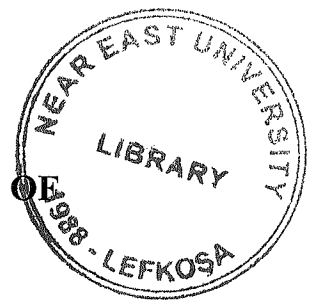


**MOBILE BANKING ACCEPTANCE PERSPECTIVE OF
UNIVERSITY STUDENTS IN ZIMBABWE**



**A THESIS SUBMITTED TO THE GRADUATE SCHOOL OF
APPLIED SCIENCES
OF
NEAR EAST UNIVERSITY**

**By
DAMBUDZO NETSAI CHRISTINA CHINGOKA**


**In Partial Fulfilment of the Requirements for
the Degree of Master of Science
in
Computer Information Systems**

NICOSIA, 2015



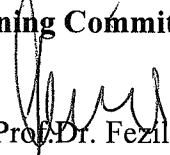
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PERSPECTIVE OF UNIVERSITY
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**Approval of Director of Graduate School of
Applied Sciences**

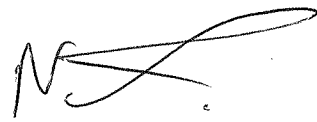

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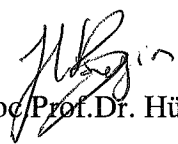
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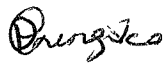
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To my family...

ABSTRACT

Mobile banking is a fast growing, convenient and portable banking service which has become a global phenomenon though used by a few people in the world compared to the expected number. It's a service offered by banks, MNO's and financial institutions as long as network is available. Extensive growth and development of new and improved Information Technologies, mobile devices have become very powerful in their uses especially in banking. However, the literature found had inadequate information on the factors which affect the university students' mobile banking adoption Zimbabwe. Therefore the aim of this research is to use a proposed model to investigate the factors that affect university students in Zimbabwe using mobile banking service. TAM and UTAUT models were combined to develop a questionnaire for this study to collect the data. This research was conducted at 5 universities across Zimbabwe, where 280 university students participated. 8 constructs were used in the proposed model: Perceived usefulness, attitude, perceived ease of use, behavioural intention to use, personal innovativeness, perceived risk, self-efficacy and social influence. Percentage, mean, standard deviation, frequency and Linear Regression Analysis methods were used. The main result shows 13 of the 16 hypothesis drawn up were supported, showing university students are ready to use mobile banking. This study may help the service providers of mobile banking to further understand the factors that influence university students, the applications to be developed and the actions to be put in place to attract and encourage more university students to use the mobile banking.

Keywords: Mobile banking, mobile banking adoption, Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT), Zimbabwe, university students

ÖZET

Mobil bankacılık hızlı gelişen, uygun, portabil, ve küresel bir bankacılık servisi olmasına rağmen dünyada beklenenden çok daha az insan tarafından kullanılmaktadır. Bu servis, ağ olduğu müddetçe bankalar tarafından verilmektedir. Enformasyon teknolojisinde olan yeni büyük ilerlemeler ve gelişmeler sayesinde mobil cihazlar çok güçlü olmuşlar ve özellikle bankacılıkta kullanılmaya başlanmışlardır. Buna rağmen, literatürde Zimbabi'deki üniversite öğrencilerinin mobil bankacılığı kullanmalarındaki etkin faktörler hakkında yeterli bilgi bulunmamaktadır. Bundan dolayı bu tezin amacı Zimbabi'deki üniversite öğrencilerinin mobil bankacılığı kullanmaları üzerine bir model geliştirmektir. TAM ve UTAUT modelleri birleştirilmiş ve bir anket hazırlanıp veri toplanmıştır. Bu araştırma Zimbabi'de 5 üniversitede yapılmış ve 280 üniversite öğrencisi çalışmaya dahil edilmiştir. Modelde 8 ana faktör kullanılmıştır: Algılanan faydalılık, tutum, algılanan kullanım kolaylığı, davranışsal kullanım maksadı, şahsi yenilikçilik, algılanan risk, öz yararlılık, ve sosyal etkinlik. Yüzdeler, ortalama, standart sapma, frekans ve lineer regresyon analiz metodları kullanılmıştır. Esas neticelere göre 16 hipotezden 13'ü desteklenmiştir, ve bu da üniversite öğrencilerinin mobil bankacılığı kullanmak için hazır olduklarını göstermiştir. Bu çalışma, mobil bankacılık servisi verenlerin üniversite öğrencilerini ne gibi faktörlerin etkilediğini anlamalarına yardımcı olacak ve aynı zamanda daha çok öğrenciyi motive edip mobil bankacılık kullanmalarına sebep olacaktır.

Anahtar kelimeler: Mobil bankacılık, mobil bankacılık kullanımı, Teknoloji Kabul Modeli (TAM), Birleştirilmiş Kabul Etme Teorisi ve Teknoloji Kullanımı (UTAUT), Zimbabi, üniversite öğrencileri

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LIST OF ABBREVIATIONS

3G: 3rd generation mobile Internet connection

4G: 4th generation mobile Internet connection

ATM: Automatic Teller Machine

ATT: Attitude

BI: Behavioural Intention to Use

E-COMMERCE: Electronic Commerce

EFFICACY: Self-Efficacy

IDT: Innovation Diffusion Theory

IS: Information Systems

IT: Information Technology

ITM: Initial Trust Model

KCB: Kenya Commercial Bank

mBanking: Mobile Banking

mCommerce: Mobile Commerce

MNO: Mobile Network Operator

MNO's: Mobile Network Operators

NFC: Near Field Communication

PDA: Personal Digital Assistant

PEU: Perceived Ease of Use

PI: Personal Innovativeness

PLS: Partial Least Squares

POS: Point Of Sale

PR: Perceived Risk

PU: Perceived Usefulness

SD: Standard Deviation

SEM: Structural Equation Modelling

SI: Social Influence

SMS: Short Messaging Service

SPSS: Statistical Package for the Social Sciences

TAM: Technology Acceptance Model

TPB: Theory of Planned Behaviour

TRA: Theory of Reasoned Action

TTF: Task Technology Fit

USSD: Unstructured Supplementary Service Data

UTAUT: Unified Theory of Acceptance and Usage of Technology

WAP: Wireless Application Protocol

Wi-Fi: Wireless Fidelity type of Local Area Network

ZIMSWITCH: Zimbabwe National Electronic Funds Transfer

ZIPIT: ZimSwitch Instant Payment Interchange Technology

CHAPTER 1

INTRODUCTION

This chapter explains in detail the background of mobile banking in Zimbabwe, the thesis problem, the aim, the importance, the limitations and lastly the overview seen below.

Technology has vastly changed lives, as most of the people in Zimbabwe use mobile or smart phones (Econet Wireless Zimbabwe, 2013). World wide mobile banking was initiated in the 90's (Shaikh and Karjaluo, 2015) and is still in use today. Mobile banking in those days used Short Messaging Service (SMS) as smart phones were not in use then (Shaikh, 2013), in developed and developing countries. This prompted banks, financial institutions, software developers, software houses and service providers to offer the services to the existing and new university students of the mobile banking services to advance the use of technology (World Finance, 2015). More than 1 billion people are relied up to utilise mobile banking services globally by 2017, further research needs to be conducted on the subject of mobile banking as there are more advanced technologies being launched daily (Smith, 2014).

The banking industry in Zimbabwe has moved from the conventional face-to-face transacting with university students embracing new technologies that are of enjoyment, safe and reliable banking solutions to university students (World Finance, 2015). Mobile banking is a preferred mode of banking as it is considered less risky compared to using the conventional banks, this has led to Mobile Network Operators (MNO's) being able to tap into the money that has been circulating outside the conventional banks with the use of mobile virtual wallets (Mangudhla, 2013). There has also been change in the banking technologies from ZimSwitch, POS, e-Banking and SMS banking to Mobile wallets, Payroll and bulk payment systems to Internet payment including e-Commerce (Chinyamakobvu, 2014).

University students have changed the way in which they transact. The mobile banking solutions offered include mobile banking applications, USSD, point of sale terminals, internet and mobile wallets (where retail and small businesses act as agents where people

are able to deposit and withdraw money from at a exorbitant fees which are offered by banks and MNO's) (Mukandatsama, 2013). Zimbabweans lost confidence in the conventional banking sector and the economy as the Zimbabwe Dollar (ZWS) was demonetised and this slowed down the economy (World Finance, 2015). Mobile banking is a welcome development that has helped in instilling confidence in the banking sector and the economy of Zimbabwe for those without bank accounts (Mangudhla, 2013).

As discovered in the literature read the demand of mobile banking is on the increase, Zimbabwe is of no exception (World Finance, 2015). Mobile banking has grown, as a result exceeding card payments transactions as people have access to the services offered easily as they do not have to register for an account. All they use is their number on the mobile network (Ecocash, 2013; Telecash, 2013; OneWallet, 2013). Analysts have previously predicted drop in bank fees and charges with other alternative forms of banking being, the bank charges and fees will soften with the extensive growth in other forms of banking; mobile banking is more convenient than traditional banking (Mangudhla, 2013). University students should be given the choice to use more electronic banking solutions (World Finance, 2015). Banks, MNO's and financial service providers within the banking industry are playing catch up with the international banking community. Within Zimbabwe the banks are having to play catch up with the MNO's as they have to offer mobile banking services to their old clients who are university students (so as to retain them) and attract new ones too with new technologies they are offering (Old Mutual, 2011). Therefore this leading to stiff competition between the MNO's and the banks, as the banks are late adopters of mobile banking (Gambanga, 2014). The use of new technologies and having more providers of mobile banking services will lower the charges that MNO's and banks are charging university students (Rudzuna, 2013). In Zimbabwe it is evident that having access to a financial institution's mobile application is much easier and much faster than a visit to a physical branch (Telecel, 2014).

Mobile banking in Zimbabwe is done through the banks and by MNO's. Banks are now joining the mobile banking bandwagon so they have to collaborate with MNO's as they have the customer base and the technologies available, for example CABS Bank mobile application Textacash using Telecel Telecash technologies (Old Mutual, 2011; Kwabeza, 2014). To use the facilities in some cases a customer has to be an existing customer with an account within the bank. Barclays has introduced NFC e-Commerce, very few mobile

banking service providers in Zimbabwe have innovated beyond the USSD technique (Mukandatsama, 2015).

Zimbabweans started using mobile banking through the MNO's Econet Wireless Zimbabwe, Telecel Zimbabwe and Netone Zimbabwe. The 3 are the largest players in the industry with Econet Wireless being the leader, being the first MNO to introduce mobile banking services (Makwembere, 2013). The 3 MNO's use different technologies in the services they offer their university students, they are listed below: the biggest supplier of information transfers administrations, giving arrangements in versatile and altered remote telephony, open payphones, web access and instalment arrangements

Company Name: Econet Wireless Zimbabwe is the leading supplier of telecommunications services, providing clarification to mobile and fixed wireless telephony, public payphones, internet access and mobile money payment solutions (Econet, 2013).

Service Name: Ecocash is a mobile banking product launched by Econet Wireless Zimbabwe the leading mobile provider of Zimbabwe (Econet Wireless Zimbabwe, 2011). Econet diversified out of the telecom business to launch EcoCash (Levin, 2013). The aim of EcoCash is to have a cashless society in Africa (Levin, 2013). Within Zimbabwe Econet is seeking to provide financial stability and inclusion to a country that has experienced well over a decade of economic instability (Cisco, 2014). All Econet Wireless subscribers just simply register their line for mobile banking through Econet Wireless Shops. One is able to deposit and withdraw money in any Econet shop or assigned EcoCash agent. Once deposited the money appears in their Ecocash wallet where they are able to complete simple financial transactions such as sending to in addition to receiving money from loved ones, purchasing prepaid airtime and paying for goods and services locally as well as abroad. Withdrawing or Cashing out monies received is done through any Econet shop and or an EcoCash agent (Rudzuna, 2013). There are many services available on the Ecocash platform. Ecocash (uses several technologies such as USSD and SMS confirm of transactions for EcoCash local service), EcoCash Ta (using NFC) (Econet, 2015), Debit Cards (using NFC and MasterCard) (Gambanga, 2014), EcoCash Diaspora (using reliable international agents to send money from anywhere in the world) (Econet Wireless Zimbabwe, 2015), EcoCash Save

(encouraging university students to save money from as little as a \$1 and earn interest plus to also take out loans. Those with bank accounts can link them to their EcoCash platform) Mukandatsama, (2013). EcoCash has outplayed the banks by being open 24/7 (Rudzuna, 2013; Shoko, 2013).

Company Name: Telecel Zimbabwe at present is the second largest mobile phone network in Zimbabwe. (Telecel, 2014).

Service Name: Telecash is a mobile money service offered by Telecel another MNO in Zimbabwe that also has a virtual money wallet where subscribers have to register and are able to use the service, after registering they are able to deposit and withdraw (Shoko, 2013). Telecash enables registered subscribers to send money across networks using ZIPIT technology which allows for internet network transfers using the Zimswitch platform, meaning all banks that are connected to Zimswitch can offer Telecel's mobile banking (Zimswitch, 2016). ZimSwitch is a financial platform that is used to connect and carry out transactions amongst banks. The facility will allow university students to transfer, withdraw, deposit, and receive money using their mobile phones all day. University students can also obtain mini-bank statements, pay bills, pay for goods and services, perform intrabank and interbank money transfers and buy airtime (Mangudhla, 2014). Those closest to the university students on Telecash are now able to send monies from abroad which will be withdrawn in Zimbabwe (Gambanga, 2014). Telecash launched a mobile app that allows university students to make bill payments, purchase goods and services, locating agents, cash out, send money and balance inquiry (Telecel, 2014).

Company Name: NetOne Zimbabwe's government owned MNO in Zimbabwe (NetOne, 2014).

Service Name: OneWallet is a mobile wallet service offered by NetOne the state owned MNO, first launched in 2011 (Machamire, 2013; Netone, 2014). OneWallet enables clients to Send and receive cash, top up airtime, interbank and intrabanks funds transfers and pay bills which are basic, though more needs to be done to revamp OneWallet to meet the likes of Ecocash and Telecel (Mukandatsama, 2015).

2 models were used to develop the hypothesis of this research namely TAM (using behavioural intention to use, attitude, perceived ease of use and perceived usefulness) and UTAUT (personal innovativeness, self-efficacy, social influence and perceived risk). Many

researchers have used Technology Acceptance Model (TAM) originally by Davis (1986) and extended TAM. TAM was originated from Theory of Reasoned Action (TRA) but custom-made to meet the demanding requirements of Information Technology (IT) and Information Systems (IS) (Davis et al., 1989). Since its introduction, TAM has been widely used and accepted to guess both users' intentions to use of IT and the actual usage of an IS. Venkatesh et al. (2003) incorporated 8 dominant models including TAM within the wide field of IT acceptance and pioneered UTAUT. UTAUT combined the different viewpoints of the models utilised.

1.1. Thesis Problem

Mobile Banking Adoption in Zimbabwe is changing with the use of mobile phones by many people in their daily lives. University students' perceptions and intended use of the mobile banking services are different from those who live in the rural areas and those working. In Zimbabwe insufficient studies have been conducted based on mobile banking of the university students

The university students' use mobile banking services quite often as they receive money from loved ones from Zimbabwe or abroad, save money, purchase goods and services, pay for school fees, purchase online, buy airtime and ringtones for low cost entertainment products to name but a few options that would suit their lifestyles (Koenig-Lewis, Palmer and Moll, 2010). The mobile banking services have their downside too (Shaikh and Karjaluo, 2015). The following list shows the problems faced by university students in Zimbabwe with the use of mobile banking.

- Perceived risk. Lack of confidence with the financial economy, as Zimbabwe dollar may be reused (Shaikh and Karjaluo, 2015 ; Chitungo and Munongo, 2013).
- Are the mobile banking services compatible with their lifestyle (Koenig-Lewis, Palmer and Moll, 2010).
- Lack of confidence with perceived ease of use of the technologies used in mobile banking.
- Total lack of interest in mobile banking, thinking it's a waste of time. What's the perceived usefulness of using mobile banking?
- Is mobile banking assistance available when required?

- Different demographics have different uses of the mobile banking services (Chitungo and Munongo, 2013).
- Mobile banking users' preferences are ever changing (Econet Wireless).

1.2. The Aim of the Thesis

The aim of this research is to use a proposed model to investigate the factors that affect university students in Zimbabwe when they are using mobile banking.

1. What are the university students' opinions on mobile banking?
2. Which are the dependencies between the research models constructs?
3. Are there any relationships between the constructs of the proposed model?

1.3. The Importance of the Thesis

This research is important to understand the factors and attributes that affect university students' adoption of mobile banking in Zimbabwe (Chitungo and Munongo, 2013). Literature studies show that, insufficient studies have been conducted on mobile banking adoption of university students in Zimbabwe. This study may help banks, financial houses, software developers and MNO's to further understand the factors that influence university students and the right policies that should be crafted, the software applications to be developed and the actions to be put in place to attract and encourage more university students to use the mobile banking. This study uses and combines two well known models TAM and UTAUT to investigate the factors that affect university students of Zimbabwe to adopt mobile banking which are also found in the literature. A questionnaire was developed to collect data which included TAM and UTAUT constructs. A total of 8 constructs were used to draw the hypothesis, TAM 4 constructs are as follows: perceived usefulness, perceived ease of use, behavioural intention to use and attitude (Davis, 1989) and UTAUT 4 constructs are: social influence, perceived risk, personal innovativeness and self-efficacy (Venkatesh et al., 2003).

1.4. Limitations of the Thesis

There are a number of limitations to this research. These should be considered in the other studies to be conducted. The research was conducted over a short period, a longitudinal research in the future would be best to collect varied data to be later analysed. The research could also include more universities in Zimbabwe. A larger target group of university students could participate in the research to yield generalised results of the university students within the whole of Zimbabwe.

1.5. Overview of the Thesis

The thesis is divided into six chapters which are shown in sequential order as in Figure 1 below excluding the References and Appendices.

Chapter 1 the first chapter is the introduction to the thesis, outlining general information to mobile banking and mobile banking adoption within Zimbabwe. Described in the introduction are the following: general information about mobile banking adoption in Zimbabwe, the problem, the importance, the aim, the limitations and finally the overview.

Chapter 2 related research on mobile banking which contains the review of literature on the topic in reference to the mobile banking adoption and theories used by the previous researchers of TAM and UTAUT. All the journals were reviewed and put under headings that related to TAM, UTAUT and a combination of TAM and UTAUT.

Chapter 3 the theoretical framework of the thesis addressed the subject of mobile banking adoption discussing the topic in detail and formulating the hypothesis using 8 constructs and 33 questions in total.

Chapter 4 the methodology states how the research was conducted. The research model, the hypothesis of the study, the participants, the data collection procedure, the instrument used in the research, data analysis technique used and the research setting are discussed in detail.

Chapter 5 outlines the research results and a detailed discussion on the results found.

Chapter 6 provides the conclusions of the entire research and future recommendations which include suggestions for future studies.

Figure 1 shows the sequential order of this thesis showing Chapters 1 through to 6.

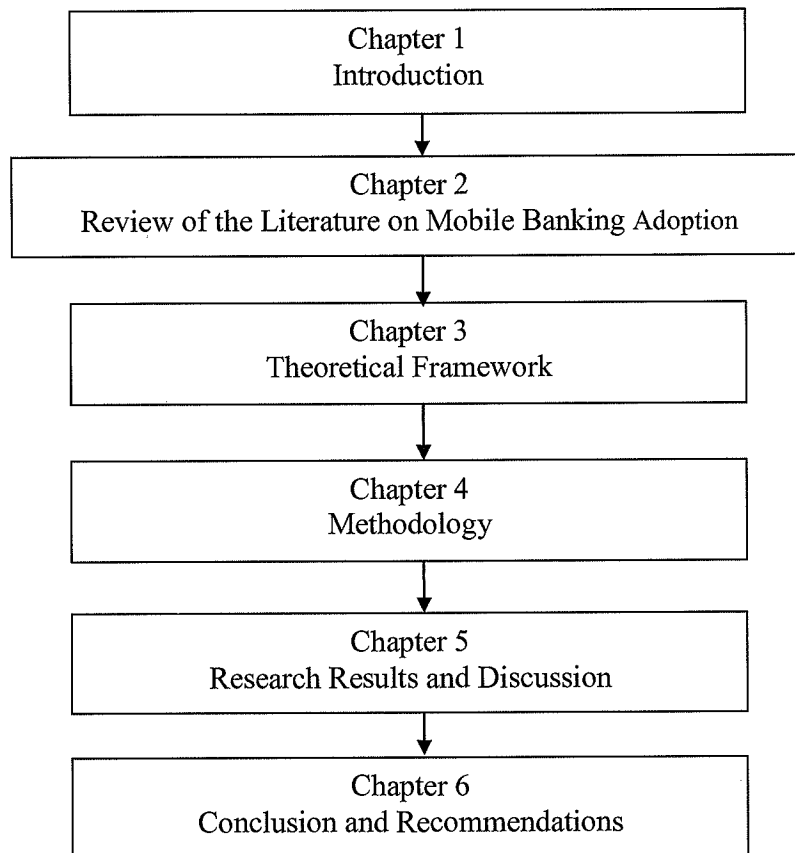


Figure 1: Illustrating the sequential order of the thesis

CHAPTER 2

RELATED RESEARCH

This chapter discusses the related research of the topic of mobile banking adoption of the models TAM and UTAUT.

2.1. Adoption of Mobile Banking by Investigating TAM

Demand of the use of mobile banking has increased worldwide with only a small percentage of university students utilising the service. Thus prompting banks, financial institutions, software developers and MNO's to offer the services to existing and potential university students of mobile banking services within developed and developing countries (Shaikh and Karjaluo, 2015). The banks, micro-finance institutions, software houses and service providers are to ensure they are to make potential and existing customers that are university students aware of the huge benefits that are involved with the use of mobile banking. Theoretical models were used to attain information on different perceptions of the acceptance of mobile banking. For example, Chitungo and Munongo (2013) extended the Technology Acceptance Model (TAM) by Davis (1989) and researched on the acceptance and adoption of mobile banking in the rural communities of Zimbabwe. Yu (2012) extended the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2003) which is a model used to research on how individuals adopt mobile banking technology, their usage and behaviour.

Chitungo and Munongo (2013) conducted an empirical research on the rural communities of Zaka, Chiredzi, Gutu and Chivi within the Province of Masvingo, Zimbabwe. The study investigated and extended TAM by determining the factors that influenced the unbanked rural communities of Zimbabwe. They stated that the improvement of wireless technologies and advancement of mobile handsets used worldwide has given more people the opportunity to adopt mobile banking services, though mobile banking is still a relatively new concept which is in its infancy. This is evident in the results of the study conducted and the services used in the rural communities. They yielded 275 paper and pencil based questionnaires from the adult respondents. Gender distribution of the adult

respondents was 48.4% males and 51.6% females. The dominant age group of the population included the 21-25 year olds 42.9%. 86.5% of respondents owned mobile phones and 79.4% have used mobile phones for between 1 to over 3 years. 46.5% were aware of the mobile banking services and 93% of the respondents actually adopted the use of mobile banking services. Pearson Correlation Analysis was used to examine the relationships among the variables. The adults in the rural communities in Zimbabwe were positively affected by mobile banking adoption of the ease of use, usefulness, relative advantage, innovativeness and social norms. Risk and cost negatively affected and deferred the customers from wanting to adopt the mobile banking services.

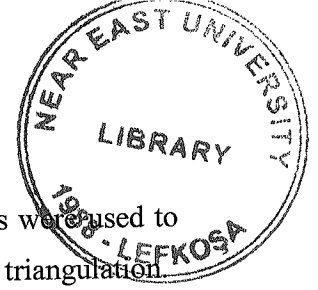
Gu, Lee and Suh (2009), examined and validated the determinants of the users' intention to utilise mobile banking in Korea. They developed a model which integrated the extended TAM and Trust as the constructs. Structural Equation Model (SEM) was implemented to test the constructs of the research hypothesis. The key construct was trust of the behavioural intention of use by the customers to use e-commerce. This research extended TAM by including self-efficacy, facilitating conditions, social influence and system quality. Trust was also tested and also used as a determinant and with the following construct used familiarity with the bank, situational normality, structural assurances and calculative-based trust. The data was collected from a web-survey which yielded 910 responses from customers that use mobile banking from the Korean Bank Wooribank. The customers saw a pop-up message on the website when they visited the bank website. The major findings of the research concluded that, self-efficacy was the strongest construct under TAM which directly affected the behavioural intention to use mobile banking. Structural Assurances was the strongest construct under trust which assisted in the increase used of mobile banking.

Aboelmaged and Gebba (2013) extended the knowledge gathered on the adoption of mobile banking by investigating the role of TAM and Theory of Planned Behaviour (TPB). The research was conducted in the United Arab Emirates (UAE). They examined the factors that influence the adoption of mobile banking amongst mobile banking users in the UAE. 119 questionnaires were analysed and resulted in a positive impact to the attitude toward adoption of mobile banking. These questionnaires were administered to the undergraduate and postgraduate students in Dubai. Gender distribution of the respondents was 78.2% males and 21.8% females and the largest age group was the over 30's being

40%. Majority of the respondents being 70.6% had more than 10 years of Internet experience. 76.5% were familiar with mobile banking technology. The Kaiser-Mayer-Olkin method of sampling data was used. Major results showed that both attitude and subjective norms positively and significantly impact mobile banking adoption.

Lin (2011) provided an extended model of understanding the determinants of customer adoption or continued use of the mobile banking. The research focused on perceived innovation attributes and knowledge-based trust as explanatory and predictive variables of attitude and behavioural intention. The data for this research was collected in Taiwan 2009 via a paper-based questionnaire. This study drew 2 sets of populations which consisted of student (undergraduate and postgraduate students as they are frequent users of mobile phones) and the other group constituted of customers from the public and 3 private banks). 368 questionnaires were obtained from 177 potential and 191 repeat customers of mobile banking. 2 different questionnaires were developed, one for the potential customer and the other for the repeat customer. SEM was used to test the research model. Lin's study found several major findings, supporting the appropriateness of using innovation attributes to predict the customers attitudes toward adopting and continuing to use mobile banking. Customers had positive belief about perceived relative advantage of mobile banking and formed more favourable attitudes towards adopting or continuing to use mobile banking. Customers had to believe that mobile banking firms are able to develop effective service delivery strategies to have adequate protection against fraud and violation of privacy the customers who are more likely to adopt and continue to increase usage.

Shaikh and Karjaluo (2015) summarised the main results and identified gaps that demanded further research in the field of mobile banking adoption. They also extended to understand the mobile banking technology by detailing a review on mobile banking adaptation. This study aimed to contribute to mobile banking literature by synthesizing, exploring and analysing the current state of knowledge on mobile banking and adoption across the developed and developing countries. They conducted a literature search on all articles spanned over 33 Information Systems, Marketing and Business Administration journals and conference proceedings. They searched various databases using keywords. The search was from January 2005 – March 2014. The studies read in mobile banking focused mainly on TAM, Innovation Diffusion Theory (IDT) and UTAUT. The results from various studies suggested giving some guidance of how to increase mobile banking



adoption among the developed and developing countries. Different methods were used to collect the empirical data which included survey instruments, interviews and triangulation.

Al-Jabri and Sohail (2012) investigated a set of technical attributes and how they influenced mobile banking adoption in a developing nation of Saudi Arabia. They examined potential facilitators and inhibitors of mobile banking adoption having used IDT. Yielding 466 questionnaires, obtained from 330 mobile banking users and 136 potential mobile banking users from adults residing in Saudi Arabia. The gender ratio of the mobile banking service users was 57.9% male and 42.1% female; 93% Saudi nationals; majority aged between 18-25 years of age; 54.5% were students and 43.7% used mobile banking for more than a year. The Bartlett's Test of Sphericity and Kaiser-Meyer-Olkin were used to validate the hypothesis model. Results indicated that banks should focus on communication information that focuses the relative advantage and usefulness. Banks were encouraged to reduce perceived risk by offering guarantees that will protect them, by taking complaints seriously. The banks were urged to offer mobile banking services that are compatible with the user's requirements, past experiences, lifestyle and beliefs.

Laukkanen and Kiviniemi (2010) explored how innovation has affected consumers' resistance to use innovation. They focused on mobile banking adoption and utilised a hypothesis model using the Innovation Resistance Theory. An online-survey was conducted which yielded 1551 respondents that were Internet Banking customers from a large bank in Finland. The hypothesis was tested using the SEM and resulted in showing how information and guidance about mobile banking strongly affected usage barrier, image, value and risk barriers; in the respective order.

Koeing-Lewis, Palmer and Moll (2010), investigated the barriers faced by youth when adopting mobile banking services and also investigated how youth adopt new technology. The research extended TAM and IDT, a hypothesis model was created and tested. An online survey was conducted in Germany with young people aged between 18 and 35 years old who were residents. The hypothesis tested compatibility, perceived cost, perceived usefulness, perceived ease of use, credibility, trust, risk and behavioural intention to adopt mobile banking. The data collected from the survey was tested using SEM. Results showed that 65% of the respondents were young people who intended to adopt mobile banking services. Compatibility, perceived usefulness and risk are all important to the adoption of

mobile banking services. Compatibility being the strongest, perceived cost, ease of use, credibility and trust are not salient factors.

Wessels and Drennan (2010) identified and tested what motivated and distracted consumer acceptance of M-banking notably what affected the consumers' attitude towards the use of mobile banking and the consumers' intention of use of the mobile banking service; by Extending the TAM. A web survey was conducted in Australia where 314 respondents received emails with a link to the questionnaire. Results showed that perceived usefulness, perceived risk, cost and compatibility affected the consumers' acceptance of M-banking whereas attitude drastically affected the consumers' perception and the intended use.

Mohammadi (2015) explored the barriers that affect the consumers' attitude towards mobile banking in Iran. TAM was extended and included the following barriers and moderators: resistance, perceived risk, compatibility, awareness, perceived ease of use, perceived usefulness, attitude, subjective norms and personal innovativeness. SEM and Path Analysis were used to test the hypothesis data that was collected for the research. E-mails were randomly sent to users of social networking sites such as Facebook and LinkedIn to mostly students with a hyperlink of the questionnaire. There were a total of 128 Iranian respondents of which female respondents were 65.6%; majority of the students being from the age range 20-30 of 56.2%; and the respondents were postgraduates 57.8% and undergraduates 42.2%. Major findings stated that perceived ease of use and perceived usefulness both affect user's attitude to use mobile banking.

2.2. Adoption of Mobile Banking by Investigating UTAUT

Yu (2012) investigated the factors that affected individuals when faced with adopting mobile banking. Yu (2012) extended the UTAUT model by including age and gender as constructs. 441 diverse respondents approached in shopping malls across downtown Taipei filled in questionnaires. The questionnaires were collected over 10 weekdays (morning, afternoon and night) and two weekends. Partial Least Squares (PLS) regression was used to test the hypothesis. Social influence, perceived financial cost, performance expectancy and perceived credibility by their order persuaded the user to adopt mobile banking. Behavioural intention and facilitating conditions predicted the actual behaviour of the users. Effort expectancy did not influence the intention to use mobile banking and perceived self-efficacy did not affect the actual adoption.

Zhou, Lu and Wang (2010), integrated the UTAUT and Task Technology Fit (TTF) models and explained user adoption of mobile banking from a technology perception and task technology fit. Data for the research was collected within Eastern China from the universities and 3 branches of 2 Telecommunications Service Providers of China (China Mobile and China Unicom). This research yielded 250 responses, which included 83 students and 167 working professionals. Respondents' gender showed that there were more males 63.2% as compared to the females 36.8%. The largest group of respondents were the youth, the 20-29 year olds which yielded 61.2%. Results indicated user behaviour is indeed significantly influenced by technology perception and task technology fit factors.

Oliveira et al. (2014) combined the strengths of UTAUT, TTF and Initial Trust Model (ITM). Oliveira provided a comprehensive insight into the decision factors that affected the adoption of mobile banking. The main objective explored was the influence of the end-customers attitude toward the initial trust and the technological characteristics of mobile banking solutions. They conducted the study in Portugal and yielded 194 respondents. The respondents groups were split into two, one being 152 early respondents and 42 late respondents. The respondents had to be familiar with the usage of mobile banking prior to the research being conducted. At the end of the study they found that facilitating conditions and behavioural intention directly influenced mobile banking adoption. Initial trust, performance expectancy, Technology characteristics and TTF effect behavioural intention. Kolmogorov-Smirnov test was used to test non-response bias of the early and late respondents. Harman's one-factor test was used to also test the common method bias, PLS was the most appropriate for the research model. The results of the research conducted found majority 57.2% were woman; 34% owned more than one mobile phone and also used a smart phone or PDA and most of the respondents were aged between 20-29 years of age at 52.1%.

Luo et al. (2010) conducted an empirical study of mobile banking services and examined the multi-dimensional trust and multi-faceted risk perceptions in the initial adoption stage of wireless internet platforms. The hypothesis of the research model is based on trust, risk, self-efficacy and UTAUT model. The 122 respondents of the research questionnaire were undergraduate students enrolled in business courses in an Eastern university in the United States of America. In total the research consisted of 56 males as compared to 66 females and the average age was 21 years of age. PLS and SEM were used to test the hypothesis.

Major finding showed risk perception is outstanding in the acceptance of innovative technology.

2.3. Adoption of Mobile Banking by Investigating TAM and UTAUT

Ndumba and Muturi (2014) investigated the factors that affected the adoption of mobile banking in Kenya. The study assessed the influence of users had to perceived risk of mobile banking adoption. The study evaluated the effect of trust in mobile banking users influence towards their preferred choice of adoption of mobile banking, examined how perceived convenience affected the adoption of mobile banking and explored how relative advantage influenced mobile banking. The hypothesis of the research model was based on perceived risk, perceived convenience, trust and relative advantage which are a combination of some constructs from TAM and UTAUT. They utilised Kenya Commercial Bank (KCB) Limuru customers, and employed a descriptive research design of 47 customers. Questionnaires were distributed to customers to collect data for the research. The return rate of questionnaires was 70% which was deemed appropriate to draw conclusions from the study as the acceptable rate is 50%. SPSS was utilised and analysed the data collected. KCB customers were asked if they had adopted M-Banking service prior to the research, 28% stated they had already adopted the service whilst a larger percentage of 72% were still yet to adopt the service.

Budree and Williams (2013) compared the socio-economic factors that impacted the successful execution of M-Pesa in Kenya and that of South Africa. They found similarities and differences between the two countries which then provided key recommendations that aided in the successful banking of the unbanked through mobile banking across similar markets in developing countries. The study conducted utilised qualitative and quantitative research methods. Qualitative research comprised of one-on-one and telephone interviews with branch managers of the top ten performing retail branches. The interview questions were based on a combination of the TAM and UTAUT. Registered M-Pesa agents were used as participants of the research. Quantitative research comprised of the transaction volume data of approximately 8949 customers across South Africa. The transaction data was input, evaluated and analysed from 927 branches from across 85 geographical areas.

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CHAPTER 3

THEORETICAL FRAMEWORK

This chapter goes through each underlying theory in detail justifying the theoretical choices made during the research and on developing the formal hypotheses. Various theoretical viewpoints to shed light on the research are discussed.

3.1. Mobile Banking

Mobile Banking is described best as one of the latest technologies that university students use on the go (Zhou, Lu and Wang, 2010; Yu, 2012; Aboelmaged and Gebba, 2013; Lin, 2011). Mobile Banking is also a service that is offered to university students by retail and commercial banks, financial institutions and Mobile Network Operators (MNO's) for transacting with a mobile device such as smart phone, tablet, mobile phone and Personal Digital Assistant (PDA) (Shaikh and Karjaluo, 2015). Mobile Banking is also referred to as mobile commerce (mCommerce) which utilises the mobile device to access the bank account, balance inquiry, bill payments, deposits and transfers (Oliveria et al., 2014). The account is accessed using an Internet connection (which can either be Wi-Fi, mobile data or fibre optic cable) (Zhou, Lu and Wang, 2010) or by mobile network by sending a SMS or calling. University students do not have to physically go into the branch to make transactions nowadays. The account information can be accessed from virtually anywhere in the world and transactions achieved as well. Mobile banking in a large sense is part and parcel of e-Commerce (Luo et al., 2010). In Zimbabwe currently there are many mobile banking products on offer which include Ecocash, One Wallet, Telecash to name a few services in use in Zimbabwe, (Chitungo and Munongo, 2013).

3.2. Mobile Banking Historical Development

As correctly stated by Shankar (2014), mobile banking has come a long way from where it started off. Mobile banking is a service that most of the banks in the world are offering; the service includes applications and support for mobile banking which are offered on all mobile devices such as mobile phones, smart phones, tablets and PDA's in the market.

Mobile Banking was first used in the 1990's when it was first tested and set up in the developed European countries that included Germany, Spain, Sweden Austria and the United Kingdom (Shaikh and Karjaluo, 2015). The Banks at the time offered Online banking which was built into the operating software that was developed by Microsoft using Microsoft Money which was used in over 100,000 households (Shankar, 2014). Kenya was amongst one of the first countries in Africa to have adopted mobile banking, (Shaikh and Karjaluo, 2015). In 1999, European banks started offering their online banking customers Wireless Application Protocol (WAP) services on their WAP enabled mobile phones (Shankar, 2014). Chitungo and Munongo (2013), stated that mobile banking services were introduced into Zimbabwe in 2011 where the major players of mobile banking were the 3 Mobile Network Operators (MNO's) which are Econet Wireless Zimbabwe (Ecocash), Telecel (Telecash) and Netone (OneWallet), this giving a solution to those who cannot afford to have a bank account in the local banks due to the prohibitive high opening balance requirements and subsequent high costs of maintaining the accounts. Shankar (2014) stated that with the introduction of the Apple iPhone in 2007 saw the move of using one's personal computer to perform their online banking to using a smart phone. 2009 saw the Android based phones joining the mobile banking bandwagon (Ryu et al., 2014).

Banks use the following information technologies for mobile banking which include, mobile banking applications, contactless payments, SMS banking, USSD, debit and credit card, mobile money wallets (virtual wallets), telephone banking, wireless POS to name but a few, (Shaikh and Karjaluo, 2015; Chitungo and Munongo, 2013). Mobile banking is now allowing university students to be reached in the developing and developed nations of the world (Shankar, 2014).

3.2.1. Advantages

The following are advantages of mobile banking listed below are cited by the following authors, Chitungo and Munongo, (2013); Railienoa, (2014); Shaikh , (2013), Cavus and Chingoka, (2015):

Globalisation: Mobile banking has brought the world closer allowing transactions to be conducted irregardless of where the university students are located. Mobile banking has downsized the global village.

Cost Effectiveness and Operational Excellence and Efficiency: Automation of processes for university students means it is now easier, less strenuous, more economical and cost effective processes. Mobile banking transactions are accomplished in less the amount of time compared to the days before automation in banking. Fewer errors are made by the use of mobile banking.

Bridging the Cultural Gap: University students from different nationalities and cultures are able to conduct banking transactions on the go, thus allowing exchange of goods and services internationally.

Longer Working Hours: Business hours are extended from the normal Monday to Friday, 8 am to 5pm working days. The business is virtually open 24 hours and 7 days a week and university students can transact flexibly. This applies to all businesses around the globe. University students are now allowed to purchase anytime and anywhere.

More Banking Services: Prompting many more banking services to provide innovative products and application designs to be extended to the university students.

Improve current university students' retention: Banks and MNO's are to improve their products and services to retain their current university student's. New products and services.

Greater accessibility compared to conventional banking: Mobile banking will provide a greater reach for its university students as it is a free service. The university student has to have connection to the network to access mobile banking on the go.

Interactivity: there is two way communication between the university students and the mobile banking service, they no longer required to queue in the banking halls to pay for bills, check account balance, purchase goods etc.

3.2.2 Disadvantages

University students face extreme danger of accepting fake messages from programmers and tricksters. The loss of their mobile devices implies that their data can be attained unlawfully, accessing their mobile banking PIN. Keeping in mind the end goal to have better involvement with versatile managing an account university students need access to

more up to date day devices, for example, Smartphone, PDA's and tablets. From the previous research on Mobile Banking Adoption there are a few key issues that were expressed in the exploration. There are different issues faced by university students:

Security and Risk: University students are susceptible to scammers. This is when a university student receives a fake message asking for them to send their bank account details from a hacker. If and when a mobile device is stolen the university students are at great risk as most automatically designed their mobile devices to remember their login details, or they use login details that are simple and easy to hack (Cavus and Chingoka, 2015).

Trust: The potential university students still have issues with trusting the systems in place (Zhang, Zhu and Liu, 2012; Cavus and Chingoka, 2015).

Compatibility: Some mobile banking services are not accessible on all devices (Al-Jabri and Sohail, 2012). These limit the services university students' available. Others require the university students to make use of bespoke mobile banking applications that are readily accessible on the majority prominent smart phones available on the market (Cano and Domenech-Asensi, 2011; Cavus and Chingoka, 2015).

Cost: The cost of mobile banking occurs if when the university student does not have a compatible devices, even though they may have a compatible device they may still incur data and service costs.(Chitungo and Munongo, 2013; Cavus and Chingoka, 2015).

Scalability and Reliability: The banks and MNO's need to make sure that the mobile banking services are working properly for university students to access the service from anywhere and anytime. There can be loss of confidence in mobile banking services if the service does not meet the requirements, found to be consistent with Luo et al. (2010), Cavus and Chingoka, (2015) and Gu et al. (2009).

Application Distribution: University students expect their mobile banking applications to be consistently available, updated, upgraded and download to be accessible (Cavus and Chingoka, 2015).

3.3. Adoption Theories

The research utilises a combination of 2 adoption theories which are namely TAM and UTAUT. The most used adoption theories/models utilised in research are TAM and UTAUT. There are many determinants that affect the way university students would adopt mobile banking. Theoretical models were used to attain information on different university students' perceptions of the adoption of mobile banking. As discovered by all the literature read, demand of mobile banking has increased worldwide but a small percentage of people utilise the service. Thus prompting banks, financial institutions, software developers and MNO's to recommend the services to existing and potential university students of mobile banking services (Shaikh & Karjaluto, 2015) within developed and developing countries. The banks, micro-finance institutions, software houses and service providers are to ensure they are to make potential and existing university students aware of the huge benefits that are involved with the use of mobile banking. For example, Chitungo and Munongo (2013) extended the TAM by Davis (1989) in rural communities of Zimbabwe which will come to accept the adoption of mobile banking. Yu (2012) extended the UTAUT by Venkatesh (2003) which is a model used to research on what impacts individuals to adopt mobile banking technology, their usage and behaviour.

3.3.1. Technology Acceptance Model (TAM)

3.3.1.1. History

Theory of Reasoned Action (TRA) by Ajzen and Fishbein (1980) was used to forecast the behavioural intention, including the forecast of attitude and behaviour. Davis (1989) extended the TRA which produced the TAM. TRA proposes a person's behavioural intention is dependent on the person's attitude concerning their behaviour and subjective norms. If a one means to conduct in a certain behaviour meaning they will most likely complete the action (Davis et al., 1989).

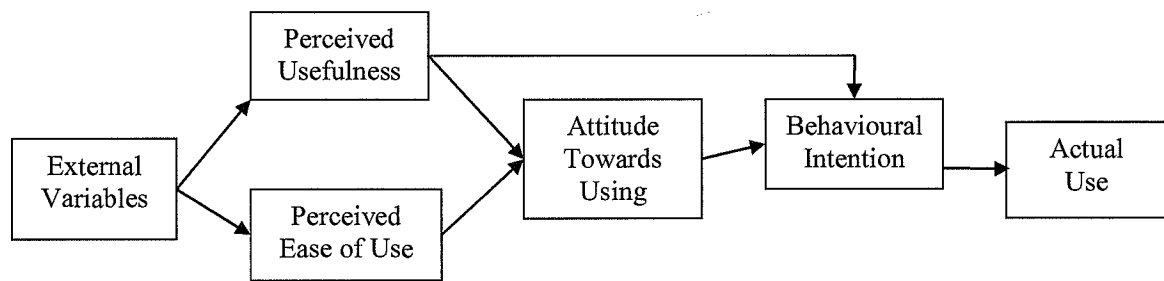


Figure 2: Technology Acceptance Model (TAM)

3.3.1.2. Usage

TAM is an Information Technology (IT) and Information Systems (IS) theoretical model that is used to find out how people accept innovative technologies and their behavioural intention (Gu et al 2009). Banking is of no exception, as it involves the acceptance of mobile banking technologies by users of the systems. This model is used to guess the tolerability of mobile banking and to recognize the changes that must be made in order for mobile banking to be suitable to university students (Aboelmaged and Gebba, 2013).

There are some factors that affect how users accept technology, currently and in the future. The two original constructs TAM are (Davis 1989):

- **Perceived Ease of Use:** The degree to which the prospective users such as university students expect mobile banking to be free of effort (related to effort).
- **Perceived Usefulness:** The prospective user's such as university students' subjective probability that using a specific application system will increase his or her job performance in the job within the organisational context (related to productivity).

Perceived ease of use and perceived usefulness influence an individual's attitude that results in his or her behavioural intention, which finally influences their actual usage of IT being the use of mobile banking (Davis 1989). Later studies have extended the original determinants of the TAM such as Chitungo and Munongo (2013); Mohammadi (2015); Gu, Lee and Suh (2009); Aboelmaged and Gebba (2013); Koeing-Lewis, Palmer and Moll (2010); Wessels and Drennan (2010). Shaikh and Karjaluto (2015) summarised and compared the studies that were conducted from 2005 – 2015, TAM is the most popular

research theory used to explain the customer attitudes and behavioural intention towards the use of mobile banking service adoption.

TAM suggests the use of mobile banking is controlled by a university student's behavioural intention, however, behavioural intention is dictated by a university students' attitude towards the use of mobile banking and their insight of mobile banking. According to Davis (1989), the attitude of a university student is not by any means the only variable that decides a university students' mobile banking use, on the other hand mobile banking depends on the effect it might have on their execution. Therefore, even if university students do not welcome the use of mobile banking, the probability would be high if university students perceive mobile banking would improve their life. TAM hypothesizes a link with perceived usefulness and perceived ease of use (Aboelmaged and Gebba, 2013). With two different mobile banking applications on the market offering the same features, a university student would be more inclined to use the mobile banking application they found easier to use (Dillon and Morris, 1996).

3.3.2. Unified Theory of Acceptance and Use of Technology (UTAUT)

3.3.2.1. History

Is a model discovered by Venkatesh et al. (2003), which is an expansion of the TAM by Davis (1989). UTAUT is used to explain a university students intention to utilise an IS such as mobile banking and their usage behaviour. There are namely four constructs which are performance expectancy, effort expectancy, social influence and the facilitating conditions.

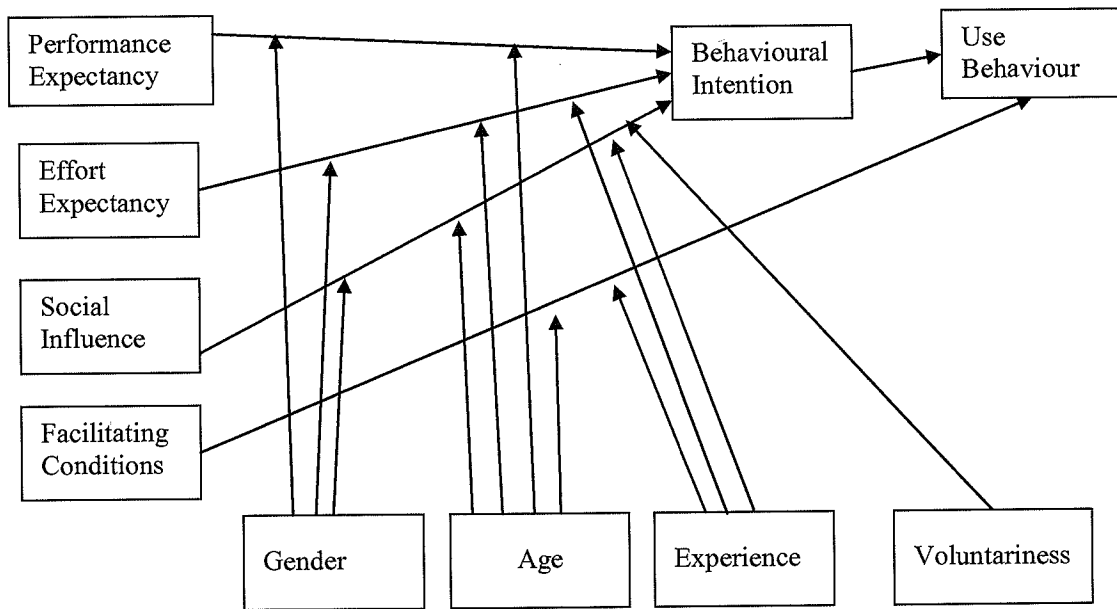


Figure 3: Unified Theory of Acceptance and Use of Technologies (UTAUT)

3.3.2.2. Usage

UTAUT is a review of eight other models used in earlier research. The 8 dominant technology acceptance models namely TRA (Fishbein and Ajzen, 1975), TAM (Davis, 1989), Motivational Model (MM) (Davis et al., 1992), Theory of Planned Behaviour (TPB) (Ajzen, 1991), Model of Personal Computer Use (MPCU) (Thompson et al., 1991), IDT (Rogers, 1995) and Social Cognitive Theory (SCT) (Bandura, 1986). UTAUT is a model that is not widely used as stated by Zhou et al. (2010) having drawn researchers attention and having been applied to mobile technologies recently.

The constructs of the UTAUT model listed below with the similarities from that of TAM stated Venkatesh et al. (2003):

- **Performance Expectancy:** it is the degree to which an individual believes that using the system will help them to attain gains in using mobile banking. Performance expectancy of UTAUT is equivalent to perceived usefulness in TAM. It is the strongest predictor of behavioural intention to use when using mobile banking (Oliveria et al., 2014).
- **Effort Expectancy:** it is the degree of ease that is associated with the use of a mobile banking. Effort expectancy is equivalent to perceived ease of use in TAM.

- ***Social Influence:*** it is the degree to which an individual perceives it is important that others believe they should use mobile banking with the persuasion of others who are important to them.
- ***Facilitating Conditions:*** it is the degree to which an individual believes that a technology exists to support the use of mobile banking.

Performance expectancy, effort expectancy and social influence are candid constructs used to find out the university students intention to use mobile banking which are affected by age and gender (Oliveria et al., 2014). Facilitating conditions have an undeviating persuasion of usage of mobile banking (Venkatesh et al., 2003). Gender, age, experience, and voluntariness of use are put forward to diminish the impact of the four key constructs on usage intention and behaviour to use mobile banking. Effort expectancy and behavioural intention are moderated by experience of usage of a technology such as mobile banking (Yu, 2012). Social influence and behavioural intention in addition are fair on experience and voluntaries of use of mobile banking (Oliveria et al., 2014). Facilitating conditions and behavioural intentions influence the actual use of mobile banking. TAM has been widely used as compared to UTAUT (Zhou et al., 2010). UTAUT has been used in different studies conducted that were used to analyse the behavioural intention of use and mobile banking adoption (Oliveria et al., 2014; Yu, 2012; Zhou et al., 2010).

CHAPTER 4

METHODOLOGY

This chapter discusses the process undertaken to conduct this research. By thoroughly examining the proposed research hypothesis, the information of the participants of the research, the data collection tools, data analysis, the procedure and the duration of the thesis and the resources utilised.

4.1. Research Model

Mobile banking is still in its infancy stages (Oliveria et al., 2014). The proposed hypothesis is grounded by two well established theories which are a combination of TAM and UTAUT constructs. The research is to cover more geographical coverage to get better results from different demographics as compared to that of Chitungo and Munongo (2013) and use of a combination of models. The research is intended to use a proposed model to investigate the factors that affect university students in Zimbabwe. In the literature read researchers have extended TAM to test how users will come to accept, reject and use mobile banking. Behavioural intention to use and the attitude towards mobile banking are the deciding factors for extended TAM (Davis et al., 1989). The four constructs to be utilised of TAM are perceived ease of use, perceived usefulness, behavioural intention of use and attitude. UTAUT is used to test technology adoption by explaining a university student's intention to utilise following their usage behaviour. The research utilises four constructs of UTAUT which are perceived risk, social influence, personal innovativeness and self-efficacy (Venkatesh et al., 2003). Figure 4 below illustrates the research model, used to show the relationships between the constructs that were hypothesized being TAM and UTAUT.

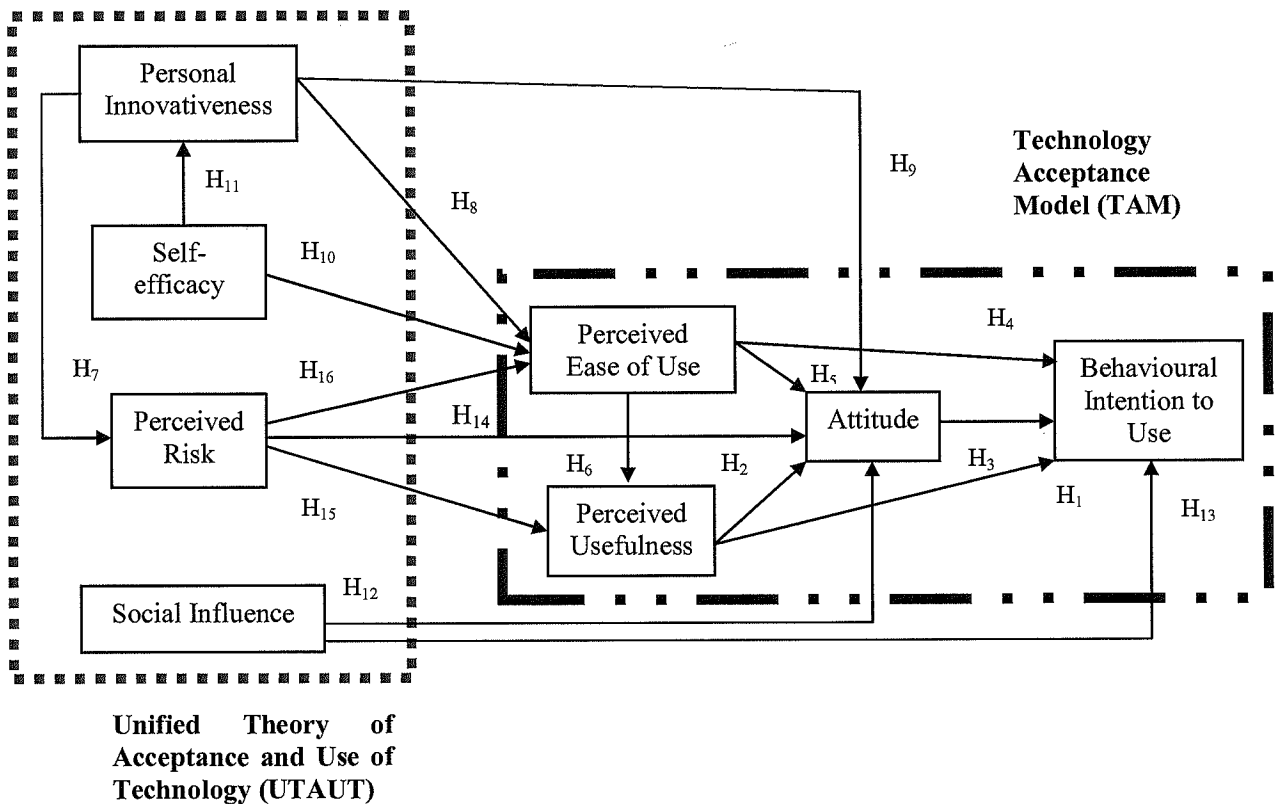


Figure 4: Proposed research model

4.1.1. Hypothesis of the Study

Listed below is an explanation of the hypothesis in Figure 4 for the research conducted with an explanation of the different constructs of the proposed model. Logically attitude positively affects the behavioural intention to use a technology such as mobile banking (Aboelmaged and Gebba, 2013; Yu, 201). Also, literature searched shows previous researchers have checked the relationships of the constructs thus the proposed research model (Aboelmaged and Gebba, 2013; Lin, 2011; Yu, 2012; Mohammadi, 2015; Zhou et al., 2010; Oliveria et al., 2014).

a) Perceived Usefulness

Is the level at which a university student believes that using a particular system would enhance their performance by using a technology such as mobile banking considering its benefits (Davis, 1989). Perceived usefulness is also known as performance expectancy in UTAUT adoption model (Venkatesh et al., 2003). Perceived usefulness is acceptable where a university student's behavioural

intention to use a technology is far greater regardless of their attitude towards the technology (Aboelmaged and Gebba, 2013). Previous studies indicate perceived usefulness directly and notably impact a university student's behavioural intention to use a technology (Davis, 1989; Chitungo and Munongo, 2013; Aboelmaged and Gebba, 2013; Gu et al., 2009). Perceived usefulness directly affects a university student's attitude toward using a technology. This implies that understanding usefulness of mobile banking applications would support performance or effectiveness. The effect of perceived usefulness and perceived ease of use on one's attitude has been corroborated in previous studies conducted (Aboelmaged and Gebba, 2013; Shaikh and Karjaluo, 2015). Thus the following hypothesis is suggested:

H₁: *Perceived Usefulness* will have a positive effect on the *Behavioural Intention to Use* mobile banking by students.

H₂: *Perceived Usefulness* will have a positive effect on the students *Attitude to use* mobile banking.

b) Attitude

Attitude which is also a determinant in TRA is a university student's belief that their behaviour leads to certain outcomes and the university student's evaluation of those outcomes, favourable or unfavourable. A more positive attitude highlights stronger behavioural intention. Attitude toward using mobile banking is a major determinant of the intention to use application (Mohammadi, 2015). Studies conducted before indicate the above (Lin, 2011, Shaikh and Karjaluo, 2015; Aboelmaged and Gebba, 2013). Attitude is expected to have a positive impact on behavioural intention to use in mobile banking adoption:

H₃: *Attitude* will have a positive effect on the *Behavioural Intention to continue using* mobile banking.

c) Perceived Ease of Use

The degree to which a university student believes that using a system would be free of effort making mobile banking adoption easy to understand and operate (Davis, 1989; Lin, 2001). Perceived ease of use is related to effort expectancy in UTAUT

(Yu, 2012). The impact of perceived ease of use on a university student's intention to adopt an innovation either directly or indirectly through perceived usefulness which is documented (Chitungo and Munongo, 2013). Perceived usefulness and perceived ease of use both positively effect ones intention to utilise a system (Gu et al., 2009) therefore also having a positive effect on attitude which brought about the hypothesis listed below:

H₄: *Perceived Ease of Use* will have a positive effect on the students *Behavioural Intention* to continue using mobile banking services.

H₅: *Perceived Ease of Use* will have a positive effect on the *Attitude* of the students to use mobile banking.

H₆: *Perceived Ease of Use* will have a positive effect on the *Perceived Usefulness* of mobile banking by students.

d) Personal Innovativeness

Personal innovativeness represents the coming together of technology-related beliefs which jointly contribute to determining a university student's pre-deposition to adopt mobile devices and related services (Mohammadi, 2015). It is the innate willingness of the university students to try out and embrace new technologies and their related services for accomplishing a specific goal and an important factor that affects mobile banking adoption behaviour. (Chitungo and Munongo, 2013). Therefore given the same level of beliefs and perceptions about an innovation, individuals with higher personal innovativeness are more likely to develop positive attitudes and feel less danger and more open to towards adopting new technologies than less innovative individuals (Mohammadi, 2015). Attitude plays an important part as some may still lack the innovativeness to use different mobile banking services. Perceived ease of use influences the attitude as well. As a new relationship to be tested Personal innovativeness will have a positive effect on perceived risk of mobile banking

H₇: *Personal Innovativeness* will have a positive effect on the *Perceived Risk* of the mobile banking adoption of the students.

H₈: *Personal Innovativeness* will have a positive effect on *Perceived Ease of Use* of mobile banking by the students.

H₉: *Personal Innovativeness* will have a positive effect on the *Attitude* of students to adopt mobile banking.

e) Self-efficacy

Self-efficacy is the point at which university students believe that they have the ability and skill to perform a specific task when using mobile banking (Yu, 2012). Self-efficacy as an indirect determinant of intention to use although it's to be positively tested versus perceived ease of and personal innovativeness is an indirect determinant that captured (Venkatesh et al., 2003; Gu et al., 2009). Thus the test to be conducted on perceived ease of use and personal innovativeness:

H₁₀: *Self-efficacy* will have a positive effect on the *Perceived Ease of Use* of mobile banking by the students.

H₁₁: *Self-efficacy* will have a positive effect on the *Personal Innovativeness* of mobile banking by the students.

f) Social Influence

Is similar to TRA subjective norms (Ajzen, 1991) which is affected by external factors like the university student's friends, relatives and superiors thus affecting the university students' attitude and intention to adopt mobile banking. (Zhou et al., 2010) An individual would feel like a professional by using the mBanking service (Oliveria et al., 2014). Social influence is defined as the degree to which university students perceive the importance of others persuasion on their adoption of a new system or technology. Social influence as a direct determinant of behavioural intention (Venkatesh et al., 2003) leads to this:

H₁₂: *Social Influence* will have a positive effect on the *Attitude* of the students Behavioural Intention to adopt mobile banking.

H₁₃: *Social Influence* will have a positive effect on the *Behavioural Intention to Use* mobile banking by the students.

g) Perceived Risk

Perceived risk is used to test trust of the adoption of mBanking. Trust has been found to be a key factor by other researchers (Oliveria et al., 2014; Gu et al., 2009), thus affecting their attitudes, ease of use and usefulness (Mohammadi, 2015). There is a lot of risk when it comes to mBanking (Mohammadi, 2015; Shaikh and Karjaluoto, 2015). In this study perceived risk will be tested versus attitude, perceived usefulness and perceived ease of use:

H₁₄: *Perceived Risk* will have a negative effect on the *Attitude* of the students when they would like to adopt mobile banking.

H₁₅: *Perceived Risk* will have a negative effect on the *Perceived Usefulness* of mobile banking by the students.

H₁₆: *Perceived Risk* will have a positive effect on the *Perceived Ease of Use* by students to adopt mobile banking.

4.2. Participants

Simple random sampling was conducted which had a total of 280 respondents that were selected randomly. The randomly selected participants were undergraduate students from universities across Zimbabwe. Universities from Harare - Women's University in Africa and the Catholic University, Gweru - Midlands State University, Bulawayo - National University of Science and Technology, and Chinhoyi - Chinhoyi University of Technology. The questionnaire took 10 minutes to fill in. Mobile banking studies that have been conducted nowadays show no significance in the research with gender hence the information collected in the first part of the question which included the demographic information (age, nationality, and education level), the phone use (income bracket, if they owned a mobile, number of hours they use the phone, how they connect to the internet, how long they have used a phone and the operating software of their phone) and the banking information (type of account, frequency of bank use and the extent they use banking services) were collected to create a profile of the respondents.

4.2.1. Demographic Information

The participants were asked to fill in their demographic profile. All the respondents are university students. This first section has been divided into three. The respondents were asked about their age, gender, and nationality.

Table 1: Participants information

DEMOGRAPHIC	FREQUENCY (f)	PERCENTAGES (%)
Gender		
Male	86	30.7
Female	194	69.3
Nationality		
Zimbabwean	206	73.6
South African	24	8.6
Tswana	8	2.9
Zambian	18	6.4
Mozambican	8	2.9
Malawian	8	2.9
Angolan	8	2.9
Age		
< 21	112	40.0
> 21	168	60.0

The Table 1 shows the demographics of the 280 who have attained and perusing undergraduate level in their university students. The female participants were 69.3% (n=194), and male participants were 30.7% (n=86). Majority of the students were from Zimbabweans 73.6% (n=206), followed by South Africans 8.6% (n=24), Zambians 6.4% (n=18), Tswana 2.9% (n=8), Mozambicans 2.9% (n=8), Malawians 2.9% (n=8) and Angolans 2.9% (n=8). Under the age of 21 the participants were 40% (n=112) and over the age of 21 60% (n=168).

4.2.2. Phone Use

The aim of the second section was to collect data on the respondent's phone usage; the section consisted of six questions. The respondents were asked how much they earn per annum, if they own a mobile phone, how long they use the phone per day, how they connect to the internet, how long they have been using the phone and the type of operating software of their phone. The responses to this section are listed below in the graphs.

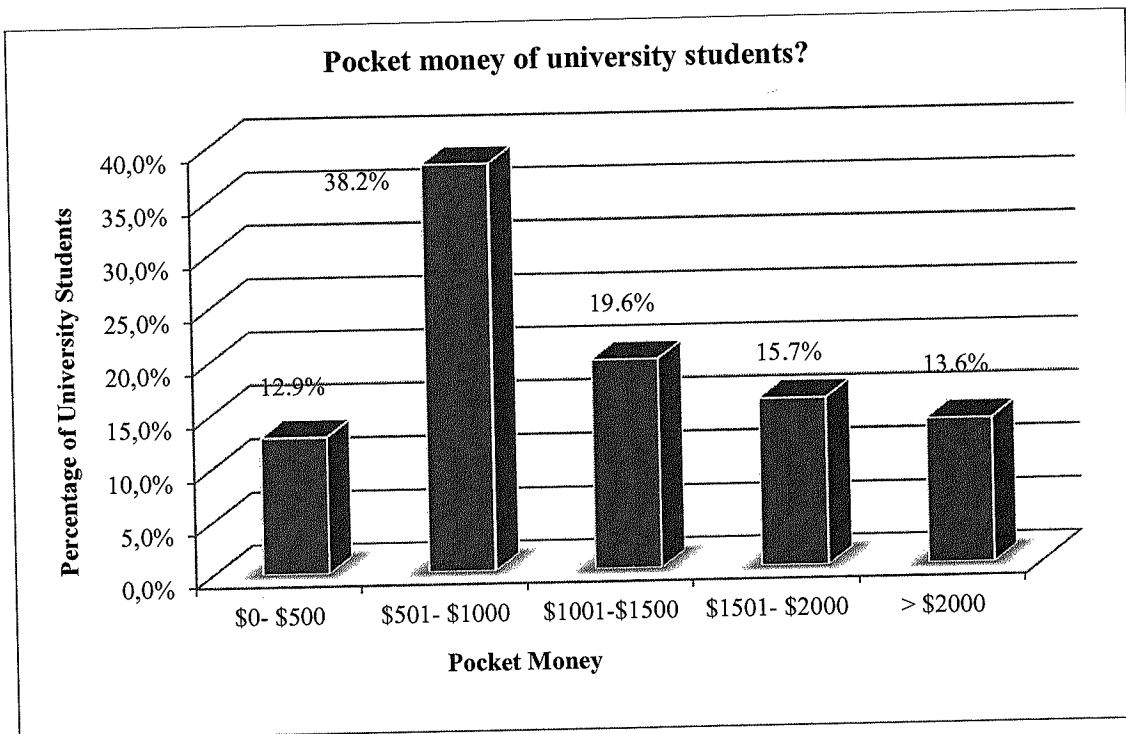


Figure 5: The pocket money amount of the university students

The graph in Figure 5 indicates the pocket money of the university students. Majority of the university students spend \$501 - \$1000 (n=107). Followed by \$1001 - \$1500 (n=55), 44 students spend \$1501 - \$2000, 38 spend above \$2000 lastly 36 spend \$0 - \$500.

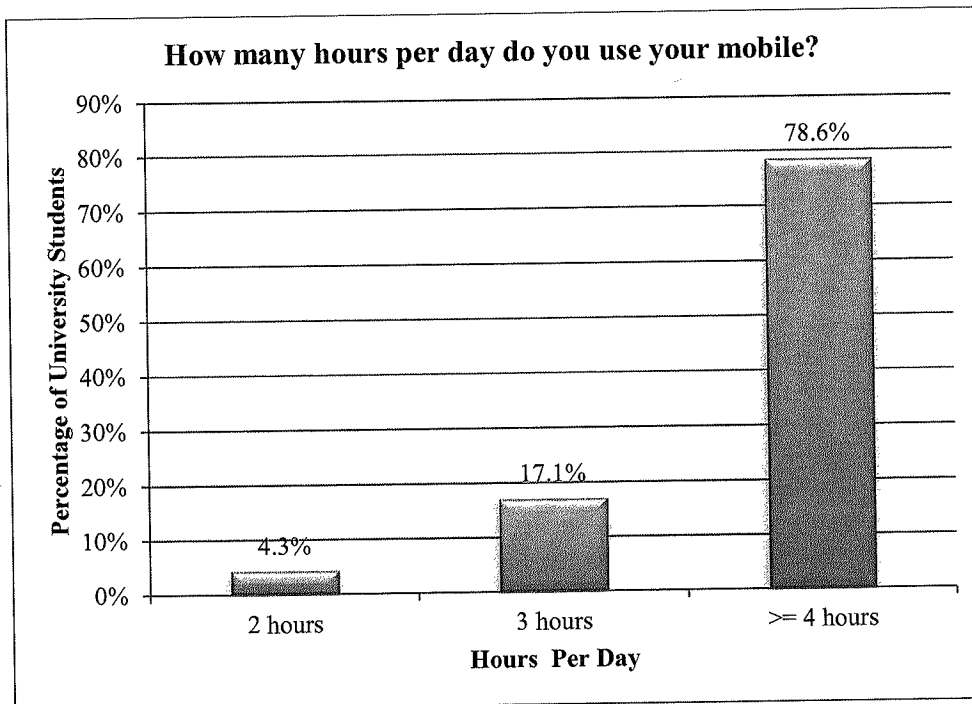


Figure 6: Number of hours the respondents use their mobiles per day

Figure 6 shows the hours the university students use their mobiles per day. Showing that 78.6% (n=220) of the respondents use their mobile or smart phones for more than 4 hours per day. Followed by 3 hours per day 17.1% (n=48) and 2 hours per day 4.3% (n=12).

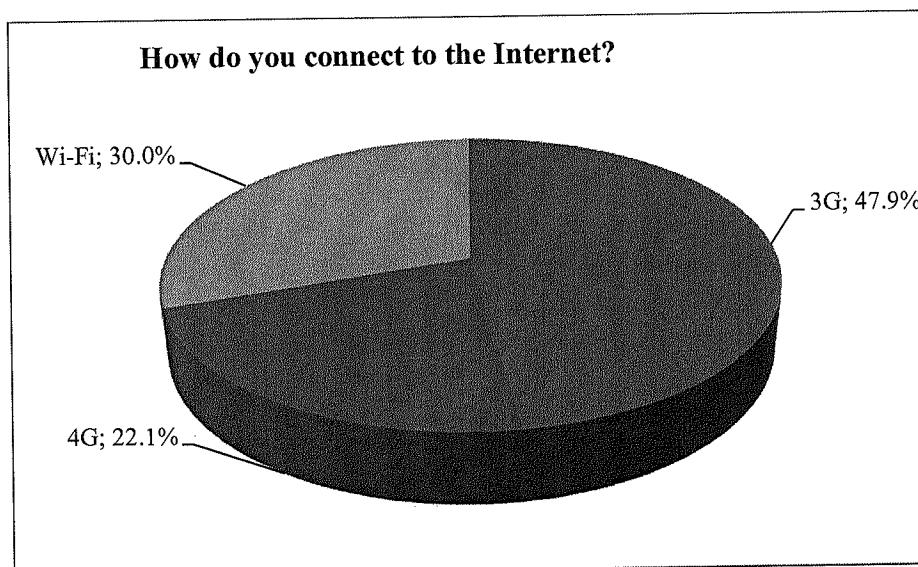


Figure 7: Connection to the Internet

Figure 7 shows majority of the university students 47.86% (n=134) use 3G mobile connection to connect to the Internet. Followed by Wi-Fi 30.0 % (n=84) and 4G mobile connection 22.1% (n=62).

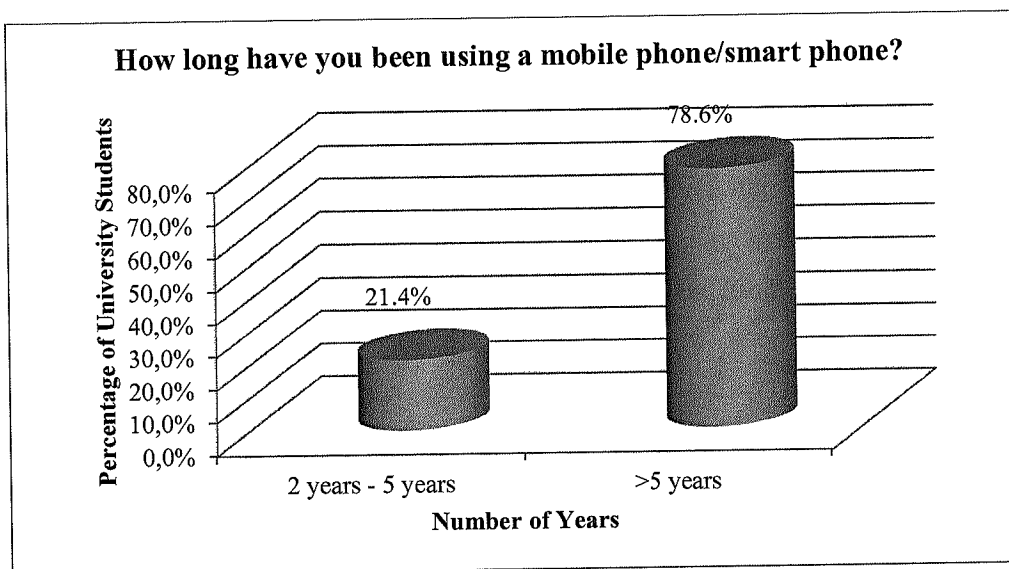


Figure 8: Number of year's respondents has used a mobile or smart phone

Figure 8 shows how long the university students have been using the mobile or smart phone. Majority of respondents have used a mobile or smart phone for more than 5 years, 78.6% (n=220) and followed by 2-3 years 21.4%.

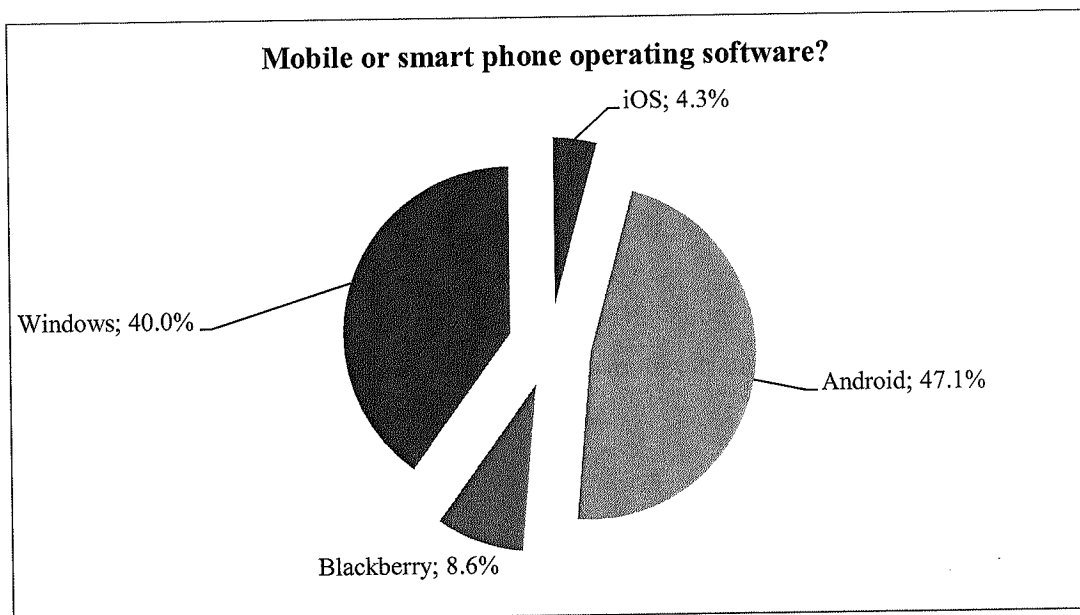


Figure 9: Mobile or smart phone operating system

Figure 9 shows the type of operating software used in the university student's phones. Majority of the respondents use mobiles or smart phones which use Android 47.1% (n=132), closely followed by Windows 40% (n=112), Blackberry 8.6% (n=8.6) and iOS 4.3% (n=12).

4.2.3. Banking Purpose

Section 3 shows the results from the students about their banking. They were asked to fill in data about the purpose of the accounts they held, frequency of their banking and the extent they utilised the banking hall, Internet banking, m-Banking, telephone banking and point of sale.

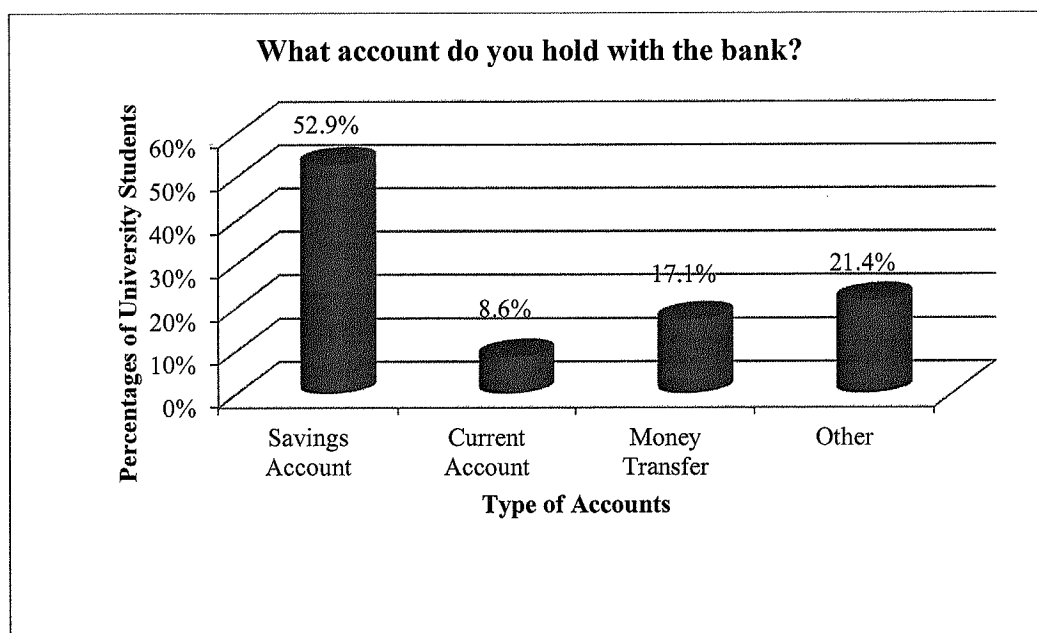


Figure 10: The respondents responses when asked if they hold a bank account

Figure 10 shows that majority have 52.9% (n=148) savings accounts, 21.4% (n=68) other types of accounts not listed, 17.1% (n=48) used money transfer and 8.6% (n=24) current accounts.

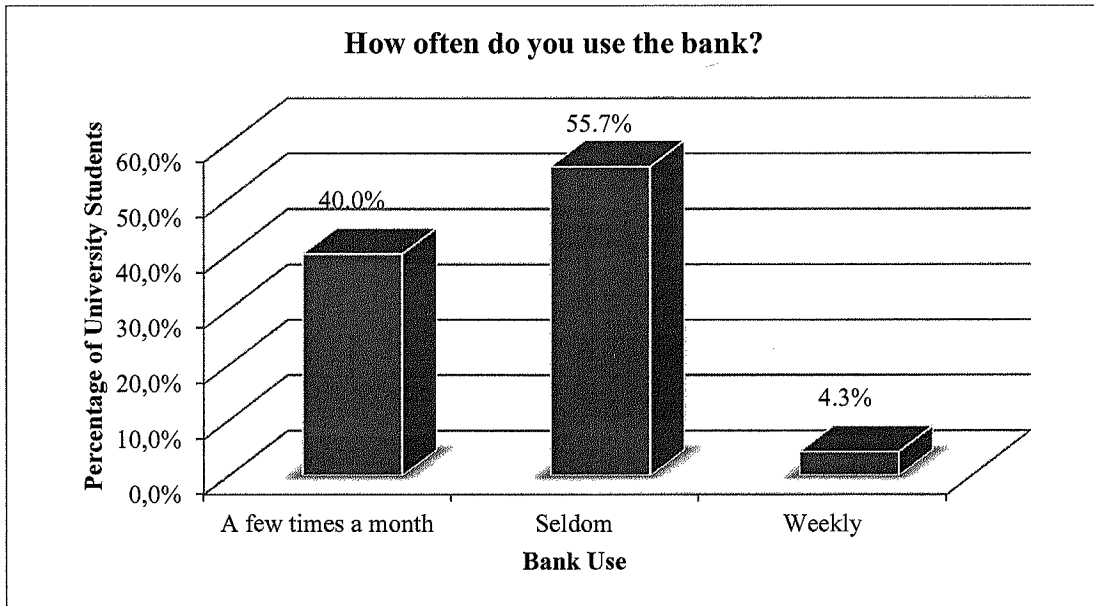


Figure 11: The respondents' responses when asked how frequently they bank

The results in Figure 11 show that 55.7% (n=156) respondents seldom use the bank, 40.0% (n=112) use the bank a few times in a month and 4.3% (n=12) use the bank weekly.

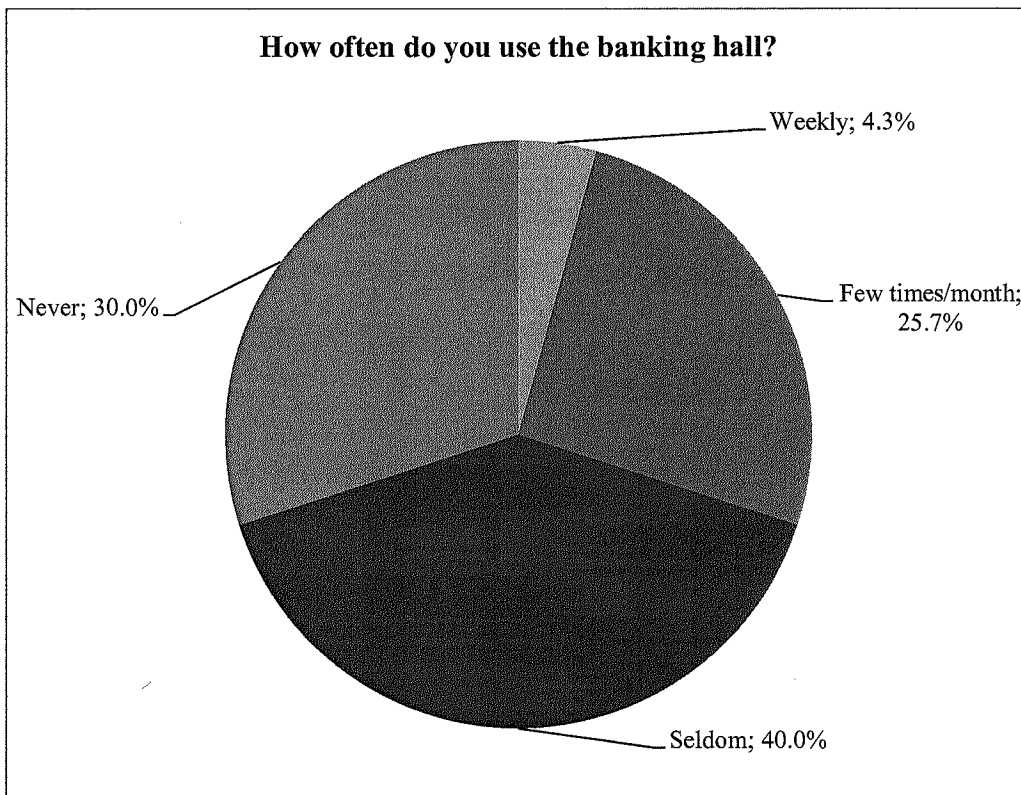


Figure 12: The extent to which the respondents use the banking hall

Results shown in Figure 12 indicate that most university students seldom use the banking hall 40.0% (n=112), never 30% (n= 84), 25.7% (n=72) and 4.3% (n=12).

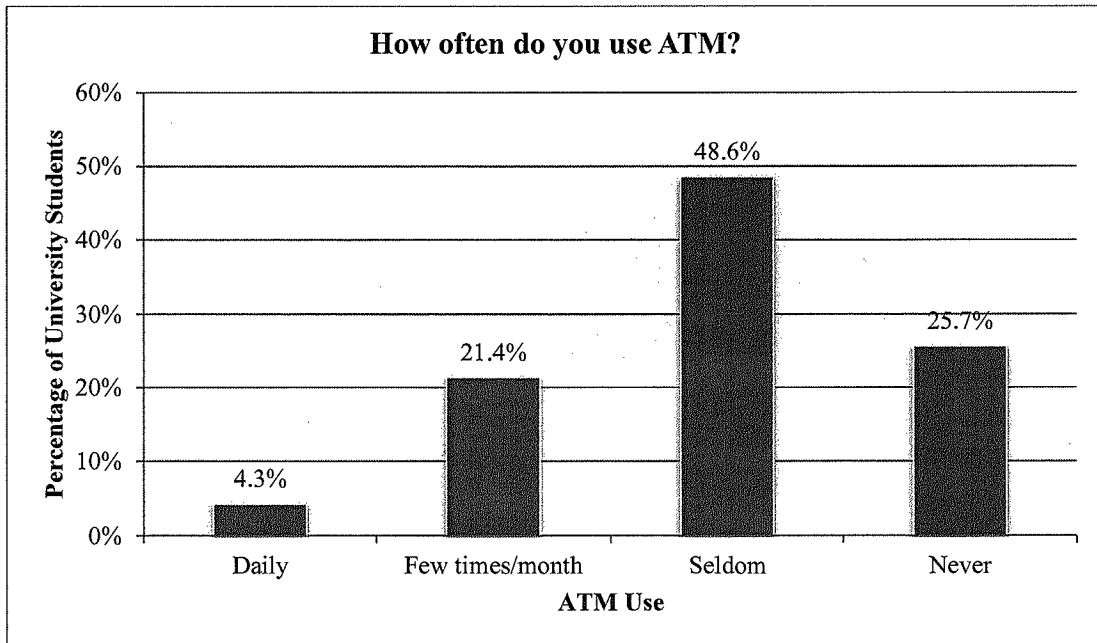


Figure 13: The extent to which the respondents use ATM

Results depicted in Figure 13 show that the university students use the ATM: seldomly 48.6% (n=136), never 25.7% (n=72), few times per month 21.4% (n=60) and daily 4.3% (n=12).

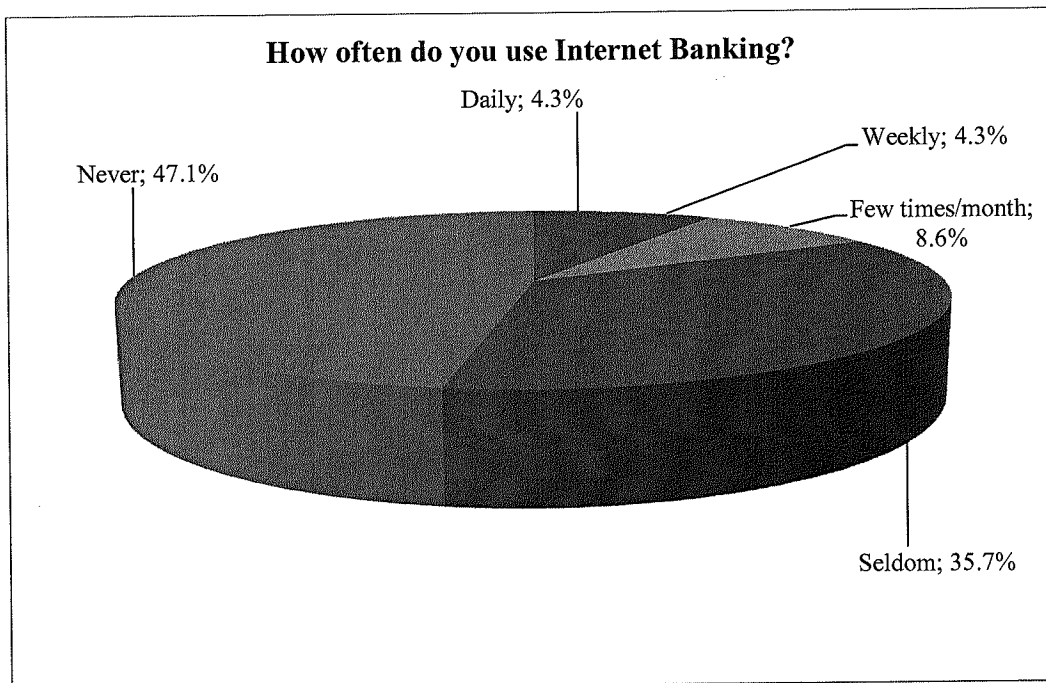


Figure 14: The extent to which the respondents use Internet

Figure 14 depicts the internet use results shown as never 47.1% (n=132), seldom 35.7% (n=100), few times a month 8.6% (n=24), weekly 4.3% (n=12) and daily 4.3% (n=12).

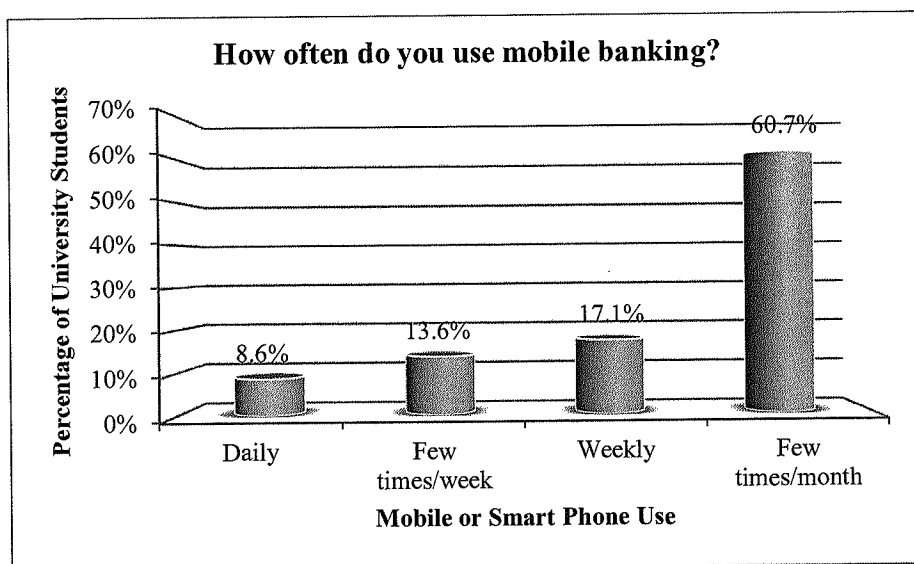


Figure 15: The extent to which the respondents use mBanking

Mobile banking Figure 15, shows as few times a month 60.71% (n=170), weekly 17.1% (n=48), few time per week 13.6% (n=38) and daily 8.6% (n=24).

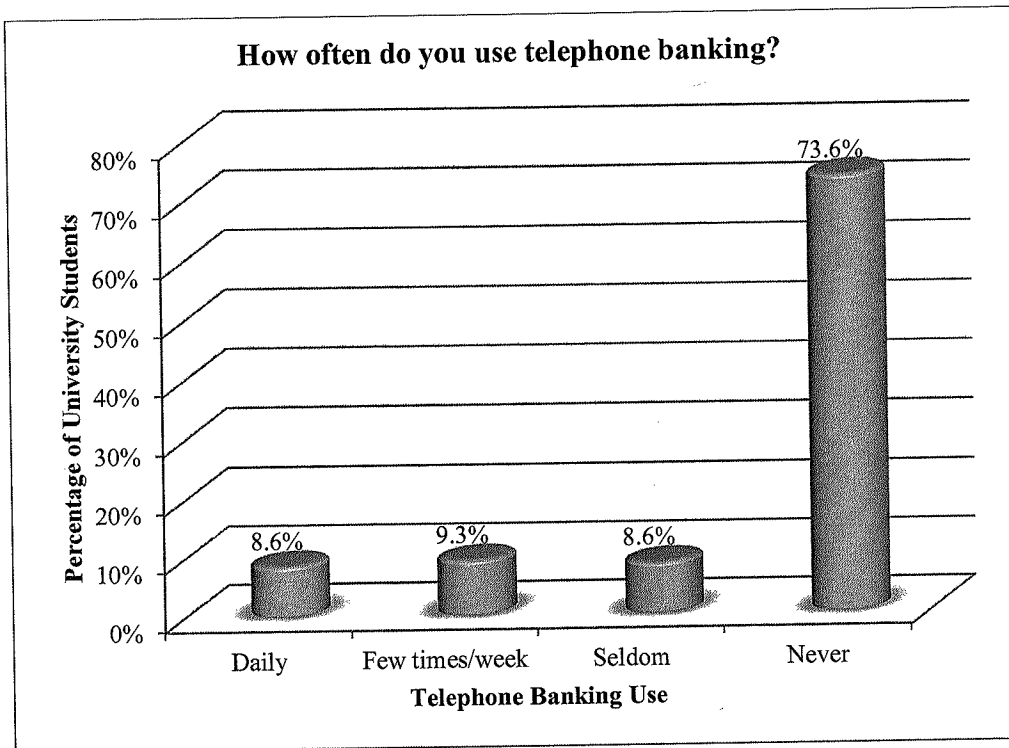


Figure 16: The extent to which the respondents use telephone banking

Telephone banking results in Figure 16 shows as never 73.6% (n=206), few times per week 9.3% (n=26), seldom 8.6% (n=24), daily 8.6% (n=24).

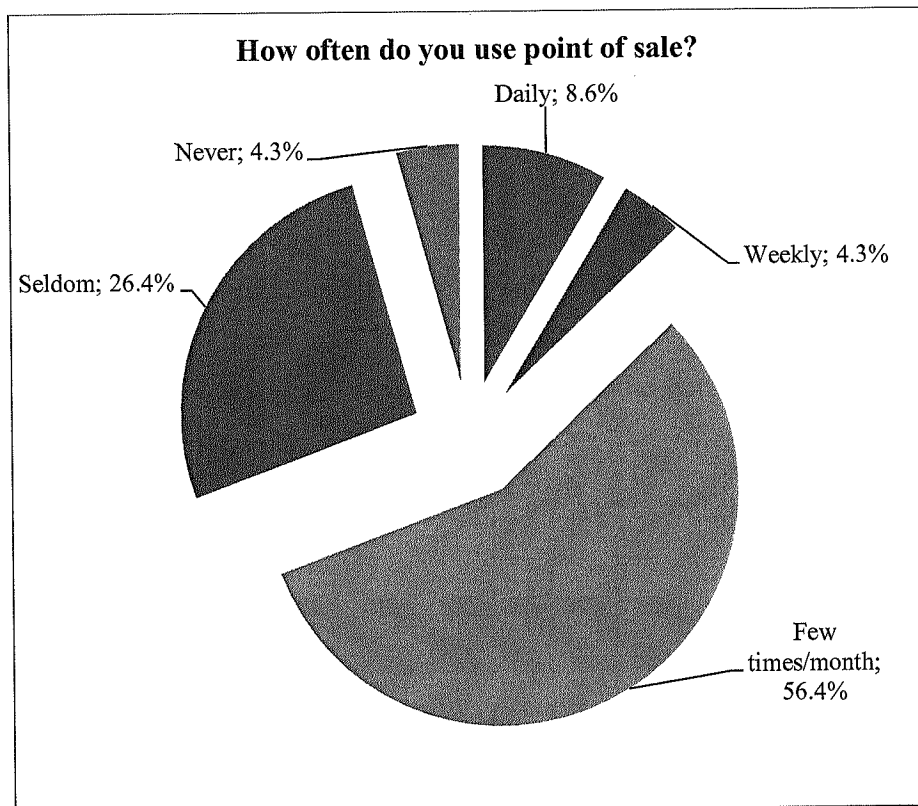


Figure 17: The extent to which the respondents use point of sale

Figure 17 shows the point of sale results show few times a month 56.4% (n=158), seldom 26.4% (n=74), daily 8.6% (n= 24), weekly 4.3% (n= 12) and never 4.3% (n= 12).

4.3. Data Collection Tools

“Factors That Affect Mobile Banking Adoption” was prepared by the researcher in the form of a questionnaire in connection to mobile banking adoption which aimed to find out the factors that affect students’ behavioural intention to adopt the use of mobile banking. This section used a five point Likert scale ranging from (1) “strongly disagree” to (5) “strongly agree” that was used to select the most appropriate constructs included in the research model. The questionnaire statements were adopted from prior studies conducted with necessary validation and changing of the statements to suit the research.

Below is a list which was used to create the proposed research model with the statements that were asked, the reference of the statements from previous researchers in the questionnaire and the combined Cronbach’s Alpha for each of the 8 constructs. To test the

trustworthiness and legality of the questionnaire Cronbach's alpha was used to test each construct and the corresponding items. According to the Cronbach's Alpha, the research statements were considered to be fair. The statements asked in the questionnaire section four are listed in the table below.

Table 2 shows the proposed research model statements that were used in the section 4 of the questionnaire, the references of where the statements were attained, the combined Cronbach's Alpha for the individual constructs and at the bottom of the table the total Cronbach's Alpha.

Table 2: Statements, reference and total Cronbach's Alpha of each construct the proposed model

Statements	Reference	Cronbach's Alpha
PERCEIVED USEFULNESS		
1. Mobile banking improves how I do my banking.	Aboelmaged and Gebba (2013); Cheng et al. (2006); Curran and Meuter (2005)	0.825
2. Mobile banking is useful for me.		
3. Mobile banking makes life easier to do my banking.		
4. Mobile banking makes my financial life easy.		
PERCEIVED EASE OF USE		
1. Learning to use mobile banking is my easy for me.	Lin (2011); Yu (2012); Luarn and Lin (2005); Venkatesh and Zhang (2010); Foon and Fah (2011); Sripalawat et al. (2011); Gu et al. (2009)	0.948
2. Mobile banking is easy to use.		
3. Mobile banking is easy to use to complete what I want to.		
4. Interaction with mobile banking does not require a lot of mental effort.		
5. Mobile banking navigation on my phone is easy.		
ATTITUDE		
1. Using mobile banking will save me time.	Aboelmaged and Gebba (2013); Wu and Chen (2005); Cheng et al. (2006)	0.821
2. Using mobile banking will save me money.		
3. I believe it is a good idea to use mobile banking.		
4. I believe using mobile banking is moving ahead with the times.		
BEHAVIOURAL INTENTION OF USE		
1. I will adopt mobile banking as soon as possible.	Lin (2011); Yu (2012); Venkatesh and Zhang (2010); Larn and Lin (2005); Sripalawat et al. (2011)	0.979
2. I intend to use mobile banking in the future.		
3. I will regularly use mobile banking in the future.		
4. Using mobile banking will be good for me.		
5. I prefer to use mobile banking.		

PERSONAL INNOVATIVENESS

1. If I heard about new information technology, I would find ways to experiment with it.		
2. Among my peers, I am usually the first to try out new technologies.	Mohammadi (2015);	0.783
3. In general, I am hesitant to try out new information technologies.	Kim and Mirusmonov, (2010);	
4. I am interested to hear about new technological developments.	Cheng et al. (2006)	

PERCEIVED RISK

1. I would feel secure sending sensitive information across the mobile banking.		
2. Mobile banking is a secure means through which to send sensitive information.	Mohammadi (2015);	0.989
3. Overall mobile banking is a safe place to transmit sensitive information.	Cheng et al. (2006)	

SOCIAL INFLUENCE

1. My friends and family value the use of mobile banking.		
2. The people that influence me use mobile banking.	Zhou et al. (2010);	0.888
3. I find mobile banking trendy.	Oliveria et al. (2014)	
4. The use of mobile banking gives me professional status.		

SELF-EFFICACY

1. I would use mobile banking if I had built-in help guidance for assistance.		
2. I would use mobile banking if someone showed me how to do it.	Yu (2012); Venkatesh et al. (2003); Larn and Lin (2005);	0.973
3. I would use mobile banking if I had someone else using it.	Venkatesh and Zhang (2010)	
4. I would use mobile banking if I could call someone for help.		

Total 0.930

4.4. Data Analysis

A questionnaire and hypothesis were drawn up and used to collect data from the university students. SPSS 20.0 was used to analyze and interpret the collected data. Cronbach's Alpha was used to test the reliability of the statements asked in the questionnaire. Output a total of 0.930 which is depicted in Table 2. Linear Regression Analysis method was used to analyse the data collected. Frequency, percentages, mean, standard deviation and independent samples t-test methods were used during the analysis process.

4.5 Procedure

The literature was searched and read to fully understand that in Zimbabwe there were not enough research conducted based on mobile banking of the university students, the decision was made to further study this subject. A continuation to search the literature was conducted to find the suitable models that would be used for the study; TAM and UTAUT were chosen from the other theoretical models. A questionnaire was prepared. A decision was made as to which universities in Zimbabwe would be used and the total number of university students to participate in the study. In a 4 week period the questionnaires were handed to the university students to fill their desired answers to the questions. Once the questionnaires were collected, the data was analysed to check for anomalies. If any of the questionnaires had missing data they were removed. Data from the correctly filled in questionnaires was entered into SPSS and the suitable analysis methods were used to analyse the data. After the analysis a report was written in the thesis outlining the results.

Table 3 shows the work and duration of the work conducted on the thesis and Figure 18 also shows the Gantt chart showing the duration of the thesis.

4.5.1. Duration and Resources

This study began in February 2015 after conducting an extensive research on the topic of mobile banking adoption and preparing the research proposal, this research was completed in January 2016. Table 3 and Figure 18 show all the work that was conducted and the duration taken for each item during this timeframe. Table 3 shows the duration taken where as the Gantt chart shown in Figure 18 shows the start and complete dates. The thesis presentation, preparation of the data collection tools, and getting more acquainted with the statistical analytical tools were done during this time period. The expenses incurred during this research were financed by the researcher.

Table 3: Time schedule

WORK DONE	DURATION
• Literature Research	Feb, 2015– Jan, 2016
• Preparation of the Research Proposal	8 weeks
• Creation of the Questionnaire	4 weeks
• Hypothesis Drawn	4 weeks
• Questionnaires Handed to University Students	4 weeks
• Check Data for Anomalies	1 week
• Input Data into SPSS	1 week
• Interpretation and Discussion of Results	3 weeks
• Writing of the Thesis	31 weeks
• Reading, Discussion and Correction of the Thesis According to the Feedback from Supervisor	5 weeks

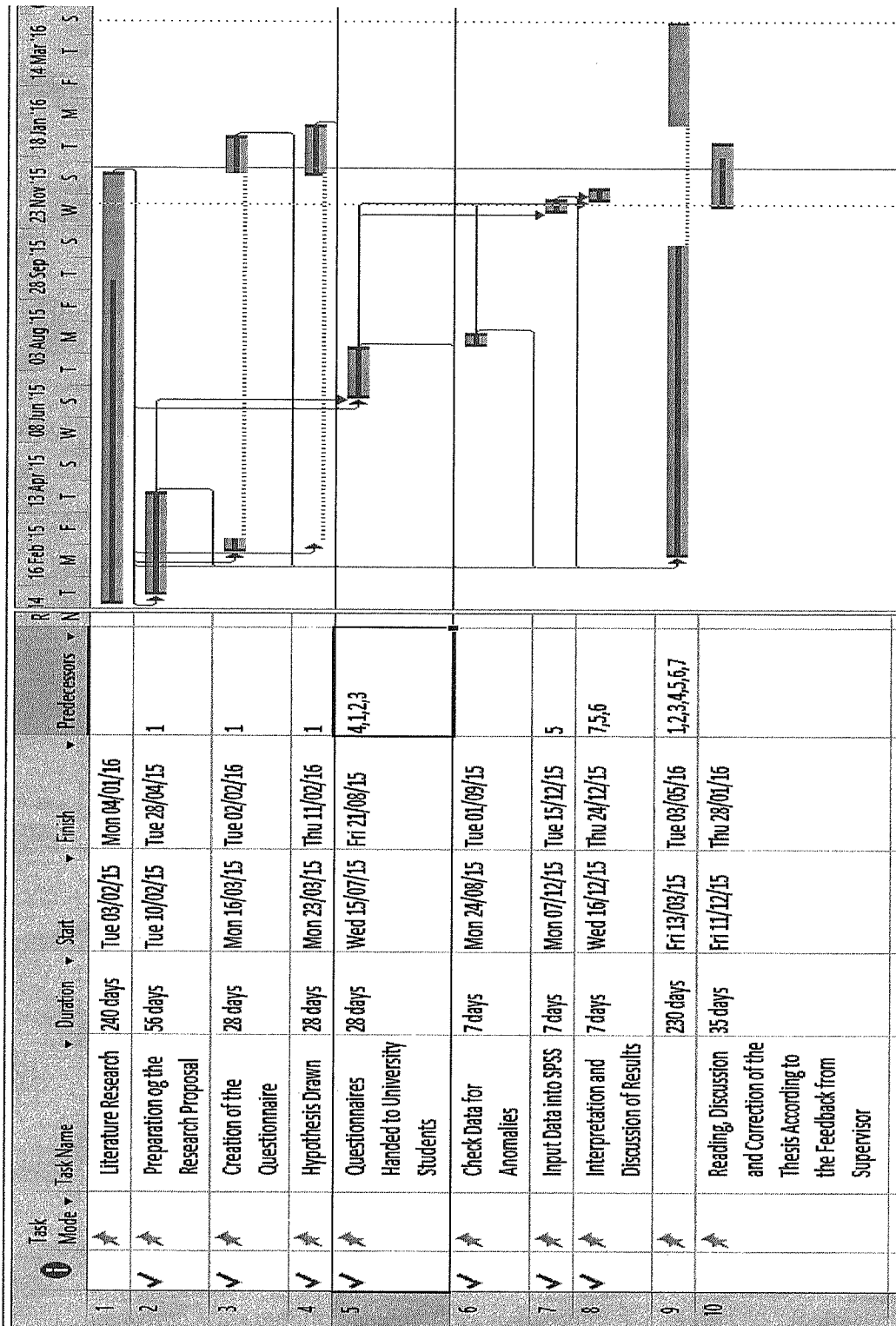


Figure 18: Gantt chart showing the time schedule of the thesis

CHAPTER 5

RESULTS and DISCUSSION

This chapter discusses the results of the research in sight of the original aims and the hypothesis of the research.

5.1. The Students' Opinions on Mobile Banking

A pre-analysis is calculated to check the validity of the different constructs in then questionnaire. Table 4 below shows the statements, mean and standard deviation for each construct. Most of the constructs were of average response as the means were above 3.0. Perceived risk constructs is an exception which is shown as a mean below the average of 3.0. The means and standard deviations listed below show the answers the students picked from the 5-point Likert scale in the questionnaire.

Table 4: The mean and standard deviation of each item

Statements	Mean	SD
PERCEIVED USEFULNESS		
Mobile banking improves how I do my banking.	4.49	0.50
Mobile banking is useful for me.	4.31	0.55
Mobile banking makes life easier to do my banking.	4.31	0.69
Mobile banking makes my financial life easy.	4.44	0.50
Total	4.39	0.46
ATTITUDE		
Using mobile banking will save me time.	4.52	0.58
Using mobile banking will save me money.	4.10	0.83
I believe it is a good idea to use mobile banking.	4.61	0.49
I believe using mobile banking is moving ahead with the times.	4.66	0.56
Total	4.47	0.51
PERCEIVED EASE OF USE		
Learning to use mobile banking is easy for me.	4.44	0.50
Mobile banking is easy to use.	4.34	0.48
Mobile banking is easy to use to complete what I want to.	4.34	0.48
Interaction with mobile banking does not require a lot of mental effort.	4.44	0.50
Mobile banking navigation on my phone is easy.	4.44	0.50
Total	4.40	0.44

BEHAVIOURAL INTENTION TO USE		
I will adopt mobile banking as soon as possible.	4.53	0.58
I intend to use mobile banking in the future.	4.61	0.57
I will regularly use mobile banking in the future.	4.53	0.58
Using mobile banking will be good for me.	4.61	0.57
I prefer to use mobile banking.	4.57	0.58
Total	4.57	0.55
PERSONAL INNOVATIVENESS		
If I heard about new information technology, I would find ways to experiment with it.	4.36	0.70
Among my peers, I am usually the first to try out new technologies.	4.37	0.67
In general, I am hesitant to try out new information technologies.	3.89	0.91
I am interested to hear about new technological developments.	4.41	0.68
Total	4.26	0.58
PERCEIVED RISK		
I would feel secure sending sensitive information across the mobile banking.	2.96	1.04
Mobile banking is a secure way to send sensitive information.	2.90	0.98
Overall mobile banking is a safe place to transmit sensitive information.	2.96	1.04
Total	2.94	1.01
SOCIAL INFLUENCE		
My friends and family value the use of mobile banking.	4.36	0.78
The people that influence me use mobile banking.	4.31	0.62
I find mobile banking trendy.	4.35	0.70
The use of mobile banking gives me professional status.	4.20	0.62
Total	4.26	0.66
SELF-EFFICACY		
I would use mobile banking if I had built-in help guidance for assistance.	4.38	0.67
I would use mobile banking if someone showed me how to do it.	4.49	0.65
I would use mobile banking if I had someone else using it.	4.44	0.65
I would use mobile banking if I could call someone for help.	4.44	0.65
Total	4.44	0.63

Table 4 shows a summary of the mean and standard deviation results for the proposed model. Majority of the results are strong positive results.

The most important result of all of constructs of the proposed model was *"I believe using mobile banking is moving ahead with the times."* with the highest mean score (M = 4.66) for attitude to use mobile banking. This shows that university students are interested in moving ahead with the times this includes using mobile technology for mobile banking adoption which is also evident in (Aboelmaged and Gebba (2013).

The second result of all the constructs of the proposed model was a three way tie *"I believe it is a good idea to use mobile banking."*, *"I intend to use mobile banking in the future."* and *"Using mobile banking will be good for me."* all with the same score of (M = 4.61) of attitude and 2 from behavioural intention to use mobile banking. This shows that university students believe mobile banking works for them, they intend to keep on using mobile banking in the future and they feel mobile banking would be good the best solution for them (Aboelmaged and Gebba, (2013).

The third result of all the constructs of the proposed model was *"I prefer to use mobile banking."* Which scored (M = 4.57) of behavioural intention to use mobile banking. This depicts that university students' behavioural intention to use has a significant influence on technology of mobile banking (Venkatesh et al., 2003).

The antepenultimate statement was *"In general, I am hesitant to try out new information technologies."* (M=3.89) for personal innovativeness in mobile banking. This shows that the university students are confident in using information technologies in mobile banking that are available to them. The university students who have high innovativeness come to accept new innovative mobile banking applications that are a lot faster and meet their needs (Mohammadi, 2015).

The penultimate statement was *"Mobile banking is a secure way to send sensitive information."* (M= 2.90) for perceived risk in mobile banking. This shows that the students don't feel safe sending their confidential data through mobile banking technologies. This is also evident with Chitungo and Munongo (2013) as they also found that the individuals in their research perceive there to be higher risk and uncertainty with loss and theft of personal and financial information from hacking.

The statements that scored the least result of all the constructs of the proposed model were *"I would feel secure sending sensitive information across the mobile banking."* and

“Overall mobile banking is a safe place to transmit sensitive information.” both have the same score of (M = 2.96) for perceived risk in mobile banking. The results show that university students are not certain about transferring their personal data across the mobile banking platforms and mobile banking is a secure place to transmit personal data, contrary to (Mohammadi, 2015).

The constructs of the proposed research model in chronological order according to the mean totals are as follows: Behavioural intention to use (M = 4.57), attitude (M = 4.47), self-efficacy (M= 4.44), perceived ease of use (M = 4.40), perceived usefulness (M = 4.39), joint second personal innovativeness and social influence (M = 4.26) and perceived risk (M = 2.94).

5.2. Dependencies between the Research Model Constructs

Correlation analysis was used to examine the degree of association between the relationships of the constructs of the proposed research model. The correlation value is always between +1 and -1. Correlation is an indication of how strong or weak the constructs are related, the data depicted in the Table 5 illustrates the correlation between the constructs of the proposed research model in this study.

Table 5: Correlation Matrix to depicts the results

Constructs	Mean	SD	CORRELATIONS								
			1	2	3	4	5	6	7	8	
1.Perceived usefulness	4.39	.46	1								
2.Perceived ease of use	4.40	.44	.366**	1							
3.Attitude	4.47	.51	.567**	.491**	1						
4.Behavioural intention to use	4.57	.55	.391**	.454**	.920**	1					
5.Personal innovativeness	4.26	.58	.096	.529**	.542**	.518	1				
6.Perceived risk	2.94	1.01	-.293**	.013	-.129*	-.090	.105	1			
7.Social influence	4.26	.66	.447**	.260**	.574**	.525**	.179**	-.069	1		
8.Self-efficacy	4.44	.63	.297**	.266**	.753**	.839**	.396**	-.006	.725**	1	

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

* . Correlation is significant at the 0.05 level (2-tailed).

Significant correlations remained between all the associations of the constructs with the exception of the following: (personal innovativeness against perceived usefulness, perceived risk), and (perceived risk against perceived ease of use, behavioural intention to use, personal innovativeness, social influence and self-efficacy). Significant positive

correlations remained between all the other associations of the constructs. Implying in all positive associations with an increase in one construct there will be an increase in the other associations.

The strongest correlation was confirmed between behavioural intention to use – attitude (correlation coefficient=0.920) followed by self-efficacy – behavioural intention to use (correlation coefficient=0.839) in that order. These values indicate high dependence between the pairs. That's to say with high increase in behavioural intention to use there will be a high increase in attitude, and the same goes for, a high level of self-efficacy, there will be a high increase in behavioural intention of use of mobile banking.

From the above correlation matrix, it's clear to understand the directions of the dependencies by considering the scale and signs of the correlation coefficients. Therefore, a description of the observed linear dependence between any two assorted constructs can either be positive or negative and strong or weak. It is not enough to falsify the formulated hypothesis, there is need to view all possible relationships from the constructs, such associations can be considered in understanding which construct could significantly predict the other. For this reason, the researcher employed Linear Regression.

5.3. Relationships between the Constructs of the Proposed Research Model

Linear Regression Analysis was used to examine the relationships between two variables of the hypothesis. Hypothesis will either be supported or rejected considering if p is greater than or less than 0.05. β has either a positive or negative effect. The output from SPSS 20 is listed below from Table 6 to Table 21.

5.3.1. Relationship between perceived usefulness and behavioural intention to use mobile banking

The researcher proposed that the university students' perceived usefulness would positively affect their behavioural intention to adopt a mobile banking application. This is grounded by the hypothesis H_1 : "*Perceived Usefulness* will have a positive effect on the *Behavioural Intention to Use* mobile banking by students"; the hypothesis was tested and yielded the following result:

Table 6: Linear Regression Analysis of the relationship between perceived usefulness and behavioural intention

Dependent variable: Behavioural Intention to Use						
	B	Std. Error	β	t	p	Decision
(Constant)	2.501	.294				
Perceived Usefulness	.472	.067	.391	7.084	.000	Supported
Model F = 50.184						
R ² = .153						

The hypothesis H_1 was supported by considering the coefficients in Table 6, ($F(280) = 50.184$; $p < .05$; $R^2 = .153$). The overall regression model was significant. $R^2 = 0.153$ denoted that “perceived usefulness” accounts for 15.3% of variance in “behavioural intention” to use mobile banking. The coefficient ($p < 0.05$), indicated that “perceived usefulness” had significant positive influence on “behavioural intention” to use mobile banking.

The above result shows perceived usefulness having a positive and significant effect on the university students’ intention to use mobile banking offered by the banks, financial institutions and MNO’s. The above result from this research contradicted that of Aboelmaged and Gebba (2013). They indicated that there was no significant impact of perceived usefulness on the intention to use mobile banking.

5.3.2. Relationship between perceived usefulness and attitude to use mobile banking

The researcher proposed that the university students’ perceived usefulness would positively affect their attitude to use a mobile banking application. This is grounded by the hypothesis H_2 : “*Perceived Usefulness* will have a positive effect on the *Attitude* to use mobile banking by students”; the hypothesis was tested and yielded the following result:

Table 7: Linear Regression Analysis of the relationship between perceived usefulness and attitude

Dependent variable: Attitude						
	B	Std. Error	β	t	p	Decision
(Constant)	1.713	.242				
Perceived Usefulness	.629	.055	.567	11.482	.000	Supported
Model F = 131.847						
R ² = .322						

The hypothesis **H₂** was supported by considering the coefficients in Table 7, (F (280) = 131.847; $p < .05$; $R^2 = .322$). The overall regression model was significant. $R^2 = .322$ denoted perceived usefulness accounts for 32.2% of variance in attitude of mobile banking adoption. The coefficient ($p < 0.05$), indicated that “perceived usefulness” had significant positive influence on “attitude” of mobile banking adoption.

This result shows that perceive usefulness does have a positive and significant effect on university students attitude to use mobile banking applications. Gu et al. (2009) considered perceived usefulness as an important construct in the hypothesis as users are more likely to use mobile banking when they find it to be of use to them also evident in this research on mobile banking.

5.3.3. Relationship between attitude and behavioural intention to use mobile banking

The researcher proposed that the university students’ attitude would positively affect their behavioural intention to use a mobile banking application. This is grounded by the hypothesis **H₃**: “*Attitude* will have a positive effect on the *Behavioural Intention* to continue using mobile banking”; the hypothesis was tested and yielded the following result:

Table 8: Linear Regression Analysis of the relationship between attitude and behavioural intention to use

Dependent variable: Behavioural Intention to Use						
	B	Std. Error	β	t	p	Decision
(Constant)	.091	.115				
Attitude	1.002	.026	.920	39.220	.000	Supported
Model F = 1538.218						
R ² = .847						

The hypothesis **H₃** was supported by considering the coefficients in Table 8, (F (280) = 1538.218; p < .05; R² = .847). The overall regression model was significant. R² = 0.847 denoted that attitude accounts for 84.7% of variance in behavioural intention to use mobile banking adoption. The coefficient (p<0.05), indicated that “attitude” had significant positive influence on “behavioural intention to continue using mobile banking”.

This result shows that attitude does have a positive effect on the university students’ intention to use mobile banking applications. This research agrees with the research conducted by Aboelmaged and Gebba (2013) attitude is a powerful predictor of the university students’ intention to use mobile banking, solely showing the importance of those offering the services to develop existing and new university students as university students’ attitude to implement mobile banking.

5.3.4. Relationship between perceived ease of use and behavioural intention to use mobile banking

The researcher proposed that the university students’ perceived ease of use would positively affect their behavioural intention to continue using a mobile banking application. This is grounded by the hypothesis **H₄**: “*Perceived Ease of Use* will have a positive effect on the students *Behavioural Intention* to continue using mobile banking services”; the hypothesis was tested and yielded the following result:

Table 9: Linear Regression Analysis of the relationship between perceived ease of use and behavioural intention to use

Dependent variable: Behavioural Intention to Use						
	B	Std. Error	B	t	p	Decision
(Constant)	2.095	.293				
Perceived Ease of Use	.563	.066	.454	8.486	.000	Supported
Model F = 72.019						
R ² = .206						

The hypothesis **H₄** was supported by considering the coefficients in Table 9, (F (280) = 72.019; p < .05; R² = .206). The overall regression model was significant. R² = .206 denoted perceived ease of use accounts for 20.6% of variance in behavioural intention to use mobile banking adoption. The coefficient (p<0.05), indicated that “perceived ease of use” had a significant and positive influence on “behavioural intention to use” mobile banking adoption.

This result shows that perceived ease of use does have a positive effect on the university students’ intention to use mobile banking applications. This research supports the research conducted by Koenig-Lewis, Palmer and Moll (2010) that perceived ease of use is dependent on the university students experience and novice of mobile banking and the intention to use mobile banking.

5.3.5. Relationship between perceived ease of use and attitude to use mobile banking

The researcher proposed that the university students’ perceived ease of use would positively affect their attitude to use a mobile banking application. This is grounded by the hypothesis **H₅**: “*Perceived Ease of Use* will have a positive effect on the *Attitude* of the students to use mobile banking”; the hypothesis was tested and yielded the following result:

Table 10: Linear Regression Analysis of the relationship between perceived ease of use and attitude

Dependent variable: Attitude						
	B	Std. Error	β	t	p	Decision
(Constant)	2.008	.263				
Perceived Ease of Use	.560	.060	.491	9.409	.000	Supported
Model F = 88.521						
R ² = .242						

The hypothesis H_5 was supported by considering the coefficients in Table 10, (F (280) = 88.521; $p < .05$; $R^2 = .242$). The overall regression model was significant. $R^2 = 0.242$ denoted perceived ease of use accounts for 24.2% of variance in attitude of mobile banking adoption. The coefficient $p < 0.05$, indicated that “perceived ease of use” had significant positive influence on “attitude” of mobile banking adoption.

The results show that perceived ease of use and attitude has a positive relationship which is shown by the university students’ intention to use is easy if they are confident and they have the right attitude to use mobile banking. Evident in Lin (2011) revealed that perceived ease of use had a positive and significant relationship with attitude.

5.3.6. Relationship between perceived ease of use and perceived usefulness to use mobile banking

The researcher proposed that the university students’ perceived ease of use would positively affect their perceived usefulness to use a mobile banking application. This is grounded by the hypothesis H_6 : “*Perceived Ease of Use* will have a positive effect on the *Perceived Usefulness* of mobile banking by students”; the hypothesis was tested and yielded the following result:

Table 11: Linear Regression Analysis of the relationship between perceived ease of use and perceived usefulness

Dependent variable: Perceived Usefulness						
	B	Std. Error	β	t	p	Decision
(Constant)	2.733	.254				
Perceived Ease of Use	.377	.057	.366	6.559	.000	Supported
Model F = 43.024						
R ² = .134						

The hypothesis **H₆** was supported by considering the coefficients in Table 11, (F (280) = 43.024; p < .05; R² = .134). The overall regression model was significant. R² = .134 denoted perceived ease of use accounts for 13.4% of variance in perceived usefulness of mobile banking adoption. The coefficient (p < 0.05), indicated that “perceived ease of use” had a significant and positive influence on “perceived usefulness” of mobile banking adoption.

This shows perceived ease of use immensely influences perceived usefulness of mobile banking technologies. When the university students acquire the knowledge of how easy mobile banking is to use, they are positively influenced by intent to use mobile banking. A similar result was recorded by Gu et al. (2009) and Chitungo and Munongo (2013). Contrary to result found by Koeing-Lewis, Palmer and Moll (2010) there was no relationship.

5.3.7. Relationship between personal innovativeness and perceived risk to use mobile banking

The researcher proposed that the university students’ personal innovativeness would positively affect their perceived risk to use a mobile banking application. This is grounded by the hypothesis **H₇**: “*Personal Innovativeness* will have a positive effect on the *Perceived Risk* of the mobile banking adoption of the students”; the hypothesis was tested and yielded the following result:

Table 12: Linear Regression Analysis of the relationship between personal innovativeness and perceived risk

Dependent variable: Perceived Risk						
	B	Std. Error	β	t	p	Decision
(Constant)	2.164	.446				
Personal Innovativeness	.183	.104	.105	6.559	.079	Not Supported
Model F = 3.101						
R ² = .011						

The hypothesis H_7 was not supported considering the coefficients in Table 12, ($F(280) = 3.101$; $p > .05$; $R^2 = .011$). The overall regression model was insignificant. $R^2 = .011$ denoted personal innovativeness accounts for 1.10% of variance in perceived risk of mobile banking adoption. The coefficient ($p > 0.05$), indicated that “personal innovativeness” had an insignificant and positive influence on “perceived usefulness” of mobile banking adoption.

This is a new relationship that was to be tested, showed that there no support for the relationship between personal innovativeness in using mobile banking and the perceived risk of mobile banking.

5.3.8. Relationship between personal innovativeness and perceived ease of use to use mobile banking

The researcher proposed that the university students’ personal innovativeness would positively affect their perceived ease of use to use a mobile banking application. This is grounded by the hypothesis H_8 : “*Personal Innovativeness* will have a positive effect on *Perceived Ease of Use* of mobile banking by the students”; the hypothesis was tested and yielded the following result:

Table 13: Linear Regression Analysis of the relationship between personal innovativeness and perceived ease of use

Dependent variable: Perceived Ease of Use						
	B	Std. Error	β	t	p	Decision
(Constant)	2.671	.168				
Personal Innovativeness	.406	.039	.529	10.406	.000	Supported
Model F = 108.286						
R ² = .280						

The hypothesis H_8 was supported by considering the coefficients in Table 13, (F (280) = 108.286; $p < .05$; $R^2 = .280$). The overall regression model was insignificant. $R^2 = 0.280$ denoted personal innovativeness accounts for 28.0% of variance in perceived ease of use of mobile banking adoption. The coefficient ($p < 0.05$), indicated that “personal innovativeness” had a significant and positive influence on “perceived ease of use” of mobile banking adoption.

This shows that the personal innovativeness attached to mobile banking adoption immensely influences perceived ease of use of mobile banking. When university students are willing to try out mobile banking technologies increased by the influence of adopting mobile banking this would be easy and useful. A similar result was recorded by Mohammadi (2015).

5.3.9. Relationship between personal innovativeness and attitude to use mobile banking

The researcher proposed that the university students’ personal innovativeness would positively affect their attitude to use a mobile banking application. This is grounded by the hypothesis H_9 : “*Personal Innovativeness* will have a positive effect on the *Attitude* of students to use mobile banking”; the hypothesis was tested and yielded the following result:

Table 14: Linear Regression Analysis of the relationship between personal innovativeness and attitude

Dependent variable: Attitude						
	B	Std. Error	β	t	p	Decision
(Constant)	2.458	.189				
Personal Innovativeness	.473	.044	.542	10.745	.000	Supported
Model F = 115.451						
R ² = .293						

The hypothesis **H₈** was supported by considering the coefficients in Table 14, (F (280) = 115.451; $p < .05$; $R^2 = .293$). The overall regression model was significant. $R^2 = 0.293$ denoted personal innovativeness accounts for 29.3% of variance in attitude of mobile banking adoption. The coefficient ($p < 0.05$), indicated that “personal innovativeness” had a significant and positive influence on “attitude” of mobile banking adoption.

This shows that when personal innovativeness is attached to mobile banking adoption it immensely influences the university students’ attitude to use mobile banking. When university students are willing to try out mobile banking technologies this would result in an increase of their attitude to use mobile banking. A similar result was recorded by Mohammadi (2015).

5.3.10 Relationship between self-efficacy and perceived ease of use to use mobile banking

The researcher proposed that the university students’ self-efficacy would positively affect their perceived ease of use to use a mobile banking application. This is grounded by the hypothesis **H₁₀**: *Self-efficacy will have a positive effect on the Perceived Ease of Use of mobile banking by the students*”; the hypothesis was tested and yielded the following result:

Table 15: Linear Regression Analysis of the relationship between self-efficacy and perceived ease of use

Dependent variable: Perceived Ease of Use						
	B	Std. Error	β	t	p	Decision
(Constant)	3.565	.183				
Self-efficacy	.188	.041	.183	4.604	.000	Supported
Model F = 21.196						
R ² = .071						

The hypothesis H_{10} was supported by considering the coefficients in Table 15, ($F(280) = 21.196$; $p < .05$; $R^2 = .071$). The overall regression model was significant. $R^2 = .071$ denoted self-efficacy accounts for 7.1% of variance in perceived ease of use of mobile banking adoption. The coefficient ($p < 0.05$), indicated that “self-efficacy” had a significant and positive influence on “perceived ease of use” of mobile banking adoption.

This shows when self-efficacy is attached to mobile banking adoption it is immensely influenced by perceived ease of use of the mobile banking technologies. When university students acquire self-efficacy in mobile banking, higher influence in adopting mobile banking will be recorded due to the increased view of adoption of mobile banking. A similar result was recorded by Yu (2012).

5.3.11. Relationship between self-efficacy and personal innovativeness to use mobile banking

The researcher proposed that the university students’ self-efficacy would positively affect their perceived ease of use to use a mobile banking application. This is grounded by the hypothesis H_{11} : *Self-efficacy* will have a positive effect on the *Personal Innovativeness* of mobile banking by the students”; the hypothesis was tested and yielded the following result:

Table 16: Linear Regression Analysis of the relationship between self-efficacy and personal innovativeness

Dependent variable: Personal Innovativeness						
	B	Std. Error	β	t	p	Decision
(Constant)	2.642	.228				
Self-efficacy	.365	.051	.396	7.181	.000	Supported
Model F = 51.565						
$R^2 = .156$						

The hypothesis H_{11} was supported by considering the coefficients in Table 16, ($F(280) = 51.565$; $p < .05$; $R^2 = .156$). The overall regression model was significant. $R^2 = 0.156$ denoted self-efficacy accounts for 15.6% of variance in personal influence of mobile banking adoption. The coefficient ($p < 0.05$), indicated that “self-efficacy” had a significant and positive influence on “perceived ease of use” of mobile banking adoption.

This shows when self-efficacy is attached to mobile banking adoption it immensely influences perceived ease of use of mobile banking, when university students’ have a combined positive sense of self-efficacy and perceived ease of use of mobile banking. A contradicted result was recorded by Yu (2012).

5.3.12. Relationship between social influence and attitude to use mobile banking

The researcher proposed that the university students’ self-efficacy would positively affect their attitude to use a mobile banking application. This is grounded by the hypothesis H_{12} : “*Social Influence* will have a positive effect on the *Attitude* of the students Behavioural Intention to use mobile banking”; the hypothesis was tested and yielded the following result:

Table 17: Linear Regression Analysis of the relationship between social influence and attitude

Dependent variable: Attitude						
	B	Std. Error	β	t	p	Decision
(Constant)	2.599	.162				
Social Influence	.440	.038	.574	11.694	.000	Supported
Model F = 136.748						
$R^2 = .330$						

The hypothesis H_{12} was supported by considering the coefficients in Table 17, ($F(280) = 136.748$; $p < .05$; $R^2 = .330$). The overall regression model was significant. $R^2 = 0.330$ denoted social influence accounts for 33.0% of variance in attitude of mobile banking adoption. The coefficient ($p < 0.05$), indicated that “social influence” had a significant and positive influence on “attitude” of mobile banking adoption.

This shows that the social influence attached to mobile banking adoption immensely influences the attitude of mobile banking. When university students are socially influenced by the individuals who are of importance to them, they would be persuaded more into adopting mobile banking. Thus increasing their attitude attached to how important and influential these individuals are to them and persuade the choices they make into adopting mobile banking. A similar result was recorded by Yu (2012) where behavioural intention is linked to attitude.

5.3.13. Relationship between social influence and behavioural intention to use mobile banking

The researcher proposed that the university students’ social influence would positively affect their behavioural intention to use a mobile banking application. This is grounded by the hypothesis H_{13} : “*Social Influence* will have a positive effect on the *Behavioural Intention to Use* mobile banking by the students”; the hypothesis was tested and yielded the following result:

Table 18: Linear Regression Analysis of the relationship between social influence and behavioural intention to use

Dependent variable: Behavioural Intention to Use						
	B	Std. Error	β	t	p	Decision
(Constant)	2.705	.183				
Social Influence	.439	.043	.525	10.297	.000	Supported
Model F = 106.018						
$R^2 = .276$						

The hypothesis H_{13} was supported by considering the coefficients in Table 18, ($F(280) = 106.018$; $p < .05$; $R^2 = .276$). The overall regression model was significant. $R^2 = 0.276$ social influence accounts for 27.6% of variance in behavioural intention to use of mobile

banking adoption. The coefficient ($p < 0.05$), indicated that “social influence” had a significant and positive influence on “behavioural intention to use” of mobile banking adoption.

This shows that the social influence when attached to mobile banking adoption immensely influence behavioural intention to use mobile banking. When university students acquire the social influence, higher influence in adopting mobile banking will be recorded due to increased view of the need to have mobile banking. Contradicted result was recorded by Oliveria et al. (2014).

5. 3.14. Relationship between perceived risk and attitude to use mobile banking

The researcher proposed that the university students’ perceived risk would negatively affect their attitude a mobile banking application. This is grounded by the hypothesis H_{14} : “*Perceived Risk* will have a negative effect on the *Attitude* of the students when they would like to use mobile banking”; the hypothesis was tested and yielded the following result:

Table 19: Linear Regression Analysis of the relationship between perceived risk and attitude

Dependent variable: Attitude						
	B	Std. Error	β	t	p	Decision
(Constant)	4.664	.093				
Perceived Risk	-.065	.030	-.129	-2.170	.031	Not Supported
Model F = 4.710						
$R^2 = .017$						

The hypothesis H_{14} was not supported considering the coefficients in Table 19, ($F(280) = 4.710$; $p > .05$; $R^2 = .017$). The overall regression model was insignificant. $R^2 = 0.017$ perceived risk accounts for 1.7% of variance in attitude of mobile banking adoption. The coefficient ($p > 0.05$), indicated that “perceived risk” had an insignificant and negative influence on “attitude” of mobile banking adoption.

This shows that the perceived risk attached to mobile banking adoption has a negative influence on attitude to use mobile banking. When university students perceive risk in

using mobile banking, this also negatively influences their attitude to use mobile banking. A similar result was recorded by Mohammadi (2015).

5.3.15. Relationship between perceived risk and perceived usefulness to use mobile banking

The researcher proposed that the university students' perceived risk would negatively affect their perceived usefulness to use a mobile banking application. This is grounded by the hypothesis H_{15} : “*Perceived Risk* will have a negative effect on the *Perceived Usefulness* of mobile banking by the students”; the hypothesis was tested and yielded the following result:

Table 20: Linear Regression Analysis of the relationship between perceived risk and perceived usefulness

Dependent variable: Perceived Usefulness						
	B	Std. Error	β	t	p	Decision
(Constant)	4.780	.081				
Perceived Risk	-.133	.026	-.293	-5.115	.000	Supported
Model F = 26.162						
$R^2 = .086$						

The hypothesis H_{15} was supported by considering the coefficients in Table 20, ($F(280) = 26.162$; $p < .05$; $R^2 = .086$). The overall regression model was significant. $R^2 = 0.086$ perceived risk accounts for 8.6% of variance in perceived usefulness of mobile banking adoption. The coefficient ($p < 0.05$), indicated that “perceived risk” had a significant and negative influence on “attitude” of mobile banking adoption.

This shows when perceived risk is attached to mobile banking adoption there is a negative influence on perceived usefulness. When university students perceive risk in using mobile banking, this negatively influencing usefulness in using mobile banking. A contradicted result was recorded by Mohammadi (2015).

5.3.16. Relationship between perceived risk and perceived ease of use to use mobile banking

The researcher proposed that the university students' perceived risk would positively affect their perceived ease of use of a mobile banking application. This is grounded by the

hypothesis **H₁₆**: *Perceived Risk* will have a positive effect on the *Perceived Ease of Use* by students to use mobile banking”; the hypothesis was tested and yielded the following result:

Table 21: Linear Regression Analysis of the relationship between perceived risk and perceived ease of use

Dependent variable: Perceived Ease of Use						
	B	Std. Error	β	t	p	Decision
(Constant)	4.382	.082				
Perceived Risk	.006	.026	.013	.210	.834	Not Supported
Model F = .044						
R ² = .000						

The hypothesis **H₁₆** was not supported by the coefficients in Table 21, (F (280) = .044; $p < .05$; $R^2 = .000$). The overall regression model was significant. $R^2 = .000$ perceived risk accounts for 0% of variance in perceived ease of use of mobile banking adoption. The coefficient ($p < 0.05$); indicated that “perceived risk” had an insignificant with no influence on “attitude” of mobile banking adoption.

This shows that the perceived risk attached to mobile banking adoption has a negative influence on attitude to use mobile banking. When university students perceive risk in using mobile banking, this negatively influencing their attitude in using mobile banking. A contradicted result was recorded by Mohammadi (2015).

5.4. Summarised Decisions

Table 22 provides a complete list of the hypothesis, the corresponding estimates from the model and summarised decisions based on the results of the research. The β coefficients are the standardised results of the regression analysis that permit the situation between the contradicting dimensions to be 1.

Table 22: Summary of the hypothesis and the decision

Hypothesis	Decision
H ₁ : There is a relationship between <i>perceived usefulness</i> and <i>behavioural intention</i> to use mobile banking.	Supported ($\beta=.391$; $p<0.05$)
H ₂ : There is a relationship between <i>perceived usefulness</i> and <i>attitude</i> to use mobile banking.	Supported ($\beta=.567$; $p<0.05$)
H ₃ : There is a relationship between <i>attitude</i> and <i>behavioural intention</i> to use mobile banking.	Supported ($\beta=.920$; $p<0.05$)
H ₄ : There is a relationship between <i>perceived ease of use</i> and <i>behavioural intention</i> to use mobile banking.	Supported ($\beta=.454$; $p<0.05$)
H ₅ : There is a relationship between <i>perceived ease of use</i> and <i>attitude</i> to use mobile banking.	Supported ($\beta=.491$; $p<0.05$)
H ₆ : There is a relationship between <i>perceived ease of use</i> and <i>perceived usefulness</i> to use mobile banking.	Supported ($\beta=.366$; $p<0.05$)
H ₇ : <i>Personal innovativeness</i> is not related to <i>perceived risk</i> to use mobile banking.	Not Supported ($\beta=.105$; $p>0.05$)
H ₈ : There is a relationship between <i>personal innovativeness</i> and <i>perceived ease of use</i> to use mobile banking.	Supported ($\beta=.529$; $p<0.05$)
H ₉ : There is a relationship between <i>personal innovativeness</i> and <i>attitude</i> to use mobile banking.	Supported ($\beta=.542$; $p<0.05$)
H ₁₀ : There is a relationship between <i>self-efficacy</i> and <i>perceived ease of use</i> to use mobile banking.	Supported ($\beta=.183$; $p<0.05$)
H ₁₁ : There is a relationship between <i>self-efficacy</i> and <i>personal innovativeness</i> to use mobile banking.	Supported ($\beta=.396$; $p<0.05$)
H ₁₂ : There is a relationship between <i>social influence</i> and <i>attitude</i> to use mobile banking.	Supported ($\beta=.574$; $p<0.05$)
H ₁₃ : There is a relationship between <i>social influence</i> and <i>behavioural intention</i> to use mobile banking.	Supported ($\beta=.525$; $p<0.05$)
H ₁₄ : <i>Perceived risk</i> is negatively related to <i>attitude</i> to use mobile banking.	Not Supported ($\beta=-.129$; $p>0.05$)
H ₁₅ : There is a negative relationship between <i>perceived risk</i> and <i>perceived usefulness</i> to use mobile banking.	Supported ($\beta=-.293$; $p<0.05$)
H ₁₆ : There is a relationship between <i>perceived risk</i> and <i>perceived ease of use</i> to use mobile banking.	Supported ($\beta=.013$; $p>0.05$)

Figure 19 confirms that the hypothesis was supported and not supported. The following relationships between perceived risk were not supported personal innovativeness and

perceived risk; perceived risk and perceived ease of use; perceived risk and attitude. The Table 24 and Figure 19 are showing the relationships.

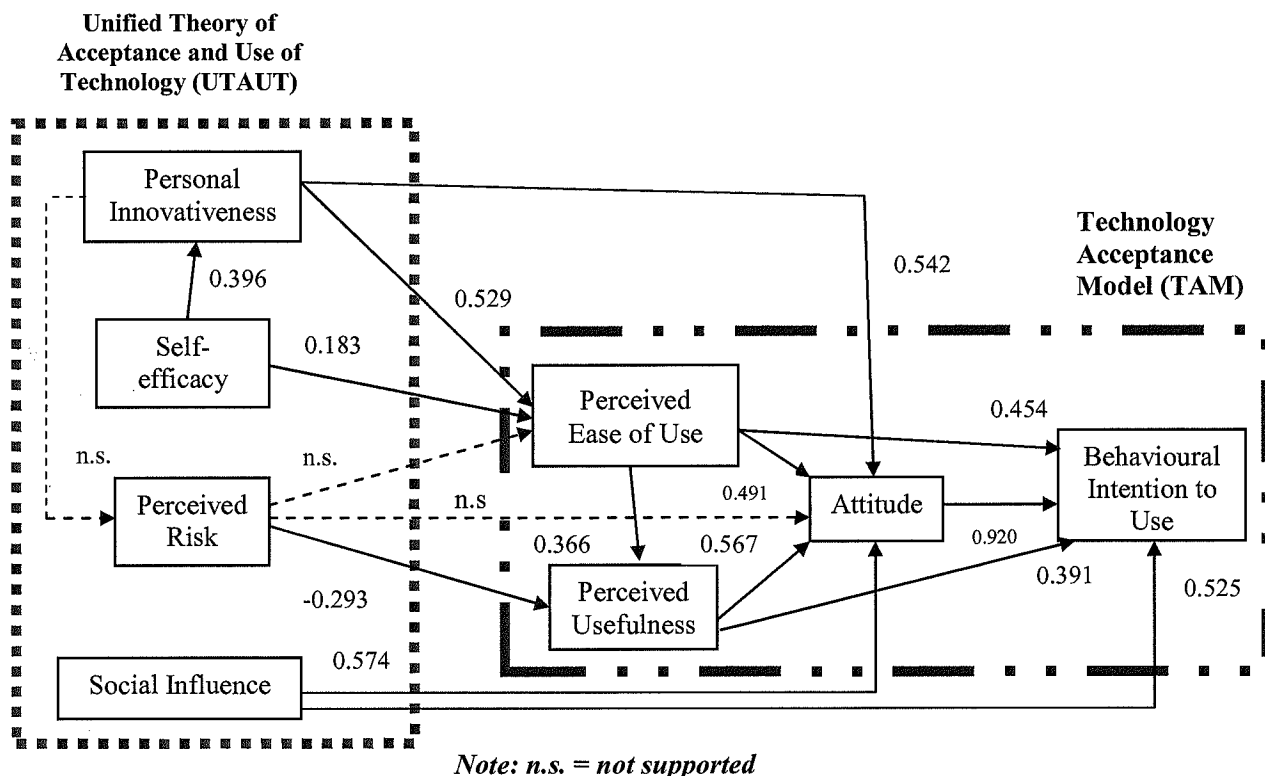


Figure 19: The results of Linear Regression Analysis

5.5. Discussion

This research is based on the hypothesis, the results are discussed below. The aim of this research is to use a proposed model to investigate the factors that affect university students in Zimbabwe when they are using mobile banking. Out of 300 questionnaires distributed by the researcher a total of 280 respondents questionnaires were correctly filled in and used for the analysis of the data. Having analysed the data, important results were found. The results showed that out of 16 hypotheses proposed 13 were supported. The discussions are listed below.

Perceived Usefulness

From the hypothesis Perceived Usefulness has positive relationships with behavioural intention to use and attitude which evident in the studies conducted (Chitungo and Munongo, 2013; Gu et al., 2009; Mohammadi, 2015; Aboelmaged and Gebba 2013; Shaikh and Karjaluoto, 2015). There is considerable proof from the research that mobile banking is useful and a beneficial service. One is more likely to use mobile banking services as they become confident and are able to trust the service offered by the MNO's, software developers, financial houses and banks.

Attitude

Attitude had a positive relationship with the behavioural intention to use mobile banking which is evident in other studies conducted (Mohammadi, 2015; Davis et al., 1989 Aboelmaged and Gebba 2013). Showing that if users are educated about mobile banking and they believe it will aid them in going about doing their business they will have positive attitude to use, which is evident in the research. In this study attitude is independent compared to that of Venkatesh et al. (2003).

Perceived Ease of Use

Perceived ease of use has positive relationships with behavioural intention to use, attitude and perceived usefulness. This is evident in other studies conducted (Chitungo and Munongo, 2013; Gu et al., 2009; Mohammadi, 2015; Aboelmaged and Gebba 2013; Shaikh and Karjaluoto, 2015, Lin, 2011). MNO's, banks, software developers and financial houses are to provide services that are easy to use.

Personal Innovativeness

Personal innovativeness was used to extend TAM by Chitungo and Munongo (2013) and is a construct used in UTAUT just like Mohammadi (2015) which had an insignificant relationship to perceived risk (not supported) and positive relationship to perceived ease of use and attitude to using mobile banking (Kim and Mirusmonov, 2010). The results were consistent with that of Chitungo and Munongo (2013), showing that the respondents with high innovativeness are more likely to explore and use mobile banking applications. This showing that the respondents are trend setters as they would influence their peers to use mobile banking. In this study compared to Chitungo and Munongo (2013) they are quick to use technologies.

Self-efficacy

Self-efficacy has positive influence on perceived ease of use and personal innovativeness in this study. Yu (2012) showed relationships between self-efficacy and effort expectance which is similar to perceived ease of use which is evident in the relationship in this research. This research also shows there is a relationship compared to the research conducted by Venkatesh et al. (2003).

Social Influence

Social influence only has one relationship which showed to be positive consistent with Yu (2012) Gu et al. (2009) and Zhou et al. (2010). The respondents felt positively about who influenced them to use mobile banking, considering how they felt mobile banking as being trendy and giving them professional status amongst their peers (Yu, 2012).

Perceived Risk

The relationships between perceived risk, attitude and perceived ease of use were both rejected. The only relationship to be negative and significant was perceived usefulness. This shows the same results as Chitungo and Munongo (2013) that the respondents are afraid of theft, the applications security and hackers this would stop them from using the mobile banking applications. MNO's, banks, software developers and financial institutions need to be watchful of the security which has a major effect on the adoption of mobile banking. The mobile banking applications need to be constantly updated to offer better security, reliability, for monies to be correctly deducted from and added to university students accounts needs to also be taken into consideration (Chitungo and Munongo (2013).

5.6. Implications

This study successfully combined the two adoption models TAM and UTAUT in context of mobile banking adoption and created a research model that was used in this research by combining 8 constructs, four from each model. The 8 constructs: perceived usefulness, perceived ease of use, behavioural intention to use, attitude, personal innovativeness, social influence, self-efficacy and perceived risk. This research has concluded that the proposed model is useful. The information pertained from this research can help with new insights on the topic of mobile banking adoption (Oliveria et al., 2014). This study shows strength in the combination of TAM and UTAUT as mobile banking is a new phenomenon. It is

also seen that more people need to use mobile banking therefore this study gives further contribution to literature. Trust is also a huge issue and needs to be addressed further which is evident in most prior studies conducted (Gu et al., 2009; Shaikh and Karjaluto, 2015). I hope this study will be beneficial to more studies conducted in the future.

CHAPTER 6

CONCLUSION and RECOMMENDATIONS

6.1. Conclusion

In conclusion, the findings concluded that a proposed model with TAM and UTAUT constructs can be used to predict the university student's intentions to use mobile banking. Banks and providers of financial services are using technologies to provide services to university students with the advancement of IT in the developing countries such as Zimbabwe. The banks and providers of financial services have also come to realise that university students' needs have changed with the advancements in technology and their own needs. More sophisticated products need to be developed. Extensive work needs to be done in the adoption of mobile banking adoption. Banks, MNO's, financial institutions and software developers need to constantly educate the university students on mobile banking for more of them to use the mobile banking applications available. Mobile banking is a very powerful tool that is used to deliver payment services and account queries for those with access to the service. Mobile banking has brought-in enormous benefits to university students, banks, and businesses particularly in terms of increase in productivity, speedy and efficient service delivery, and increased profits. With the advancement of mobile banking adoption in the banking sector, university students do not always want to visit banks branches. They are able to utilise the mobile banking services provided to make payments. Banks face stiff competition, security issues, making potential university students aware of the mobile banking and also keeping the old university students satisfied. More focus needs to be done on enhancing university student's awareness and intention to use mobile banking services by more research being conducted using the adoption theories. The developers of the mobile banking applications need to be aware of security, risk and trust issues that university students have. Solutions need to be developed to solve security and trust issues university students may have with mobile banking. This research also provides valuable information to banks, financial institutions, MNO's and software developers for the future. The most important results found showed that 13 of the 16 relationships of the hypothesis were supported.

6.2. Recommendations

Further recommendations come from other research suggestions and from analysis of the data from the study conducted.

- **Considerations of the designing a mobile banking application**

World over especially the developing countries, there are mobile banking applications available with more features that use advanced technologies; this is a missing gap within Zimbabwe. The software developers and programmers should be motivated to develop the applications. If they developed the applications they may increase the number of university students that would use mobile banking and make it easier for students to use.

- **More Studies with more University Students**

Further studies can be conducted in the other universities within Zimbabwe to make a generalised result. A larger sample size of participants can be used in further studies.

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APPENDICES

APPENDIX A

PERMISSION LETTER

38 Sandringham Drive
Alexandra Park
Harare
Zimbabwe

11 November 2015

Dear Sir/Madam,

Permission to collect data for my thesis from university students

I am a final year student at Near East University in Northern Cyprus I am currently studying for a Msc Computer Information Systems. I am carrying out a research entitled "A Technology Acceptance Perspective in University Students in Zimbabwe", I would like to request permission to collect data for my thesis.

The main objective of this research would be to investigate the factors that influence university students' confidence or lack of confidence with perceived ease of use of the adoption of mobile banking using a combination of TAM and UTAUT Mobile Banking Models within Zimbabwe. This study will seek to investigate the effects of perceived ease of use of the technologies, trust and network and perceived cost on the adoption of mobile banking.

May you kindly complete the questionnaire which will ensure that the study will become a success. Please be assured that the information collected is purely for academic purposes and will be treated with the highest confidentiality.

Thank you in advance for your support.

Yours sincerely,

Dambudzo N.C. Chingoka

APPENDIX B
RESEARCH QUESTIONNAIRE
FACTORS THAT AFFECT MOBILE BANKING ADOPTION

Dear Student,

The questionnaire aims to define your perspective on mobile banking adoption. You are expected to choose the answer that you feel closest to. The results of this questionnaire will solely be used for analysis in the research report and will not be provided to any other institution in any other way. Thank you in advance for taking the time to answer our questionnaire.

Assoc. Prof. Dr. Nadire CAVUS
Dambudzo Netsai Christina CHINGOKA

SECTION A: Demographic profile

1. Age:

a) 17	b) 18	c) 19	d) 20	e) 21+
-------	-------	-------	-------	--------
2. Gender:

a) Male	b) Female
---------	-----------
3. Nationality (If you choose other please write your nationality.)
- | | | | | |
|---------------|------------------|-----------|------------|---------------|
| a) Zimbabwean | b) South African | c) Tswana | d) Zambian | e) Mozambican |
| f) Malawian | g) Angolan | h) Other | | |

SECTION B: Phone Use

4. Pocket money:

a) \$0-\$200	b) \$501-\$1000	c) \$1001-\$1500	d) \$1501-\$2000	e) \$2000 +
--------------	-----------------	------------------	------------------	-------------
5. Do you have own a mobile phone/smart phone?

a) Yes	b) No
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6. How many hours per day do you use your mobile?:

a) < 1 hour	b) 1 hour	c) 2 hours	d) 3 hours	e) 4+ hours
-------------	-----------	------------	------------	-------------
7. How do you connect to the Internet?:

a) 3G	b) 4G	c) Wi-Fi	d) GPRS	e) EDGE	f) Other
-------	-------	----------	---------	---------	----------
8. How long have you been using a mobile phone/smart phone?

a) Less than a year	b) 1yr-2yrs	c) 2yrs-5yrs	d) More than 5yrs
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9. Mobile/Smartphone Operating Software

a) iOS	b) Android	c) Blackberry	d) Windows	e) Other
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SECTION C: Banking

10. What account do you hold with the bank? (You can choose more than one option)

a) Savings Account	d) Current Account	g) Stop Order
b) Personal Loan	e) Car/House Loan	h) Fixed Deposit
c) Bill Payment	f) Money Transfer	i) Other

11. How often do you use the bank?

a) Daily	c) A few times a week	e) Weekly
b) A few times a month	d) Seldom	

12. To what extent do you use the following to do banking? (You can choose more than one option)

	Daily	Few times/week	Weekly	Few times/ month	Seldom	Never
Bank Hall						
ATM						
Internet						
Mobile phone						
Telephone banking						

Point of Sale						
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Section D: Read the statements below. Place (X) on the heading that best suits your choice.

Extended TAM Items		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Perceived Usefulness						
1	Mobile banking improves how I do my banking.					
2	Mobile banking is useful for me.					
3	Mobile banking makes life easier to do my banking.					
4	Mobile banking makes my financial life easy.					
Perceived Ease of Use						
1	Learning to use mobile banking is easy for me.					
2	Mobile banking is easy to use.					
3	Mobile banking is easy to use to complete what I want to.					
4	Interaction with mobile banking does not require a lot of mental effort.					
5	Mobile banking navigation on my phone is easy.					
Attitude						
1	Using mobile banking will save me time.					
2	Using mobile banking will save me money.					
3	I believe it is a good idea to use mobile banking.					
4	I believe using mobile banking is moving ahead with the times.					
Behavioural Intention to Use						
1	I will adopt mobile banking as soon as possible.					
2	I intend to use mobile banking in the future.					
3	I will regularly use mobile banking in the future.					
4	Using mobile banking will be good for me.					
5	I prefer to use mobile banking.					
UTAUT Items		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Personal Innovativeness						
1	If I heard about new information technology, I would find ways to experiment with it.					
2	Among my peers, I am usually the first					

	to try out new technologies.					
3	In general, I am hesitant to try out new information technologies.					
4	I am interested to hear about new technological developments.					
Perceived Risk						
1	I would feel secure sending sensitive information across the mobile banking.					
2	Mobile banking is a secure way to send sensitive information.					
3	Overall mobile banking is a safe place to transmit sensitive information.					
Social Influence						
1	My friends and family value the use of mobile banking.					
2	The people that influence me use mobile banking.					
3	I find mobile banking trendy.					
4	The use of mobile banking gives me professional status.					
Self-Efficacy						
1	I would use mobile banking if I had built-in help guidance for assistance.					
2	I would use mobile banking if someone showed me how to do it.					
3	I would use mobile banking if I had someone else using it.					
4	I would use mobile banking if I could call someone for help.					

Please check that you have completed the questionnaire in full.

Thank you for completing our survey, your input is greatly appreciated.