of the constructs in this study, was not measured on the Likert scale but rather included as a single question, since it would have been time-consuming for users to read many individual statements and choose from *strongly agree* to *strongly disagree*.

The perceptions of Internet banking non-users were not measured on a Likert scale but were rather included as single questions since it was not suitable for non-users to answer the same questions as users. The final Web-based questionnaire was specifically designed to test the model and hypotheses developed in chapter three and address the primary and secondary research objectives developed in chapter one.

Table 4.1 indicates the constructs and the items used to measure the constructs in order to address the primary research objective and the first of the secondary research objectives.

Table 4.1: Constructs and measurement items (Venkatesh et al., 2003; Wu, 2005 and Rafieda, 2006)

Construct (independent variable)	Measurement item
Performance expectancy (PE)	PE1 – Internet banking improves the way I handle my finances. PE2 – More time and effort is required when I complete an Internet banking transaction. PE3 – Internet banking allows me to compare the differences among various products more easily.
Effort expectancy (EE)	EE1 – Internet banking programmes allow me to manage my finances with ease. EE2 – The Internet banking process is very simple. EE3 – Internet banking allows me to easily find specific information.
Social influence (SI)	Who has influenced you to use Internet banking? Friends, Colleagues, Family members, Your bank, Other, please state.
Facilitating conditions (FC)	FC1 – I have generally received enough information about Internet banking. FC2 – Internet banking is more cost effective than traditional banking.
Perceived risk (security risk) (PR)	If you have not used Internet banking, please state why? PR1 – Many forms of media have raised fear in my mind about disclosing personal information, credit card details and account details on the Internet.
Trust (TR)	I will engage in Internet banking if: TR1 – I am satisfied with the bank's security system. TR2 – the bank can ensure compensation for any loss due to security attack of the bank.

Reliability and validity

Reliability measures the trustworthiness of a questionnaire (Wu et al., 2011). When respondents supply consistent responses, the questionnaire is considered to have a high reliability (Wu et al., 2011). Cronbach's alpha was used to test the reliability of the measurement instrument. An alpha exceeding 0.70 will show that the questionnaire is a stable measurement instrument (Masrom, 2007).

Validity focuses on the meaningfulness of research elements and enables researchers to check whether they are measuring what they aimed to measure (Drost, 2011). Face validity is the researchers' subjective evaluations of the appearance and significance of the measuring instrument, while construct validity focuses on the logical associations among variables (Oluwatayo, 2012). In this study, the content and face validity of the questionnaire was ensured through pilot testing the questionnaire and adapting and modifying the scale items from previous studies of a similar nature (for example, Venkatesh et al., 2003; Wu, 2005 and Rafieda, 2006). Factor analysis (factor loading) was conducted to establish the construct validity of measurement items shown in Table 4.1. Construct validity is a crucial stage in the research process and ensures that measurement items in the questionnaire precisely measure the constructs under examination (Burton & Mazerolle, 2011). In order to represent adequate construct validity of measurement items, the literature proposes that the factor loading should not be lower than 0.5 (Masrek et al., 2012). Thus, factor loadings of 0.50 or higher will indicate that measurement items shown in Table 4.1 have adequate construct validity.

4.3.2 Secondary data collection

Data are categorised as secondary data if they were initially gathered for a different use and were reused for new research questions and hypotheses (Hox & Boeijs, 2005). The benefit of secondary data is that they are almost always faster and less costly to collect than primary data (Griffin et al., 2012, p.161). In this study, the researcher collected secondary data from related journals, international conference proceedings, research reports, books, published masters and doctoral theses. Specific parts of the secondary data findings were compared with the primary data findings.

4.4 Data analysis

Prior to data analysis, data preparation was completed. Data analysis will only be trustworthy if it is built upon the foundations of 'clean' data, that is, data that have been entered into the computer precisely (Gray, 2009, p.290).

4.4.1 Data preparation

In this study, data preparation was conducted in the following ways:

Text variables

Text variables were converted to numerical variables that were coded in the Statistical Package for Social Sciences (SPSS) version 21.0.

Missing data

Missing data were treated as system-missing data as more than half of the respondents in each category of respondents answered the relevant questions. System-missing values are automatically identified as missing by SPSS. Values left blank were treated as system-missing values. For a large sample, it is possible to allow cases to be excluded.

Reverse coding

Prior to running Cronbach's alpha on measurement items, statisticians reverse code items that are negatively stated so that a high value indicates the same type of response on every item, thus improving reliability. The coding for the item, "More time and effort is required when I complete an Internet banking transaction" was reverse coded to show high agreement to be positive, consistent with the rest of the scoring items.

Social influence (SI) and usage (U)

The social influence (SI) construct was coded according to the level of contribution that the items make to SI. Although there was no particular initial order, the nature of the respondents and their interactions with the influencing items were considered in terms of ranks. For example, the opinions of family members and friends were ranked more highly than colleagues and banks respectively because the concept of social influence was attributed to family and friends rather than authority type of figures. Usage (U) was also ranked in a similar manner, using the frequency of use as a measure.

Perceived risk (security risk) (PR), trust (TR) and behavioural intention (BI)

The constructs, perceived risk (security risk) and trust as well as behavioural intention were ranked and coded using the Likert scale based on their responses to the open-ended question, their reasons for not using Internet banking and the factors that would encourage them to use Internet banking in the future.

The commercial statistical software package, SPSS provides an excellent balance of power and flexibility (Fathalla & Fathalla, 2004, p.98). Therefore, SPSS version 21.0 was used to analyse the primary data collected. Statistical analysis was divided into two parts, namely, descriptive statistics and inferential statistics.

4.4.2 Descriptive statistics

Descriptive statistics allowed the researcher to make sense of a large amount of data and comprised frequencies and percentages shown in tables and figures to describe and summarise the basic results of the sample.

4.4.3 Inferential statistics

Inferential statistics strives to draw conclusions beyond the data, for example, inferring what a population may believe on the basis of sample data (Gray, 2009, p.293). Inferential statistics comprised Fisher's exact tests, correlation analysis and multiple regression analysis. Fisher's exact tests were used to determine whether differences exist between Internet banking users and non-users, and to establish whether demographic factors have an association with academics' use and non-use of Internet banking. Correlation analysis was used to test the hypotheses while multiple regression analysis was used to test the model developed in chapter three.

4.5 Summary

Conducting research entails a range of connected activities moving from start to finish (Ling & Bouma, 2004, p.8). This chapter provided a view of the various steps taken to conduct the research and described the data collection and statistical tools used in the research process. The descriptive and inferential statistics presented and described in the next chapter will address the primary and secondary research objectives developed in chapter one.

CHAPTER FIVE

ANALYSIS AND RESULTS

5.1 Introduction

This chapter presents the analysis and results obtained from the Web-based questionnaires distributed to academic staff at UKZN. A Web-based questionnaire was the primary data collection tool used to collect data. The primary data collected from a sample of 272 academics were analysed with SPSS version 21.0. To test the reliability of the questionnaire, Cronbach's alpha was used. Once reliability was confirmed, descriptive statistics summarised the profile of respondents.

Thereafter, the analysis and results were divided into two parts, those who currently use Internet banking and those who do not use Internet banking yet. The analysis of Internet banking users comprised descriptive statistics, factor analysis, correlation analysis and multiple regression analysis. The analysis of Internet banking non-users comprised descriptive statistics and correlation analysis. Excerpts from Internet banking users and non-users were also included in the respective analysis sections. Lastly, in order to compare Internet banking users' and non-users' responses to the same questions in the questionnaire and determine whether demographic factors are associated with academics' use and non-use of Internet banking, Fisher's exact tests were conducted.

Fisher's exact tests, correlation analysis and multiple regression analysis utilised p-values or significance values. Statisticians utilise significance values, also known as p-values, to verify whether there are valid associations between different variables (Fenton & Neil, 2012, p.10). In examining hypothesised relationships, researchers pre-set a p-value in advance of the study. Generally, a value of 0.01 or 0.05 is pre-set. In this study, the p-value was set at 0.01 for correlation analysis while 0.05 was set for all other tests.

5.2 Reliability statistics

Table 5.1 indicates that Cronbach's alpha was used to test the reliability of the questionnaire.

Table 5.1: Reliability statistics

Construct	Number of measurement items	Cronbach's alpha
Performance expectancy (PE)	2 of 3	0.458
Effort expectancy (EE)	2 of 3	0.723
Facilitating conditions (FC)	2 of 2	0.444

An alpha exceeding 0.70 shows that the questionnaire is a stable measurement instrument (Masrom, 2007). As shown in Table 5.1, the EE construct had a reliability score that exceeded 0.70. However, the remaining constructs, PE and FC, had values that were less than the recommended alpha. Possible reasons for this are that there is a variation of interpretations of some items resulting in the inter-item correlation being low. It must be noted that reliability analysis was not conducted for social influence (SI) since it was a single item question.

5.3 Profile of respondents

From the sample of 272 respondents, the majority of respondents (77.9%) use Internet banking while a small number of respondents (22.1%) do not use Internet banking.

Table 5.2 summarises the profile of respondents – both Internet banking users and non-users.

Table 5.2: Profile of respondents

		Are you an Internet banking user?				Total count per category
		Yes		No		
		Count	Percent (%)	Count	Percent (%)	
Gender	Male	104	49.1	23	38.3	127
	Female	108	50.9	37	61.7	145
	<i>Total</i>	<i>212</i>	<i>100</i>	<i>60</i>	<i>100</i>	<i>272</i>
Age group	20 to 29	21	9.9	0	0.0	21
	30 to 39	60	28.3	13	21.7	73
	40 to 49	56	26.4	25	41.7	81
	50 and over	75	35.4	22	36.7	97
	<i>Total</i>	<i>212</i>	<i>100</i>	<i>60</i>	<i>100</i>	<i>272</i>
Monthly income	Less than R5000	3	1.4	1	1.7	4
	R5000 to R7000	1	.5	0	0.0	1
	R7001 to R10000	4	1.9	3	5.0	7
	R10001 to R20000	54	25.5	12	20.0	66
	Over R20000	150	70.8	44	73.3	194
	<i>Total</i>	<i>212</i>	<i>100</i>	<i>60</i>	<i>100</i>	<i>272</i>
Race	African	44	20.8	23	38.3	67
	White	93	43.9	10	16.7	103
	Indian	59	27.8	26	43.3	85
	Coloured	7	3.3	1	1.7	8
	Other	3	1.4	0	0.0	3
	Not disclosed	6	2.8	0	0.0	6
	<i>Total</i>	<i>212</i>	<i>100</i>	<i>60</i>	<i>100</i>	<i>272</i>
Marital status	Single	51	24.1	17	28.3	68
	Married	147	69.3	37	61.7	184
	Divorced	11	5.2	4	6.7	15
	Widow(er)	3	1.4	2	3.3	5
	<i>Total</i>	<i>212</i>	<i>100</i>	<i>60</i>	<i>100</i>	<i>272</i>
Banking institution	Standard Bank	70	33.0	26	43.3	96
	ABSA	38	17.9	10	16.7	48
	FNB	59	27.8	9	15.0	68
	Nedbank	36	17.0	13	21.7	49
	Investec	5	2.4	0	0.0	5
	Capitec Bank	2	0.9	2	3.3	4
	Other	2	0.9	0	0.0	2
	<i>Total</i>	<i>212</i>	<i>100</i>	<i>60</i>	<i>100</i>	<i>272</i>

From a sample of 272 respondents, 127 were male respondents (46.7%) and 145 were female respondents (53.3%). By gender, the ratio of male to female Internet banking users was approximately 1:1, whilst that for non-users was approximately 4:6. Thirty eight point two per cent of the sample were male users; slightly lower than female users (39.7%). Similarly, the percentage of male non-users (8.5%) was slightly lower than the percentage of female non-users (13.6%). It would appear from the table that as the age group increases, the number of users increases. A similar trend occurs for the non-users, that is, as the age group increases, the number of non-users increases, except for the over 50 age group. Thus, it may be possible that the older age group are more comfortable with using traditional banking processes with which they are familiar than to change to unfamiliar technology and processes. With regard to the users, the older age group who use Internet banking continue to use it.

An interesting observation is that *all* respondents in the age group 20-29 – a young age group category – make use of Internet banking. This observation suggests that the young are more willing to adopt Internet banking than the older age categories. From the data in Table 5.2, it may be inferred that only 9.7% of the total white respondents – the lowest percentage – did not make use of Internet banking as opposed to 30.5% of the total Indian and 34% of the total African respondents. The majority of Internet banking users (70.8%) are those earning more than R20000. Thus, it can be inferred that most individuals who are using Internet banking are those with higher monthly incomes. Table 5.2 further indicates that most Internet banking users were married (69.3%).

It is apparent from the table that nearly 96.0% of both user types bank with one of the major retail banks in South Africa. Most respondents from each category banked with Standard Bank. Although Standard Bank was shown to be the most popular bank among customers in this study, in a survey, conducted on quality of banking services (service levels, pricing and convenience), Standard bank emerged as the third bank that offers quality services (Muller, 2012).

5.4 Analysis: Internet banking users

5.4.1 Internet banking habits

This section analyses Internet banking users' habits which may be beneficial to financial institutions devising their future marketing strategies to retain their clients.

Sources of Internet banking information

Internet banking users were requested to indicate their source(s) of Internet banking information. Figure 5.1 reflects these sources.

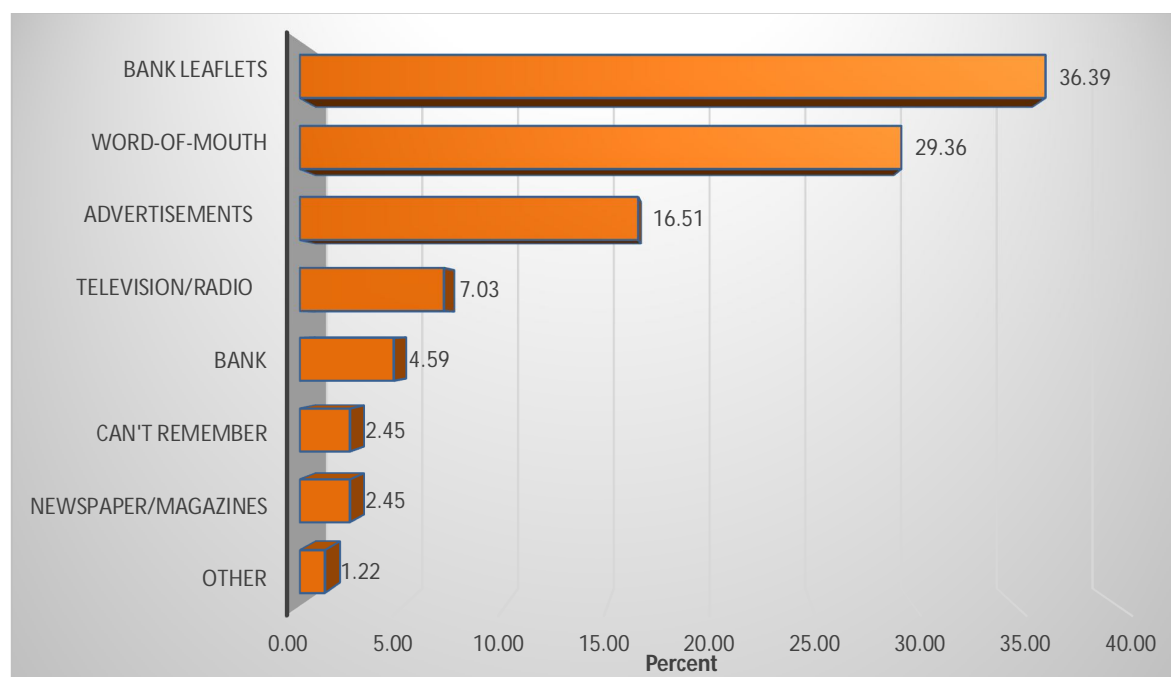


Figure 5.1: Sources of Internet banking information

As reflected in Figure 5.1, the three highest ranked sources of Internet banking information were identified as bank leaflets (36.4%), word-of-mouth (29.4%) and advertisements (16.5%). The option of bank in the above figure refers to the face to face interaction in the bank itself. All of the other sources contributed no more than 7% as sources of Internet banking information. Thus, banks need to strengthen the three highest ranked sources of Internet banking information when promoting Internet banking to non-users.

Period of Internet banking use

Internet banking users were requested to specify the number of months or years they have used Internet banking. Figure 5.2 indicates the period of Internet banking use.

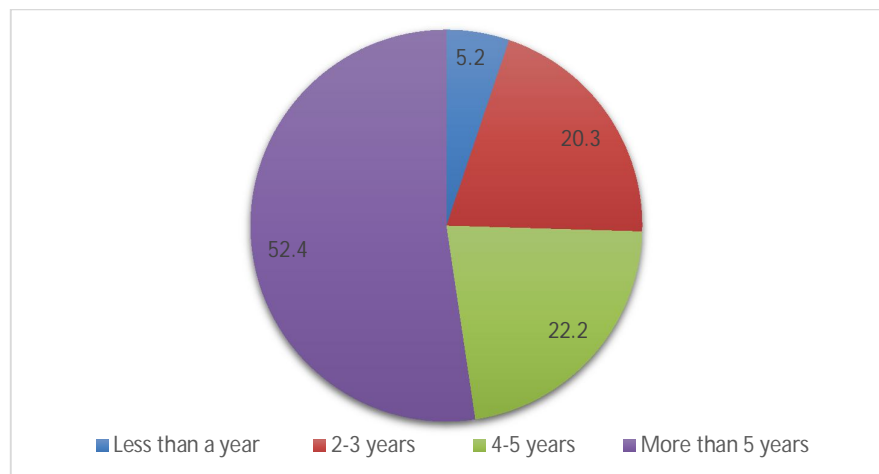


Figure 5.2: Period of Internet banking use

It can be seen in Figure 5.2 that a little more than half of the respondents (52.4%) indicated that they had been using Internet banking for more than five years. Thus, it appears that many users who have started using the Internet banking service, continue to do so.

The apparent bias in the data for the option of the 20 to 30 years category catering for the “more than five years” option of use of Internet banking is alleviated by the fact that academics would be at least 23 years old before entering the university as an academic staff member – considering the fact that all academic staff must have studied for at least five years to obtain their first degree and an Honours degree to be appointed at the lowest rank.

Uses of Internet banking

Figure 5.3 shows the most common uses of Internet banking by respondents.

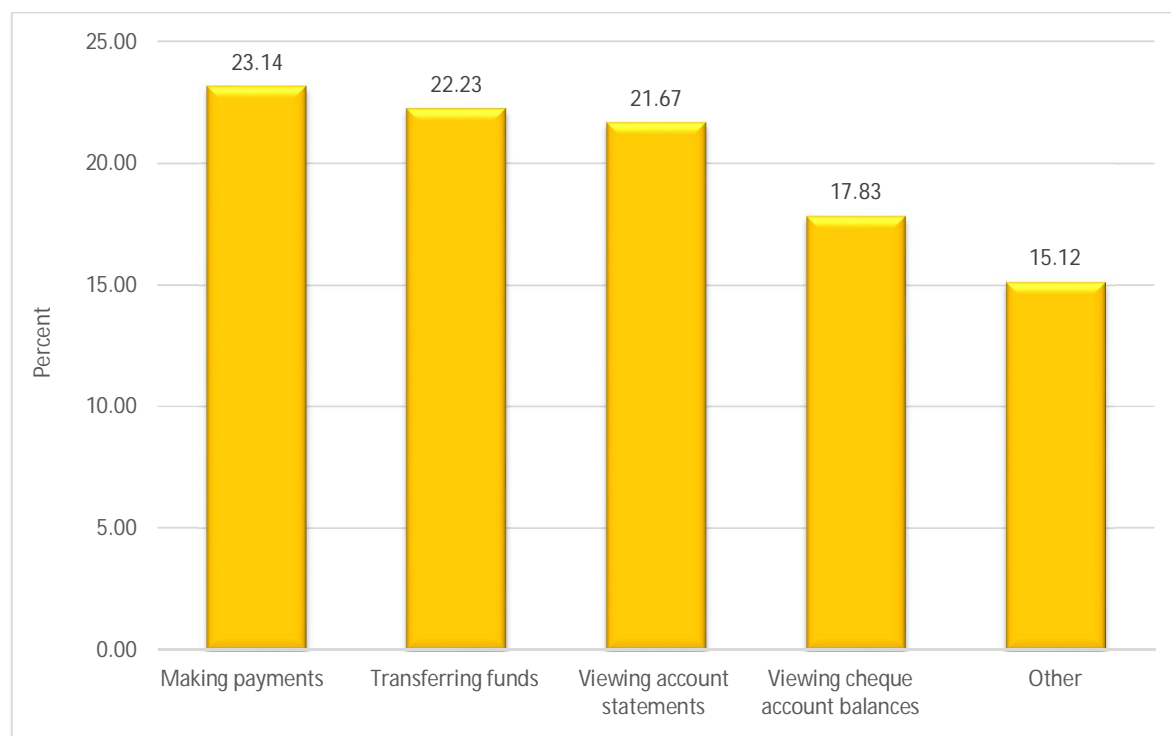


Figure 5.3: Uses of Internet banking

As shown in Figure 5.3, a similar number of respondents used Internet banking for making payments (23.1%), transferring funds (22.2%) or viewing account statements (21.7%). In total, this grouping consisted of two thirds of the Internet banking users (67.0%). The remaining options were mainly for viewing cheque account balances (17.8%) and other reasons (15.1%). Thus, it can be inferred that the most common uses of Internet banking were more transactional in nature than investment related.

Frequency of Internet banking use

Internet banking users responded to the frequency of their use of Internet banking. Figure 5.4 illustrates the frequency of Internet banking use.

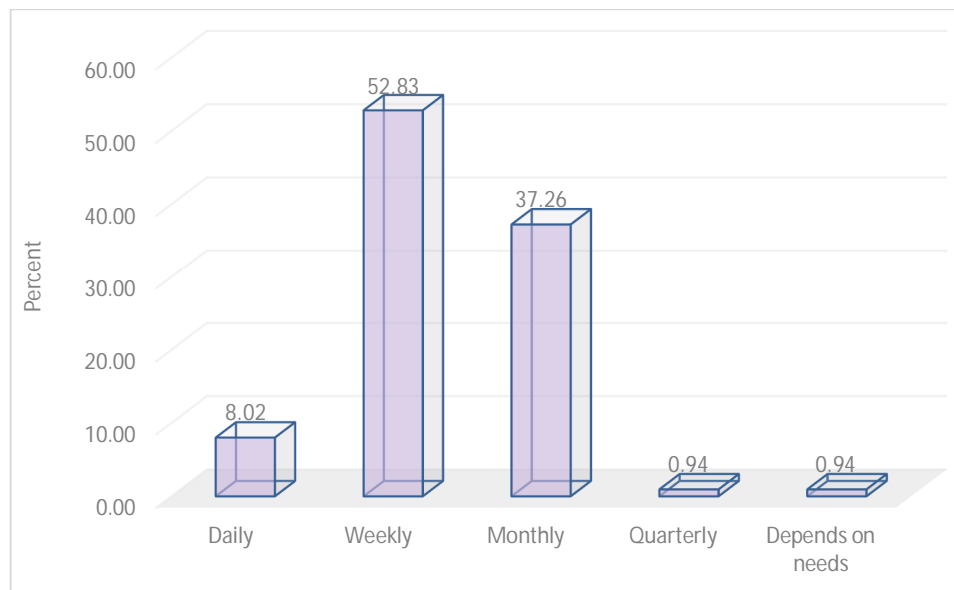


Figure 5.4: Frequency of Internet banking use

Figure 5.4 indicates that nine out of ten respondents (90.1%) used Internet banking, either on a weekly or monthly basis. A little more than half of the respondents (52.8%) use Internet banking on a weekly basis, with a further 37.3% using it on a monthly basis. Eight per cent accessed the Internet daily for banking. The remaining options were less than 1.0% each. Synovate also found that the majority of respondents they surveyed in various parts of South Africa used the Internet for banking purposes at least once a week (Ipsos, 2010). Thus, it may be possible that most respondents use Internet banking on a weekly basis for checking their account balances and making payments.

5.4.2 Hypotheses and model testing

The hypotheses and model developed in chapter 3 were tested using correlation analysis and multiple regression analysis respectively. Correlation analysis enabled the researcher to establish whether four constructs (independent variables), namely, performance expectancy (PE), effort expectancy (EE), social influence (SI) and facilitating conditions (FC) have an association respectively with the dependent variable usage (U). Multiple regression analysis enabled the researcher to determine whether the independent variables predict the dependent variable. Prior to conducting correlation analysis and multiple regression analysis, factor analysis was performed to determine the construct validity of the measurement items.

Factor analysis

To determine the construct validity of the measurement items, factor analysis was performed. The suitability of factor analysis for this research was determined using Bartlett's test of sphericity with Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy shown in Table 5.3 (Saibaba & Murthy, 2013).

Table 5.3: Internet banking users – KMO and Bartlett's test

Construct	KMO	Bartlett's test of sphericity		
		Approx. chi-square	df	Sig. (p-value)
PE	.519	26.757	3	.000
EE	.591	104.477	3	.000
FC	.500	17.757	1	.000

The Bartlett's test of sphericity shown in Table 5.3 was significant, $p < 0.05$, which indicates that correlations among the items of measurement in the questionnaire were adequate to conduct factor analysis (Saibaba & Murthy, 2013).

The KMO measure of sampling adequacy generates values ranging between zero and one (Maduku, 2013). The closer the values are to one, the more suitable factor analysis will be (Maduku, 2013). The KMO measure of sampling adequacy for each construct, shown in Table 5.3, was close to one. Thus, KMO supports factor analysis.

Through factor analysis (factor loading), the researcher was able to confidently establish whether the measurement items actually measure the constructs they were intended to measure, namely, performance expectancy (PE), effort expectancy (EE) and facilitating conditions (FC) (Burton & Mazerolle, 2011).

Table 5.4 shows the factor analysis results.

Table 5.4: Internet banking users – factor analysis

Construct	Measurement item	Factor loading
PE	Internet banking improves the way I handle my finances.	.798
	Less time and effort is required when I complete an Internet banking transaction.	.706
	Internet banking allows me to compare the differences among various products more easily.	.494
EE	Internet banking programmes allow me to manage my finances with ease.	.848
	The Internet banking process is very simple.	.826
	Internet banking allows me to easily find specific information.	.610
FC	I have generally received enough information about Internet banking.	.802
	Internet banking is more cost effective than traditional banking.	.802

It can be seen in Table 5.4 that the factor loadings range from 0.494 to 0.798 for PE, 0.610 to 0.848 for EE and 0.802 for FC. To represent adequate construct validity, no factor loadings should be below 0.50; nearly all factor loadings met this requirement (Masrek et al., 2012). Thus, adequate construct validity of the measurement items was present for EE and FC. The third item that supposedly measured PE did not load well and hence was not considered further in the analysis (as was consistent with the reliability statistics recorded in Table 5.1). It must be noted that factor analysis was not conducted for social influence (SI) since it was a single item question.

Correlation analysis

Correlation analysis focuses on determining the strength of an association between independent and dependent variables (Kent, 2001, p.125). When data is not normally distributed or the occurrence of outliers provides an inaccurate representation of the association between two random variables, the Spearman's rank correlation coefficient (also known as Spearman's rho) can be used instead of the Pearson's correlation coefficient (Zaiontz, 2014). Spearman's rank correlation coefficient is more sensitive to data that is non-normally distributed as compared to the Pearson's correlation coefficient. In this study, the Kolmogorov-Smirnoff test for normality indicated that none of the variables follow a normal distribution. Hence, Spearman's rank correlation coefficient was used in this study. It is used to determine the strength and direction of an association between an independent and dependent variable and the result (r) will at all times be between one and minus one (Barcelona Field Studies Centre, 2013). When r is closer to positive one or minus one, the association between the two variables is stronger (Barcelona Field Studies Centre, 2013). An ideal positive correlation is plus one, while an ideal negative correlation is minus one (Barcelona Field Studies Centre, 2013).

The Spearman's rank correlation coefficient was used to establish whether performance expectancy (PE), effort expectancy (EE), social influence (SI) and facilitating conditions (FC) have an association respectively with academics' Internet banking usage (U). At the beginning of this chapter it was stated that the p-value was set at 0.01 for correlation analysis. If the p-values were less than 0.01, the null hypotheses were rejected. If the p-values were greater than 0.01, the null hypotheses were not rejected.

Table 5.5 reflects the correlation analysis results for Internet banking users.

Table 5.5: Internet banking users – correlation analysis

			PE	EE	FC	SI	U
Spearman's rho	PE	Correlation coefficient	1.000				
		Sig. (p-value) (2-tailed)	.				
		N	212				
	EE	Correlation coefficient	.678**	1.000			
		Sig. (p-value) (2-tailed)	.000	.			
		N	212	212			
	FC	Correlation coefficient	.550**	.567**	1.000		
		Sig. (p-value) (2-tailed)	.000	.000	.		
		N	212	212	212		
	SI	Correlation coefficient	.044	.050	-.053	1.000	
		Sig. (p-value) (2-tailed)	.527	.469	.446	.	
		N	212	212	212	272	
	U	Correlation coefficient	.299**	.338**	.537**	-.045	1.000
		Sig. (p-value) (2-tailed)	.000	.000	.000	.455	.
		N	212	212	212	272	272

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

The Spearman correlation coefficient value of 0.299 confirms that there appears to be a positive association between the two variables PE and U. Since SPSS reports the p-value for this test as being .000 we can say that we have evidence to believe H_{a1} , i.e. we have some evidence to believe that PE is positively correlated to U, where $r = 0.299$, $n = 212$, $p < 0.01$. Hence, the null hypothesis H_{01} must be rejected in support of the alternate hypothesis H_{a1} .

Similarly, the Spearman correlation coefficient value of 0.338 for EE confirms that there appears to be a positive association between EE and U. Furthermore, the p-value for this test is reported as being .000 indicating that there is some evidence in the sample to believe that EE is positively correlated to U, where $r = 0.338$, $n = 212$, $p < 0.01$. This test result implies that the null hypothesis H_{02} must be rejected in support of the alternate hypothesis H_{a2} .

In the same vein, the Spearman correlation coefficient value of 0.537 for FC confirms that there appears to be a positive association between FC and U and the p-value for this test is reported as being .000 indicating that there is some evidence in the sample to believe that FC is positively correlated to U, where $r = 0.537$, $n=212$, $p<0.01$. Once again, by implication, the null hypothesis H_{04} must be rejected in support of the alternate hypothesis H_{a4} .

Thus it is possible that Internet banking users may continue to use Internet banking in the future based on their perceptions of performance expectancy, effort expectancy and facilitating conditions.

Since SPSS reports the p-value as 0.455 ($p>0.01$) for SI to U, we cannot reject the null hypothesis, i.e. social influence has no association with academics' Internet banking usage. Moreover, the Spearman rank correlation coefficient (r) value of SI (-0.045) indicates that there was a weak negative correlation between SI and U. We can conclude that social influence does not have a significant association with academics' Internet banking usage. Thus, the null hypothesis, namely, H_{03} cannot be rejected.

A plausible reason for this is that academics are independent, critical thinkers and seasoned researchers who choose to ask questions and draw their own conclusions before arriving at a crucial decision. Thus, it might be surmised that academics are less likely to be influenced by other people's opinions but rather make their own decisions based on solid evidence.

Furthermore, the majority of users, as pointed out earlier, indicated that their source of Internet banking information was from their bank rather than any other source. Thus, it can be inferred that most users prefer to gather information from their banks and make decisions based on their own research and their banks' information, rather than being influenced by friends.

Table 5.6 summarises the hypotheses test results.

Table 5.6: Internet banking users – summary of hypotheses testing

Number	Hypothesis statement	p and r value	Result
H ₀₁	Performance expectancy has no association with academics' Internet banking usage.	$p < 0.01$ $r = 0.299$	Rejected
H _{a1}	Performance expectancy has an association with academics' Internet banking usage.	$p < 0.01$ $r = 0.299$	
H ₀₂	Effort expectancy has no association with academics' Internet banking usage.	$p < 0.01$ $r = 0.338$	Rejected
H _{a2}	Effort expectancy has an association with academics' Internet banking usage.	$p < 0.01$ $r = 0.338$	
H ₀₃	Social influence has no association with academics' Internet banking usage.	$p > 0.01$ $r = -0.045$	Not rejected
H _{a3}	Social influence has an association with academics' Internet banking usage.	$p > 0.01$ $r = -0.045$	
H ₀₄	Facilitating conditions have no association with academics' Internet banking usage.	$p < 0.01$ $r = 0.537$	Rejected
H _{a4}	Facilitating conditions have an association with academics' Internet banking usage.	$p < 0.01$ $r = 0.537$	

Multiple regression analysis

Allen (2004, p.3) explains that regression analysis measures how precisely an independent variable predicts a dependent variable. Multiple regression analysis, on the other hand, allows a researcher to concurrently study both the structure and accuracy of an association between a dependent variable and many independent variables (Allen, 2004, p.4). In order to address how well a set of variables, in this case the four constructs (PE, EE, SI and FC) are able to predict the intention to use and usage of Internet banking, multiple regression analysis was used. However, multiple regression requires that the independent variables show at least some correlation with the dependent variable (preferably above 0.3) and that the correlation between the independent variables are not too high (preferably below 0.7) (Pallant, 2010, p.158). In this case the three constructs (PE, EE and FC) met this requirement. Hence SI was not considered in the regression model. In order to test the significance of the model, the p-value from Table 5.8 was utilised (Ghalandari, 2012). If the p-value was less than 0.05, then the model would be considered significant. Tables 5.7, 5.8 and 5.9 present the results of the multiple

regression analysis using three constructs, namely, performance expectancy (PE), effort expectancy (EE) and facilitating conditions (FC) as the independent variables and usage (U) as the dependent variable.

Table 5.7 shows how much of the variance in U can be predicted from the independent variables.

Table 5.7: Internet banking users – model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.475 ^a	.225	.214	.80080

a. Predictors: (Constant), FC, EE, PE

It can be seen in Table 5.7 that the r-square value was 0.225. Thus, nearly 23% of the variance in usage (U) can be predicted from the independent variables, which is not a good predictor.

Table 5.8 summarises the significance of the model as a whole.

Table 5.8: Internet banking users – ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	38.817	3	12.939	20.177	.000 ^b
	Residual	133.386	208	.641		
	Total	172.203	211			

a. Dependent Variable: U

b. Predictors: (Constant), FC, EE, PE

As shown in Table 5.8, the p-value was significant ($p < 0.05$) and thus the model was significant. This result implies that, collectively, the independent variables do predict the dependent variable, even if it is a small percentage.

Table 5.9 shows the highest predictor of the dependent variable.

Table 5.9: Internet banking users – coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.487	.412		3.608	.000
	PE	-.035	.140	-.023	-.253	.800
	EE	-.010	.121	-.007	-.084	.933
	FC	.651	.101	.491	6.461	.000

a. Dependent Variable: U

It can be deduced from Table 5.9 that FC was a significant contributor to the model since the p-value was less than 0.05. Thus, FC was the highest predictor of the dependent variable.

To obtain an overview of the participants' views of Internet banking, the responses to the open-ended questions were collated and reviewed.

Table 5.10 lists some of the responses Internet banking users provided to the open-ended question with regard to performance expectancy, effort expectancy and facilitating conditions.

Table 5.10: Internet banking users – excerpts related to PE, EE and FC

Excerpts
"I am happy with Internet banking as it makes things convenient for me."
"As a disabled person, Internet Banking is greatly beneficial."
"Very convenient and more secure than standing at the ATM."
"It is a breeze and no more rushing to the bank."
"I find it very useful and prefer to do Internet banking as this saves time and money."
"Cannot live without it."
"Ease of use and convenience. "It reduces the need to physically visit bank branches to perform transactions."
"I should have started using Internet banking sooner!" "It is so convenient."
"Internet banking has definitely saved me a lot of time and money." "I just click and perform whatever transaction I want to."

“Internet banking is much more convenient than going to the bank and waiting in long queues.” “With Internet banking, it takes me five minutes to pay my regular monthly bills.”
“Internet banking has made payments easier and saves us time.” “Standard Bank’s Internet banking facility is easy to use and helps resolve queries easily, especially if you want to quickly track what you have paid for.”
“Internet banking is preferable to waiting in queues and driving long distances to bank branches as these become fewer and fewer in number.”
“Internet banking is quicker for paying bills, which is all I use it for.”
“Internet banking is very convenient.”
“Internet banking is very useful and effective.” “It saves a lot of time.”
“Internet banking saves me time as I can easily add beneficiaries and make payments from home or work.” “There is no need to make a trip to the ATM or bank to do this.”
“Internet banking is user friendly and helps save time.”
“Internet banking is my preferred method of banking, and I can't imagine going back to standing in queues at the bank.”
“Internet saves a lot of time, no queuing in the bank.”
“It saves time and is cost effective.” “It has made my life a lot easier.”
“It is convenient to have access at anytime to do banking transactions.”
“It is very convenient.”
“I am very happy with Internet banking and would find it very difficult to go back to the days of using an ATM for banking information and transactions.”
“Internet banking has definitely saved me a lot of time and money.”
“Internet banking reduces transaction charges and time.”
“Internet banking saves me time and is cost effective.”

Almost all who commented on the Internet banking service, seemed to be impressed with the convenience, simplicity and cost savings associated with Internet banking. These excerpts further support the results, that performance expectancy, effort expectancy and facilitating conditions have a positive association with academics’ Internet banking usage. Thus, banks need to build on these strengths in order to retain existing customers.

Table 5.11 lists some of the responses to the open-ended question with regard to perceived risk (security risk) and trust by Internet banking users.

Table 5.11: Internet banking users – excerpts related to security risks and trust

Excerpts
“Banks should collaborate with technology companies, universities and other research institutions in order to improve customer service and security that is, feed off innovations from these institutions.”
“E-banking is hugely convenient as long as there are no issues with security.”
“Different countries and their banks organise Internet banking differently.” “In my experience there are fewer security checks on my South African bank account.”
“Even though Internet Banking is a convenience, it also depends upon technology which is always a threat when it comes to the security point of view.”
“I find Internet banking very useful but do have concerns about security.”
“Fraud is a major concern.”
“I do not have peace of mind engaging in online banking.”
“I have managed to stop some unknown debits for more than 4 times.” “Few others had gone through because I did not check my statement for others.” “However, the bank had refunded the money that was debited from my account unlawfully.”
“I once lost R50, 000 because of fraud.” “The bank refused to refund me.” “I closed one of my accounts in protest.” “Unfortunately we have to rely on banks despite their unethical practice.” “We have no choice.”
“I think if banking institutions were to afford this service onto customers, the risk of potential fraud and security breaches to one’s account needs to be borne by the bank as Internet Banking is essentially their product.”
“My biggest worry with Internet banking is the fraud that takes place as I was nearly a victim of it several times.”
“Internet banking is the way to go.” “However, security of the system is still a concern.”
“Internet banking is useful as long as the security is highly ensured.”
“My greatest concern is that if someone hacks my computer at work or home, they can gain access to my personal details and finance.”
“It is good for banks to remind users to ensure that their website is secure (https) before entering their credit card details for an online payment.”
“The occasional scam that attempts to get you to reveal banking details is a bit scary from time to time, especially when the site looks very much like your banking site.” “Fortunately the banks are pretty quick to pick up scams and to warn people about it.”

“Trust regarding disclosing credit card and other financial information online depends on the site.” “There is some information about "safe" banking and transactions online and banks try to educate people about phishing.” “More can be done to educate consumers about safe online shopping.”

As pointed out earlier, Internet banking users are satisfied with the cost and convenience of Internet banking and most have been using Internet banking for more than five years. However, the excerpts in Table 5.11 imply that users may not continue to be loyal Internet banking customers because of their security concerns and lack of trust in their banks. When an existing customer loses trust in a bank, even once, due to the bank's lack of security processes and procedures, the bank may lose the customer completely. Thus, banks need to make a concerted effort to implement more stringent security controls and educate customers about existing security measures employed. Furthermore, demonstrating the merits of these security measures to customers should there be an unforeseen security attack may add to the trust relationship between the bank and the customer. In this way, banks may be able to retain their existing customers.

5.5 Analysis: Internet banking non-users

5.5.1 Hypotheses testing

The hypotheses developed in chapter 3 were tested using correlation analysis. These tests enabled the researcher to establish whether two independent variables, namely, perceived risk (security risk) (PR) and trust (TR) have an association respectively with the dependent variable, namely, behavioural intention (BI).

Correlation analysis

The Spearman's rank correlation coefficient, also known as Spearman's rho, was used to establish whether perceived risk (security risk) (PR) and trust (TR) have an association respectively with academics' behavioural intention (BI) to use Internet banking. At the beginning of this chapter it was stated that the p-value was set at 0.01 for correlation analysis. If the p-values were less than 0.01, the null hypotheses were rejected. If the p-values were greater than 0.01, the null hypotheses were not rejected.

Table 5.12 presents the correlation analysis results for Internet banking non-users.

Table 5.12: Internet banking non-users – correlation analysis

			TR	PR	BI
Spearman's rho	TR	Correlation Coefficient	1.000		
		Sig. (p-value) (2-tailed)	.		
		N	58		
	PR	Correlation Coefficient	.184	1.000	
		Sig. (p-value) (2-tailed)	.166	.	
		N	58	60	
	BI	Correlation Coefficient	.377**	.100	1.000
		Sig. (p-value) (2-tailed)	.006	.484	.
		N	51	51	51

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

Since SPSS reports the p-value as 0.484 ($p > 0.01$) for PR to BI, we cannot reject the null hypothesis, i.e. perceived risk has no association with academics' behavioural intention to use Internet banking. Moreover, the Spearman rank correlation coefficient (r) value of PR (0.100) indicates that there was a weak positive correlation between PR and BI. We can conclude that perceived risk does not have a significant association with academics' behavioural intention to use Internet banking. Thus, the null hypothesis, namely, H_{05} cannot be rejected,

Since SPSS reports the p-value as 0.006 ($p < 0.01$) for TR to BI, it can be deduced that there was evidence to believe that TR was associated with academics' behavioural intention to use Internet banking. Moreover, the Spearman rank correlation coefficient (r) value of TR (0.377) confirms that there was a positive association between TR and BI. Thus, the null hypothesis, namely, H_{06} , was rejected, thereby supporting the alternate hypothesis, namely, H_{a6} , where $r = 0.377$, $n = 58$, $p < 0.01$. Thus, it is possible that Internet banking non-users may use Internet banking in the future based on their perception of trust.

The trust findings concur with Annan and Perkin's (2013) study where trust had a positive association with behavioural intention to adopt Internet banking, while the perceived risk results were inconsistent with Martins et al. (2013) study who found that

perceived risks such as security risks had a negative association with behavioural intention to use Internet banking.

Table 5.13 summarises the hypotheses test results.

Table 5.13: Internet banking non-users – summary of hypotheses testing

Number	Hypothesis statement	p and r value	Result
H ₀₅	Perceived risk has no association with academics' behavioural intention to use Internet banking.	$p > 0.01$ $r = 0.100$	Not rejected
H _{a5}	Perceived risk has an association with academics' behavioural intention to use Internet banking.	$p > 0.01$ $r = 0.100$	
H ₀₆	Trust has no association with academics' behavioural intention to use Internet banking.	$p < 0.01$ $r = 0.377$	Rejected
H _{a6}	Trust has an association with academics' behavioural intention to use Internet banking.	$p < 0.01$ $r = 0.377$	

5.5.2 Factors discouraging Internet banking use

This section analyses the responses from Internet banking non-users with regards to the factors discouraging them from using Internet banking.

Table 5.14 lists the factors that discourage the use of Internet banking in order of descending frequency from the 60 non-user respondents. The participants could check more than one option for their reasons. Thus, the sum is greater than the total number of non-user respondents.

Table 5.14: Internet banking non-users – factors discouraging Internet banking use

If you have not used Internet banking, please state why?	Count	Percent (%)
Many forms of media have raised fear in my mind about disclosing personal information, credit card details and account details on the Internet.	88	68.22
I have used traditional banking for many years and thus have a fear of change.	15	11.63
Other	15	11.63
I am not aware of the benefits associated with Internet banking.	4	3.10
For security reasons.	4	3.10
Internet banking service fees are very high.	3	2.33

From Table 5.14 it can be seen that the highest reason (68.22%) relate to perceived risk (security risk) that is, regarding personal information being on the Internet and the related vulnerability of credit card and account details being on the Internet. The third highest reason selected was the fear of changing from familiar traditional banking to something different. Approximately 12% of the respondents were afraid of changing from traditional banking methods. Thus, perceived risk (security risk) was the main barrier to Internet banking, followed by fear of change.

Table 5.15 lists some of the responses to the open-ended question with regard to perceived risk (security risk) and trust by Internet banking non-users.

Table 5.15: Internet banking non-users – excerpts related to security risks and trust

Excerpts
“Even though financial institutions assure you that Internet banking is safe and there is no breach of privacy and security, I still will not take my chances and disclose such important private data electronically.”
“A noble idea but issue of security and identity theft should be of major concern.” “New ways for securing members should be developed.”
“Have been robbed once on Internet banking and do not wish to do Internet banking in the future.”
“I am aware of the benefits and that Internet banking is safe but I do not use Internet banking and will not do so in the future despite it being free.” “There is always a risk with on-line applications and transactions.”
“I am not sure I trust Internet banking.” “Too many scams found on e-mail daily.”
“I am not too sure of the security on Internet banking.” “One reads of too many hackers and this gives the impression that there is a competition between hackers and the banks and/or other institutions.”
“I believe banks do not do enough to advertise, encourage and train people in Internet banking.”
“I know of people whose accounts have been wiped out on account of lack of security with Internet banking and do not want to take that risk.” “I did Internet banking for a while and then stopped.”
“Internet banking is driven by the bank's interest and often the public becomes the victim.”
“It seems easier for details to be hijacked over the Internet.”
“Judging from the inefficiencies I see in banks, I don't trust their security measures.” “Of course, Internet banking is easier, but the hassles of fixing errors would take away any advantage in time saved initially.”

“My bank has tried to encourage me to do Internet banking but there are too many scams around.”
“My fear that computers can shut down and also the fact of phishing that goes on bothers me.”
“My main reason for not using Internet banking is the security problem.” “I have heard about too many frauds and feel uncomfortable to use it.”
“Safety is the most important thing and in the last period there have been horrific reports of accounts which have been emptied overnight and large sums of money have been lost.” “The banks have not replaced the money lost.” “Therefore, I will continue with traditional banking even though I am aware that Internet banking has the potential to make it easier for me.”
“Will probably consider it when I retire at end of this year but I have a deep seated fear of security vulnerability.”

It would appear that most excerpts (as presented in Table 5.15) indicate security as the main issue of concern. This observation concurs with what has been deduced from the previous table (Table 5.14) that Internet banking non-users are discouraged from using Internet banking mainly because of their security concerns and trust issues. Thus, banks need to focus their Internet banking marketing strategies on their security systems in order to attract new customers and retain existing customers. More importantly, customers need to receive security behaviour education when transacting online.

5.5.3 Factors encouraging Internet banking future use

This section analyses the responses from Internet banking non-users with regards to the factors that would encourage them to use Internet banking in the future.

Table 5.16 indicates that Internet banking non-users would use Internet banking in the future if certain criteria were met.

Table 5.16: Internet banking non-users – factors encouraging Internet banking future use

I will engage in Internet banking if:	Count	Percent (%)
I am satisfied with the bank's security system	34	21.52
the bank can ensure compensation for any loss due to security attack of the bank	34	21.52
the bank proves to me that Internet banking is more convenient than traditional banking	14	8.86
the bank provides prompt support in technical and non-technical Internet banking issues	14	8.86
the bank provides free and sufficient training	12	7.59
the bank provides free access to the Internet	12	7.59
the bank provides free and sufficient training, guides and manuals on the use of Internet banking	11	6.96
the bank can confirm that Internet banking transactions are more cost effective than traditional banking transactions	11	6.96
I am satisfied with what I have	10	6.33
the bank's website is clear and user-friendly	6	3.80

It is apparent from Table 5.16 that the two highest scoring reasons (21.52 % each) that would persuade academics to use Internet banking were related to security and compensation in the event of a loss. This relates to the results in Table 5.14 and the excerpts in Table 5.15 that reflect the security concerns of the respondents. These results indicate that respondents were willing to try Internet banking if they were comfortable with the bank's security system and they could trust their banks. No doubt, trust plays a major role in influencing respondents to use Internet banking in the future.

5.6 Analysis: Comparison of Internet banking users and non-users

By means of Fisher's exact tests, this section compares Internet banking users and non-users' responses to the same questions in the questionnaire and also determines whether demographic factors have an association with academics' use and non-use of Internet banking. By using frequency (count) data, the Fisher's exact test identifies group distinctions (Preacher & Briggs, 2001). The chi-square test of independence can also be

used to identify group distinctions. However, the chi-square test results in an approximate p-value whereas the Fisher's exact test provides an exact p-value for a specified frequency table (Preacher & Briggs, 2001). At the beginning of this chapter it was stated that the p-value was set at 0.05 for Fisher's exact tests. If the p-values were greater than 0.05, there were no differences between the two groups. If the p-values were less than 0.05, there were differences between the two groups.

5.6.1 Locations where respondents access the Internet

Table 5.17 reflects the location(s) where Internet banking users and non-users access the Internet.

Table 5.17: Locations where respondents access the Internet

Internet access	Fisher's exact test p-value
Work * Are you an Internet banking user?	.427
Home * Are you an Internet banking user?	.001
Internet café * Are you an Internet banking user?	.169
Mobile smartphone * Are you an Internet banking user?	.690
3G * Are you an Internet banking user?	1.000
Tablet * Are you an Internet banking user?	.528
Library * Are you an Internet banking user?	1.000
Bank * Are you an Internet banking user?	1.000

As shown in Table 5.17, most of the p-values, except where the location of use was Home ($p < 0.05$), were greater than 0.05 which implies that both groups access the Internet at similar locations. Given the fact that all other p-values except Home were greater than 0.05, there were no major overall differences between the two groups.

5.6.2 Reasons for Internet use

Table 5.18 presents the reasons for using the Internet.

Table 5.18: Reasons for Internet use

Internet use	Fisher's exact test p-value
E-mail * Are you an Internet banking user?	.492
Banking * Are you an Internet banking user?	.000
Update on latest news * Are you an Internet banking user?	.104
Entertainment * Are you an Internet banking user?	.079
Academic work * Are you an Internet banking user?	1.000
Research * Are you an Internet banking user?	.474
Study * Are you an Internet banking user?	.128
Other * Are you an Internet banking user?	.536

It is apparent from Table 5.18 that both groupings have similar patterns except for banking, which is not used by one group. All of the p-values were greater than 0.05 which implies that both types of users have similar reasons for accessing the Internet. Thus, there were no substantial differences between the two groups.

5.6.3 Frequency of Internet use

Both groups responded regarding how often they use the Internet. Using Fisher's exact test, the p-value (0.123) was greater than 0.05 which implies that the two groups use the Internet at a similar frequency. Thus, there were no major differences between the two groups.

5.6.4 Banking institutions

Internet banking users and non-users were requested to identify the bank(s) with which they currently bank. Most of the p-values, except for First National Bank, were greater than 0.05, which implies that both groups presently conduct their banking transactions at similar financial institutions. Overall, there were no differences between the two groups.

5.6.5 Social influences

Table 5.19 indicates the individual or groups of individuals who have influenced Internet banking users to use Internet banking or whom non-users think would influence them to use Internet banking.

Table 5.19: Social influences

Social influences	Fisher's exact test p-value
Your bank * Are you an Internet banking user?	.467
Family members * Are you an Internet banking user?	1.000
Colleagues * Are you an Internet banking user?	.212
Friends * Are you an Internet banking user?	.572
Other * Are you an Internet banking user?	2.219

It can be seen in Table 5.19 that the p-values were greater than 0.05. This implies that both groups were influenced or would be influenced to use Internet banking by the same individual or groups of individuals. Thus, there were no differences between the two groups.

5.6.6 Demographic factors

Table 5.20 presents Internet banking users' demographic information.

Table 5.20: Internet banking users – demographic factors

Demographic factor	Fisher's exact test p-value
What is your gender? * How frequently do you use the Internet?	0.679
What is your age? * How frequently do you use the Internet?	0.749
What is your monthly income? * How frequently do you use the Internet?	0.431
What position are you currently holding? * How frequently do you use the Internet?	0.349
What is your race? * How frequently do you use the Internet?	0.263
What is your marital status? * How frequently do you use the Internet?	0.387
Which college do you belong to? * How frequently do you use the Internet?	0.362

As shown in Table 5.20 all p-values were greater than 0.05 which implies that all demographic factors had no association with academics' use of Internet banking.

Table 5.21 presents Internet banking non-users' demographic information.

Table 5.21: Internet banking non-users – demographic factors

Demographic factor	Fisher's exact test p-value
What is your gender? * Are you an Internet banking user?	0.147
What is your age? * Are you an Internet banking user?	0.008
What is your monthly income? * Are you an Internet banking user?	0.519
What position are you currently holding? * Are you an Internet banking user?	0.102
What is your race? * Are you an Internet banking user?	0.000
What is your marital status? * Are you an Internet banking user?	0.457
Which college do you belong to? * Are you an Internet banking user?	0.534

Table 5.21 indicates that two p-values were less than 0.05, which implies that two demographic factors, namely, age and race, were related to academics' non-use of Internet banking. The results further indicate that there was a difference between the two groups in terms of two demographic factors, age and race, on academics' use and non-use of Internet banking. Overall, there were no differences between the two groups.

5.7 Conclusion

From the analysis and results, it can be concluded that both Internet banking users and non-users have security concerns and trust issues which can ultimately affect their continued use of Internet banking and future use of Internet banking respectively. Although four of the six constructs in this study had a positive association with academics' Internet banking usage and behavioural intention to use Internet banking respectively, banks should still utilise highly developed security systems and focus their efforts on providing higher awareness to both users and non-users about privacy and security processes (Santouridis & Kyritsi, 2014). This may enable them to retain their existing customers and attract new customers. Moreover, Internet banking sites should be extremely user-friendly and Internet banking processes should be simple to follow, especially for those who have a fear of changing from traditional banking (Musa et al., 2009). Banks also need to consider that they have more power than others to influence potential customers and existing customers to use and continue using Internet banking through their various information sources.

5.8 Summary

The Statistical Package for Social Sciences (SPSS) version 21.0 was used to analyse the primary data collected from a sample of 272 respondents through a Web-based questionnaire. By conducting both descriptive and inferential statistics, the researcher was able to fulfil the primary and secondary research objectives developed in chapter one.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This study set out to explore the usage of Internet banking among academics. Using the model developed in chapter three, the *primary objective* of this research was to determine the factors (constructs) that are associated with academics' Internet banking usage. In particular, the constructs, namely, performance expectancy (PE), effort expectancy (EE), social influence (SI) and facilitating conditions (FC) were based in part on the Unified Theory of Acceptance and Use of Technology (UTAUT) model.

As pointed out in chapter one, the *secondary objectives* of this research were to determine whether:

- perceived risk (security risk) and trust are associated respectively with academics' behavioural intention to use Internet banking
- there are differences between users and non-users of Internet banking
- demographic factors are associated with academics' use and non-use of Internet banking

In order to address the primary and secondary objectives of the research:

- six hypotheses were proposed based on the model developed in chapter three
- primary data was collected from a sample of 272 academics at UKZN through a Web-based questionnaire to test the model and hypotheses developed for this study
- the primary data was analysed through SPSS version 21.0

Upon completing analysis, the results were presented and described through descriptive and inferential statistics. Descriptive statistics comprised frequencies and percentages, shown in tables and figures, which described the basic results of the sample. Inferential statistics consisted of Fisher's exact tests, correlation analysis and multiple regression analysis to provide an in-depth analysis of the sample. Descriptive and inferential statistics fulfilled the primary and secondary research objectives. The findings obtained

in this study and recommendations for future research are described in the next two sections.

6.2 Summary of findings

- While the data showed that performance expectancy, effort expectancy and facilitating conditions had a positive association with academics' Internet banking usage, there was no clear support for an association between social influence and academics' Internet banking usage.
- Trust had a positive association with academics' behavioural intention to use Internet banking, however, it could not be established clearly that perceived risk (security risk) was associated with academics' behavioural intention to use Internet banking.
- There were no overall differences between Internet banking users and non-users in their responses to the same questions in the questionnaire.
- The demographic factors had no association with academics' use of Internet banking, however, age and race appeared to have had some association with academic's who do not use Internet banking.
- The regression model found facilitating conditions to be the highest predictor of academics' Internet banking usage.
- The three constructs, performance expectancy, effort expectancy and facilitating conditions, in the multiple regression model explained 23% of the variance in use among those who used Internet banking.

6.3 Recommendations for future research

Banking institutions are always striving to provide the best products and services to their existing and potential customers and this research has provided further knowledge relating to customers' needs and wants, which is essential for banks that are planning their Internet banking promotion strategies (Musa et al., 2009). Further research could extend the model and hypotheses developed for this study using other significant variables from previous literature, such as perceived credibility and perceived cost (Saibaba & Murthy, 2013). Further statistical analysis of the current research data can be performed in order to discover other potential associations among the six constructs (Santouridis & Kyritsi, 2014). The questionnaire in this study can be used to collect data

from academics at other universities in South Africa or abroad and the results can be compared with the present research results. Qualitative research can be conducted in which academics from other universities or other types of customers are interviewed using the same questions from the questionnaire in this study.

6.4 Summary

In summary, all the primary and secondary research objectives developed in chapter one were accomplished through successful data collection and basic and in-depth analysis of the data. Although all objectives of the research were successfully met, the researcher feels that a few academics at UKZN could have been interviewed with an additional set of Internet banking questions and their responses recorded. This would have added to the overall findings and existing body of knowledge. In this study, certain academics were not comfortable to disclose their personal information. As a result, the number of responses received was reduced. A higher number of responses may have added to the study's overall analysis and findings. However, this was beyond the researcher's control.

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APPENDICES

Appendix 1: Sample size table (The Research Advisors, 2006)

Required Sample Size [†]								
Population Size	Confidence = 95%				Confidence = 99%			
	Margin of Error				Margin of Error			
	5.0%	3.5%	2.5%	1.0%	5.0%	3.5%	2.5%	1.0%
10	10	10	10	10	10	10	10	10
20	19	20	20	20	19	20	20	20
30	28	29	29	30	29	29	30	30
50	44	47	48	50	47	48	49	50
75	63	69	72	74	67	71	73	75
100	80	89	94	99	87	93	96	99
150	108	126	137	148	122	135	142	149
200	132	160	177	196	154	174	186	198
250	152	190	215	244	182	211	229	246
300	169	217	251	291	207	246	270	295
400	196	265	318	384	250	309	348	391
500	217	306	377	475	285	365	421	485
600	234	340	432	565	315	416	490	579
700	248	370	481	653	341	462	554	672
800	260	396	526	739	363	503	615	763
1,000	278	440	606	906	399	575	727	943
1,200	291	474	674	1067	427	636	827	1119
1,500	306	515	759	1297	460	712	959	1376
2,000	322	563	869	1655	498	808	1141	1785
2,500	333	597	952	1984	524	879	1288	2173
3,500	346	641	1068	2565	558	977	1510	2890
5,000	357	678	1176	3288	586	1066	1734	3842
7,500	365	710	1275	4211	610	1147	1960	5165
10,000	370	727	1332	4899	622	1193	2098	6239
25,000	378	760	1448	6939	646	1285	2399	9972
50,000	381	772	1491	8056	655	1318	2520	12455
75,000	382	776	1506	8514	658	1330	2563	13583
100,000	383	778	1513	8762	659	1336	2585	14227
250,000	384	782	1527	9248	662	1347	2626	15555
500,000	384	783	1532	9423	663	1350	2640	16055
1,000,000	384	783	1534	9512	663	1352	2647	16317
2,500,000	384	784	1536	9567	663	1353	2651	16478
10,000,000	384	784	1536	9594	663	1354	2653	16560
100,000,000	384	784	1537	9603	663	1354	2654	16584
300,000,000	384	784	1537	9603	663	1354	2654	16586

Appendix 2: UKZN total academic population as at 2013

Colleges	Schools	Number of permanent, temporary and contract academic staff
College of Agriculture, Engineering and Science	School of Agriculture, Earth and Environmental Sciences	80
	School of Chemistry and Physics	63
	School of Engineering	73
	School of Life Sciences	73
	School of Mathematics, Statistics and Computer Science	70
Total		359
College of Health Sciences	School of Clinical Medicine	128
	School of Health Sciences	84
	School of Laboratory, Medical and Medical Science	78
	School of Nursing and Public Health	61
Total		351
College of Humanities	School of Applied Human Sciences	65
	School of Arts	87
	School of Built Environmental and Development Studies	40
	School of Education	123
	School of Religion, Philosophy and Classical Music	39
	School of Social Sciences	69
Total		423
College of Law and Management Studies	Graduate School of Business and Leadership	13
	School of Accounting, Economics and Finance	73
	School of Law	68
	School of Management, Information Technology and Governance	66
Total		220
Total Population		1353

Appendix 3: Questionnaire

UNIVERSITY OF KWAZULU-NATAL
School of Management, Information Technology and Governance
Discipline of Information Systems and Technology (IS & T)

Dear Colleague,

My name is Theresadevi Moodley and I am a tutor in the discipline of Information Systems and Technology (IS & T). I am conducting research for my Master's degree regarding the adoption of Internet Banking. I would greatly appreciate it if you could complete a short survey online by clicking on the link below,

[https://docs.google.com/forms/d/17N11XoJrhSu26ikle9xGuk46CtfscEVsJZrk2ytra38/vi
ewform](https://docs.google.com/forms/d/17N11XoJrhSu26ikle9xGuk46CtfscEVsJZrk2ytra38/vi
ewform)

The information and ratings you provide will go a long way in helping us determine the factors that have a positive association with an academic's (your) Internet banking usage and the factors that would encourage an academic's (your) Internet banking future use.

The questionnaire should take no more than 10 minutes to complete. Kindly answer all questions as honestly as possible. Anonymity is ensured in this questionnaire which is in no way a reflection of you or your work. The information obtained will be treated with confidentiality.

Thank you in anticipation for your time and participation!

Kind regards

Researcher: Theresadevi Moodley (moodleyther@ukzn.ac.za)

Internet usage

1. Where do you access the Internet? (Check all that apply)

- Work
- Home
- Library
- Internet café
- Other, please state _____

2. What do you use the Internet for? (Check all that apply)

- E-mail
- Study
- Entertainment
- Update on latest news
- Banking
- Other, please state _____

3. How frequently do you use the Internet?

- Daily
- Once a week
- More than two times a week
- Once a month
- Other, please state _____

Internet banking habits

4. Which bank do you currently bank with? (Check all that apply)

- Standard Bank
- ABSA
- Nedbank
- First National Bank
- Other, please state _____

5. Are you an Internet banking user?

- Yes
- No

If YES, skip to questions 6 to 19

If NO, skip to questions 20 to 30

Internet banking users

6. Where did you find out about Internet banking? (Check all that apply)

- Bank leaflets
- Advertisements
- Television/radio
- Word-of-mouth
- Newspaper/magazines
- Other, please state _____

7. I have been utilising Internet banking for:

- less than a year
- 2-3 years
- 4-5 years
- More than 5 years

8. What do you use Internet banking for? (Check all that apply)

- Viewing account statements
- Viewing cheque account balances
- Making payments
- Transferring funds
- Other, please state _____

9. How frequently do you use Internet banking?

- Daily
- Weekly
- Monthly
- Quarterly
- Yearly
- Other, please state _____

10. Who has influenced you to use Internet banking? (Check all that apply)

- Friends
- Colleagues
- Family members
- Your bank
- Other, please state _____

11. Internet banking perceptions (Internet banking users)

Kindly read each statement and tick a number in the table below that best describes your perceptions towards Internet banking.

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Internet banking improves the way I handle my finances.	1	2	3	4	5
More time and effort is required when I complete an Internet banking transaction.	1	2	3	4	5
Internet banking programmes allow me to manage my finances with ease.	1	2	3	4	5
The Internet banking process is very simple.	1	2	3	4	5
I am concerned about disclosing credit card details, account details and personal information on the Internet.	1	2	3	4	5
I am concerned about unauthorised people (i.e. hackers) having access to my personal information.	1	2	3	4	5
I trust that the bank will reimburse for losses due to security reasons.	1	2	3	4	5
I have generally received enough information about Internet banking.	1	2	3	4	5
Internet banking allows me to compare the differences among various products more easily.	1	2	3	4	5

Internet banking allows me to easily find specific information.	1	2	3	4	5
Internet banking is more cost effective than traditional banking.	1	2	3	4	5

Demographic information (Internet banking users)

12. What is your gender?

- Male
- Female

13. What is your age?

- 21 to 29
- 30 to 39
- 40 to 49
- 50 and over

14. What is your monthly income?

- Less than R5000
- R5000 to R7000
- R7001 to R10000
- R10001 to R20000
- Over R20000

15. What position are you currently holding?

- Post Graduate Assistant
- Tutor
- Senior Tutor
- Lecturer
- Senior Lecturer
- Associate Professor
- Professor
- Other

16. What is your race?

- African
- White
- Indian
- Coloured
- Other

17. What is your marital status?

- Married
- Divorced
- Single
- Widow(er)

18. Which college do you belong to?

- College of Humanities
- College of Agriculture, Engineering and Science
- College of Health Sciences
- College of Law and Management Studies

19. The questions in the questionnaire may not have been all-embracing and comprehensive. Therefore, you may not have been afforded the opportunity to report some things you may want to say about Internet banking, your own experience or the banking industry. Please make any additional comments in the space provided.

Internet banking non-users

20. If you have not used Internet banking, please state why? (Check all that apply)

- I am not aware of the benefits associated with Internet banking
- Many forms of media have raised fear in my mind about disclosing personal information, credit card details and account details on the Internet
- My computer and Internet skills are limited
- Internet installation costs are very high
- Internet banking service fees are very high
- I do not have a computer at home
- I have used traditional banking for many years and thus have a fear of change
- My Internet access is limited
- Other, please state _____

21. I will engage in Internet banking if: (Check all that apply)

- the bank provides free and sufficient training, guides and manuals on the use of Internet banking
- the bank's website is clear and user-friendly
- I am satisfied with the bank's security system
- bank can ensure compensation for any loss due to security reasons
- the bank provides prompt support in technical and non-technical Internet banking issues
- the bank proves to me that Internet banking is more convenient than traditional banking
- the bank provides free access to the Internet
- the bank can confirm that Internet banking transactions are more cost effective than traditional banking transactions
- Other, please state _____

22. Who would influence you to use Internet banking? (Check all that apply)

- Friends
- Colleagues
- Family members
- Your bank
- Other, please state _____

Demographic information (Internet banking non-users)

23. What is your gender?

- Male
- Female

24. What is your age?

- 21 to 29
- 30 to 39
- 40 to 49
- 50 and over

25. What is your monthly income?

- Less than R5000
- R5000 to R7000
- R7001 to R10000
- R10001 to R20000
- Over R20000

26. What position are you currently holding?

- Post Graduate Assistant
- Tutor
- Senior Tutor
- Lecturer
- Senior Lecturer
- Associate Professor
- Professor
- Other

27. What is your race?

- African
- White
- Indian
- Coloured
- Other

28. What is your marital status?

- Married
- Divorced
- Single
- Widow(er)

29. Which college do you belong to?

- College of Humanities
- College of Agriculture, Engineering and Science
- College of Health Sciences
- College of Law and Management Studies

30. The questions in the questionnaire may not have been all-embracing and comprehensive. Therefore, you may not have been afforded the opportunity to report some things you may want to say about Internet banking, your own experience or the banking industry. Please make any additional comments in the space provided.

Appendix 4: Gatekeepers' letter

28 November 2011

Ms T Moodley
 School of Information Systems & Technology
 UKZN
 Westville Campus

Dear Ms Moodley

RE: PERMISSION TO CONDUCT RESEARCH

Gatekeeper's permission is hereby granted for you to conduct research at the University of KwaZulu-Natal towards your postgraduate studies, provided Ethical clearance has been obtained via the Research Office. It is noted the title of your dissertation is:

Internet Banking: A Study of Academic Staff

Please note that the data collected must be treated with confidentiality and anonymity.

Yours sincerely

Prof. J. Meyerowitz
REGISTRAR

Office of the Registrar

Postal Address: Private Bag X54001, Durban 4000, South Africa

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Founding Campuses: ■ Edgewood ■ Howard College ■ Medical School ■ Pietermaritzburg ■ Westville

Appendix 5(a): Ethical clearance letter



Research Office, Govan Mbeki Centre
Westville Campus
Private Bag x54001
DURBAN, 4000
Tel No: +27 31 260 8350
Fax No: +27 31 260 4609
snymanm@ukzn.ac.za

25 January 2012

Ms T Moodley (200204716)
School of Information Systems & Technology

Dear Ms Moodley

PROTOCOL REFERENCE NUMBER: HSS/0018/012M
PROJECT TITLE: Internet Banking: A study of academic staff

In response to your application dated 29 November 2011, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number.
PLEASE NOTE: Research data should be securely stored in the school/department for a period of 5 years.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully


.....
Professor Steven Collings (Chair)
HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE

cc. Supervisor – Dr I Govender
cc. Ms C Haddon

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Appendix 5(b): Ethical clearance letter (title amended)

04 March 2015

Ms Theresadevi Moodley (200204716)
School of Management, IT & Governance
Westville Campus

Dear Ms Moodley,

Protocol reference number: HSS/0018/012M

New project title: Internet banking usage among academic staff at the University of KwaZulu-Natal

Approval Notification – Amendment

This letter serves to notify you that your request for an amendment received on 25 February 2015 has now been approved as follows:

- Change in Title

Any alterations to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form; Title of the Project, Location of the Study must be reviewed and approved through an amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number.

PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

Best wishes for the successful completion of your research protocol.

Yours faithfully

.....
Dr Shenuka Singh (Chair)

/ms

cc Supervisor: Dr Irene Govender
 cc Academic leader Research: Professor Brian McArthur
 cc School administrator: Ms Angela Pearce

Humanities & Social Sciences Research Ethics Committee

Dr Shenuka Singh (Chair)

Westville Campus, Govan Mbeki Building

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