EXAMINING THE FACTORS AFFECTING INTERNET BANKING ADOPTION IN GHANA: THE CUSTOMERS' PERSPECTIVE

By

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DECLARATION

I hereby declare that the submission of this compilation is the true findings of my own researched work presented towards MPhil in Information Technology and that, to the best of my knowledge, it contains no material previously published by another person nor submitted to any other University or institution for the award of degree except where due acknowledgement has been made in text. However, references from the work of others have been clearly stated.

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DEDICATION

This work is dedicated to my parents: Agya Kwadwo Appiah and Eno Adwoa Sarfowaa.

May the creator of this this universe bless you for your sacrificial efforts and investment in my life.

ACKNOWLEGEMENT

Almighty God! I thank you very much for giving me life and strength to complete this work.

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And to my lovely wife Mrs. Elizabeth Amissah and my two daughters Akosua Sarfowaa Appiah and Bridget Yaa Appiah, thank you for your care and patience.

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ABSTRACT

In order to ensure effective delivery of products and services to their target customers, Ghanaian banks have adopted Internet banking services into their operations. This "self-service" channel relieves bank customers the hustle of visiting the bank halls regularly. The adoption of this Internet technology has changed the way businesses are conducted in Ghanaian banks. The expectation of the banks that have adopted this channel is that customers will utilize this new innovation to do most of their banking transactions. However, the rate at which Ghanaian bank customers adopt Internet banking is nothing to write home about. The study examines the factors that affect Internet banking adoption in Ghana. With the use of Unified Theory of Acceptance and Use of Technology (UTAUT) as the research model, one hundred (100) Ghanaian bank customers who used Internet banking were interviewed. The data was analysed with the use of Structural Equation Modelling (SEM). The results revealed that factors such as performance expectancy, social influence, perceived risk and facilitating conditions influence the behavioural intentions of customers in Ghanaian banks to adopt Internet banking. Additionally, the two constructs namely the perceived risk factor and behavioural intentions also affect the way customers use internet banking channel in Ghanaian banks ($p < 0.01$).

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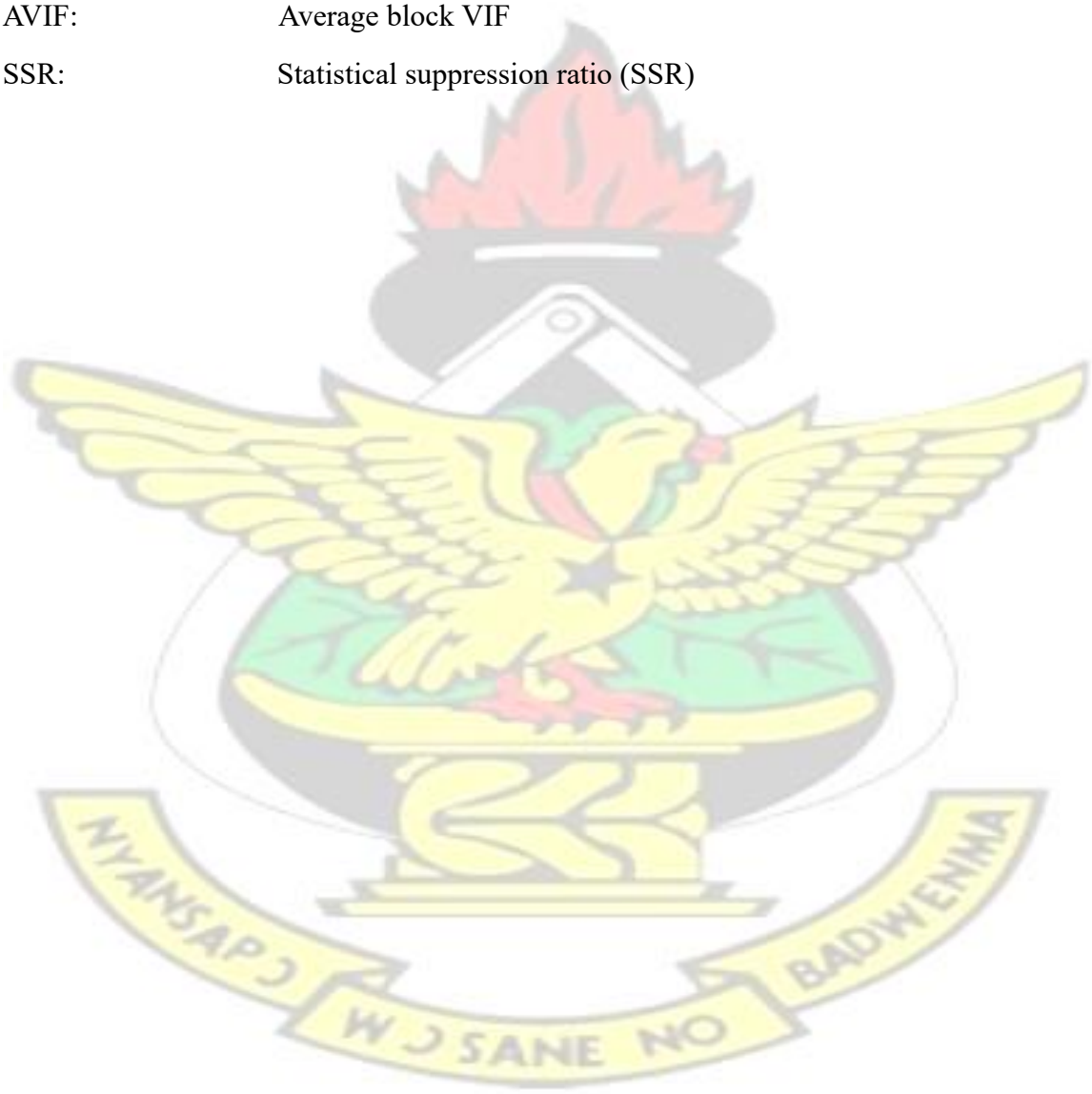
LIST OF ABBREVIATION

EFTPoS:	Electronic Funds Transfer at Point of Sale)
ATM;	Automated Teller Machines
IB:	Internet Banking
TRA:	Theory of Reasoned Action
TPB:	Theory of Planned Behaviour
IDT:	Diffusion of Innovation Theory
TAM:	Technology Acceptance Model
PU:	Perceived Usefulness
PEU:	Perceived Ease of Use
DTPB:	Decomposed Theory of Planned Behavoiur
TAM:	Extended Technology Acceptance Model
UTAUT:	Unified Theory of Acceptance and Use of Technology
MM:	Motivational Model
MPCU:	Model of PC Utilization
SCT:	Social Cognitive Theory
GUI:	Graphical User Interface
SEM:	Structural Equation Modelling
MSLC:	Middle School Leaving Certificate
JSS:	Junior Secondary School,
SSS:	Senior Secondary School,

O'LEVEL:	Ordinary Level
A' Level:	Advanced Level
CR:	Composite Reliability
CA:	Cronbach's Alpha
AVE:	Average variances extracted
APC:	Average path coefficient
ARS:	Average R-squared
AARS:	Average adjusted R-squared
AVIF:	Average block VIF
SSR:	Statistical suppression ratio (SSR)



CHAPTER ONE INTRODUCTION

1.0 Background of Study

Technology adoption over the years has changed the way services are provided in Ghanaian banks (Abor, 2005). The adoption of these technologies by the financial institutions such as the banks has brought a lot of improvements in the way businesses are conducted in these institutions. According to Hanafizadeh et al., (2013b), the adoption of technology has helped many banks to compete favourably in this technological age.

In order to target the needs of all kinds of customers by paying equal attention to the specific needs of each group, Ghanaian banks have adopted internet banking channel into their operations. Internet Banking is a service that enables subscribers to perform most of their banking needs anywhere internet is available with the exception of cash withdrawal (Ayvaz et al., 2011). This banking channel is impacting positively in the Ghanaian banking sector because it can be used to serve customers at any part of the world within the 24-hours.

According to Zarafat (2013), the usage of this banking channel is now prevalent because with it banking becomes stress-free. For example, customers can use this internet banking to perform many of the banking services (Tan, 2000).

There are many advantages that the banks as well the customers could derive from the adopting of internet banking channel. However, factors like security issues, perceived risks, and accessibility to the internet sometimes influence the way customers adopt new technology like Internet banking (K & Ramayah, 2012; Lee, 2008). This research examines the issues affecting customers that use this banking service in Ghanaian banks.

1.1 Problem Statement

Organisations and individuals invest a lot of resources before they are able to come out with new innovation. Banks invest a lot of resources in Internet banking with the expectation that the intended users will accept it with ease. The adoption of this banking channel has helped the banks to cut down on their operational costs and also serve their cherished customers in a timely manner.

Ghanaian banks have accepted Internet banking because of its usefulness in this technological age. According to Akuffo-Twum (2011), there are nineteen banks in Ghana that have accepted this banking channel into their operations. The study further revealed that the adoption of this banking service has the possibility of changing how Ghanaian banks work. However, attitude of customers in Ghanaian banks towards the usage of Internet banking is nothing to write home about.

1.2 Main Objective

The study will examine the factors affecting the adoption of Internet banking usage within Ghanaian banks. The goal can be achieved by focusing on the following objectives:

- To examine how factors like performance expectancy, effort expectancy, facilitating conditions, price value, social influence and perceived risk affect Internet Banking adoption in Ghanaian banks
- To examine whether or not the above constructs have influence on behavioural intentions
- To examine whether Behavioural Intentions have effect on internet banking usage

1.3 Research Questions

The following questions will be researched into:

- What are the effects of performance expectancy, effort expectancy, facilitating conditions, price value, social influence and perceived risk factors have on

  Internet Banking adoption in Ghana?
- What are the effects of the above constructs on behavioural intention?
- What are the effects of behavioural intentions on internet usage?

1.4 Significance of the Study

The use of technology can save a life. The use of technology like internet banking can minimize the number of times a customer goes to his or her bank to transact business. This can help to reduce traffic on our roads and also save people from getting involved in road accident because customers can access their bank accounts at the comfort of their homes. Productivity might be increased due to the fact that many customers will not spend most of their working hours at the banking halls. With the usage of Internet banking, customers will have the flexibility to transact most of the banking services at any time of the day in any part of the world where Internet is available.

Technological innovations have come to reduce the stress that customers usually go through in most banking halls (Morris et al., 2003). The introduction of Automated Teller Machine gave bank customers the opportunity to banking outside the banking halls at their own time. The banks in Ghana have adopted Internet banking in their operations because of its usefulness in this global village. According to Zarafat (2013), internet banking makes transactions easy, and most of the banking transactions could be performed with the exception of physical cash withdrawal (Tan, 2000; Liao et al., 1999).

It is the belief of Abor (2005) that this banking service saves a lot of cost.

The acceptance of IB channel by banks in the developed economies such as United States of America has served as eye opener to many bank customers. It is for this reason that the

banks in Ghana have taken the bold step by adopting this banking channel into their operations. The banks that have taken the steps to introduce this innovation into their operations have created a niche for themselves in the Ghanaian banking sector.

1.5 Scope and Limitations of the Study

The attention of the study will focus on Ghanaian banks that offer internet banking services. And the research investigations will concentrate on customers that use Internet banking.

1.6 Thesis Organisation

This work will consist of the following chapters:

Chapter 1: It will cover the introduction of the study by focusing on the background, statement of the problem, the general and the specific objectives of the study, the research questions, and the significance of the study. Chapter 2: In this chapter, the Literature Review of the study will be discussed. Chapter 3: The chapter will look at the methodology and instruments that will be adopted for the study. Chapter 4: This is where the results of data will be examined, analysed and the findings highlighted. Chapter 5: The chapter provides the summary of the research, the contribution, and the recommendations for further studies.

CHAPTER TWO LITERATURE REVIEW

2.0 Introduction

Internet technology usage is so indispensable in recent times because without it several organisations especially those in the financial sector will cease to exist. Because of this, the adoption of technology has become part and parcel of many institutions in this 21st century.

One internet technology that the banks in the developed economies have accepted, and is currently gaining currency in the developing economies such as Ghana is the adoption and the acceptance of banking through the internet. And this service is changing the way banking services are carried out (Hanafizadeh et al., 2013a).

With the usage of internet banking, bank customers can carry out the following services (funds transfer, bills payment, cheque book request, viewing and printing of account statements) without going to the banking halls. And all these services can be done through the bank's secured website (Tan, 2000).

Apart from the benefits that customers will derive from this banking channel, the service also enables the banks to reduce their staff strength, cut down administrative costs, and reduces the huge investment that go into physical infrastructure development (Ayvaz et al., 2011; Liao et al., 1999;). According to Eriksson and Nilsson (2007), the face-to face interactions among people in many sectors especially those in the financial industry is being replaced with self-serving services like Internet banking.

2.1 Technology Adoption in Ghanaian Banks

Technology adoption by Ghanaian banks over the years has resulted in intense competition and reforms in the sector (Marfo-Yiadom & Ansong, 2012).

According to Abor (2005) and cited by (Dankwah, 2013), from the use of office automation devices to the use of personal computers (PC) in the late 1980s, the introduction of technology has changed Ghanaian banks dramatically. Some of the technological innovations that have been adopted by the banks in Ghana include the following:

2.1.1 Networking of Bank Branches

According to Abor (2005) cited by Study et al. (2012) branch networking is a method of connecting devices in all the branches of a bank to enable customers and the bank share resources at any branch of the bank in different locations. This banking channel makes inter-bank transactions very quick, it increases productivity because customers do not spend long time to travel to their main branch and there is a division of labour because the workload is distributed among the branches (Study et al., 2012). Another benefit is that it reduces traffic on our road since many customers can access their bank accounts at any networked branch without having to visit their main branches regularly. However, anytime there is a network problem, customers find it difficult to transact business. The architecture of network of bank branches is displayed in figure 1.

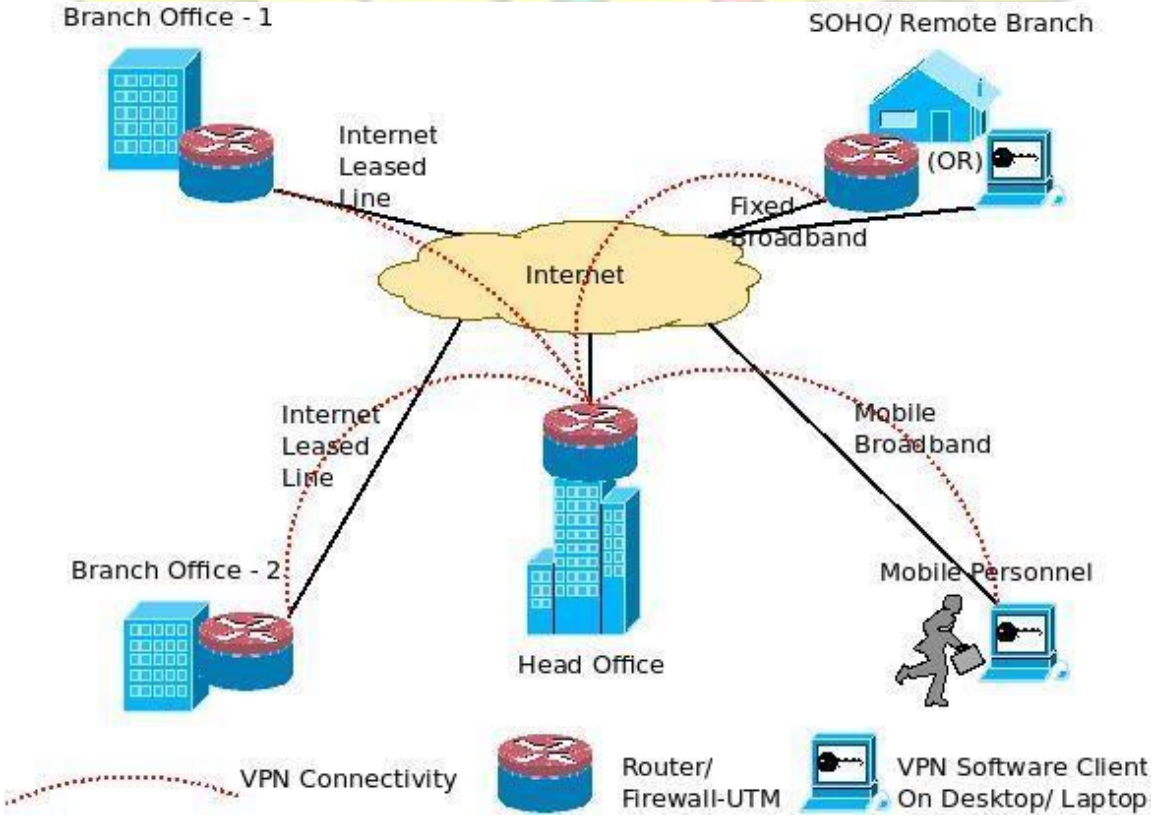


Figure 1 Networking of Bank Branches

2.1.2 The Use of Automated Teller Machine (ATM)

According to Study et al. (2012), an Automated Teller Machine is a facility used in the banking sector to enable customers to bank at any time of the day with the use of their secret PIN code.

The introduction of ATM outlets in Ghana in 1995 revolutionised the banking industry. Currently the major banks in Ghana use ATMs to serve their customers (Dankwah, 2013).

According to Of and Banking (2011), with a personal identification number bank customers in Ghana can use the service to make deposits, withdraw cash, check account balance and transfer funds to between accounts. All these banking services can be performed outside the banking halls and within the convenient time of the customers.

In order to differentiate itself from the rest in the Ghanaian banking sector, the United Bank for Africa (UBA) Ghana has introduced a cardless ATM which bank customers can use to take money on UBA's ATMs.

Barclays Bank Ghana has also become the first bank to introduce a deposit taking ATM to enhance banking experience with the view to reducing the long queues in the banking halls. It also provides convenience to the banking public because it has a feature which makes it possible to dispense cash without necessarily using an ATM notecard.

2.1.3 Banking with Personal Computer

This refers to the online access of banking information from a personal computer (Abor, 2005). The PC banking allows banks customers to use the proprietary software from the bank to access banking services through the World Wide Web (WWW). Ghanaian banks that used this banking channel limit it only to their corporate clients (Owusu-Afriyie, 2012).

2.1.4 Telephone Banking

It is one of the alternative ways used by the banks to deliver banking services through their network branches (Ahmad & Buttle, 2001). Ghanaian banks such as the Barclays Bank Ghana and the Societe General Ghana Limited use this service because it saves time and offers the lower fees as compared to traditional way of banking (Howcroft et at., 2002).

2.1.5 The use of Electronic Funds Transfer at Point of Sale (EFTPoS)

According to Abor (2005) and cited by Of and Banking (2011) this is an on-line platform that enables banks customers instantly transfer funds from their bank accounts to the vendor's account at the point of sale.

2.1.6 The Use of Electronic Cards

The continuous integration of the technological innovations in the Ghanaian banking has resulted with the introduction of different electronic payment cards like GTBank Visa PrePaid card, GCB MasterCard and 'sika' card (a card loaded with cash electronically), and debit cards. These cards enable cardholders to pay for goods and services with ease. Apart from being environmentally friendly as compared to traditional paper, it is also versatile and highly customized.

The introduction of these cards by Ghanaian banks will surely remove any inconvenience of using large sums of money for transactions by most Ghanaians. The government of Ghana spends a lot of foreign exchange to replace defaced currency notes. With the usage of these cards, they will serve as an alternative to bank notes and cheque, and the amount of money spend to print new currencies by Ghana government will be reduced drastically.

One electronic card introduced into the Ghanaian banking industry in 2008 is the use of the e-zwich card. The card is so secure and convenient that many organisations have accepted it as a channel to pay their personnel (Antwi, 2015; Haruna, 2012). Because of

the usefulness of the e-zwich technology, the Government of Ghana has adopted it as a channel to pay the allowance of national service personnel.

2.1.7 Mobile Banking

Mobile Banking is the method of performing financial transactions using the mobile phone devices. It is easy to use mobile phones to send, receive and make payments anywhere (Iddris, 2013). Data from the National Communications Authority reveal that Ghana's Mobile voice subscriber base has increased from 30,360,771 in 2014 to 30,629,604 in January 2015. Mobile money subscribers Ghana must first register their subscriber identity module (SIM) card with the mobile operators like MTN, Tigo Airtel and Vodafone. Subscribers choose a secret personal identification number (PIN) to enable them authenticate their identity anytime they want to perform any transactions. Mobile phones users who have not registered mobile money in Ghana can still use their secret codes called token which are normally generated by the merchants of the mobile operators. The dramatic increase in the mobile phone usage in Ghana will make the mobile money one of best mode of payment in the years ahead.

2.1.8 The use of Internet or Online Banking

According to Ayvaz et al. (2011), Internet Banking (IB) is a banking service which allows bank customers to perform any banking transaction with the exception of physical cash withdrawal; and it can be conducted anywhere in the world if internet is available.

This "self-serving" channel is now used by banks across the globe. Hanafizadeh et al.(2013a) believe that internet banking has drastically altered the way banking services are carried out. Bank services such as funds transfer, bills payment, cheque book request, and viewing and printing of account statements could be performed by customers with the use of Internet banking without going to banking halls regularly(Cheung, 2003; Tan et al.;

2000). In addition, Internet banking also provides customers access to universal banking (Safeena et al., 2011).

Rouibah et al. (2009) consider quality of delivery as one ingredients that makes a bank competitive in today's global markets. This is why banks that want to improve their service delivery quality must envision integrating internet banking into their operations.

Notwithstanding the numerous benefits that IB provides, factors such as demographic, economic, cultural, social political and technological issues do not allow many users to accept this banking channel as expected(Hanafizadeh et al.; 2014). Another factor that prevents users from adopting it is the issues of security. This is because Internet banking borders on confidentiality, privacy and integrity of the banks. But to make sure that the use of internet banking is more secured and safe, security measures like encryption techniques and the use of strong password are employed (Tassabehji and Kamala, 2012; Suh & Han, 2002).

Table 1: Ghanaian Banks with/without Internet Banking

No.	Bank Name	Internet Banking?
1.	Agricultural Development Bank	Yes
2.	Bank of Baroda(Ghana) Limited	Yes
3.	Amalgamated Bank Limited	Yes
4.	Barclays Bank Ghana	Yes
5.	Access Bank(Ghana)Limited	Yes
6.	CAL Bank	Yes
7.	Ecobank Ghana Limited	Yes
8.	Energy Bank(Ghana) Limited	Yes
9.	Fidelity Bank	Yes
10.	First Atlantic Merchant Bank	Yes
11.	First Capital Plus Bank Limited	Yes
12.	Ghana Commercial Bank Limited	Yes
13.	Guaranty Trust Bank(Ghana) Limited	Yes
14.	HFC Bank	Yes
15.	Bank of Baroda Ghana Limited	Yes

16.	National Investment Bank Limited	Yes
17.	Prudential Bank Limited	Yes
18.	Sahel-Sahara Bank BSIC(GH) Ltd	Yes
19.	Société Générale Ghana Limited	Yes
20.	Stanbic Bank Ghana Limited	Yes
21.	Standard Chartered Ghana	Yes
22.	The Trust Bank	Yes
23.	Unibank Ghana Limited	Yes
24.	Universal Merchant Bank	Yes
25.	United Bank For Africa(Ghana) Ltd	No
26.	Zenith Bank(Ghana) Limited	Yes
27	GN Bank Limited	Yes
28	The Royal Bank	Yes
29	First National Bank Ghana Limited	Yes

Source: Researcher's Field Survey

In spite of the challenging factors that militate against Internet banking adoption in Ghana, the technology has a bright future in the Ghana. From Table 1, it shows that there are twenty-two (28) Ghanaian banks are currently using Internet banking.

2.2 The Adoption of Technology

Technology adoption for the sake of adoption is meaningless. There are many reasons that users assign for accepting a new technology. But even before users accept a new technology, that technology must be in existence. The existence of a new technology must be made available to the users through a process called diffusion. And diffusion is the spread of new ideas from person to another within a specific period (Straub,2011;Sahin and Rogers, 2006). This new idea passes through some stages such as awareness, interest, evaluation, trail and adoption before a user will decide either to accept or reject the new technology. These stages of technology are made known to the users through the use of media like radio, television or newspapers (Hornor & Emerson, 2007;Sahin & Rogers, 2006).

When a new technology is made available to the user, there are certain factors that are considered by the user before he or she makes the decision to adopt it. The adoption of this new innovation is motivated by how users perceived it to serve their needs and whether the new system will be easy to use Davis (1989). These are the two main factors that some researchers think influence technology adoption (Safeena et al., 2011; Venkatesh & Davis, 2000; Morris et al., 2003; Venkatesh, 2008). However Morris et al., (2003) also posited that the factors affecting technology acceptance may be grouped into social influence, facilitating conditions, performance expectancy and effort expectancy. The researchers also believe that the sex of the user, his age and whether he will accept the new innovation willing also moderate the constructs and serve as the determinants of technology adoption.

Apart from these factors, users' intentions also have an effect on technology adoption. This is because a user's intent in deciding what action to take in a given situation is motivated by one's attitude as well as other external conditions (Findings, 1977). Additionally, the belief system of a person also contributes to his behavioural intention to accept a new innovation like internet banking (Sciences and Islamic, 2012).

According to Riffai et al. (2012), an individual intention about certain behaviour sometimes differs from the expectations towards that behaviour. That is why Hale et al. (2003) and cited by Riffai et al. think that apart from users' intentions, other behavioural factors like spontaneity, habits, cravings or mindlessness and impulse which were ignored in the Theory of Reasoned Action (TRA) also influence the way a person will behave in given time. If a customer is assured that there is a reward package attached to the performance of an action, he or she is likely to change his or her behaviour towards the action because of reward package.

In 1985 Ajzen developed a theory called the Theory of Planned Behaviour (TPB). Ajzen asserted in TPB that the outcome of any particular behaviour can be controlled to some extend (Hanafizadeh et al., 2013a; Riffai et al., 2012; Liao et al., 1999). But controlling a person's behaviour is not an easy task because human nature is complex. It may surprise you that people you expect to behave in a certain way may embarrass you due to certain personal traits and other environmental factors. These factors sometimes motivate people to change their thoughts and actions on the usage of a system at any given time. For example the fear of using a computer makes people shun new innovation and anything related to a computer like the use of internet banking.

2.3 The Theories of Technology Adoption

Over the years researchers have used different theories and models to explain why and how people adopt new technologies like Internet banking (Morris et al., 2003). Some of these theories are:

2.3.1 Diffusion of Innovation Theory (IDT)

It was proposed by Rogers in 1983. According to Hornor and Emerson (2007), diffusion is a process of making sure that an innovation is made available to the people. A new development that is accepted and use by people is called innovation. The existence of a new idea may not be known unless it is diffused through channels like radio, television, internet or a word of mouth.

According to Straub (2011), there are five stages that users go through before adopting a the new technology. And the stages are:

i. first knowledge of an innovation ii.

forming an attitude toward the innovation iii.

decision to adopt or reject iv.

implementation of the new idea,

v. confirmation of this decision

But even before an individual confirms his or her decision to use a new the technology, there are other perceived attributes that come into play before a new innovation like Internet banking is accepted. Some of them which include relative advantage, compatibility, complexity, trialability and observability have an influence on adoption. They also influence behavioural intention of a person to adopt new innovation like Internet banking (Universita and Sa, 2006). Because of these perceived attributes, new technology is adopted faster by individuals than others. The image construct is the thinking that if a person is using a new technology, it gives him an edge over others in his environment, and the voluntariness of use, which is the desire to use an innovation without compulsion also have effect on the way users accept new technology. A study conducted by Ryan and Gross classified technology users as innovators, early adopters, early majority, late majority, and laggards Hanafizadeh et al., 2013b; Shing et al, 2007).

This shows that bank customers are not likely adopt Internet banking at the same time.

2.3.2 Technology Acceptance Model (TAM)

Researchers have used this model to explain why a new technology such as Internet banking is accepted. According to Davis (1989), how users perceived that a new technology will serve their needs and whether that innovation will be easy to use are the two main constructs in TAM. These two constructs have also been found to determine how users accept new technology like internet banking (Davis, 2010).

The PU and the PEU were originated from the Theory of Reasoned Action (TRA) (Mohamad et al., 2010). The researchers believe that whether a user will accept a

technology is influenced by subjective norm, attitude and the use's behaviour towards the technology. This means that bank customers who think that technology can help them increase their work output are likely to accept Internet banking.

2.3.3 Decomposed Theory of Planned Behaviour (DTPB)

DTPB is the result of the combination of Innovation Diffusion Theory and the Theory of Planned Behaviour (Universita and Sa, 2006). Taylor and Todd used this theory to establish that user's intentions, beliefs as well as his attitudes towards the usage of a system have something in common. To them, a user's behavioural attitude is motivated by the perception about whether the new system will be usefulness, easy to be used and also compatible with other system (Al-somali et al., 2009; Hanafizadeh et al., 2013b; Tan, 2000).

If users of mobile phones, iPads and laptops get to know that they could use these devices to access their banking accounts and conduct banking transactions without visiting the bank premises, they are likely to adopt this new service.

2.3.4 Extended Technology Acceptance Model (TAM2)

According to Venkatesh & Davis (2000), the determinants of TAM2 are Perceived Usefulness and Perceived Ease of Use. While several attempts have been made to find out the causes of perceived ease of use, nothing has been done about perceived usefulness (Venkatesh, 2008). It is for this reason that Venkatesh (2008) developed TAM2. In this theory, the usefulness of a system will be will depend on how people see it, and whether it will be relevant to the job, to perform well, demonstrate what it can do, and a user's own personal interest to use the system.

If a new innovation like internet banking can help users to be productive by not leaving their work place to bank during working hours of the day but enable them to do most of their banking transactions at their own comfort, it is likely to be adopted.

2.4.5 Unified Theory of Acceptance and Use of Technology (UTAUT)

Different theories in the past are used to explain users' intentions to adopt new innovations such as internet banking. However (Venkatesh et al., 2014) combined eight of these models and theories and came out with a model called UTAUT. The main models combined to form UTAUT are:

- Theory of Reasoned Action(TRA)
- Technology Acceptance Model(TAM),
- Motivational Model(MM),
- Theory of Planned Behaviour(TPB),
- a Model combining the Technology Acceptance Model and the Theory of planned behaviour,
- The Model of PC Utilization(MPCU), Innovation Diffusion Theory(IDT) and Social Cognitive Theory (SCT).

The combination of these models and theories resulted in the formation of four main constructs (social influence, performance expectancy, effort expectancy and facilitating conditions) which are moderated by the sex of the user, age, familiarity and desire to use the system. These factors which are said to influence on technology acceptance (Hanafizadeh et al., 2013a;Morris et al., 2003b).

This model is so reliable it has become one of the best models used by researchers in recent times to forecast if users are likely to use innovation like Internet banking.

2.4 Factors Affecting Internet Banking Adoption

Certain factors hinder technology acceptance. The acceptance of technological innovation by customers in the bank sector is also affected by these factors. Venkatesh et al. (2014), posited that the factors affecting Internet banking adoption can be classified into the following headings:

2.4.1 Performance Expectancy

This is where a person thinks that the usage of a system will help him do his work well (Morris et al., 2003). In transacting a business with a bank, if customers get to know that a new innovation like IB will them to perform the transaction more easily, they are likely to adopt it. This is the reason why Abushanab and Pearson (2007) consider the Internet banking adoption by customers will be based highly on performance expectancy of the system.

2.4.2 Effort Expectancy

A system that requires less effort to use will be preferred to by users no matter the usefulness of its counterpart. It is for this reason that computers with a graphical user interface (GUI) are normally preferred by people to those with command line interface (Morris, 2000). It is believed that if bank customers see that it will take less effort to use Internet banking channel to perform most of their banking needs, they are likely to accept it.

2.4.3 Social Influence

According to Morris et al. (2003) social influence is a situation whereby an individual is likely will use a new system simply because someone who is closer to him is also using the same system. For instance, in order to enhance one's self-esteem, some people

sometimes do conform to the wishes of their friends and family members to adopt new innovation like Internet banking.

2.4.4 Facilitating Conditions

The usage of a system will be enhanced if and only if certain infrastructures exist to support it (Venkatesh et al., 2012). In the telecommunication industry for example, if mobile network operator is able to increase its infrastructure in many cities and towns so that users can use it without any difficulty, it is likely to be attracted more people than its counterparts in the same industry. It is for this reason that India is noted as one of the fastest technological nations in the world because it has the technological infrastructure for consumers to adopt new innovation easily (Tan, 2000**).**

2.5 What is Behavioural Intention?

It is a choice a person makes in order to take a certain course of action (Armitage, 2003).

2.6 Authentication Technologies in Internet Banking

One of the critical success factors in any online transaction such as Internet banking is the issue of security (Rouibah et al., 2009). According to Twum and Ahenkora (2012), the strategies used in Internet banking must be improved because trust and security affect the way users adopt this banking channel.

According to Subsorn and Limwiriyakul (2012), the measures used to make sure that Internet banking are secured for providers and customers include the following:

- Bank Site Authentication Technology

This is where the banks use encryption technologies like Secure Sockets Layer (SSL), Digital Certificate as well as Certificate Authority to secure information.

- Session Management

It is a critical component of modern web application used to protect the confidentiality of Internet banking customers.

- **User site authentication technology**

Technologies used in the user site authentication include the following:

i. Two-factor authentication for logon and/or for transaction verification available

ii. Logon requirements iii. Logon failure limitation iv. User Logon input type

v. Scramble an on-screen input keypad

vi. restriction of Password ; and vii.

Verification of Transaction

Other ways to authenticate customers in the Internet banking environment include the use of secret code or PINs, Digital Certificates with Public Key Infrastructure , smart cards, USB plug-ins, transaction profile scripts, one-time passwords (OTPs), and biometric feature identification (Council, 2011).

According to Khan (2014), on-line banking platforms should be secured and free from risk so that it can be trusted by customers. Another way to prevent online fraud such as criminals obtaining customers information and using the information to transact business is the use of transaction monitoring. This compares the current transaction parameters of the customers and the third party

2.7 Internet Banking Adoption Using the Proposed Research Design

Using the proposed research model, I postulated the following hypotheses.

i. H1a: Performance Expectancy will significantly influence the behavioural intention to use internet banking.

ii. H1b: Effort Expectancy will significantly influence the behavioural intention to use IB and will be moderated by age, gender and experience.

iii. H1c: Social Influence will significantly influence the behavioural intention to use IB moderated by age, gender and experience.

iv. H1d: Facilitating Conditions will significantly influence the behavioural intention to use IB, moderated by age, gender and experience

v. H1e: Price Value will have a significant influence on behavioural intention to use IB, moderated by age, gender and experience.

vi. H2a: The Perceived Risk factor will have a significant influence on behavioral intention to use IB, moderated by time risk performance risk, financial risk, psychological risk, social risk, privacy risk, and overall risk.

vii. H2b: The Perceived Risk factor will have a significant influence on the usage of the Internet banking. viii. H3: Facilitating Conditions will have a significant influence on the usage of the
Internet banking.

ix. H4: Behavioural intention of customers will have a significant influence on the usage of the Internet banking.

To obtain quality data for this study, the respondents were purposively selected at the bank premises to answer the questionnaires. The use of Structural Equation Modelling (SEM), tables, pie charts, bar charts, and graphs was employed to represent the processed data. The research model adopted for the study is as shown in Figure 2.

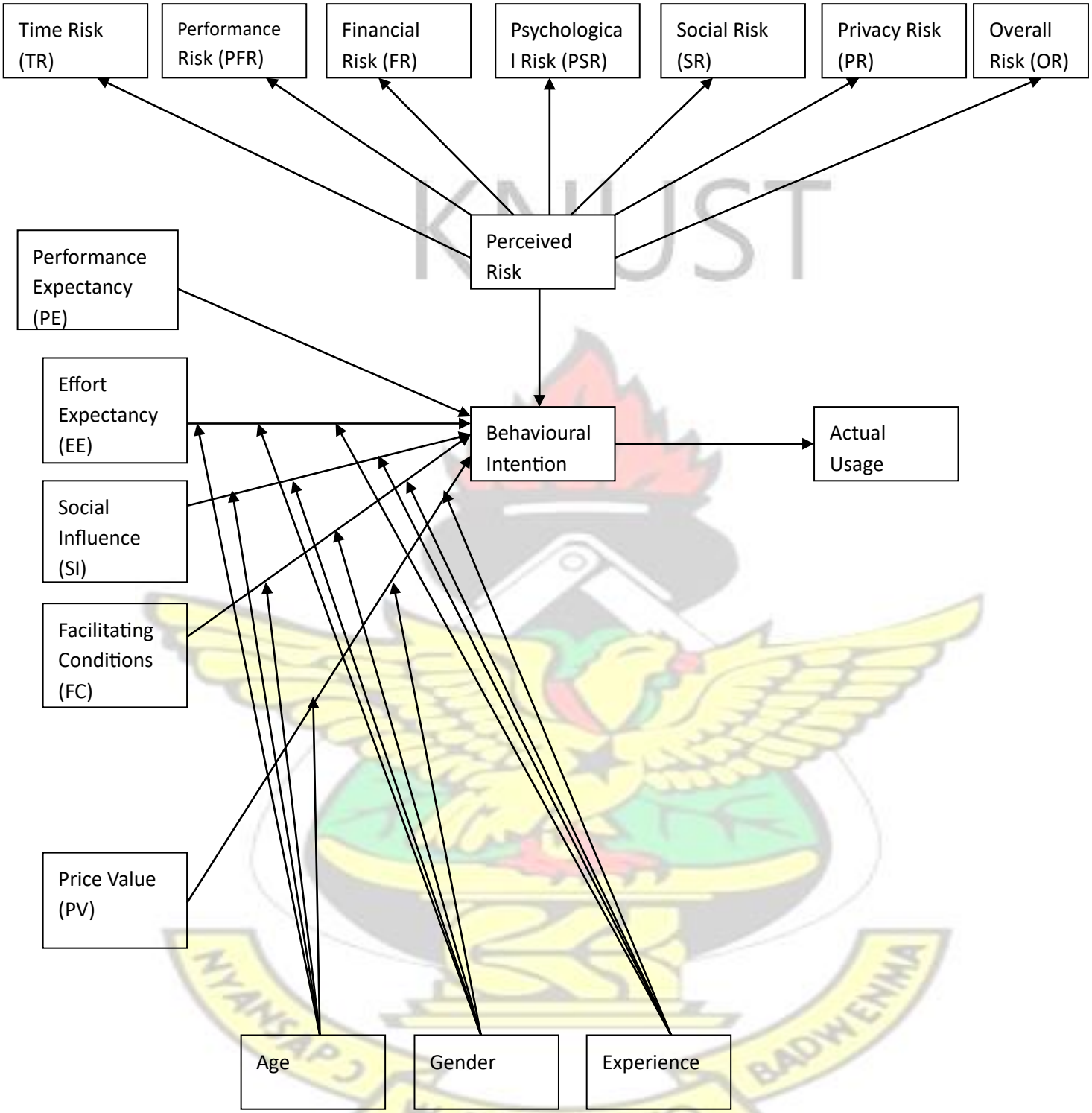

Time Risk (TR)
Performance Risk (PFR)
Financial Risk (FR)
Psychological Risk (PSR)
Social Risk (SR)
Privacy Risk (PR)
Overall Risk (OR)
Perceived Risk
Performance Expectancy (PE)
Effort Expectancy (EE)
Social Influence (SI)
Facilitating Conditions (FC)
Price Value (PV)
Behavioural Intention
Actual Usage
Age
Gender
Experience

Figure 2: The Research Design

This research design posits that users' behavioural intention influence the actual usage of internet banking. Users' behavioural intention is also influenced by six main constructs namely Perceived Risk, Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions and Price Value.

The Perceived Risk construct is determined by factors like Time Risk, Performance Risk, Financial Risk, Psychological Risk, Social Risk, Privacy Risk and the Overall Risk.

With the exception of Performance Expectancy and Perceived Risk constructs, the rest of the constructs are moderated by users' age, gender and experience.

CHAPTER THREE RESEARCH METHODOLOGY

3.0 Introduction

The way adopted by researchers in the course of their work to describe, explain and to predict the occurrence of something is termed as research methodology (Rajasekar et al., 2006). Any investigation worth its salt should be based on scientific and a well-defined research methodology.

Research methodology is important to any researcher because it helps him or her to collect, process, and analyse the collected data. According to Springer et al. (2013), research can be grouped into either basic or applied and quantitative or qualitative.

According to Rajasekar et al. (2006), other research methods are comparative, exploratory, action and explanatory. But Springer et al. (2013) think that any of these research methods should have the following features.

- a clear statement of the problem
- a plan to follow
- building on present
- Collect new information and organize them

3.1 The Research Type

Depending on the nature of the research, it can be explanatory, descriptive, and exploratory (Rajasekar et al., 2006). This study employed exploratory and descriptive research because the study intended to find out why Ghanaian banks customers do not adopt Internet banking as expected.

3.2 Approaches to Research

According to Warfield (2005), researchers group research into three. They are

- Quantitative research: It deals with the investigation of things that can be observed and measured
- Qualitative research: It helps people to appreciate the society and the way people behave.
- Mixed method research: It combines both qualitative and quantitative research methods

The study examines the factors influencing the adoption of internet banking in Ghana from customers' perspective. For this reason the mixed method research approach was adopted for the study.

3.3 Research Strategies

In order to achieve an effective research work, strategies are adopted. And the common ones used by researchers include experiments and quasi-experiments, survey using structured questionnaires, purposive sampling, in-depth interviews, participant observation or focus groups case studies, and the analysis of archives (Turner, 2010; Hox and Boeije, 2005). This study adopted survey using structured questionnaire because it enables respondents answer the same questions and administering them is also easy.

3.4 Ethnical Issues in Research

The four ethnical principles considered in any research are:

i. Independence of the individual
ii. Generosity iii. No injury iv. fairness

(Lawrence, 2007; Bricki and Green, 2007).

Apart from these four ethnical issues, researchers also consider confidentiality and the consent from the participants as the two main keys that must be considered in conducting research work.

3.5 Data Sources

In research, the main sources of data can be grouped as:

- Primary Sources
- Secondary Sources (Hox & Boeije, 2005)

3.5.1 Primary Source

The Primary Sources of data is collected for a specific research problem at any given time and can be obtained through questionnaires, observations and interviews. Data collected from this source can be used for teaching and learning, to describe contemporary and historical attributes, do comparative research, and reanalysis (Hox & Boeije, 2005).

3.5.2 Secondary Source

This type of data is available for use in research because other researchers had collected it for other purposes. And this can be acquired through books, articles, research reports, and annual reports. Also relevant online literature and published materials on the subject were used.

3.5.3 Sampling Technique and Research Population

According to Barreiro & Albandoz (2001) research involves choosing one of the following sampling methods:

- Probability Sampling: It is a method that allows a sample equal chance to be selected.
- No-Rule Sampling: The representative is taken from a homogenous population without any rule.
- Purposive Sampling: This is where an individual makes a selection from a population depending on his purpose or opinion. This method was selected for

the study because the researcher wanted to select only customers who have adopted internet banking to answer the questionnaire.

3.6 Research Instrument and Data Collection Approach

Different kinds of research instruments are used for data collection in any research work. Some of them are questionnaires, interviews and focus groups surveys. Others include telephone interviews, field notes, taped social interaction and classroom observation (Zohrabi, 2013).

The use of questionnaires was adopted to obtain the data for this study. The variables were constructed on Multi-Item using the 7 point Likert scale. From 1(totally disagree) to 7(totally agree).

3.7 Sample Size and Data collection Instrument adopted

The study was conducted in ten (10) Ghanaian Banks that used Internet banking services. One hundred and ten (110) questionnaires were administered to bank customers in Ghana Commercial Bank, Agricultural Development Bank, Barclays Bank Ghana, CAL Bank, Ecobank Ghana Limited, Standard Chartered Ghana, Zenith Bank(Ghana) Limited, The Trust Bank, Universal Merchant Bank and Prudential Bank Limited who used Internet banking. At the end of the exercise, one hundred and three (103) questionnaires were retrieved from the respondents. But three (3) of the questionnaires were eliminated because the respondents did not complete them well. Therefore one hundred (100) valid questionnaires were obtained and used for the data analysis.

CHAPTER FOUR FINDINGS AND ANALYSIS

4.0 Introduction

The findings from the collected data will be analysed; and the results are presented using graphical representations such as tables, graphs and charts.

4.1 Descriptive Statistics

Respondents from ten banks which used internet banking services were chosen. Out of the 110 questionnaires, 103 of them were retrieved at the end of the exercise but three (3) of the questionnaires were eliminated because they did not meet the set criteria. One hundred (100) valid questionnaires were used for the data analysis.

4.2 Demographic Information

This is the data about the respondents who participated in the study.

Table 2: Gender of Respondents

Gender	**No. of Respondents**
Male	55
Female	45
Total	**100**

Table 2 shows that out of the one hundred (100) usable responses, 45 were females and 55 males.

Table 3: Ages of Respondents

Age Group (yrs)	No. of Respondents
Less than 21	12
21-30	42
31-40	25
41- 50	16
51-60	5

Total	**100**

Source: Researcher's Field Survey

Table 3 tells us that those who use internet banking in Ghana fall within these ages: <21) was 12%, (21-30) was 42%, (31-40) was 25%, (41-50) was 16% and (51-60) was 5%.

Table 4: Respondents' Educational Background

Level of Education	MSLC/JSS	SSS/O' LEVEL	A'LEVEL/ POST SEC	TERTIARY/ DIPLOMA/DEGREE	POSTGRADUATE/ PROFESSIONAL
No. of Respondents	2	6	7	63	22

Source: Researcher's Field Survey

KEY: MSLC/JSS = Middle School Leaving Certificate or Junior Secondary School

SSS/O'LEVEL= Senior Secondary School or Ordinary Level, A' LEVEL = Advanced Level

In Table 4, the respondents with MSLC/JSS was 2%, SSS/O'LEVEL was 6%, A' Level/Post Sec was 7%, Tertiary/Diploma Degree was 63% and those with Postgraduate/ Professional was 22%.

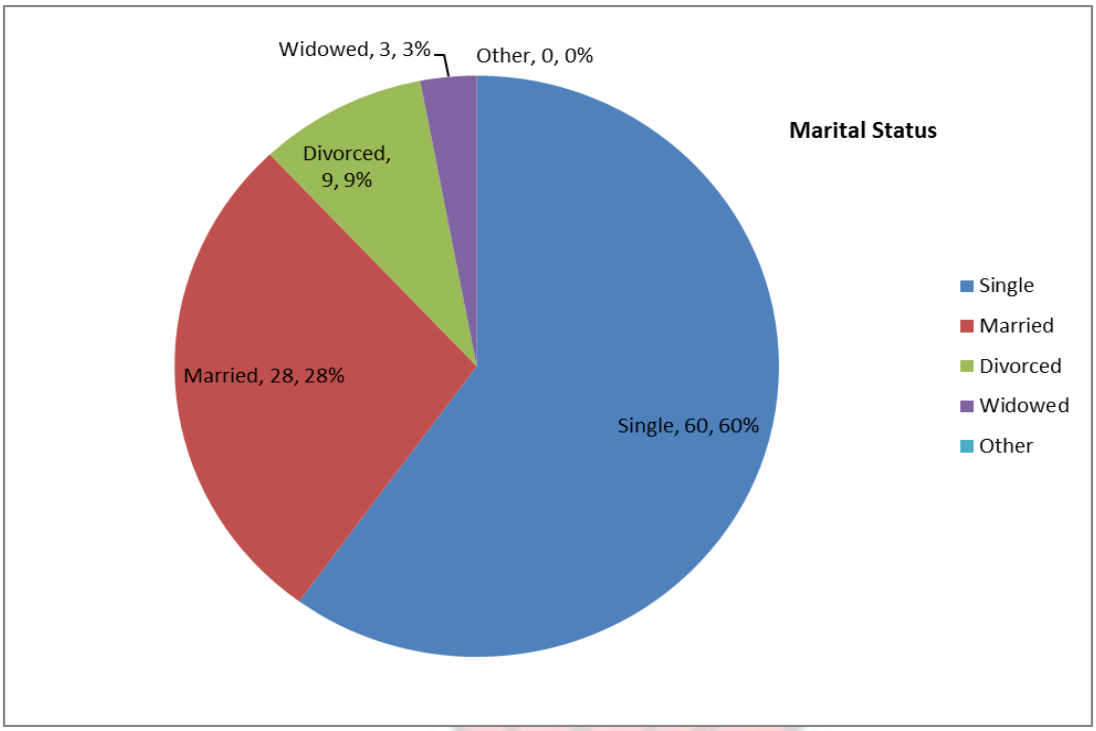


Figure 3: Marital Status of Respondents

In Figure 3, it shows that 60% the participants were single, 28% were married, 9% had divorced and 3% were widowed.

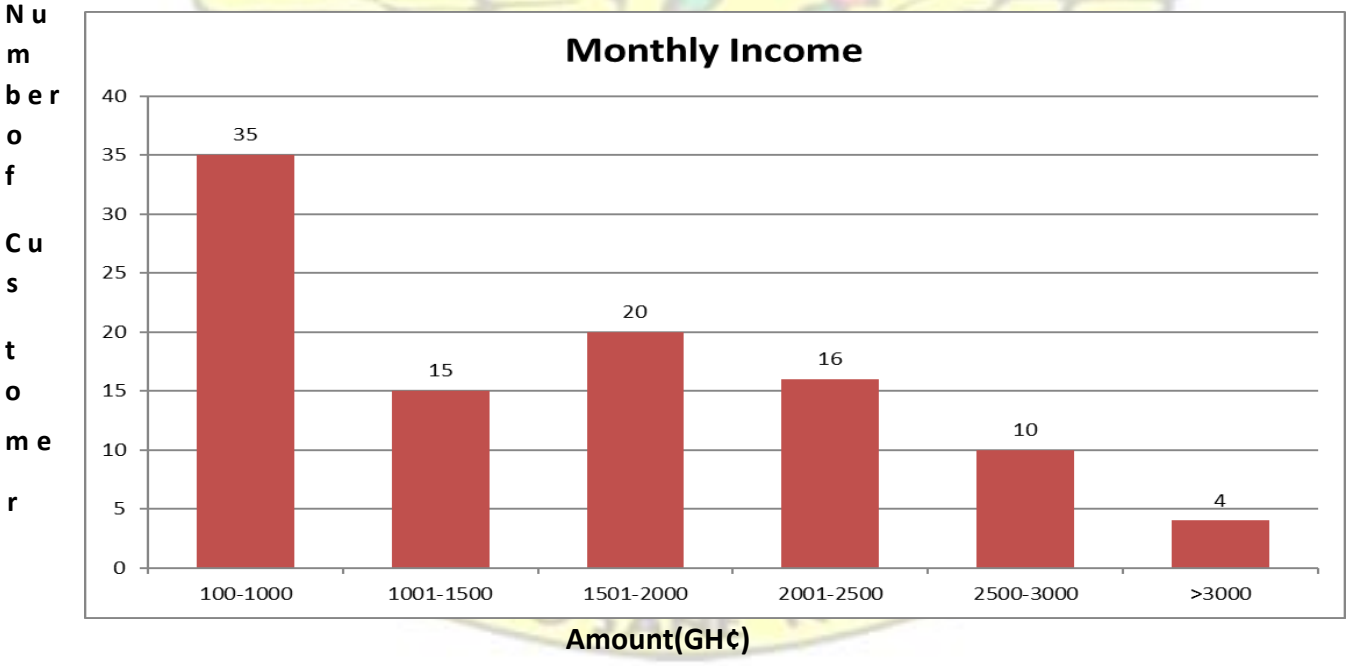


Figure 4: Income Level of Respondents

In Figure 4, it shows that participants with Monthly Income in the range(GH¢100-1000) were 35, (Gh¢10001-1500) were 15,(GH¢1501-2000) were 20, ,(GH¢2001-2500) were

16, ,(GH¢2500-3000) were 10 and participant with monthly income greater than GH¢3,000 were 4.

Table 5: Account Type of Respondents

Account Type	No. of Years Accounts Operated				No. of Respondents
		< 2years	2- 3years	>6years	
Current		10	17	6	33
Savings		15	20	22	67

Source: Researcher's Field Survey

From Table 5, it shows that 33 respondents used Current Account whilst 67 used Savings Account. Fifteen (15) respondents had used internet banking less than two years. Those who had used the service within 2-3 years were 59 and those who had used the service for more than six years were 26.

Table 6: Internet and Internet banking usage

Where Internet is accessed				Internet Usage			Internet Banking usage(hours)					
H	PE	S/AI	C	OC	H/L	SP	Never	0.5	0.5-1	1-2	2-3	>3
46	24	19	11	20	52	28		8	22	26	24	20

KEY: H= Home, PE = Place of Employment, S/AI = School or Academic institution C= Cybercafé, OC = Office Computer, H/L= Home or Laptop computer, SP= Smart Phone

From Table 6, it can be observed that 46 of the respondents accessed internet in their homes. 24 accessed it at their work place. Nineteen (19) respondents accessed it in schools, 11 of them accessed it in the Cybercafé, 20 of the respondents use their office computers to access internet, 52 respondents used their home computers or Laptops to access the internet and 28 respondents of the use their Smart Phones to access the

internet.

While 8 of the respondents spent (< 0.5 hours) on the internet, 22 of them spent (0.51hour) to use the internet. 26 respondents spent (1-2 hours) on the internet. Twenty-four (24) respondents spent (2-3) hours and 20 respondents used more than 3 hours on the internet.

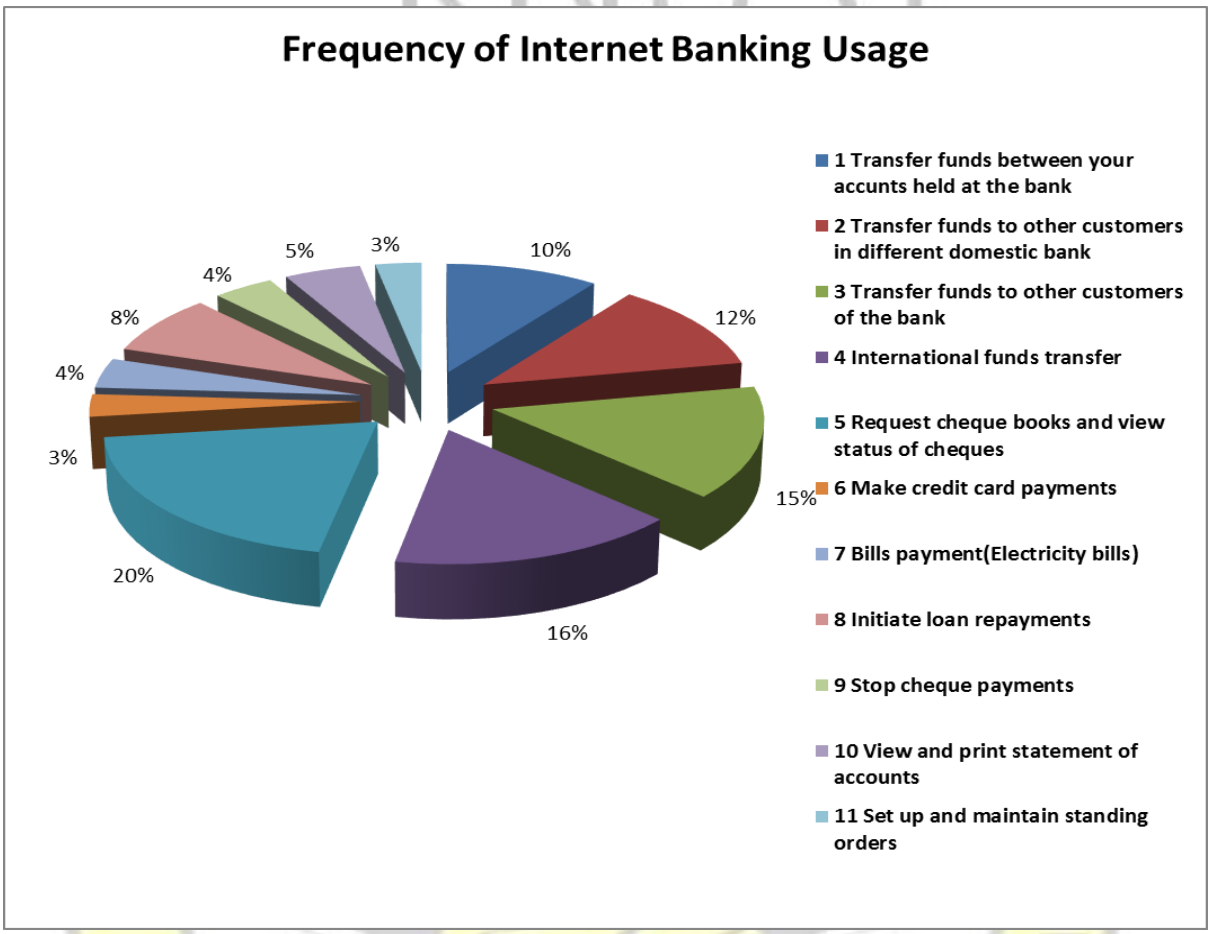


Figure 5: Frequency of Internet Banking Usage

Figure 5 shows that 10% of the participants used internet banking to transfer funds between accounts held at the bank. 12% used internet banking to send funds to other local banks. 5% used it to do international funds transfer.

3% of the participants used the service to request cheque books and view the status of their cheques and make credit card payments.

4% of the participants used internet banking to pay their bills (e.g. electricity) and 8% used the channel to initiate their loan repayments. 15% used the internet banking to stop cheque payments and 16% used it to view and print statements of their bank accounts.

20% of the participants used the service to set up and maintain their standing orders.

4.3 Data Analysis Method Adopted

According to Ketkar et al. (2012), the Structured Equation Modelling (SEM) is the best statistical tool used to reduce biases in measurement and the test of reliability of variables and therefore adopted for the study. The data collected from the one hundred (100) respondents were exported into Microsoft Excel and the data analysis was performed using WarpPLS 4.0.

4.4 Results and Discussion

The WarpPLS 4.0 software which uses SEM and Partial Least Squares (PLS) regression algorithm was employed for this study and Figure 6 displays the result.

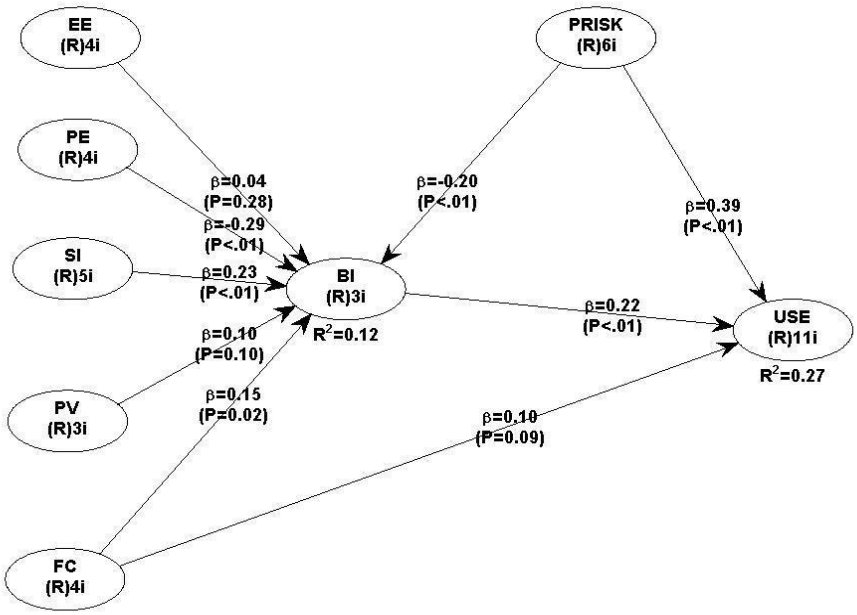


Figure 6: Result of Structural Equation Modelling

KEY: EE (Effort Expectancy), SI (Social Influence), PE (Performance Expectancy), PV (Price Value), FC (Facilitating Conditions), PRISK (Perceived Risk), BI (Behavioural Intention), USE (Usage Frequency)

The arrows in the Figure 6 represent the effects or direct links (links that connect pairs of latent variables like EE, SI, PE, PV, FC, PRISK, BI and USE in the study. The oval symbols represent each of the latent variables such as Behavioural Intention. Each link with their associated β coefficients values are listed near the arrows.

P values are also displayed below the direct links and are within the parentheses while the dependent variables are represented by R^2.

4.5 Quality Indices and Model Measurement

The use of SEM in performing quality indices and the fitness of the model is presented in Table 7.

Table 7: Model Fit and Quality Indices

Name	P values
Average path coefficient (APC)=0.191	0.003
Average R-squared (ARS)=0.194	0.003
Average adjusted R-squared (AARS)=0.154	0.012
Average block VIF (AVIF)=1.202,	acceptable if <= 5, ideally <= 3.3
Average full collinearity VIF (AFVIF)=1.450	acceptable if <= 5, ideally <= 3.3

The Average Path Coefficient (APC) and Average R-squared (ARS) are used in determining the model fitness of the data. In addition, the Average variance inflation factor (AVIF) is also considered when assessing the model fitness of the data.

APC and ARS must have a P value which is lower than 0.05 but the value of AVIF should be lower than 5 (Kock, 2012).

From Table 7, it can be observed that APC and ARS had a P value of 0.003, and that of AVIF was 1.202. This shows that all the three criteria needed in assessing the model fitness in the data were met. The model is therefore good for explanatory quality and also predictive.

The R^2 value of 0.12 in the study shows a least amount of variance in the determination of user's behavioural intention to use internet banking. 27% in the way internet banking is accepted in Ghanaian banks was also accounted for by the model.

4.6 Discriminant Validity Test

It is one of the validation tests performed in this study to find out if the latent variables vary from one another. And this was carried out using the correlations among the constructs with the square root of the average variance extracted (Zait & Bertea, 2011; Farrell, 2009; D. Straub & Gefen, 2004; Fornell & Larcker, 1981). After conducting the discriminant validity test, the results in the study are shown in Table 8.

Table 8: Correlations among Latent Variables with sq. rts. of AVEs

	EE	PE	SI	FC	PV	PRISK	BI	USE
EE	**0.837**	0.620	-0.022	0.352	0.075	-0.367	0.247	-0.081
PE	0.620	**0.790**	0.083	0.289	0.134	-0.122	0.170	-0.044
SI	-0.022	0.083	**0.830**	0.320	-0.085	0.297	0.220	0.341
FC	0.352	0.289	0.320	**0.760**	0.165	-0.160	0.324	0.176
PV	0.075	0.134	-0.085	0.165	**0.892**	-0.179	0.163	0.139
PRISK	-0.367	-0.122	0.297	-0.160	-0.179	**0.638**	-0.152	0.160
BI	0.247	0.170	0.220	0.324	0.163	-0.152	**0.904**	0.154

USE	-0.081	-0.044	0.341	0.176	0.139	0.160	0.154	**0.660**

Note: The diagonal values (i.e., are highlighted) are the square roots of Average Variances Extracted (AVEs)

The method of finding whether the correlation that exists between the same items is higher than the between different items is known as the discriminant validity. And a critical examination of Table 8 shows that the numbers on the diagonal (i.e., square root of AVE) are all greater if compared with any pair of the latent constructs. This shows that the discriminant validity in the study was confirmed and the measurement model is therefore acceptable.

4.7 Convergent Validity Test

A valid test is supposed to measure if attribute exists and whether the variations in that attribute is likely to produce differences in the outcomes of the measurement (Borsboom, et al., 2004). In order to check whether the measurements used in the study were valid, the convergent validity was performed using WarpPLS and the result is shown in Table 10.

To find out whether indicators used in a study are supposed to measure the same construct then convergent validity test is performed and if the indicators produce similar results, then convergent validity is achieved. But there are three things that must be met before convergent validity can be attained. These are:

i. all item factor loadings should be greater than zero(0) and significant ii. the average relative variance extracted must be higher than 0.050 or the square root of AVE should be larger than 0.707 iii. composite reliability index for each construct must be greater than 0.80 (Guo et al., 2011).

Table 9: Composite reliability coefficients

EE	PE	SI	FC	PV	PRISK	BI	USE
0.903	0.868	0.917	0.844	0.921	0.794	0.931	0.891

Table 10: Combined loadings and cross-loadings of indicators and latent variables

	EE	PE	SI	FC	PV	PRISK	BI	USE
EE1	**0.892**	0.037	0.018	-0.036	-0.020	0.162	0.066	-0.061
EE2	**0.867**	0.194	-0.081	0.059	0.008	0.004	0.010	-0.020
EE3	**0.809**	-0.267	-0.003	0.027	0.123	-0.021	-0.148	0.104
EE4	**0.773**	0.019	0.073	-0.053	-0.114	-0.169	0.067	-0.016
PE1	-0.107	**0.820**	-0.065	-0.088	-0.098	-0.091	0.036	-0.007
PE2	0.230	**0.811**	-0.147	-0.071	0.108	0.059	0.076	-0.071
PE3	0.008	**0.846**	0.180	0.046	0.066	-0.016	-0.153	-0.050
PE4	-0.158	**0.670**	0.030	0.137	-0.093	0.060	0.058	0.158
SI1	0.064	-0.053	**0.805**	0.035	-0.063	0.099	-0.024	-0.075
SI2	0.149	0.021	**0.868**	-0.001	-0.129	0.124	0.021	-0.057
SI3	-0.029	0.163	**0.834**	-0.103	0.165	0.238	0.020	-0.005
SI4	-0.222	-0.080	**0.814**	0.045	-0.085	-0.258	0.008	0.083
SI5	0.028	-0.056	**0.830**	0.027	0.113	-0.212	-0.027	0.055
FC1	0.260	0.002	-0.017	**0.787**	-0.067	0.116	-0.003	-0.138
FC2	0.212	-0.143	-0.031	**0.851**	-0.023	0.026	0.024	0.037
FC3	-0.325	0.075	-0.222	**0.770**	0.031	-0.032	-0.024	0.099
FC4	-0.220	0.101	0.344	**0.612**	0.080	-0.145	0.001	0.002
PV1	-0.038	-0.079	-0.087	0.004	**0.871**	0.013	0.103	-0.001
PV2	0.077	0.115	0.098	-0.041	**0.888**	-0.097	-0.155	0.006
PV3	-0.038	-0.036	-0.013	0.036	**0.915**	0.082	0.053	-0.005
lv_PRF	-0.042	-0.124	0.234	-0.382	-0.246	0.465	0.383	-0.010
lv_FR	0.352	-0.115	0.159	-0.144	0.250	**0.434**	0.065	-0.294
lv_TR	-0.379	0.300	-0.114	0.175	-0.257	**0.761**	-0.068	0.010
lv_PSR	-0.154	-0.043	-0.215	0.250	0.251	**0.748**	-0.027	0.168
lv_SR	0.165	-0.066	-0.008	-0.036	0.195	**0.824**	-0.049	0.129
lv_OR	0.283	-0.071	0.160	-0.105	-0.311	**0.472**	-0.201	-0.226
BI1	0.081	-0.057	0.061	-0.010	0.032	0.057	**0.928**	-0.068

BI2	-0.127	0.157	-0.030	0.035	-0.110	0.021	**0.903**	0.045
BI3	0.045	-0.100	-0.034	-0.025	0.079	-0.082	**0.881**	0.025
FU1	-0.366	-0.014	-0.127	0.438	-0.007	-0.174	0.038	**0.651**
FU2	-0.535	0.052	-0.090	0.384	-0.031	-0.168	0.017	**0.662**
FU3	-0.255	0.038	-0.148	0.188	-0.027	-0.075	0.168	**0.795**
FU4	0.021	0.013	-0.132	0.235	-0.091	0.054	-0.050	**0.549**
FU5	0.444	-0.035	0.098	-0.303	-0.124	0.049	0.062	**0.631**
FU6	0.252	-0.133	-0.178	0.111	0.082	0.428	-0.019	**0.468**
FU7	-0.103	0.037	-0.259	0.018	-0.007	-0.075	0.090	**0.796**
FU8	-0.237	0.183	-0.011	-0.113	-0.132	-0.016	-0.025	**0.838**
FU9	0.176	-0.064	0.331	-0.258	0.304	0.030	-0.240	**0.700**
FU10	0.471	-0.073	0.177	-0.404	-0.065	0.079	0.066	**0.597**
FU11	0.581	-0.163	0.515	-0.391	0.175	0.062	-0.211	**0.450**

KEY: EE(Effort Expectancy), PE(Performance Expectancy) SI(Social Influence) Facilitating Conditions(FC) PV(Price Value) PRISK(Perceived Risk) BI(Behavioural Intentions) SE= Standard Error, USE=Usage of Internet Banking, FU(Usage Frequency), loadings are unrotated (**highlighted**).

In Table 10, latent variables are found on the column and the indicator names are on the row.

After convergent validity test, the study revealed that all the items load (highlighted values) were more inside in the construct than outside. And the same values were obtained from indicators that were supposed to measure the same construct (Table 10). Most the square root numbers for AVE were more than 0.70 (Table 8) and majority of the composite reliability index were greater than 0.80 (Table 9). The convergent validity was achieved because all the criteria were met in the study.

4.8 Reliability Test

According to Drost (2004) reliability can be achieved if different individuals at different time perform measurements and the same results are obtained. But for one to assess the

reliability of a measurement, the use of internal consistency is employed. It is also used to measure Composite Reliability (CR) and Cronbach's alpha (CA) (Iconaru, 2013). Their latent variables values obtained for each of them are displayed in Table 11 and Table 12 respectively.

Table 11: Composite reliability coefficients for Latent Variables

EE	PE	SI	FC	PV	PRISK	BI	USE
0.903	0.868	0.917	0.844	0.921	0.794	0.931	0.891

Table 12: Cronbach's alpha coefficients for Latent Variables

EE	PE	SI	FC	PV	PRISK	BI	USE
0.856	0.796	0.887	0.751	0.871	0.689	0.888	0.864

Kock (2012) believes that the CR and the CA values must higher or equal to 0.7 But Hafiz et al. (2013) disagree and think that while the CR value should be higher than 0.7 that of CA must be greater than 0.5.

The study showed that the composite reliability coefficients in Table11 are all greater than 0.7 and the Cronbach's alpha coefficients in Table 12 are also greater than 0.5. It therefore confirms how the measurement model for the data is highly reliable.

4.9 Full Collinearity (VIFs)

Collinearity is used to measure the same construct in multiple regression models. If the VIF values are greater than 3.3, then the model is contaminated. But if the VIF values from a full collinearity test are equal to or lower than 3.3, then the model is said to be free from common method bias (Kock & Kock, 2015). The calculated full collinearity VIFs values obtained in the study are presented Table 13.

Table 13: Full collinearity VIFs

EE	PE	SI	FC	PV	PRISK	BI	USE

2.032	1.723	1.467	1.425	1.139	1.388	1.218	1.209

The biggest VIFs value from Table 13 is 2.032 which is less than the threshold value of 3.3. This shows that the collinearity among the latent variables in model was not significant source of bias.

4.10 Direct, Indirect and Total Effects

The mediating effects of the variables in the model can be evaluated and explained by means of direct, indirect and total effect. And according to Kock (2012), the effects for varibles linked by one or more paths must be calculated using the following indicators:

- the path coefficients linked with its effects
- the number of paths making up the effects
- the P values connected with the effects
- Standard errors connected with the effects,

The results of the study showing the total effect, the P values and the effect size existed among the latent variables are shown in Table 14 and Table 15 respectively.

Table 14: Relationship among Latent Variables

Relationship Among Latent variables	EE-BI	PE-BI	SI-BI	PV-BI	FC-BI	PRISK-BI	FC-USE	PRISK-USE
Total Effect	0.04	-0.29	0.23	0.10	0.15	0.02	0.10	0.10
P values	0.28	0.01	0.01	0.10	0.02	0.09	0.09	0.09
Effect Size	medium	nil	nil	medium	small	medium	medium	medium

The effect size must fall within: Small (0.02), Medium (0.15) or Large (0.35)) (Cohen et al., 2003) Key: EE (Effort Expectancy), BI (Behavioural Intention), SI (Social Influence), PV (Price Value), FC (Facilitating Conditions), PRISK (Perceived Risk), USE (Usage Frequency)

A critical examination of Table 14 revealed that the magnitude of the effect size of FC on BI was small. But the magnitude of the effect size of EE- BI, PV- BI, PRISK-BI, FCUSE and PRISK-USE was medium. There was no evident of effect size of PE on BI as well as SI on BI.

Table 15: Direct effects for each latent variable relationship

Relationships	Total Effect	P value	No. of paths	Standard error	Effect size coefficient	Effect size
EE- USE	0.010	0.429	1	0.054	0.001	No rel.
PE- USE	-0.063	0.122	1	0.054	0.003	No. rel.
SI- USE	0.050	0.178	1	0.054	0.017	Medium
FC- USE	0.033	0.038	1	0.054	0.009	No rel.
PV- USE	0.021	0.349	1	0.054	0.003	No rel.
PRISK- USE	-0.042	< 0.001	1	0.054	0.019	Medium
BI-USE	0.217	0.003	1	0.076	0.066	Small

From Table 15, it can be seen clearly that only Perceived Risk (PRISK) showed significant negative relationship (direct effect= -0.042, P<0.001) on the frequency at which internet banking is used.

While the magnitude of the direct effect of PRISK on the Frequency of Use (USE) of internet banking was medium (effect size = 0.019), the Effort Expectancy (EE) showed significant positive relationship (direct effect= 0.010, P 0.429) on USE. The degree of the direct effect of EE on USE was below the stated threshold (effect size=0.001).

The PE showed a significant negative relationship (direct effect= -0.063, P 0.122) on USE of internet banking in Ghanaian banks. But the magnitude of the direct effect of PE on the Frequency of Use (USE) of internet banking was also below the recommended effect size threshold for relevancy (effect size = 0.003).

The study further revealed that Social Influence showed significant positive direct effect on USE at which customers in Ghanaian banks use Internet banking (direct effect= 0.050, P 0.178). And the level of the direct effect of SI on the Frequency of Use (USE) of internet banking was medium (effect size = 0.017). In addition the FC showed a significant positive direct effect relationship (direct effect= 0.033, P 0.038) on USE of internet banking by Ghanaian bank customers. But the magnitude of the direct effect of
FC on USE was below Cohen's recommended effect size threshold for relevancy (effect size=0.009).

The Price Value also showed a significant positive relationship on USE at which customers in Ghanaian banks use Internet banking (direct effect= 0.021, P 0.349).

However, the level of the direct effect of PV on USE was less than the agree limit (effect size=0.003). The behavioural intention positive and significantly influence the usage of internet banking usage (direct effect= 0.217, P 0.003) and the degree of the direct effect of BI of bank customers and the USE of internet banking service was small (effect size = 0.066).

The hypotheses test performed in the study is presented in Table 13.

Table 16: Testing of Hypotheses

Hypotheses		Path Coeff.	P value	Validation
H1b	EE-BI	0.04	0.28	Not Supported
H1e	PV-BI	0.10	0.10	Not Supported
H3	FC-USE	0.10	0.09	Not Supported
H1a	PE-BI	-0.29	0.01	Supported
H1c	SI-BI	0.23	0.01	Supported
H1d	FC-BI	0.15	0.02	Supported
H2a	PRISK-BI	0.02	0.01	Supported
H2b	PRISK-USE	0.23	0.01	Supported
H4	BI-USE	0.22	0.01	Supported

Hypotheses valid at P< 0.05

KEY: BI (Behavioural Intention), PE (Performance Expectancy), EE (Effort Expectancy) SI (Social Influence), PV (Price Value), FC (Facilitating Conditions), PRISK (Perceived Risk), USE (Usage Frequency)

4.11 Effect of Effort Expectancy on Behavioural Intention to use internet banking

The effect of Effort Expectancy was positively related but had no significant effect (H1b, β=0.04, p=0.28) on behavioural intention to use internet banking. Hypothesis H1b is not supported (Table 16).

4.12 Effect of Price Value on Behavioural Intention to use internet banking

The Hypothesis (H1e), which states that the behavioural intention to use internet banking is influenced by price value was positive and significant (**H1e, β=0.10, p=0.10)**. From Table 16 this hypothesis was supported and is represented in Figure 7 showing a nonlinear relationship that exists between price value and behavioural intention.

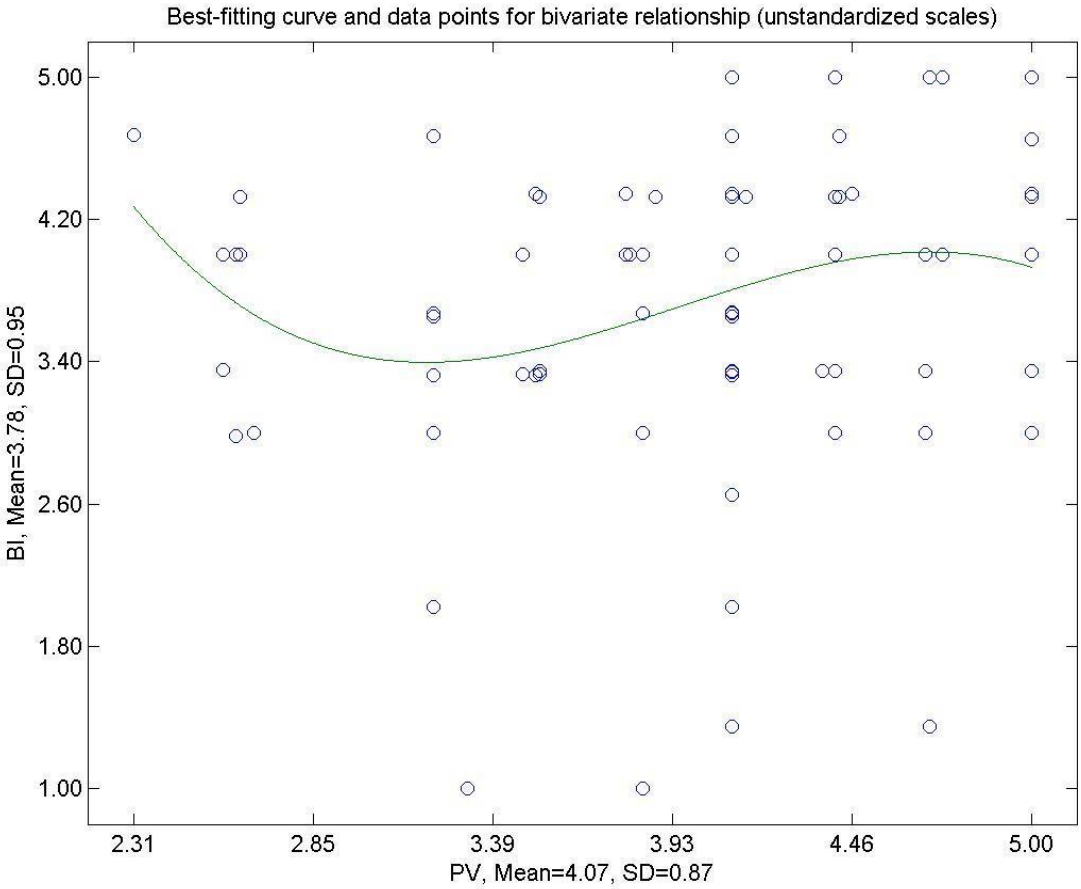


Figure 7: Price Value and Behavioural Intention Relationship

4.13 The Effect of Facilitating Conditions on internet banking Usage

The impact of facilitating conditions on how internet banking is used was positively related but not significant (**H3, β=0.01, p=0.09)**. The Hypothesis is supported and Figure 8 shows a non-linear relationship between facilitating conditions and internet banking usage.

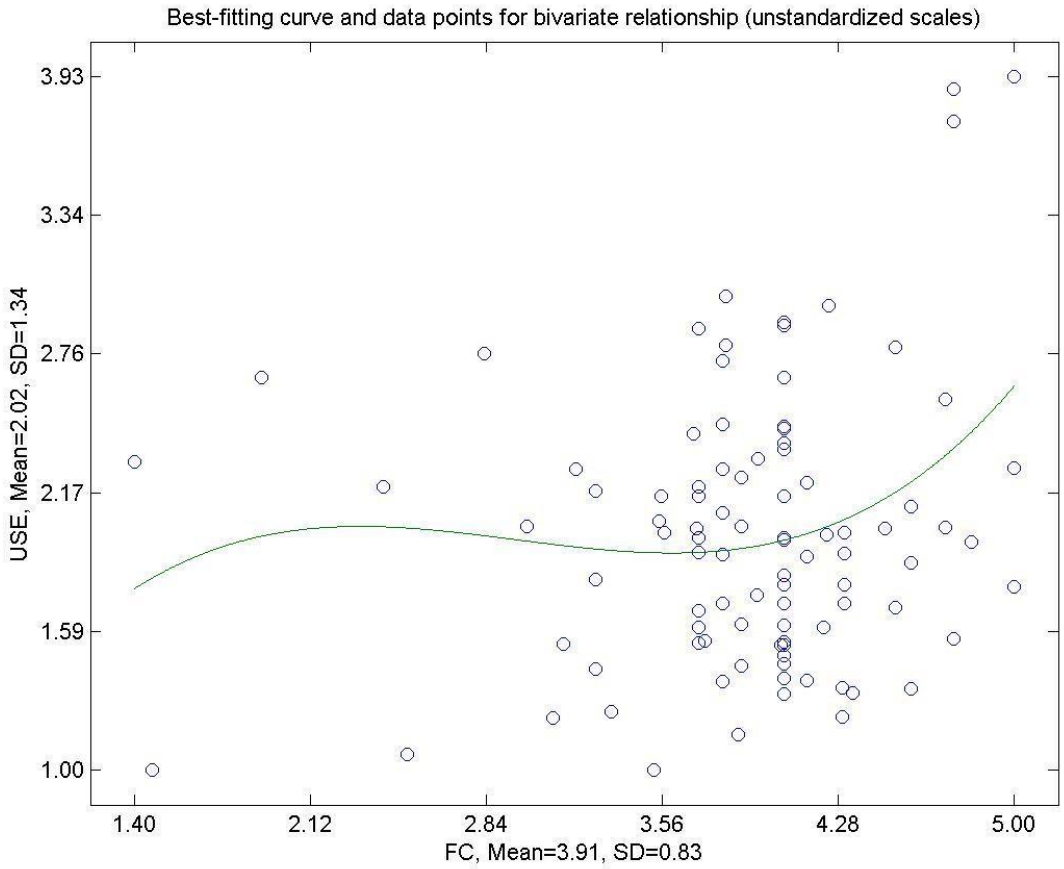


Figure 8: Relationship between Facilitating Conditions and Usage Frequency

4.14 Effect of Performance Expectancy on Behavioural intention to use internet banking

The behavioural intention of bank customers to use internet banking is significantly but negatively influenced by performance expectancy as shown in Table 16 (**H1a, β= -0.29, p=0.01).** Hypothesis H1a is therefore accepted. A non-linear relationship between performance expectancy and behavioural intention is represented in Figure 9.

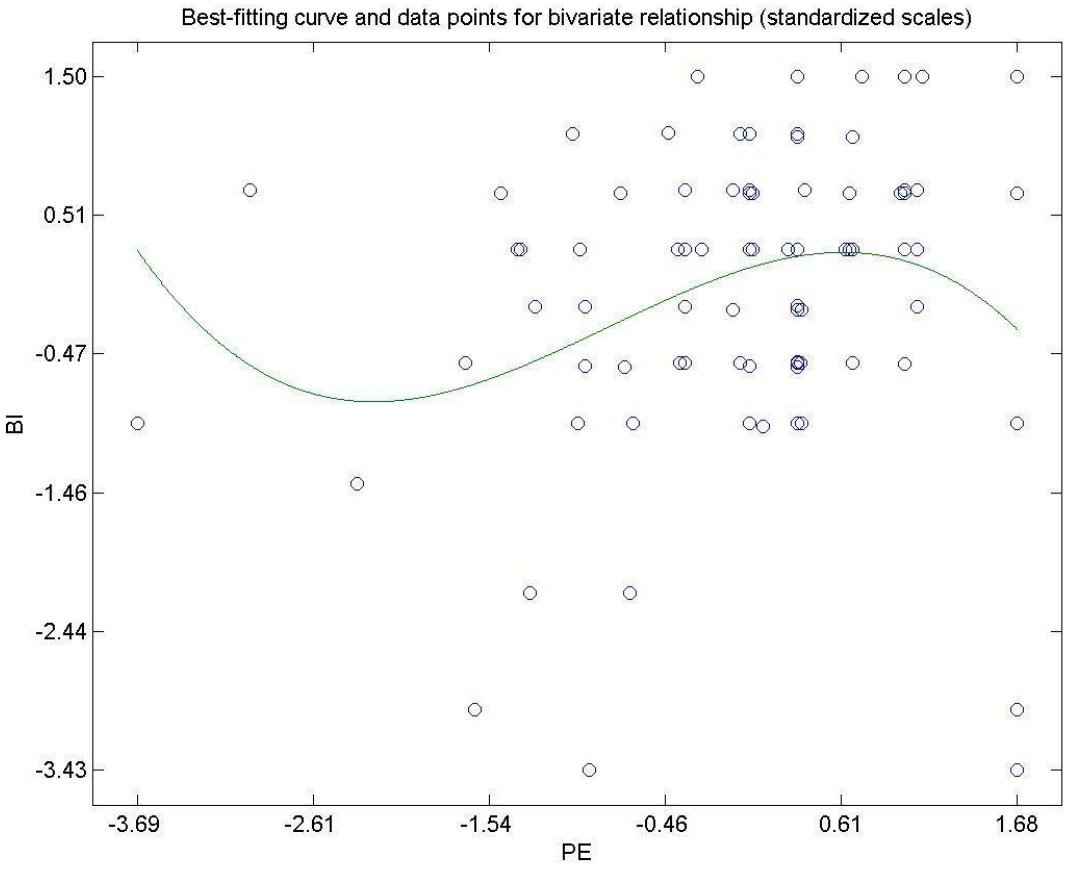


Figure 9: Relationship between Performance Expectancy and Behavioural Intention

4.15 Effect of Social Influence on Behavioural intention to use internet banking

Table 13 depicts that the behavioural intention to use internet banking is significantly and positively influenced by social influence. (**H1c, β=0.23, p=0.01**). Hypothesis H1c is supported**.** The relationship between social influence and behavioural intention and it is displayed in Figure 10.

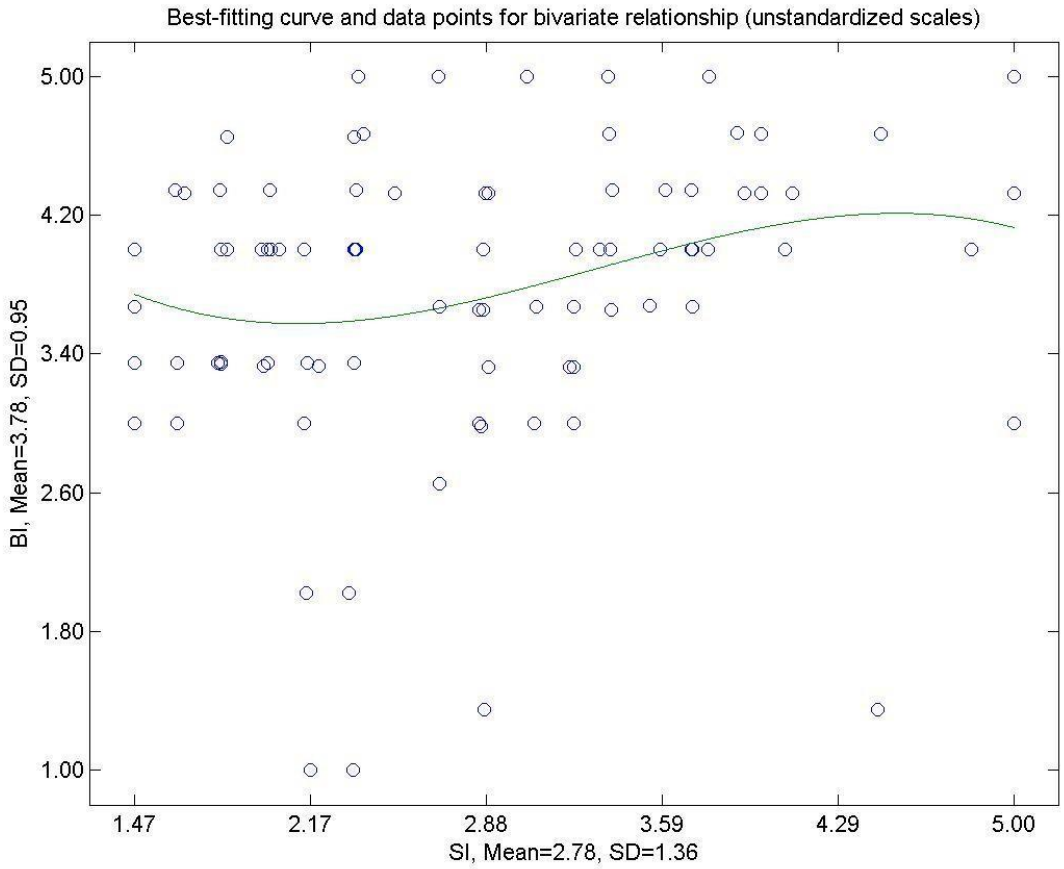


Figure 10: Relationship between Social Influence and Behavioural Intention

4.16 Effect of Facilitating Conditions on Behavioural intention to use internet banking

Customers' behavioural intention to use internet banking was significantly and positively **(H1d, β=0.15, p=0.02)** influenced by facilitating conditions. Hypothesis H1d is accepted (Table 16).

This is represented in Figure 11 showing a linear relationship between facilitating conditions and behavioural intentions to use internet banking.

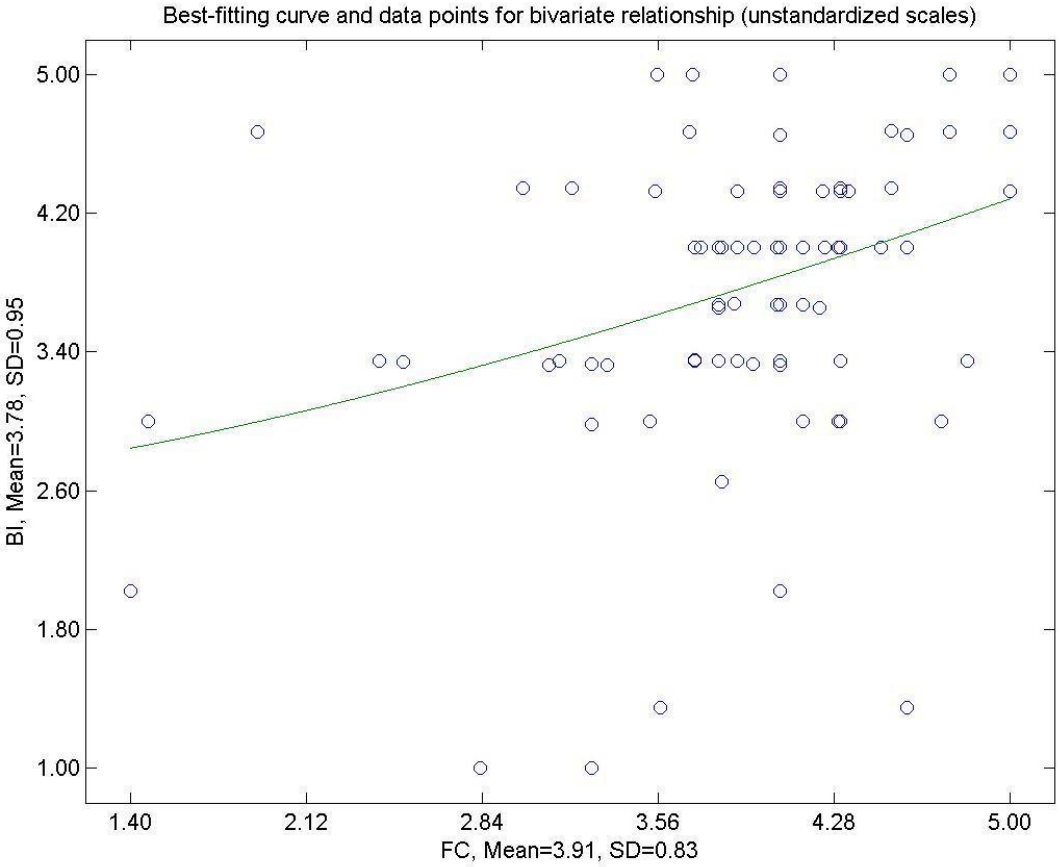


Figure 11: Relationship between Facilitating Conditions and Behavioural Intention

4.17 Effect of Perceived Risk on Behavioural intention to use internet banking

The behavioural intention for customers to use internet banking was significantly and positively (**H2a, β=0.02, p=0.01)** influenced by the perceived risk factor (Table 16). Hypothesis H2a is also supported. Figure 12 shows a non-linear relationship between perceived risk and behavioural intention to use internet banking.

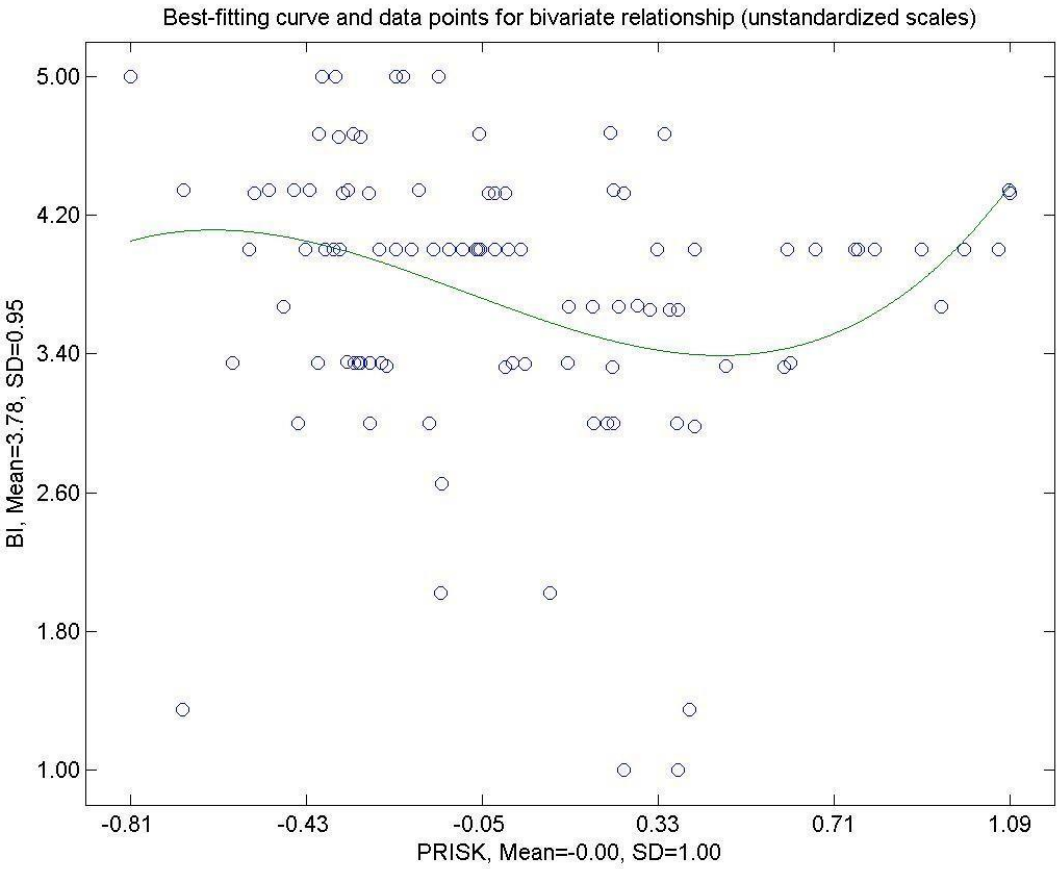


Figure 12: Relationship between perceived risk and behavioural intention

4.18 The Effect of Perceived Risks on internet Usage Frequency

There is a strong and significant positive relationship between perceived risk and the frequency of internet banking usage (H2b, β=0.39, p=0.01). Hypothesis H2b is accepted (Table 16).

The relationship between perceived risk factor and internet banking usage frequency among is shown in Figure 13.

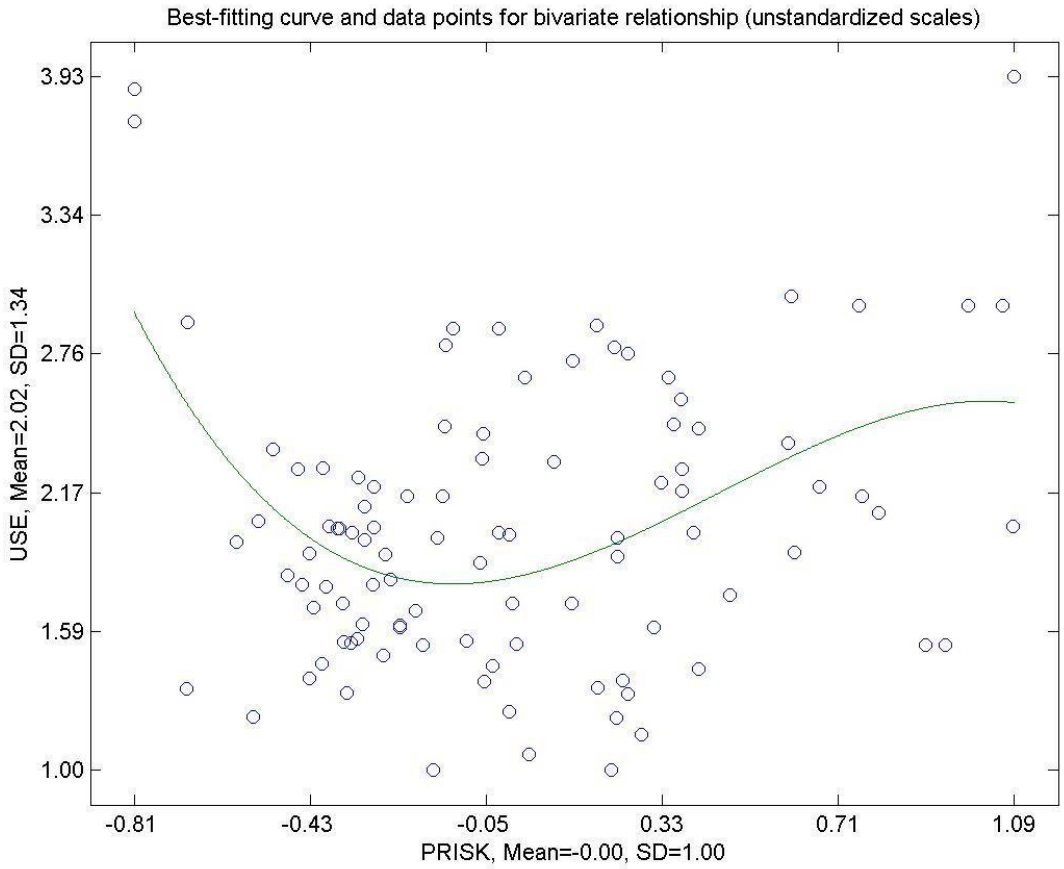


Figure 13: Relationship between Perceived Risk and Frequency of internet banking usage

4.19 The Effect of Behavioural Intention on internet Usage Frequency

The internet banking usage frequency was significant and positive (**H4, β=0.22, p=0.01)** influenced by the behavioural intention (Table 16). Hypothesis H4 is therefore supported and this has been displayed in Figure 14 which shows a non-linear relationship between the constructs.

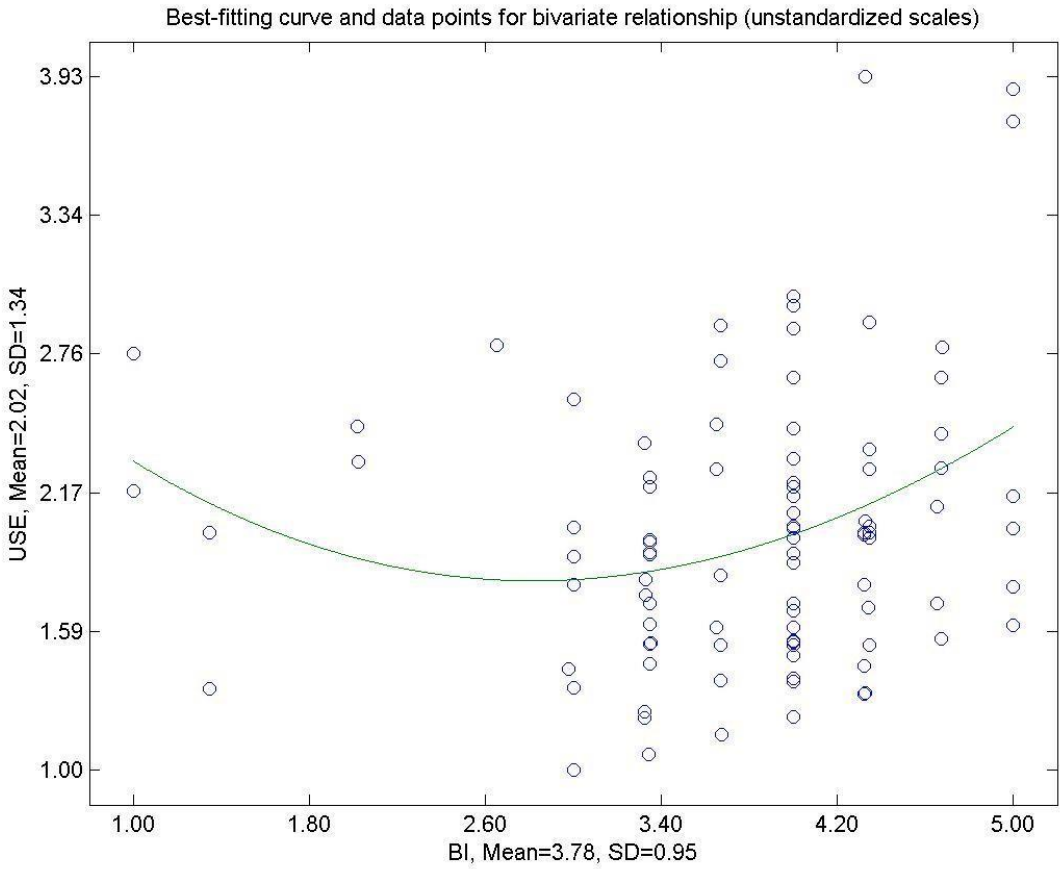


Figure 14: Relationship between Behavioural Intention and internet banking usage

CHAPTER FIVE SUMMARY, CONCLUSION AND RECOMMENDATION

5.0 Introduction

The chapter will be divided into three: summary of the findings, conclusion and the suggestions for further studies

5.1 Summary of Findings

The study began with the examination of the factors affecting the adoption of internet banking in Ghana from the customers' viewpoint. And these objectives were outlined:

- To examine how factors as performance expectancy, effort expectancy, facilitating conditions, price value, social influence and perceived risk affect Behavioural Intention to adopt Internet Banking in Ghanaian banks

- To examine whether or not the above constructs have influence on behavioural intention
- To examine whether behavioural intentions have effect on internet banking usage

The results from the Structured Equation Modelling revealed that performance expectancy, social influence, perceived risk, and facilitating conditions influenced internet banking adoption in Ghana banks. With the exception of effort expectancy and price value the rest of the constructs had effect on behavioural intentions use internet banking ($p<0.05$). In addition, the use of internet banking service was motivated by user's behavioural intentions ($p< 0.01$). User's behavioural intention also showed positive and significant direct effect on the way bank customers' use internet banking. The facilitating conditions also showed a positive and significant direct effect on internet banking usage. The perceived risk factor however showed a significant negative direct effect on customers' behavioural intention to use internet banking services.

It came to light in the study that facilitating conditions had no influence on the usage of internet banking ($p<0.09$) but perceived risk factor affected how customers use this banking services ($p<0.01$).

5.2 Conclusion of the Study

This research examined the factors affecting internet banking adoption in Ghana from the customers' perspective. The examination of the effects of performance expectancy, effort expectancy, facilitating conditions, price value and perceived risks factors on internet banking adoption in Ghana showed that with the exception of effort expectancy and price value constructs, the other constructs had influenced on the way customers adopted internet banking in Ghanaian banks.

The behavioural intentions of Ghanaian bank customers to use internet banking channel were determined by performance expectancy, facilitating conditions, social influence and perceived risks factors.

There was a significant relationship on perceived risks and behavioural intentions to adopt internet banking as well as perceived risks and internet banking usage. A study conducted on Internet Banking Security Strategy: Securing Customer Trust revealed that the perception people have about the security of the internet banking come from the awareness of the threat and the trust of the providers and the system used (Twum, 2012). It is therefore important for the banks to make sure that the issue of security should be given the needed attention if they want customers to accept internet banking and use it as expected in the years ahead.

The Use of UTAUT as the theoretical model in this study to examine the effects of performance expectancy, effort expectancy, facilitating conditions, price value and perceived risks factors on internet banking adoption in Ghana from the consumers' perspective was useful in bridging the research gap.

The study further revealed that price value and perceived risk factors show significant positive relationship on behavioural intention of customers to use internet banking in Ghana.

5.3 Recommendations

Even though the banks in Ghana are making everything possible to add internet banking to their banking channels to make banking more convenient for their cherished customers, the following suggestions if taken into account will make sure the channel which is "self-serving" will achieve its intended purpose in the Ghanaian banking industry. The following suggestions that should be considered:

- Banks that have adopted internet banking should make sure that other conditions exist to facilitate the usage of the services.
- Banks should minimise the risks associated with the channel to reduce the perception that customers have about internet banking. This is because the perceived risk affected internet banking adoption as well as the usage of the service
- The necessary measures should be put in place by the banks that use this service so that the channel will perform to the satisfaction of its intended users

5.4 Suggestion for Further Research

Researchers who want to research into Internet Banking Adoption in Ghana in the near future should consider following for further investigations.

- Are Ghanaian Banks reaping the full benefits of Internet banking adoption?
- What are the effects of age, gender and experience on effort expectancy, performance expectancy, price value, social influence and fascinating conditions on customers' internet banking adoption?

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APPENDIX I

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

This questionnaire is designed to gather information on internet banking adoption among customers in the Ghanaian Banking Industry. Your contribution towards completion of this questionnaire is highly appreciated. Please be assured that the information you provide will be used only for academic purposes and given the utmost confidentiality needed.

Please state the extent to which you agree or disagree with each of the following statements

1 – Strongly disagree 2 – Disagree 3 – Neutral 4 – Agree 5 – Strongly agree

	PERFORMANCE EXPECTANCY **Description of items**	**PLEASE TICK ONE**				
PE1	Internet Banking is useful in my daily life	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
PE2	I think that using Internet Banking would enable me to transfer money more quickly	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
PE3	I think that using Internet Banking would increase my productivity	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
PE4	I think that using Internet Banking would improve my performance	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

	EFFORT EXPECTANCY **Description of items**	**PLEASE TICK ONE**

EE1	I think that learning how to use Internet Banking would be easy for me	1	2	3	4	5
EE2	My interaction with Internet Banking would be clear and understandable	1	2	3	4	5
EE3	I would find Internet Banking easy to use.	1	2	3	4	5
EE4	It is easy for me to become skilful at using Internet Banking.	1	2	3	4	5

	SOCIAL INFLUENCE **Description of items**	**PLEASE TICK ON E**				
SI1	People who influence my behaviour think that I should use Internet Banking	1	2	3	4	5
SI2	People who are important to me think that I should use Internet Banking	1	2	3	4	5
SI3	People in my environment who use Internet Banking services have more prestige than those who do not	1	2	3	4	5
SI4	People in my environment who use Internet Banking services have a high profile	1	2	3	4	5
SI5	Having Internet Banking services is a status symbol in my environment.	1	2	3	4	5

	FACILITATING CONDITIONS Description of items	PLEASE TICK ON Σ				
FC1	I have the resources necessary to use Internet Banking.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
FC2	I have the knowledge necessary to use Internet Banking	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
FC3	Mobile Internet is compatible with other technologies I use.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
FC4	I can get help from others when I have difficulties using Internet Banking.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

	PRICE VALUE Description of items	PLEASE TICK ON Σ				
BI1	Internet Banking service is reasonably priced	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
BI2	Internet Banking is a good value for the money.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
BI3	At the current price, Internet Banking provides a good value.	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

	PERFORMANCE RISK Description of items	PLEASETICK ONE

PRF1	Internet banking might not perform well and create problems with my credit	1	2	3	4	5
PRF2	The security systems built into the Internet banking system are not strong enough to protect my checking account	1	2	3	4	5
PRF3	The probability that something's wrong with the performance of Internet banking is high	1	2	3	4	5
PRF4	Considering the expected level of service performance of Internet banking, for me to sign up and use, it would be risky	1	2	3	4	5
PRF5	Internet banking servers may not perform well and thus process payments incorrectly	1	2	3	4	5

	FIANACIAL RISK **Description of Items**	**PLEASE TICK ON Ɛ**				
FR1	The probability of losing money if I use Internet banking is high	1	2	3	4	5
FR2	Using an Internet-bill-payment service subjects my checking account to potential fraud	1	2	3	4	5
FR3	Signing up for and using an Internet banking service would lead to a financial loss for me	1	2	3	4	5
FR4	Using an Internet-bill-payment service subjects my checking account to financial risk	1	2	3	4	5

	TIME RISK **Description of Items**	**PLEASE TICK ONE**				
TR1	I think that if I use Internet banking then I will lose time due to having to switch to a different payment method	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
TR2	Internet banking would lead to a loss of convenience for me because I would have to waste a lot of time fixing payments errors	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
TR3	Considering the investment of my time involved to switch to (and set up) Internet banking, it would be risky	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
TR4	The possible time loss from having to set up and learn how to use e-bill payment is high	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

	PSYCHOLOGICAL RISK **Description of Items**	**PLEASE TICK ONE**				
PSR1	I think that Internet banking will not fit in well with my self-image or self-concept	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐
PSR2	If I use Internet banking services, it would lead me to a psychological loss because it would not fit in well with my self-image or self-concept	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

	SOCIAL RISK **Description of Items**	**PLEASE TICK ONE**				
SR1	If I use Internet banking, it will negatively affect the way others think of me	1 ☐	2 ☐	3 ☐	4 ☐	5 ☐

SR2	My signing up for and using Internet banking would lead to a social loss for me because my friends and relatives would think less highly of me	1	2	3	4	5

	PRIVACY RISK **Description of Items**	**PLEASE TICK ON Ξ**				
PR1	The chances of using the Internet banking and losing control over the privacy of my payment information is high	1	2	3	4	5
PR2	My signing up and using of Internet banking would lead me to a loss of privacy because my personal information would be used without my knowledge	1	2	3	4	5
PR3	Internet hackers (criminals) might take control of my checking account if I use Internet banking services	1	2	3	4	5

	OVERALL RISK **Description of Items**	**PLEASE TICK ON Ξ**				
OR1	On the whole, considering all sorts of factors combined, it would be risky if I use Internet banking	1	2	3	4	5
OR2	Using Internet banking to pay my bills would be risky Internet banking is dangerous to use	1	2	3	4	5
OR3	I think that using Internet banking would add great uncertainty to my bill paying. Using Internet banking exposes me to an overall risk	1	2	3	4	5

	BEHAVIORAL INTENTION **Description of items**	**PLEASE TICK ON Ξ**

BI1	I intend to continue using the internet banking in the future.	1	2	3	4	5
BI2	Whenever possible, I intend to use the internet banking	1	2	3	4	5
BI3	I plan to continue to use internet banking	1	2	3	4	5

Please choose your usage frequency for each of the following usage of Internet Banking

1 – Never 2 – Occasionally(less than once in a month) 3 – Monthly 4 –Weekly 5 –Daily

	Transfer funds between your accounts held at the bank	1	2	3	4	5
	Transfer funds to other customers in different domestic bank	1	2	3	4	5
	Transfer funds to other customers of the bank	1	2	3	4	5
	International funds transfer	1	2	3	4	5
	Request cheque books and view status of cheques	1	2	3	4	5
	Make Credit card payments	1	2	3	4	5
	Bills payment (e.g. Electricity bills)	1	2	3	4	5
	Initiate loan repayments	1	2	3	4	5
	Stop cheque payments	1	2	3	4	5
	View and print statement of accounts	1	2	3	4	5

	Set up and maintain standing orders	1	2	3	4	5

1. What is your gender? Male { } Female { }
2. What is your age group?(a) < 21 { } (b) 21-30 { } (c) 31-40 (d) { } 41-50 { }
   (e) 51-60 { }
3. What is your educational background?
   a) MSLC/JSS { }
   b) SSS/O'LEVEL { }
   c) A'LEVEL/POST SEC { }
   d) TETIARY (DIPLOMA/DEGREE) { }
   e) POST GRADUATE/PROFESSIONAL { }
4. What is your marital status?
   a) Single { }
   b) Married { }
   c) Divorced { }
   d) Widowed { }
   e) Other { }
5. What is your monthly income?
   a) GH¢100- 1000 { }
   b) GH¢1001-1500 { }
   c) GH¢1501-2000 { }
   d) GH¢2001-2500 { }
   e) GH¢2500-3000 { }
   f) GH¢>3000 { }
6. What is your account type (a) Current{ } (b) Savings { }
7. How long have you had the account (a) < 2 years { }(b) 2-5 years{ } (c) 6 years

{ }

8. Do you have internet access? Yes { } No { }

9. Where do you primarily access internet from?

a) Home { }

b) Place of employment { }

c) School/academic institution { }

d) Cybercafé { }

10. From where do you often access the Internet Banking Service

a) Office computer{ } (b) Home{ } (c) Smart phone{ }

11. On an average day, how much time do you spend using the internet?

a) Almost never { }

b) Less than 0.5 hours { }

c) 0.5 hours to 1 hour { }

d) 1-2 hours { }

e) 2-3 hours { }

f) More than 3 hours { }