

**THE EFFECT OF INTERNET BANKING ON THE  
GHANAIAN BANKING INDUSTRY –  
A CASE OF CAL BANK, UNIBANK AND PRUDENTIAL  
BANK**

By

**KNUST**

**Akuffo-Twum, Emmanuel  
(PG3031409)**

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## DECLARATION

I hereby declare that this submission is my own work towards the Executive Masters of Business Administration and that, to the best to my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

# KNUST

Emmanuel Akuffo-Twum  
PG3031409

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Signature

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Date

Certified by:

Aristotle Ayensu  
Supervisor

.....  
Signature

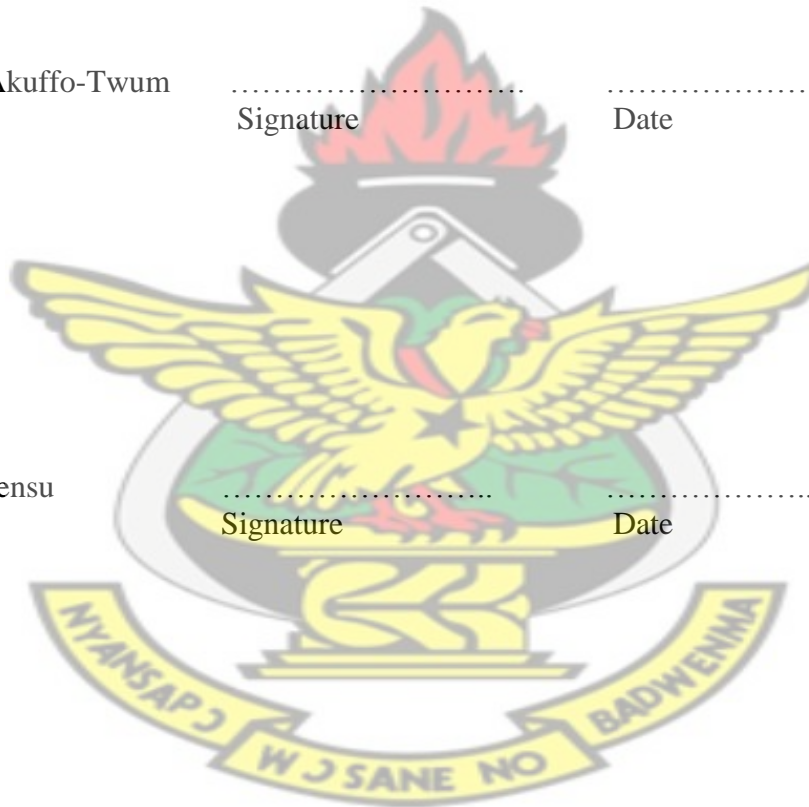
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Certified by:

Prof. I. K. Dontwi  
Dean, IDL

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## ABSTRACT

E-business is revolutionizing the way business is conducted in every industry. Banks are no exception to this transformation. This study aims at examining the effect of internet banking on the banking industry in Ghana. Specifically, it looks at concerns such as the various banking services available through internet banking in Ghana, factors influencing internet banking adoption in Ghana, factors impacting negatively on customers' utilization of internet banking and banks' perceptions of Internet banking and its operational value. The study was based on both qualitative and quantitative approaches and questionnaires were administered to some selected Internet banking customers and staff of the three banks using purposive and simple random sampling techniques. Findings from the study indicate that internet banking services in Ghana include checking of balances and account activity, request for cheque book and same bank funds transfer. However, customers are enthused by the service as shown by the expectations of advance services. The availability of other electronic products, frequency of internet use and management's commitment to internet banking are some of the factors that affect internet banking adoption. Some level of value in terms of banking operations is derived from internet banking. Improved customer service delivery, lower transaction costs and improved cross-selling opportunities are some of the benefits. This study concludes by highlighting the fact that internet banking is still in its teething stage and that most of the banks do not offer full-fledged Internet banking though they have plans to do so. Bankers see Internet banking as a strategic opportunity that can be used to reduce transaction costs and enhance customer service delivery. The study provides some recommendations towards improving internet banking in Ghana such as developing appropriate internet banking marketing strategies that maximizes value for customers and satisfaction in the long run.

## DEDICATION

This thesis is dedicated to Joana my wife and children Nhyira and Freddie for their love and support.

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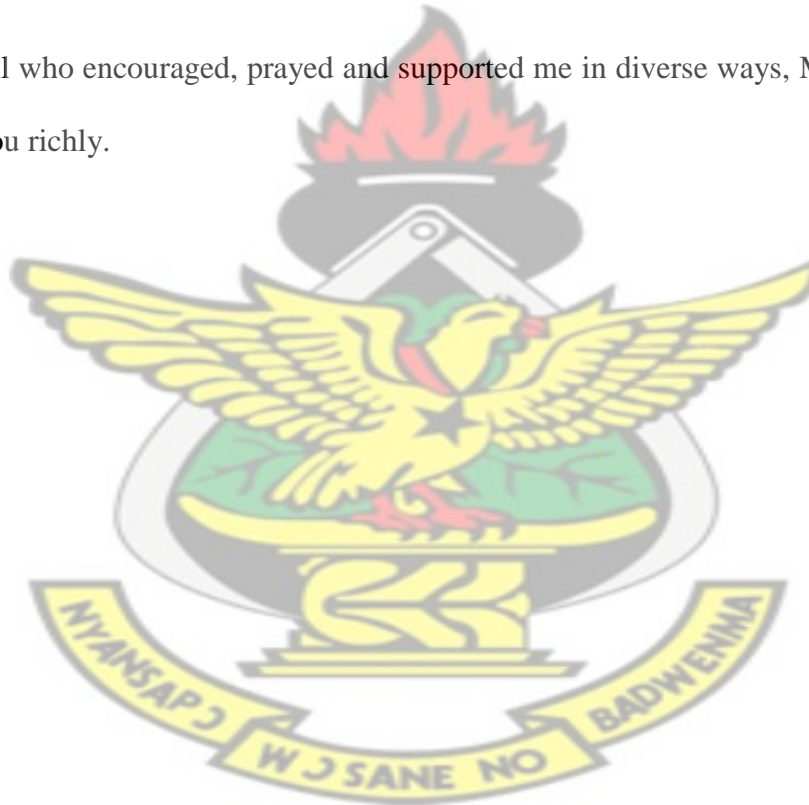


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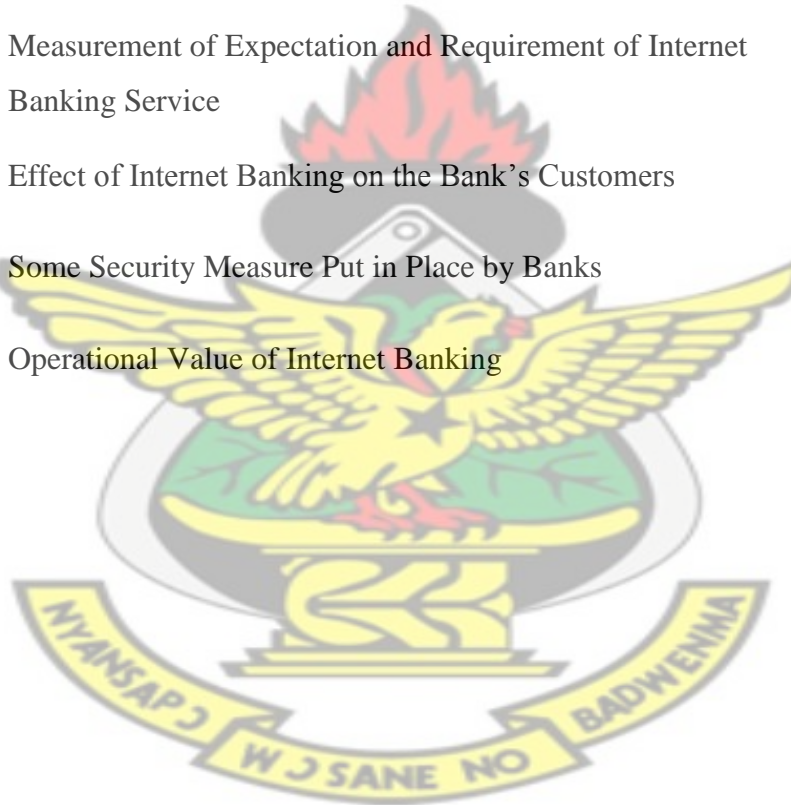
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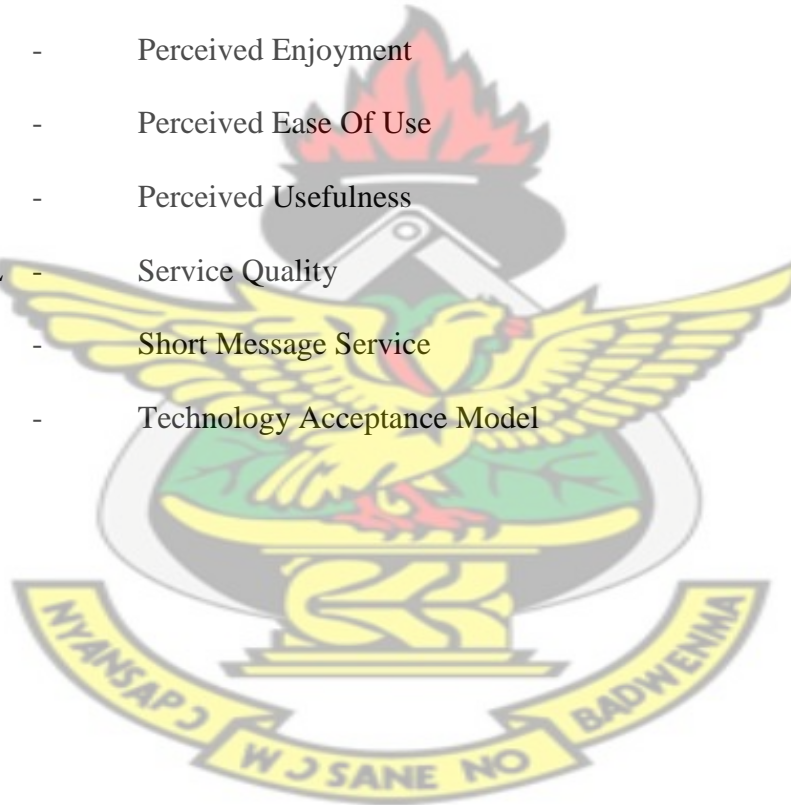


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## LIST OF ABBREVIATIONS

DSTV	-	Digital Satellite Television
ECG	-	Electricity Company of Ghana
ICTs	-	Information and communications technologies
OTP	-	One Time Passwords
PC	-	Personal Computer
PDF	-	Portable Document Format
PE	-	Perceived Enjoyment
PEOU	-	Perceived Ease Of Use
PU	-	Perceived Usefulness
SERVQUAL	-	Service Quality
SMS	-	Short Message Service
TAM	-	Technology Acceptance Model



## CHAPTER ONE

### INTRODUCTION

#### 1.0 Background Of Study

The banking industry has developed from traditional ‘brick and mortar’ to Internet banking. Internet banking refers to the use of the Internet as a remote delivery channel for banking services, including viewing and verifying transactions on account, Checking Balances, Printing Statements, Monitor uncredited and unpaid cheques, and many more. The service provided by banks on the Internet has evolved from simple consultation of account to a full range of banking services. Compared to the traditional form of banking, the Internet has the advantage of eliminating most of the network and software costs attached to other electronic banking innovations through the use of browsers, with the consequence that the unit cost is only a small percentage of traditional costs (Clemons and Hitt, 2000). Jones et al (2004) in their studies found that banks saved 107 times of total cost when internet banking services were employed. Pennathur (2001) found that Internet banking increase operational, legal, reputation risks, and increase competition thus promoting better services amongst competing banks. Internet banking also allow customers to interact more intensively than before with the front office of the bank and, at the same time allow banks to centralize back office operations and increase their efficiency. It’s day and night availability makes it so convenient for the banks’ clients.

Ghana, like any third world country is not yet at the level of Western societies and therefore cannot be expected to have similar levels of banking services. A high percentage of people in the country are unbanked. Out of a population of about 23 million, only 2.2 million people have bank accounts (Business & Finance | Tue, 15

Dec 2009). This rather low patronage of banking services is attributed to the fact that a greater proportion of Ghanaian communities are illiterates and the economy is to large extent cash based.

However, globalization and the need to upgrade services to an internationally accepted level have prompted some Ghanaian banks to offer Internet banking services. In Ghana the face of banking is fast changing and focus is now on new delivery channels, to improve customer service and give way to 24 hours a day access to banking services. With internet banking, customers are supposed to transact from the comfort of their homes and offices and be able to do most of the transactions which would have been done in the banking halls. Using a PC with an internet connection, they are able to transact on their traditional accounts such as cash withdrawals, Transfers from one account to the other, payments of utility bills, viewing and printing of statements, request for cheque books etc.

### **1.1 Problem Statement**

Internet banking is the latest development that has added a new dimension to banking transactions by making it more convenient and also contributes to the elimination of long wearisome queues in banking halls. Nonetheless, there are some problems which do not encourage banking through the internet and causes many customers to be physically present in the bank premises instead of taking advantage of internet banking. Low broadband internet penetration, customers' preference for traditional branches, fear of online threats/scams, lack of basic knowledge of computers and the high cost of internet accessibility are some of the problems threatening the growth of internet banking in Ghana. Unfortunately this new additional way of doing business



comes with risks. This study therefore seeks to look at the perceptions of banks and their customers regarding the effect of internet banking innovation on banking services in Ghana.

## **1.2 Main Objective**

The main objective of this thesis is to assess the effect of internet banking in Ghana with CAL Bank, Unibank and Prudential bank as case study. The goal of this study is accomplished by focusing on these specific objectives.

1. To identify factors influencing internet banking adoption in Ghana.
2. To identify banking services that could be utilized with internet banking of CAL bank, Unibank and Prudential bank.
3. To identify factors impacting negatively on CAL, Unibank and Prudential banks customers' utilization of internet banking.
4. To identify CAL, Unibank and Prudential banks' perceptions of Internet banking and its operational value.

## **1.3 Research Questions**

The research questions to be addressed by this study are:

1. What factors influence internet banking adoption in Ghana?
2. What banking services can be utilized through internet banking of CAL bank, Unibank and Prudential bank?
3. Are there any negative factors affecting CAL, Unibank and Prudential banks customers' utilization of Internet banking?

4. What are CAL, Unibank and Prudential banks' perceptions of Internet banking and its operational value?

#### **1.4 Significance of Study**

Mansel et al (2004) contend that “the Internet is becoming an important business tool”. However there are challenges to realize full benefits of Internet banking including organizational ability to utilize the technology, management attitudes, resource constraints, and knowledge issues. According to Chircu and Kauffman (2000) as cited by Woldie et al (2008), the lack of adequate information technology infrastructure remains a critical barrier in supporting the continual growth of online commerce.

The banking industry in Ghana is a service industry crucial to the growth of its economy. This thesis explores internet banking services in Ghana along with challenges in the provision of this service. The study further looks at how customers perceive its usefulness in relation to traditional banking services, its role in the developing Ghanaian economy and the financial sector in general.

#### **1.5 Scope of Study and Limitations**

This study will be limited to stakeholders (banks and customers) perceived value in internet banking. Investigations will focus on customers of internet banking services provided by three banks (CAL Bank, UniBank Ghana and Prudential Bank) in Ghana as well as staff of the banks.

## **1.6 Organization of the Study**

This study is organized into five chapters. The Introduction, which is Chapter one, consist the background of the study, statement of the problem, the main and specific objectives of the study, research questions, significance of the study and how the study is organized . Chapter two discusses literature related to the study while research methodology is discussed in chapter three. The fourth chapter presents the data and analysis based on the objectives and research questions. Chapter five presents the summary of findings, conclusions and recommendations.



## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

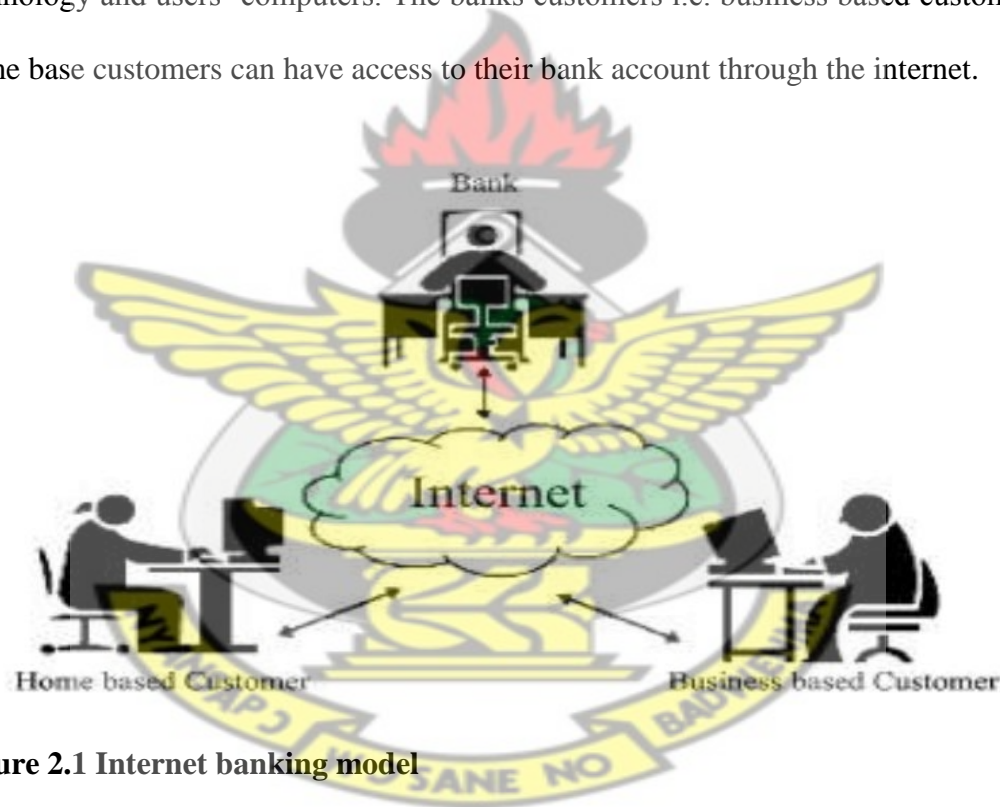
Information and communications technologies (ICTs) have changed the approaches to conducting business transactions and meeting the growing demands of customers for most organizations. The promise of ICTs in the banking sector has been seen in terms of its potential to increase customer base, reduce transaction costs, improve the quality and timeliness of response, enhance opportunities for advertising and branding, facilitate self-service and service customization, and improve customer communication and relationship (Garau, 2002). Most banks in developed and some in developing parts of the world are now offering e-banking services with various levels of sophistication. However, most African banks seem to be content with having a Web presence with only a few of them making strides towards full-fledged e-banking applications. Since the mid-1990s, there has been a fundamental shift in banking delivery channels toward using self-service channels such as internet banking services.

#### **2.1 What Is Internet Banking?**

According to the Internet Banking Comptroller's Handbook (1999) cited by Ntsiful, Acka and Odorh (2010), Internet banking refers to systems that enable bank customers to access accounts and general information on bank products and services through a personal computer (PC) or other intelligent devices. Internet banking products and services can include wholesale products for corporate customers as well as retail and fiduciary products for consumers. Internet banking according to Essinger (1999) cited by

Abor (2004) is: “to give customers access to their bank accounts via a website and to enable them to enact certain transactions on their account, given compliance with stringent security checks.” Mols (1999) also mentions that by the use of the Internet it is possible for banks to offer a number of home banking services, such as bill payment and money management services 24 hours a day.

Johns and Perrott (2008) present a simple model of internet banking represented in Figure 2.1 as cited by Adams and Lamptey (2009). Internet banking involves a bank, internet technology and users’ computers. The banks customers i.e. business based customers and home base customers can have access to their bank account through the internet.



**Figure 2.1 Internet banking model**

**Source: Johns and Perrott (2008)**

The products and services obtained through Internet banking may mirror products and services offered through the traditional bank delivery channel when a customer visits the bank premises.



Electronic banking services range from information push services where customers receive information about the bank, its products and services, to information-download services where customers can download account information and full-transaction services where customers can perform most banking transactions (such as transfer between accounts, bill payment, third party payment, card and loan applications, etc.) electronically (Boateng and Molla, 2006; Singh and Malhotra, 2004).

Internet banking allows funds to be transferred from a checking account to a savings account, or vice versa. Customers can fill out loan applications for anything from personal loans to mortgages online and can even use internet banking for investments. Internet banking accounts can be accessed any time, day or night as long as there is an internet connection of any kind. Extra caution is taken when setting up internet banking systems. Customers who have accounts online use complex passwords. The information will be encrypted. Furthermore, if customers try to make risky transactions, they will be asked more security questions.

## **2.2 Internet Banking Adoption**

During the past few years online banking acceptance has been rapid and currently 55 percent of the private banking customers in Finland have an online banking contract with their bank (The Finnish Banker's Association, 2003; cf. Nordea Oyj, 2003).

In general, Europe has been and still is the leader in online banking technology and usage (Schneider, 2001). By comparison, at the end of 2000 only roughly 20 percent of the US banks offered online banking services and only 20 percent of US private banking customers equipped with an internet connection used online banking services



(Sheshunoff, 2000; Orr, 2001). By the end of 2002 about 120 largest US banks offered online banking services (Pyun et al., 2002).

### ***2.2.1 Why Adopt Internet Banking?***

Pikkarainen et al (2004) in their work on Consumer acceptance of online banking find two fundamental reasons underlying online banking development and diffusion. First, banks get notable cost savings by offering online banking services. It has been proved that online banking channel is the cheapest delivery channel for banking products once established (Sathye, 1999; Robinson, 2000; Giglio, 2002). Second, banks have reduced their branch networks and downsized the number of service staff, which has paved the way to self-service channels as quite many customers felt that branch banking took too much time and effort (Karjaluoto et al., 2003). Therefore, time and cost savings and freedom from place have been found the main reasons underlying online banking acceptance (Polatoglu and Ekin, 2001; Black et al., 2002; Howcroft et al., 2002).

### ***2.2.2 Internet Banking Acceptance using Technology Acceptance Model***

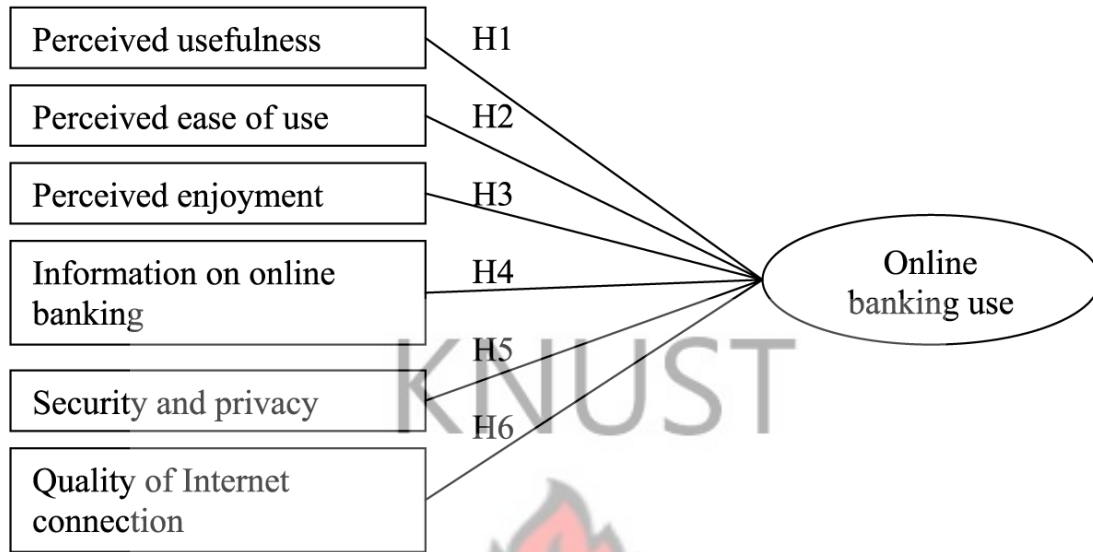
It has been noted that users' attitudes towards and acceptance of a new information system have a critical impact on successful information system adoption (Davis, 1989; Venkatesh and Davis, 1996; Succi and Walter, 1999). If users are not willing to accept the information system, it will not bring full benefits to the organisation (Davis, 1993; Davis and Venkatesh, 1996). The more accepting of a new information system the users are, the more willing they are to make changes in their practices and use their time and effort to actually start using the new information system (Succi and Walter, 1999) as cited by Pikkarainen et al (2004).

One of the most utilized model in studying information system acceptance is the technology acceptance model (TAM) (Davis et al., 1989; Mathieson, 1991; Davis and

Venkatesh, 1996; Gefen and Straub, 2000; Al-Gahtani, 2001) in which system use (actual behavior) is determined by perceived usefulness (PU) and perceived ease of use (PEOU) relating to the attitude toward use that relates to intention and finally to behavior. Pikkarainen et al (2004) in their study of consumer acceptance of online banking in Finland in the light of the technology acceptance model (TAM) added with new variables derived from online banking acceptance literature on one hand and from a focus group interview with bank managers on the other. The model they developed proposed that online banking acceptance can be modeled with the variables derived from the TAM (PU and PEOU) and four other variables referring to perceived enjoyment (PE), information on online banking, security and privacy, and the quality of the Internet connection. By applying these into online banking context they hypothesize:

- H1. Perceived usefulness (PU) has a positive effect on consumer acceptance of online banking
- H2. Perceived ease of use (PEOU) has a positive effect on consumer acceptance of online banking
- H3. Perceived enjoyment (PE) has a positive effect on consumer acceptance of online banking
- H4. The amount of information a consumer has about online banking has a positive effect on consumer acceptance of online banking
- H5. Security and privacy have a positive effect on consumer acceptance of online banking
- H6. The quality of the Internet connection has a positive effect on consumer acceptance of online banking

**Figure 2.2 The research model - Consumer acceptance of online banking**



**(Source: Pikkarainen et al 2004)**

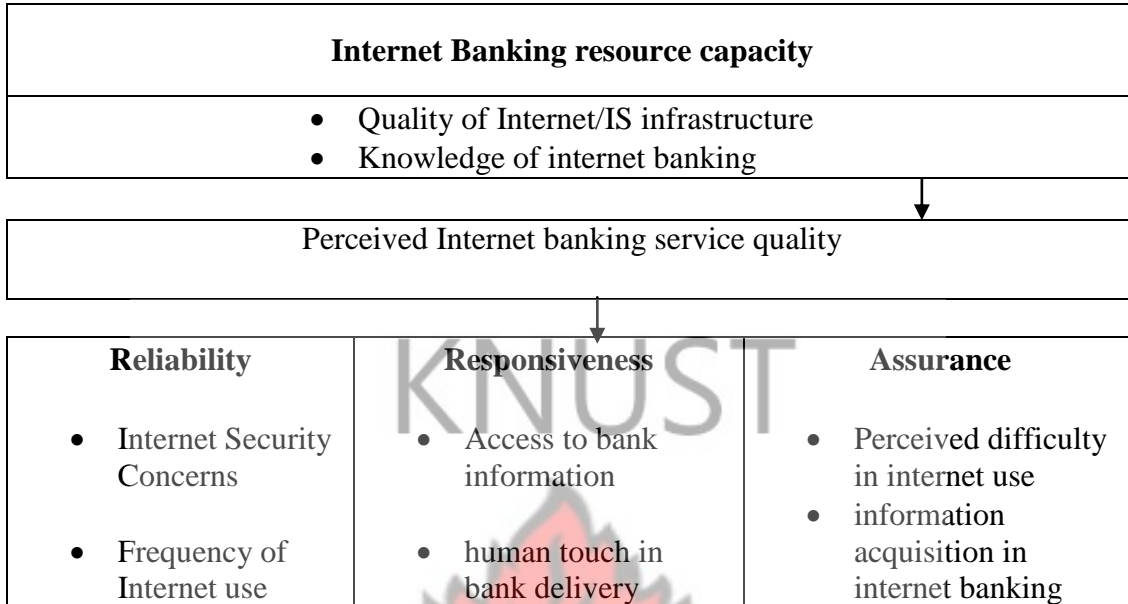
The model was tested with 268 Finnish consumers and revised, with the use of a factor analysis, five factors were identified suggesting that PU, PEOU, PE, information on online banking, and security and privacy have an impact on the acceptance of online banking. Thus, from the hypothesized model used the factor referring to quality of Internet connection did not suite in the model. This might hint that speed and reliability of the Internet connection is not regarded as important owing to the fact that reliable Internet connections have become so common place among the respondents.

### ***2.2.3 Internet Banking acceptance based on Service Quality***

SERVQUAL (Parasuraman, Berry, and Zeithaml, 1985, 1988, 1991) is one of several theories that have had considerable applicability in Information Systems (IS) and Internet related research. SERVQUAL (service quality) is basically an operational instrument used in measuring customer perceptions of service quality along five key dimensions:

tangibles, reliability, responsiveness, assurance and empathy. Tangibility refers to the tangible aspects of an intangible service delivery, including physical facilities and staff appearance, etc. Reliability refers to the ability of the service provider to execute the delivery of the service in an accurate and dependable manner, whilst responsiveness refers to the willingness of the service provider to respond to customer needs in a timely manner. Assurance refers to the ability of the service provider to inspire trust in the customer while empathy is the extent to which the provider is able to identify the obvious and latent needs of the Customer and offer caring individualized service. Woldie, Hinson, Iddrisu and Boateng, (2008) in their research on Internet banking: an initial look at Ghanaian bank consumer perceptions, adopted a variation of SERVQUAL which is essentially a two tier SERVQUAL model as shown below. At one level they examined the resource pre-requisites for the adoption of Internet banking and then evaluated Internet banking perceptions along three traditional SERVQUAL model dimensions: reliability, responsiveness and assurance. They found in a pre-test of the SERVQUAL dimensions of 20 IT managers of sampled firms in the Association of Ghanaian Industries database. They discovered that reliability, responsiveness and assurance are the SERVQUAL dimensions most likely to impact the perceptions of Internet banking adoption amongst Ghanaian corporate entities. The results of the study revealed that Ghanaian firms are willing to use Internet banking services if they are provided by their banks although 86% of the respondents said they would still visit their banks even if their companies adopt Internet banking.

**Figure 2.3 Variation of SERVQUAL**



(Source: Woldie et al 2008)

Results from a study on Consumers' attitudes towards online and mobile banking in China by Laforet and Li (2005) showed Chinese online and mobile bank users were predominantly males, not necessarily young and highly educated, in contrast with the electronic bank users in the West. The issue of security was found to be the most important factor that motivated Chinese consumer adoption of online banking. Main barriers to online banking were the perception of risks, computer and technological skills and Chinese traditional cash-carry banking culture. The barriers to mobile banking adoption were lack of awareness and understanding of the benefits provided by mobile banking. The demographic, attitudinal and behavioral characteristics of online and mobile bank users were examined. Respondents from six major Chinese cities participated in the consumer survey.



## **2.3 Benefits of Internet Banking**

Internet banking does offer many benefits for both banks and their customers. The banks are doing what they can to encourage customers to sign up to it. The benefits of internet banking to banks include;

### ***2.3.1 Less Expensive to Maintain***

Internet banking costs less. This is because there are fewer buildings to maintain, and less involvement by salaried employees, there is a much lower overhead with online banking. These savings allow banks to offer higher interest rates on savings accounts and lower lending rates as well as lower service charges. Some banks also offer better deals such as free bill paying services to encourage their customers to do their banking online. (Source: <http://correctbanking.com/index.php>)

### ***2.3.2 Gain Customer Loyalty***

In a recent study conducted by Forrester Research as cited by Nath, Schrick and Parzinger (2001), 61% of respondents claimed that if their banks offered the financial services they wanted, they would prefer to utilize the bank's service (Dixon, 1999). Having the consumers' interest in mind, most banks are making efforts to offer a focal point of financial services including cheque Book request, funds transfer, loan applications and repayments, insurance and be able to send secure messages to a customer's branch. The Internet allows for this convergence of financial services in one location which previously was unavailable. The idea is to attract customers who will more frequently patronize the banks web sites that offer financial services thereby creating a more loyal customer who depends on the bank for many financial services at one location. As more customers patronize, higher revenue per customer can be generated.



The benefits of internet banking to customers include;

### **2.3.3 *Ease of Account Monitoring***

Bouncing a cheque (accidentally) is a thing of the past for internet banking customers because monitoring an account can be done online any time, day or night. Customers can track your balance daily, see which cheque has cleared and know when deposits and payments are made. This is all possible by simply going online to the bank's website and logging into your account. Internet banking customers can keep their accounts balanced using a computer and their monthly statement. A customer's bank account information can be downloaded into software programs such as Microsoft Money or Quicken; making it easy to reconcile an account with just a few mouse clicks. The convenience of the data capture online makes it much easier to budget and track where your money goes. Internet bank may even allow you to view copies of the cheques you have written each month. (Source: <http://correctbanking.com/index.php>)

### **2.3.4 *Ease of Transacting***

There are sound reasons why internet banking is growing. The economic advantages have encouraged banks to provide an increasing range of easy to use services via the internet. Customers have found doing business online simple and speedy and have become very comfortable with the arrangement. Internet banking gives people more control over their money in a very convenient way that they find enjoyable and reassuring. Internet banking offers a great deal more convenience than you could get from conventional banking. Customers are not bound by 'banking hours' and don't have to go there physically. Time is not wasted when you have work to do because you can do your office's banking without leaving the office. No matter where you are or

what time it is, you can easily manage your money. (Source: <http://correctbanking.com/index.php>)

### **2.3.5 Quick Detection of Fraud**

With the ability to view an account at any time, it is easier to catch fraudulent activity early before much damage is done. As soon as an internet bank account is logged into, customers quickly see whether there is anything amiss when they check on their deposits and debits. If funds are withdrawn from an account fraudulently, the customer will see it right away. This lets customers get started on correcting the problem immediately rather than having to wait a month after receiving an account statement by post to even know what is happening as is the case with traditional banking. (Source: <http://correctbanking.com/index.php>)

## **2.4 Challenges Of Internet Banking**

Some customers are hesitant because of problems they see in the industry. While there are some disadvantages to internet banking, many of the problems start with the consumer.

### **2.4.1 Technophobia**

Technophobia is the fear or dislike of advanced technology or complex devices, especially, computers. There are still quite a few people who do not use internet banking because of their own lack of knowledge therefore are resistant to technology and feel that it is too difficult to learn. People who have this problem are usually older because young people are exposed to computers at an early age these days. Some of the same people also fear using the internet. Others who will use computers offline will not use them to go on the internet for the fear of losing their privacy. Many of such people have exaggerated fears in their minds. For them, internet banking will be

impossible, unless they come to terms with their fears. Certain people just do not have proper equipment to go on the internet. It does not take an extremely advanced computer to do internet banking transactions. However, all what is required is basic modern computer equipment with an internet connection. Most banks now expect you to have a 128-bit encryption browser for enhanced security. (Source: <http://correctbanking.com/why-some-people-fear-internet-banking.php>)

#### **2.4.2      *High Cost of Internet Services***

The high cost of internet services and products is leaving majority of Ghanaians out of the enormous opportunities and benefits that the technology offers in education, governance, commerce and research. The production, packaging and manner of distribution of internet services make the technology expensive. Also internet services are expensive because Ghana has no nation-wide telecommunication backbone for data network which makes accessing and broadcasting bandwidth for the industry a big challenge. (Source: <http://www.ghanabusinessnews.com/2008/12/06/ghanas-low-internet-penetration-high-cost-and-national-growth/>)

#### **2.4.3      *Security***

Security is a problem for many users of internet banking. The user names and passwords are often complex. This is good, for the most part, because no one else would guess them. However, it can be a problem if the customer cannot remember them. The customer might not be able to access their account when they want to, without going through an intense security procedure. What is even worse, many people who know they will have trouble remembering their usernames and passwords for internet banking will write them down and keep them near their computers. This

makes it easy for thieves to get in and steal money from their accounts. (Source: <http://correctbanking.com/why-some-people-fear-internet-banking.php>)

#### **2.4.4      *Fraud***

Internet banking, like any other business arena, is susceptible to fraud. Phonies abound in every type of business, and Internet banking is no different. One kind of fraud is done on fake bank websites. These are look-alike sites that imitate your internet banking website. They sometimes pop up when there is a slight misspelling of your bank's web address. If care is not taken, a customer can type in his username and password before he realizes he is not connected to his own bank at all. Another type of fraud is "phishing." This is the use of emails to lure victims onto a fake bank website to steal their information. A victim might open the email and find a request for information from his "bank" with a link provided. If the victim clicks on the link and go to the fake bank site, the victim might give up all kinds of valuable information if attention is not paid to what is happening. Victims could be asked not their your specific internet banking information but also other private data like social security number, or driver's license number. (Source: <http://correctbanking.com/why-some-people-fear-internet-banking.php>)

#### **2.4.5      *Up time of Internet Banking Service***

Then, there are disadvantages that are really only to do with the internet banking more than the customers. One problem happens when the bank's computer system has an extremely high volume. Customer transactions may not be made in a timely manner. There can be other failures in the communications of banks that will cause errors or lags. If a computer virus ever got into the bank's computers, it could be a real problem. Clearing up the chaos might take a while. Fortunately, internet banking

companies take many precautions to prevent this, so it is extremely unlikely to happen.

#### **2.4.6 *Expensive and Unreliable Internet Connection***

Extremely slow internet connection and frequent breaks in this service affect the use of internet banking services. Broadband connections via satellite do not live up to their hype and multinational telecommunication giants, offering mobile broadband do not extend their 3.5 G (third generation) of developments in wireless technology coverage to rural areas in Africa and particularly Ghana. All the above factors conspire to make Internet access unattractive to potential users. The poor quality of service comes with high connection costs due to the high operational costs incurred by providers. High connection cost for a service that does not guarantee value for money is a big disincentive for most users in Ghana. (Source: <http://www.ghanabusinessnews.com/2008/12/06/ghanas-low-internet-penetration-high-cost-and-national-growth/>)

While there are some challenges with internet banking, most of them can be overcome with knowledge and caution.

### **2.5 Internet Banking Security**

Internet banking companies are working hard to make the service as secure as possible. They work with experts in the field of security. Most Internet banking system is secured by industry standard methods that ensure privacy of transactions during transmission. According to Hutchinson and Warren (2003), Internet users are concerned with privacy issues including transparency, collection, use and disclosure of their personal information.



Eight security requirements have been proposed as the basis for the e-commerce security framework (Labuschagne, 2000) cited by Hutchinson and Warren (2003). (Ntsiful, Acka and Odorh, 2010)

- **Identification and authentication** – The ability to uniquely identify a person or entity and to prove such identity.
- **Authorization** – The ability to control the actions of a person or entity based on its identity.
- **Confidentiality** – The ability to prevent unauthorized parties from interpreting or understanding data.
- **Integrity** – The ability to assure that data have not been modified accidentally or by any unauthorized parties.
- **Non-repudiation** – The ability to prevent the denial of actions by a person or entity.
- **Availability** – The ability to provide an uninterrupted service.
- **Privacy** – The ability to prevent the unlawful or unethical use of information or data.
- **Auditability** – The ability to keep an accurate record of all transactions for reconciliation purposes.

NOIE et al (1999) cited by Hutchinson and Warren (2003), point out that the security offered by banks which customers also anticipate should include:

- careful reference to their authorized websites in their publications;
- verification via the use of a digital certificate;
- evidence of security protection displayed on the screen e.g. lock icon;
- protection of PINs and passwords;



- on-screen and mouse-operated keypads for sensitive information;
- virus protection;
- at least 128-bit encryption;
- firewall implementation;
- Stated limits to customer liability for unauthorized use of access codes. (Ntsiful, Acka and Odorh, 2010)

Some of these methods include the following;

### **2.5.1      *Automatic session timeout***

Internet banking sites automatically logs customers out of the service to reduce the risk of someone else accessing their account if they leave their computer unattended. The banks who provide the service do however recommend that customers use the logout function of the site as soon as they finish their Internet banking session. (Source: <http://correctbanking.com/how-to-increase-your-internet-banking-security.php>)

### **2.5.2      *Scramble pad***

To help protect information entered from a customer's PC, banks have included the 'scramble pad' feature on their Internet banking logon page. Help with using the scramble pad is available from the Help button on the Internet banking logon page. By using the scramble pad, it becomes more difficult for key-logging viruses, which may have been inadvertently downloaded onto your PC, from compromising your access codes. Use of the scramble pad heightens the protection of customers' information and reduces the possibility of unauthorized transactions occurring on their accounts. (Source: <http://correctbanking.com/how-to-increase-your-internet-banking-security.php>)

### **2.5.3      *Digital certificates***

Digital Certificates are used by banks to ensure that their customers are really connected to them. Customers can ensure that are using the banks verified site by double clicking the padlock symbol (located at the bottom right hand corner of the window for most web browsers). (Source: <http://www.buzzle.com/articles/internet-banking-security.html>)

### **2.5.4      *Encryption***

All communication between a customer's browser and the banks secure Internet banking sites is encrypted using 128bit SSL encryption technology to ensure confidentiality of transactions performed on the site. (Source: <http://correctbanking.com/how-to-increase-your-internet-banking-security.php>)

### **2.5.5      *Identity Verification***

Traditionally, when customer logs on to Internet Banking they simply use their usernames and passwords. Today, a new multi-layered approach is available to provide an additional layer of security to help protect customers against possible attempts at online fraud. Identity verification is an effective and convenient form of enhanced authentication which uses a telephone number provided by the customer. At the time of making some money transfers, the customers will receive an automated call which provides them with the Identity verification code to complete your transaction. All the customer need to do is simply enter the Identity verification code into the Internet banking screen to complete the transaction. This additional layer of protection helps to prevent unauthorized payment transactions on customers' accounts. While it's a simple step, this extra layer of security provides greater peace of mind for customers Internet

Banking payment transactions. (Source: <http://www.buzzle.com/articles/internet-banking-security.html>)

There are things the customer must also do to increase security.

#### **2.5.6 *Appropriate Web browsers***

The banks suggest that customer's browsers have 128-bit encryption. This insures that your information will be safe as it leaves your computer just as it is when it is on the bank's secure server. Customers need to have the latest version of web browsers and latest operating system which have 128-bit encryption. (Source: <http://correctbanking.com/how-to-increase-your-internet-banking-security.php>)

#### **2.5.7 *Strong User Credentials***

Credentials for accessing the service are given to customers by the bank and they are allowed to choose their own passwords. There are specific rules about how many characters it must have. There is a specification as to how to construct the password. You must use alphabets and numbers, upper and lower case letters and special characters. The customer must choose something that is not easily guessable. Some banks go the extra mile of sending a token to customers' mobile phones immediately they enter their username and password. The token must be inputted to grant full access to the service. (Source: <http://correctbanking.com/how-to-increase-your-internet-banking-security.php>)

#### **2.5.8 *Cautious Use of the Service***

It is always important to log off when after internet banking transactions. If a public computer is used, it is even more important. However, doing internet banking on a public computer, such as one in a library, is not the most secure course. An industrious internet thief can get some information off a public computer without too much

trouble. However, some internet banking companies offer a special service that prevents your banking transactions from going into a computer's cache memory. This feature makes banking at a public computer much safer. (Source: <http://www.buzzle.com/articles/internet-banking-security.html>)

It is also important that, while using a computer in public, no one can see the screen during internet banking transactions. While many people feel comfortable setting their laptops up and doing their business anywhere, it is not always wise.

Sometimes, no matter the measures in place, a fraudster will find a way into one's bank account. The best defense is to monitor an account carefully.

## 2.6 Internet Banking Fraud

Internet banking fraud is fraud or theft committed using online technology to illegally remove money from, or transfer it to, a different bank account. First, the criminal obtains the customer's account access data, i.e. logon name and password. Second, the criminal uses this information to transfer money to other accounts and withdraws the funds. Offenders often employ one of the many popular fraud schemes to obtain personal information. These fraud schemes include, but are not limited to: "Over the shoulder looking", "phishing" and Trojans.

"Over the shoulder looking" scheme involves the offender observing his potential victim making financial transactions and recording the personal information used in the transaction.

The "phishing" scheme involves using phony emails and/or fake websites. The word "phishing" was obtained from combining the words "password" and "fishing". Criminals send emails which appear to be from the customer's bank that direct customers to a fake

website. This website mimics the bank's website and prompts customers for their internet banking account access data.

Trojans are usually emails that may contain files, pages or attachments to open. Once opened, they secretly install a program that can monitor customers' online activity, down to what keys they are pushing on what page. Once a Trojan detects that the customer opens an online banking website, it captures login name and password, and sends it to the criminal.

## **2.7 Some Measures Taken to Improve Internet Banking Security**

### **2.7.1 One Time Passwords**

To improve security, some banks use "one time passwords", also called OTP. Upon activation of the customer's account for online banking, the bank mails a list of OTPs to the customer. Each time the customer perform a transaction, he enters one OTP for verification. Once used, the OTP becomes invalid. If the customer runs out of OTPs, he is sent a new list. (Source: <http://internetbankingfraud.com/>)

### **2.7.2 Hardware Tokens**

The high-tech alternative to paper OTP lists are "hardware tokens". These devices have the form factor of a key chain attachment, featuring a crypto processor and a display. A hardware token displays a new OTP every 60 seconds. Because each OTP is only valid for a limited period of time, they provide significant protection against "over the shoulder looking" and phishing schemes.

(Source: <http://internetbankingfraud.com/>)



### **2.7.3 Transaction Specific OTPs**

The shortcoming of both paper OTP lists and hardware tokens lies in the fact that each OTP is not transaction specific. That is, the same OTP can be used to verify either a genuine or a fraudulent transaction. One possible way to come by this flaw is to use a "key generator" device that generates an OTP based on primary transaction parameters.

A key generator looks similar to a pocket calculator. It has a keypad that lets the customer enter the source account, target account, transaction amount, and a PIN. Based on these parameters, the key generator generates a transaction specific OTP. The customer now enters the transaction parameters into the online banking application including the generated OTP. When the online transaction is received by the bank's server, it performs the same calculations as the key generator and thus verifies the OTP.

If a criminal captures such an OTP, he cannot use it for a fraudulent transaction, since this OTP can only be used to verify a transaction with the same parameters as entered on the key generator. Because the key generator is a separate hardware device with no connection to the Internet, it is immune to getting attacked by malicious software.

(Source: <http://internetbankingfraud.com/>)

### **2.7.4 OTP by SMS**

Some of the disadvantages of using key generators are avoided by sending OTPs to the customer using SMS. With this approach, the customer first sends the complete transaction to the bank's server. The bank's server then creates a random number as OTP and sends it to the customer's mobile phone as text message. The customer now enters this transaction specific OTP into the online banking application, and sends it

also to the bank's server. If the generated OTP matches the one transmitted by the customer, the transaction is verified. (Source: <http://internetbankingfraud.com/>)

### **2.7.5 Smart Cards and USB Tokens**

Smart cards and USB tokens employ a different approach to authentication. Smart cards contain crypto processors without a display. They must be electrically connected to the customer's PC using a card reader device. USB tokens are essentially the same, only that they render card readers unnecessary by plugging directly into the customer PC's USB port.

By exchanging crypto keys with the bank's server, the bank's server can be sufficiently sure that the online transactions secured with this approach stem from the genuine customer. While smart cards have been hacked in the past, the latest generation smart cards will likely provide a high level of fraud protection for many years. (Source: <http://internetbankingfraud.com/>)

### **2.7.6 Transaction Monitoring**

Transaction monitoring occurs in the bank's data centre. For each transaction, the transaction monitoring software scrutinizes the current transaction's parameters, and compares it with the previous transaction of both the customer and the counterparty of the transaction histories. By comparing the current transaction pattern to a stored known fraud patterns, the software can flag suspicious transactions "on the fly". Such transactions are then referred to a call centre for manual verification.

(Source: <http://internetbankingfraud.com/>)

## 2.8 Internet Banking In Ghana

Many people are becoming acquainted to the internet in Ghana. The use of the Internet in Ghana has also seen significant increases since the liberalization of the telecommunication industry in 1990s.

Due to the maturity of Internet technology in recent times and the drastic growth of Internet users, financial institutions have had to take advantage of it to serve their clients. The banking industry is facing an increasingly demanding environment as many consumers and businesses become more sophisticated. Over the past six years banks that have entered the country include Zenith Bank (originally from Nigeria), Standard bank (the most capitalized bank in Africa; originally from South Africa), United Bank of Africa (originally from Nigeria), UT Bank, Fidelity Bank (formally Fidelity Discount House) and Access Bank. All these banks aim at increasing their market share by redefining service delivery position so as to remain in the competitive environment of the banking terrain. This is because delivering quality service and product have become an integral part of banks growth and their survival in today's competitive banking industry. Internet banking is an instrument in the service delivery arsenal for banks. Online banking is the fastest growing service that banks can offer in order to gain and retain new customers (Moody, 2002) cited by Singh (2004). Many more banks have introduced internet banking in recent years with nineteen (19) out of the Twenty – seven (27) banks in Ghana offering internet banking services to their customers.

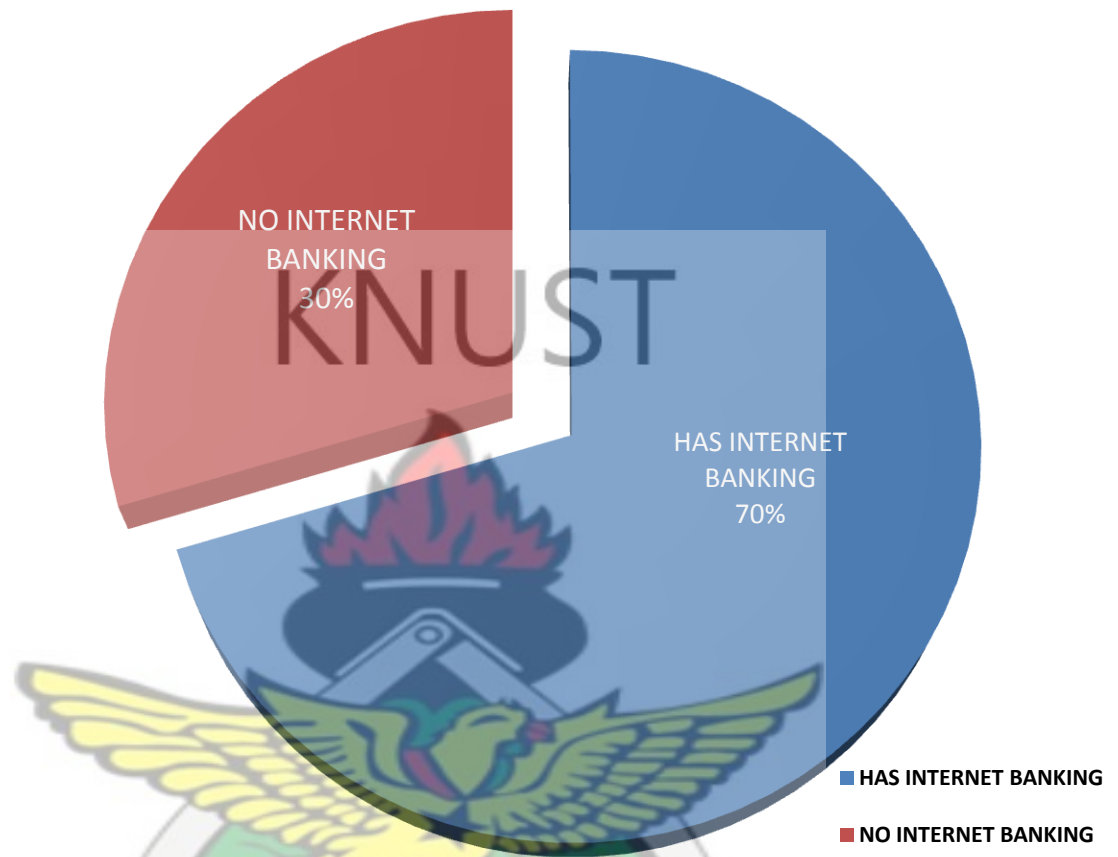
**Table 2.1 List of banks in Ghana with/without Internet Banking Services**

Bank Name	Internet Banking?
Access Bank (Ghana) Limited	YES
Agricultural Development Bank	YES
Amalgamated Bank Ltd	YES
Bank of Baroda (Ghana) Ltd.	NO
Barclays Bank Ghana	YES
CAL Bank	YES
Ecobank Ghana Ltd	YES
Energy Bank (Ghana) Ltd	NO
Fidelity Bank	YES
First Atlantic Merchant Bank	NO
Ghana Commercial Bank Ltd	YES
Guaranty Trust Bank (Ghana) Limited	YES
HFC Bank	YES
Intercontinental Bank Ghana	YES
International Commercial Bank Ltd	NO
Merchant Bank (Ghana) Limited	YES
National Investment Bank Ltd	YES
Prudential Bank Ltd	YES
Sahel-Sahara Bank	NO
SG-SSB Ltd	NO
Stanbic Bank Ghana Ltd.	YES
Standard Chartered Ghana	YES
The Trust Bank	YES
Unibank Ghana Ltd	YES
United Bank for Africa (Ghana) Ltd	NO
UT Bank Limited	NO
Zenith Bank (Ghana) Limited	YES

Source: Author's field survey September, 2011

In Ghana, only 30% of the total number of banks do not provide internet banking services to their customers as shown in the diagram below. However, most of these banks have plans of providing internet banking services in the near future.

**Figure 2.4 Proportion of Total Number of Banks With/Without Internet Banking in Ghana**



## 2.9 Conclusion

Internet Banking is of quite eminence to customers and banks because it gives great advantages to the customer and the bank. Customers have found doing business online simple and speedy and have become very comfortable with the arrangement. Internet banking gives people more control over their money in a very convenient way that they find enjoyable and reassuring. However it comes with its own risks and responsibilities. It requires thought and caution, but it can be done. It is important to remember that every customer is responsible for the way they protect their information online. This includes not falling for "phishing" scams.



## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.0 Introduction**

Methodology typically refers to the techniques that are used to conduct research. It provides us with a guideline of how to collect process and analyze data. Any kind of research should be governed by a well-defined research methodology based on scientific principles.

#### **3.1 Research Purpose**

Yin (2003) categorizes research into three different types depending on the nature of the research problem and these are exploratory, descriptive, or explanatory although a given study can have more than one of these purposes (Saunders et al, 2000; Babbie, 2004). The purpose of this thesis was to conduct an exploratory and descriptive research so as to gather as much information as possible concerning the perception of Internet Banking as a service tool in the banking environment in Ghana.

#### **3.2 Research Approach**

There are two approaches to a research, either the qualitative or the quantitative approach. Sullivan (2001) explains that qualitative data is data collected in the form of words, pictures, descriptions or narratives. Quantitative approach involves quantifying data or assigning measures to them to statistically test them for any relationship to increase understanding of a topic. Malhotra and Birks (2006) confirm that research based on qualitative data is unstructured, primarily exploratory, and aimed at breaking fresh

grounds and giving insights while quantitative-data research employ techniques that quantify data and typically subject them to statistical analysis.

According to Sullivan (2001) the approach to use depends on these factors:

- The researcher's disposition to human social behavior
- When knowledge of the subject area is sketchy
- When there is theoretical understanding of the phenomenon

This study adopted both quantitative and qualitative data approach to answering the research questions.

### **3.3 Research Strategy**

Yin (2003) describes five primary strategies for research in social sciences to collect empirical data. According to him, research can be from any of the following: Experiments, Survey, Analysis of archival records, History, Case Study. This depends on the character of the research questions, the extent to which the researcher has control over behavioral events and to what degree the focus is on contemporary event. This study uses a survey approach since the study focused on contemporary event as questionnaire and interviews were used to collect data from customers and staff of internet banking service providing banks.

### **3.4 Data Collection**

#### **3.4.1 Primary Data**

Primary data is a data that is gathered for a specific research in response to a particular problem through interviews, questionnaires or observations. Primary data was derived from responses of participants in the research.

### 3.4.2 Secondary Data

Secondary data is obtained through various kinds of documents such as research reports, annual reports, books and articles. Secondary data for this study was obtained from published documents and literature relevant to the study.

### 3.4.3 Target Population and Sample Size

To answer the research questions of the study, two populations were studied. The first population was internet banking customers of selected banks and the second population is defined by the bank officials of selected banks who offer internet banking services. It must be noted that these banks offer both traditional banking and internet banking channels. Internet banking should be seen as a complementary service as represented by the banks in their commercials and brochures.

The sample size for each of the category or group was determined with deVaus (2002) formula below:

$$n = \frac{N}{1 + N (\alpha^2)}$$

Where n = sample size, N= population universe and  $\alpha$  is the confidence level. The formula adopted a confidence level of 90% and the margin of error is therefore 10% which is acceptable in social science research. The break down for each of the group is calculated as follows:

Bank officials:

$$N = 18$$

$$n = \frac{18}{1 + 18 (0.1^2)} = \frac{18}{1 + 18 (0.01)} = \frac{18}{1.18} = 15.25 \approx 15$$

Customers:

$N = 100$

$$n = \frac{100}{1+100(0.1^2)} = \frac{100}{1+100(0.01)} = \frac{100}{2} = 50 \quad \therefore n = 50$$

For internet banking customers, 50 respondents for each bank were sampled making one hundred and fifty (150) customers for all three (3) banks. The banks would not give exact figures of their internet customer base. Analysis of the situation, indicate that one hundred (100) reflects a good population for each bank. A separate questionnaire was administered to bank officials. The purpose was to find out the effect of internet banking on the growth of banks in terms of operational value and service quality.

#### ***3.4.4 Sampling Technique***

The simple random sampling technique was used to select the customers of each bank. The customers were met at random at the banks. The researcher went to the banks premises mostly on Mondays and Fridays, when the banks usually receive more customers than any other day of the week, in a period of six weeks. The researcher approached as many customers as possible on each visit to find out if they accessed internet banking services. This is basically because each customer has an equal chance of being selected. The purposive sampling technique was used to select the officials of each bank. The branch manager and two customer representatives of five branches of each bank were approached. This was to make the information collected from the field representative enough to draw conclusions.

Sampling was adopted because it is often impossible or too expensive to collect data from all the potential units. Therefore samples are chosen to represent the relevant

attributes of the whole population. However, the caution by Graziano and Raulin (1997) was noted that because the samples are not a perfect representative of the population from which they are drawn, it is unlikely to be able to generalize conclusions for the entire population.

#### **3.4.5 Data Collection Methods**

Both primary and secondary data was used in this study. There is heavy reliance on the use of primary data in this research since data was collected through the use of questionnaires and interviews. The types of questionnaires used were a combination of open-ended Questions, Dichotomous questions with two (2) possible opposing responses, and Multichotomous questions. The technique adopted in data collection was by personal interviews, telephone interview (where personal interview was not convenient to the interviewee), and also by questionnaires. The questions were simple and straight forward to avoid ambiguity.

#### **3.5 Data Analysis**

Data analysis refers to the process of deriving meaning from the data that had been collected in a study. According to Yin (1994), the ultimate goal of analyzing data is to treat the evidence fairly, to produce compelling analytical conclusions and to rule out alternative interpretations.

Field research was conducted to collect data from the banks and their customers using interviews and questionnaires respectively. After the data collection, data reduction was conducted to select, arrange, refine, focus and summarize the data for analysis. Summary description was used to analyze the data. Data was analyzed based on how each response reflects the associated research question. From the answered questionnaires, total



responses for each vital question were tabulated using mean, standard deviation, pie charts, and bar charts. The charts were used to analyze demographic data, impact of internet banking on growth of banks and degree of customer satisfaction. The tools employed were also used to determine the relationship between the use of internet banking, age group and gender. Again an analysis of whether the use of internet banking delivery channels has any association with the degree of customer satisfaction was done.

### 3.6 Quality Data

Saunders et al (2007) noted that validity and reliability constitute the credibility of a study. Validity refers to the extent to which a measure reflects the concept it intends to measure. If the measures used actually measure what they claim to, and if there are no logical errors when drawing conclusions from the data, the study is said to be valid (Trochim, 2005,). The validity of this study is embedded in the fact that the data that was gathered directly addressed the issues raised in the research questions. With a well-calculated approach to sampling, the interviews of banking staff and the administering of questionnaires to the customers, the findings of the study reflects the general situation of internet banking in Ghana. For customer value perceptions, the only way to assess this data was to survey the customers directly (McEachern 1998).

Neuman (2006) identifies internal and external consistency as measures of reliability. This study can be replicated to achieve the same results within the prevailing timeframe. The steps employed to gather data were rational and reinforced each other – Initial interaction with the banks and some internet banking customers, Information scanning of the banks' online banking portals, Interview of banking staff administering of questionnaires to customers.

### 3.7 Profile Of Banks

The profiles of the banks used in this work are as follows;

#### 3.7.1 CAL Bank

CALNet is CAL banks online banking service designed to supplement, and improve the operational and financial control of customers' personal and/or business account(s) either from the comfort of their offices, homes, or elsewhere in the world!

With CALNet, clients can;

- Access account(s) from ANYWHERE in the world
- View and verify transactions on account(s)
- Check Balances
- Reconcile entries in account with their own records
- Print Statements
- Download transactions for the month
- View & track investments with the bank
- Track inflows and outflows

#### 3.7.2 Unibank Ghana Ltd.

uni-WEB by uniBank provides the following banking services using the Internet

- Balance Enquiry
- Funds Transfer on accounts between participating banks
- Downloading transaction information such as Mini Statement, Full Bank Statement
- Third Party Bill presentment and payment e.g. ECG, DSTV, School Fees etc

- Cheque Book Request
- Stop Cheque Request.

### 3.7.3 Prudential Bank Gh Ltd.

Prudential Bank's Internet Banking service (netWise) is designed to meet the online banking needs of customers by providing online access to general information on our products and services and customer accounts through personal computers or other electronic devices.

For both Individuals and Corporate bodies, the summary of products offered is:

**Enquiries:** Access accounts anywhere anytime; view balances of all linked accounts.

Enables a customer to get a snap shot of their recent transactions and download their account statements in various formats.

**Customer Services:** This enables the customer to access a wide range of features which include routine enquiries on Forex rates, request for cheque books, stop cheque payments, view broadcast messages and communication with the Bank personnel

**Transfers and Payments:** Execute or schedule funds transfers between own accounts in the Bank as well as transfers to third party accounts.

## CHAPTER FOUR

### ANALYSIS, DISCUSSION AND REPRESENTATION OF RESULTS

#### 4.0 Introduction

This chapter discusses and analyse data gathered from the field. The analyses were done based on the responses from respondents, using various forms of graphical representations. Here empirical data collected on the three Ghanaian internet banks are presented. The data was collected through personal interview and questionnaires. The outputs are presented in tables and charts.

#### 4.1 Demographic Data

A total of one hundred and fifty (150) questionnaires were distributed among the three (3) banks, however, one hundred and thirty – six (136) were received. Also, of the forty (45) questionnaires sent out to staff of the three (3) internet banks, forty –three (43) were received.

In terms of gender, one hundred and fifteen (115) males were sampled and sixty- four (64) were females.

**Table 4.1: Gender Distribution**

Gender	Frequency	Percentage
Male	115	64
Female	64	36
<b>Total</b>	<b>179</b>	<b>100</b>

Source: Author's field survey September, 2011.

From Table 4.1, one hundred and fifteen (115) representing 64% of the total responses were male while sixty four (64) representing 36% of the total number were females. This clearly shows that there were more male participants than females and it may be attributed to the simple random technique used in selecting respondents.

#### **4.2 Internet Banking Services in Ghana**

The products and services that customers of internet banks indicated their banks offered through internet banking were the same as what was found on the banks websites, brochures, and commercials. The responses from customers were especially important because most services could only be assessed with a customer password and cannot be confirmed by only visiting the websites.

The Table 4.2 shows the services that are available online for CAL bank, Unibank and Prudential bank customers. Customers of all three internet banks can check balances and account activity, view and print statement of accounts, and view status of cheques using the internet banking platform. Also, customers can transfer funds to other customers in the same bank or the same customer with different accounts. Only CAL bank can transfer funds to other customers in different domestic banks using internet banking. All customers of the three internet banks can stop cheque payments online by sending a secured message to their branch and also request cheque books online.



**Table 4.2 Online banking products/services in Ghana**

<b>Internet Banking Services offered</b>	<b>BANKS</b>		
	<b>CAL</b>	<b>Unibank</b>	<b>Prudential</b>
Check balances and account activity	YES	YES	YES
Transfer funds between customer accounts at the Bank	YES	YES	YES
Transfer funds to same Bank customers	YES	YES	YES
Transfer funds to other customers in different domestic banks	YES	NO	NO
View and print statement of accounts	YES	YES	YES
Request cheque books	YES	YES	YES
Stop cheque payments	YES	YES	YES
View status of cheques	YES	YES	YES
Send a secured message to customer care	YES	YES	YES
<b>Count</b>	<b>9</b>	<b>8</b>	<b>8</b>
<b>Rank</b>	<b>1st</b>	<b>2nd</b>	<b>2nd</b>

Source: Author's field survey September, 2011.

Customers of the three banks also indicated the services they would want to be available through internet banking. Banking services which customers desired to be made available online includes services such as Loan Account Enquiries, Standing Instructions Requests, Term Deposit Transactions, Requests for bank Draft, Third Party Bill payment and Beneficiary maintenance as shown in Table 4.3.

**Table 4.3 Desired Internet Banking Services**

<b>Banking Services</b>	<b>Frequency</b>	<b>Percentage</b>
Term Deposit Transactions	57	43%
Standing Instructions Requests	22	17%
Loan Account Enquiries	34	26%
Third Party Bill payment	7	5%
Request for bank Draft	10	8%
Beneficiary maintenance	2	2%
<b>Total</b>	<b>132</b>	<b>100%</b>

Source: Author's field survey September, 2011.

Some Banking services which customers desire to be made available online includes services such as Loan Account Enquiries, Standing Instructions Requests, Term Deposit Transactions, Requests for bank Draft, Third Party Bill payment and Beneficiary maintenance as shown in Table 4.3.

#### **4.3 Factors Influencing Internet Banking Adoption in Ghana**

Reasons given by bank staff during interviews for introducing internet banking included profit, competition, convenience and customers request. The reasons, however, centered mostly on customer request, competition, and convenience.

#### 4.3.1 Frequency of internet use

The frequency of internet use is necessary for the successful adoption of Internet banking. The results on Internet use by respondents show that all the respondents were computer literate and most of them use the internet daily. 70% of the respondents use the internet daily, 21% weekly and only 9% use the internet monthly as shown in Table 4.4.

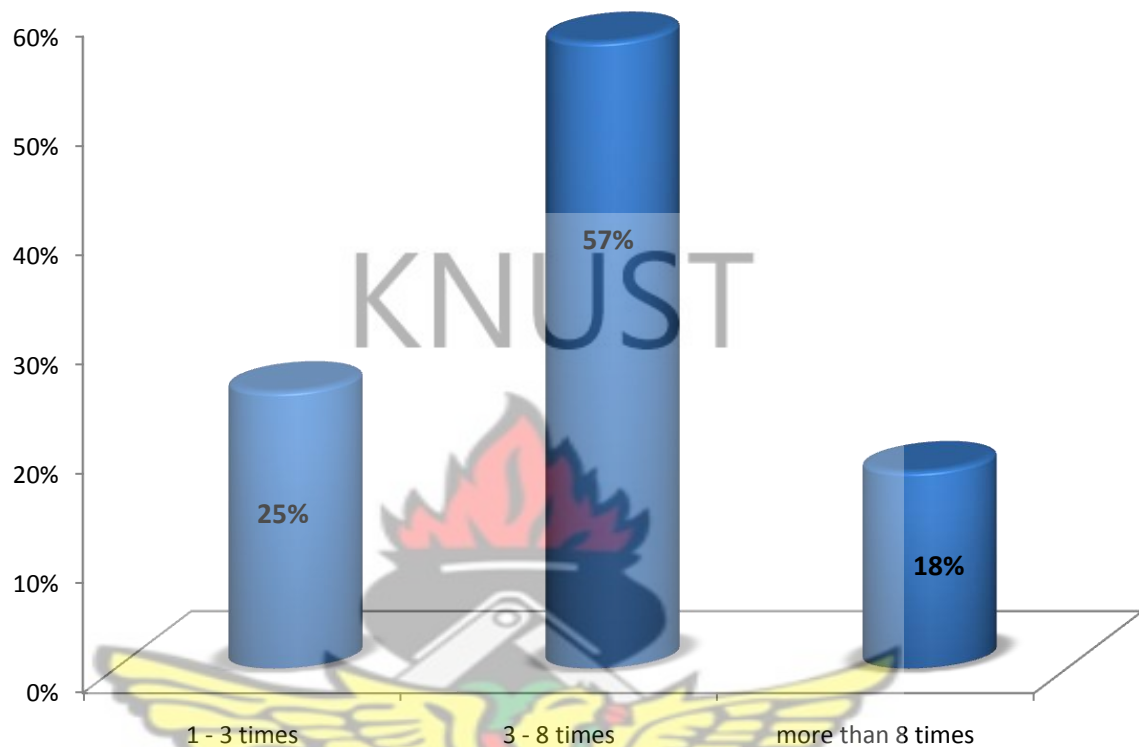
**Table 4.4** Frequency of Internet Use

Frequency	Count	%
Daily	95	70%
Weekly	29	21%
Monthly	12	9%
<b>Total</b>	<b>136</b>	<b>100%</b>

Source: Author's field survey September, 2011.

Assessing the frequency of use of the internet banking product, 57% of the respondents indicated that they use Internet banking three to eight (3 – 8) times every month, whilst 25% use it once to three (1 – 3) times in a month. However about 18% indicated they use internet banking eight or more times in a month as indicated in figure 4.1. This confirms Pikkarainen et al (2004) assertion that ease of use (PEOU) has a positive effect on consumer acceptance of online banking which in this case is as a result of frequent use of the internet.

**Figure 4.1 Frequency of Internet Banking use per month**

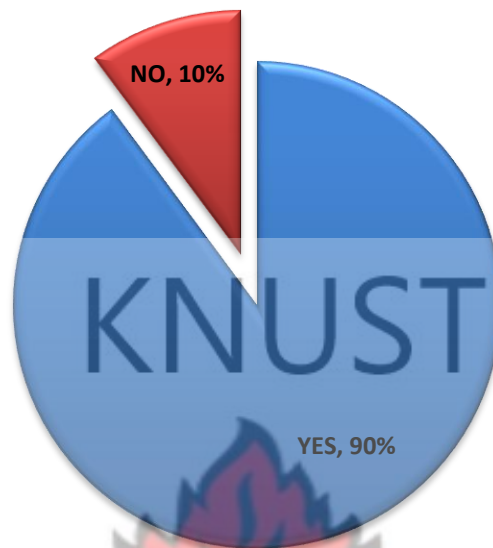


Source: Author's field survey September, 2011.

#### **4.3.2 Management's commitment to internet banking**

90% of the internet banking staff indicated that management is committed to internet banking and that the level of investment in internet banking is high while 10% indicated otherwise as shown in Figure 4.2.

**Figure 4.2 Management's Commitment to Internet banking**



Source: Author's field survey September, 2011.

#### **4.3.3 Customer expectations and requirements of internet banking service**

When customers were asked to judge how their expectation and requirement of internet banking services have been met, majority rated it above average. As shown in Table 4.5, 24% answered Very Good, 39% Good, 30% rated it as average, 6% Poor and 1% Very Poor.

**Table 4.5 Measurement of Expectations and Requirements of Internet Banking**

Rating	Frequency	%
Very Good	32	24%
Good	53	39%
Average	41	30%
Poor	8	6%
Very Poor	2	1%
<b>Total</b>	<b>136</b>	<b>100%</b>

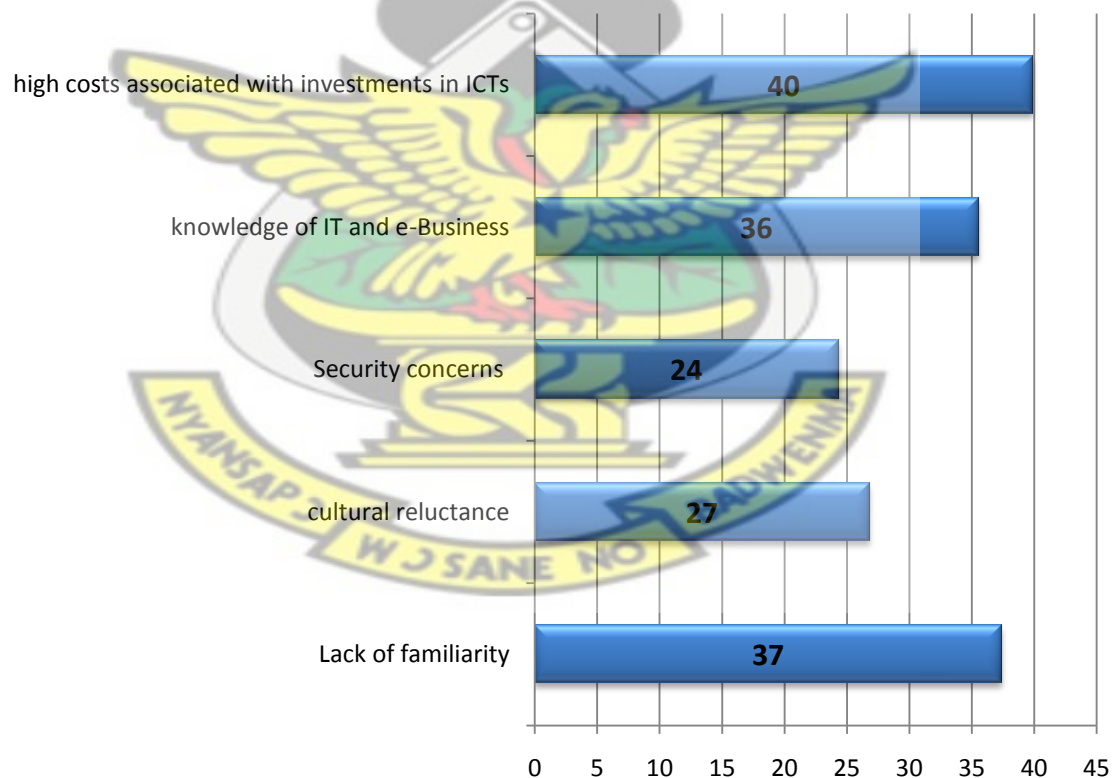
Source: Author's field survey September, 2011.



#### 4.3.4 Challenges affecting internet banking

The following were indicated by bank staff as challenges to internet banking; lack of familiarity, cultural reluctance, security concerns, knowledge of IT and e-business, and high cost associated with ICT investments. A compilation of responses from bank officials are as follows, 37 respondents indicated lack of familiarity, 27 also ticked cultural reluctance, 24 security concerns, 36 knowledge of IT and e-business, and 40 indicated high cost associated with ICT investments as shown in the figure below (figure 4.3) adoption.

**Figure 4.3 Some Challenges affecting internet banking**



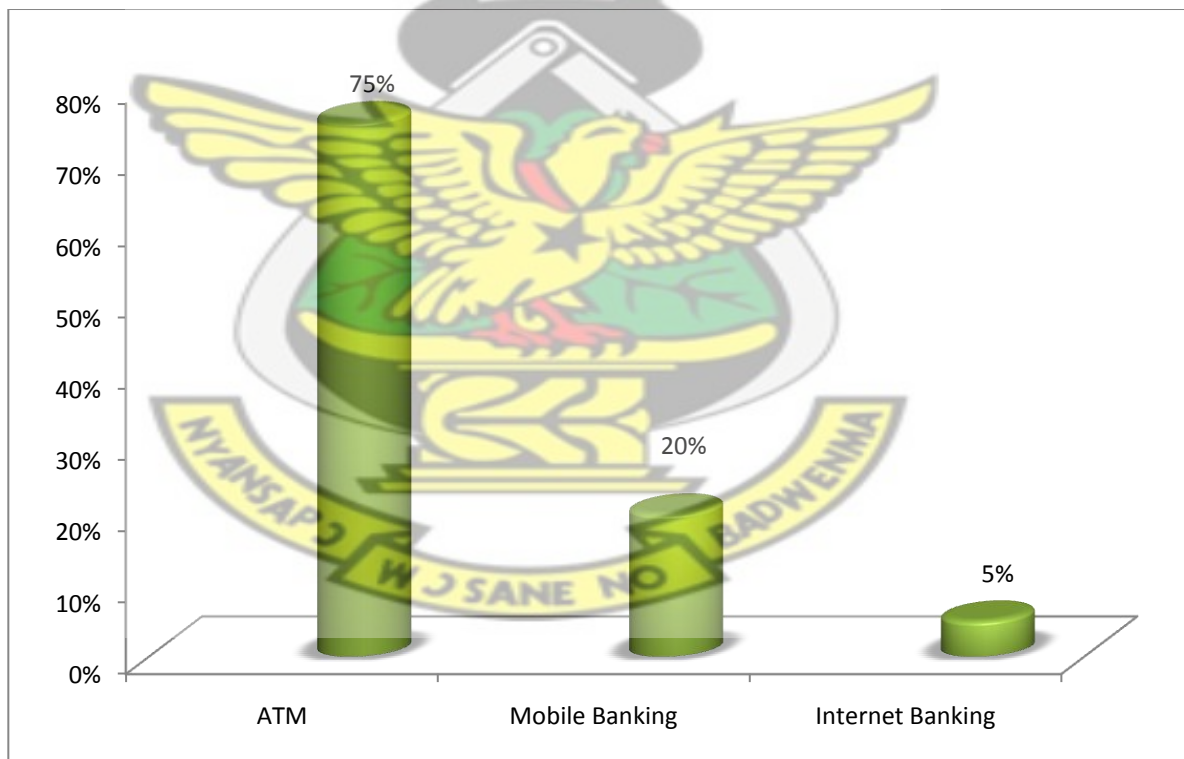
Source: Author's field survey September, 2011.

## 4.4 Factors Impacting Negatively on Customers Utilization of Internet Banking

### 4.4.1 Availability of other electronic delivery channels

An assessment of the top three electronic delivery channels offered in CAL bank, Unibank and Prudential Bank indicated that ATM (Automated Teller Machines) are the most used channel. 75% of customers indicated that ATMs are the electronic delivery channel they used most often, 20% often use mobile banking and 5% internet banking. Most bank staff interviewed explained that Internet banking is still in its emerging stage and its full benefits will soon be realized.

**Figure 4.4 Electronic Delivery Channels mostly used by customers**

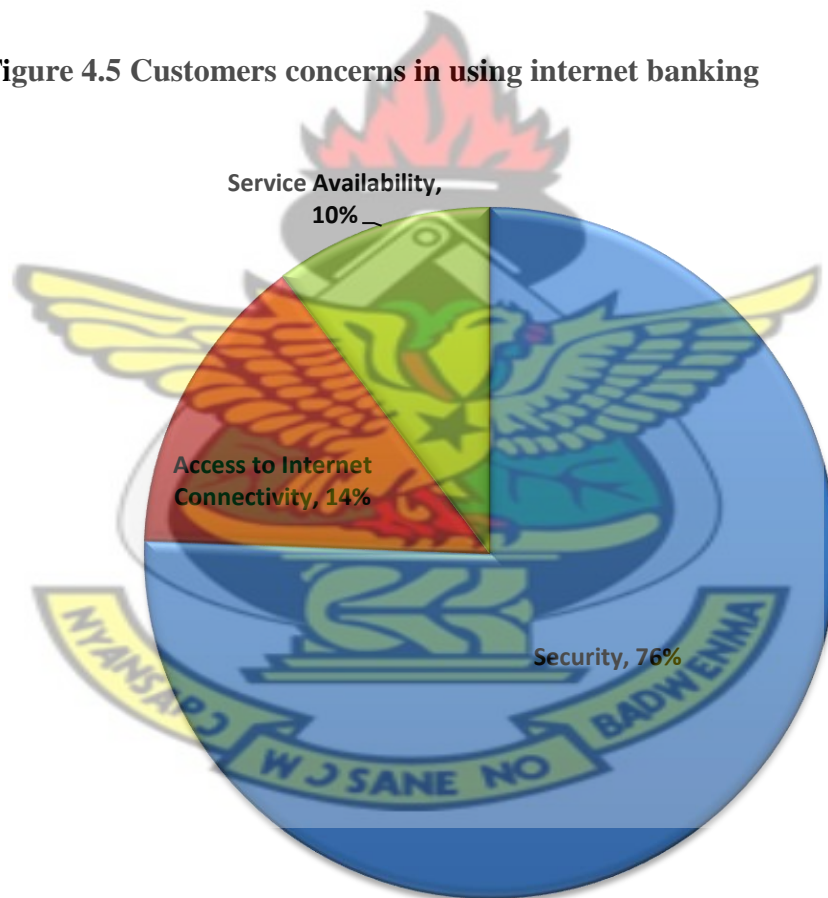


Source: Author's field survey September, 2011.

#### ***4.4.2 Issues with the use of internet banking***

The security of transacting on the internet is a major concern in adopting internet banking. Assessment of the apprehension of customers in using internet banking indicate that, 76% have security as their main concern, about 14% have concerns with access to internet connectivity and 10% service availability as shown in Figure 4.5. This confirms Pikkarainen et al (2004) assertion that security and privacy have a positive effect on consumer acceptance of online banking.

**Figure 4.5 Customers concerns in using internet banking**



Source: Author's field survey September, 2011.

#### 4.5 How Internet Banking affect Customers in Ghana

As indicated in the table below, 84% of bank officials thought that Internet banking significantly benefits their customers. However, 74% believed that it would reduce the frequency of customer visits to a physical bank branch which confirms Howcroft et al. (2002) assertion that time ,cost savings and freedom from place have been found the main reasons underlying online banking acceptance. The percentage of respondents who agreed that Internet banking would lead to a reduction in customer - banker relationship was 9%.

**Table 4.6 Effect of Internet Banking on the Bank's Customers**

EFFECT	TRUE	FALSE	% TRUE
Significantly benefits customers	36	7	84%
Reduces the frequency of customer visits to a physical bank	32	11	74%
Reduces customer-banker relationship	4	39	9%
Customers mind paying a monthly fee for Internet banking	10	33	23%
Access to accounts 24 x 7 is important to customers	43	0	100%
Internet banking security is concern of our customers	38	5	88%

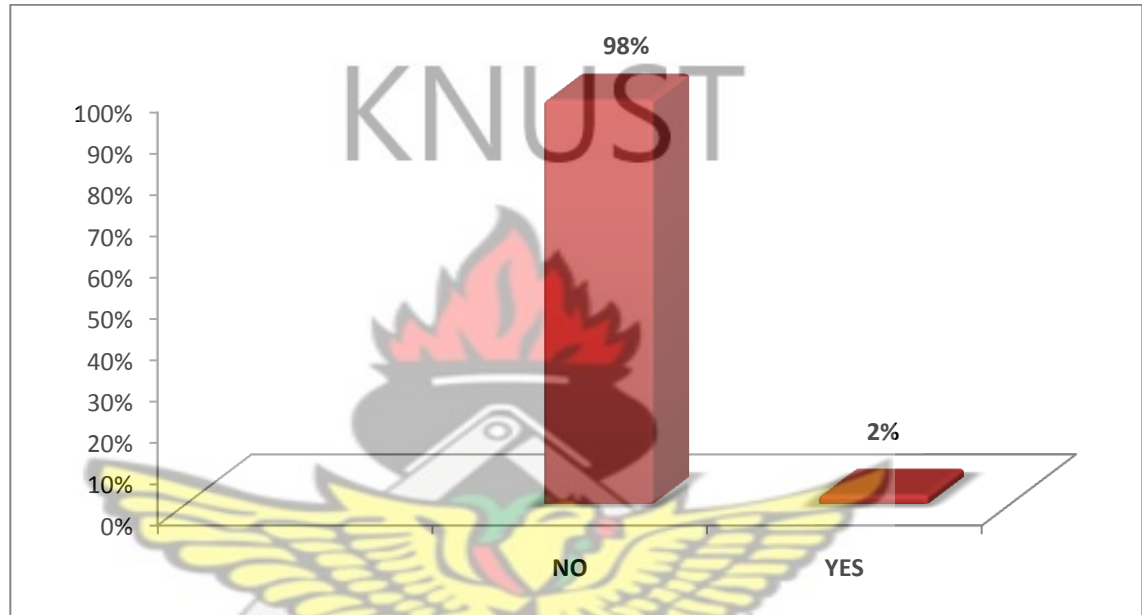
Source: Author's field survey September, 2011.

As shown in Table 4.6, all forty-three responses received from bank staff (100%) mentioned that access to accounts 24x7 is important to their customers, 23% reported that their customers would not mind paying a monthly fee for Internet banking. On Internet banking security, 88% agreed that it is a concern of their customers.

#### 4.6 Internet Banking fraud in Ghana

Customers were asked to indicate whether they have ever had their accounts attacked by fraudsters. 98% of them pointed out that they had never been attacked by fraudsters while only 2% indicated otherwise.

**Figure 4.6 Customers who have experienced Internet Fraud**



Source: Author's field survey September, 2011

Bank officials interviewed also stated some of the security measures that have been put in place to protect their customers from internet banking fraud as shown in the table below.

**Table 4.7 Some Security Measure Put in Place by Banks**

Security Measure	CAL	Unibank	Prudential
One Time passwords (OTP)	YES	YES	YES
Automatic Session Timeout	YES	YES	YES
Digital Certificates	YES	YES	YES
Encryption	YES	YES	YES

Source: Author's field survey September, 2011.



#### 4.7 Banks' Perceptions Of Internet Banking and Its Operational Value

Table 4.8 shows responses to questions aimed at assessing the operational value of internet banking to banks in Ghana.

**Table 4.8 Operational Value of Internet Banking**

Perception	Yes	No	% Yes
Benefits outweigh the costs	41	2	96%
Allows banks to increase customer base	21	22	48%
Improves customer service delivery	40	3	94%
Lowers transaction costs	37	6	87%
Offers opportunities to provide additional services	36	7	83%
Increases attempted fraud	26	17	61%
Customer Accounts Would Be Less Costly to Maintain	15	28	36%

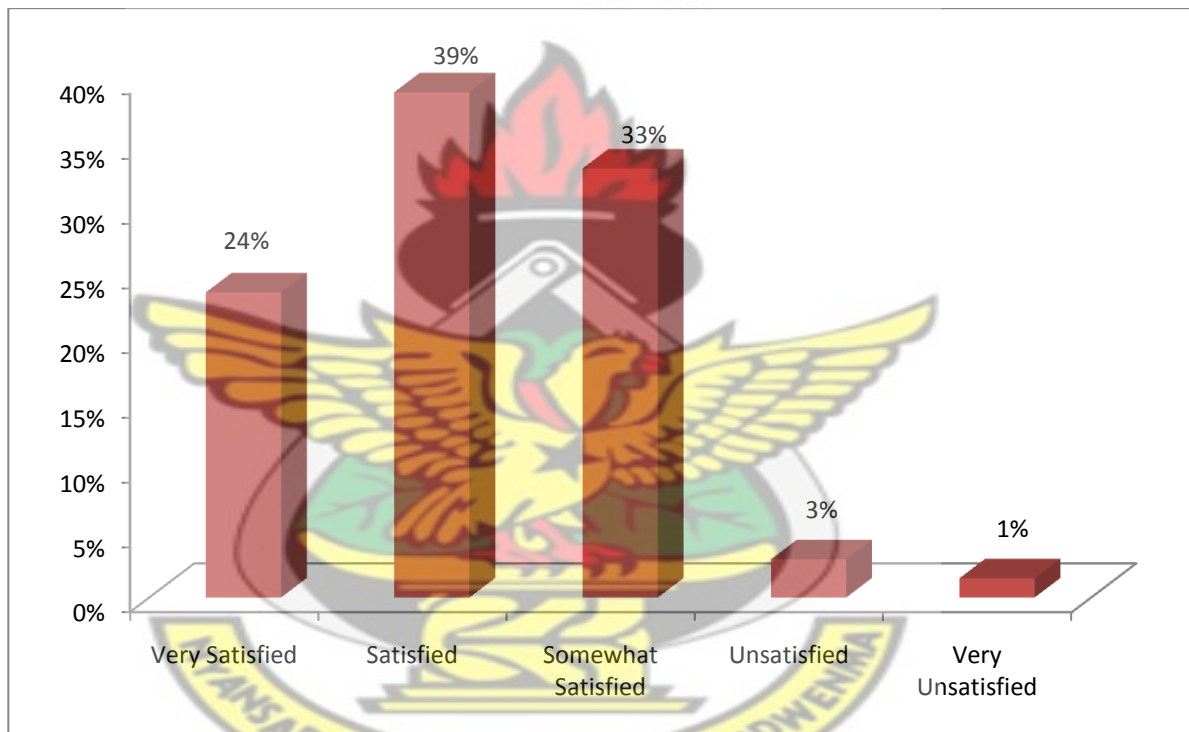
Source: Author's field survey September, 2011.

Almost all sixty-nine responses from staff of internet banks (96%) reported that the benefits of Internet banking outweigh the associated costs. Also, banks stated benefits in the following areas: increases in the customer base (48%), improvements in customer service delivery (94%), lower transaction costs (87%) which confirms Pikkarainen et al (2004) assertion that banks get notable cost savings by offering online banking services, and opportunities to offer additional services (e.g. insurance, loan repayments, Bill Payment) (83%). Only 36% of the respondents believed that customer accounts would be less costly to maintain through Internet banking. However 61% percent agreed that the likelihood of fraud increases with Internet banking.

#### 4.8 Customers Satisfaction Level of Internet Banking Service in Ghana

When customers of internet banking were asked to rate their satisfaction levels of the internet banking service they use, the majority were only satisfied. A compilation of the results show that 24% are very satisfied, 39% are Satisfied, 33% are somewhat satisfied, 3% are unsatisfied, and 1% very unsatisfied as can be seen in the chart below.

**Figure 4.7 Satisfaction Level of Internet Banking users**



Source: Author's field survey September, 2011.

The results show that customers are generally satisfied with internet banking services in Ghana.

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 5.0 Introduction

This chapter deals with summary of study, conclusion and recommendations. The conclusions would be made from the analysis and the literature review.

#### 5.1 Summary of Findings

This study sought to look at the perceptions of banks and their customers regarding the effect of introducing internet banking services in Ghana. In this regard this research sought to find out the banking services are available through internet banking in Ghana, the factors that influence internet banking adoption in Ghana, how Internet banking affect customers and their relationships with their banks, and banks' perceptions of Internet banking and its operational value.

##### 5.1.1 *Internet Banking Services Offered*

The services provided by banks in Ghana include the checking of balances and account activity, transfer funds between customer accounts at same bank, transfer funds to same bank but another customer, viewing and printing of accounts statement, cheque books request, stop cheque payments, view status of cheques, and a facility to send a secured message to customer care. However, there are other services that customers desire to be available through internet banking such as third party bill payment; Loan accounts enquiries, Standing Instructions requests, Term Deposit Transactions, Request for bank Draft and Funds Transfer to other customers in different domestic banks.

### ***5.1.2 Factors Influencing Internet Banking Adoption in Ghana***

The frequent use of the internet is necessary for the adoption of internet banking. Internet banking is based on knowledge of Internet use. The results on Internet use by respondents show that most of the internet banking users (70%) also uses the internet daily and all the respondents are computer literate. This is necessary for successful adoption of Internet banking. Bank officials indicated that the Lack of familiarity, Cultural reluctance, knowledge of IT and e-Business, High costs associated with ICT investments are other factors affecting internet banking adoption. The results obtained show that customers are content with the kind of internet banking services they receive. Bank management is very committed to the provision of internet banking services as indicated in the responses given by bank officials.

### ***5.1.3 Factors impacting negatively on Internet banking Utilization***

#### ***5.1.3.1 High Usage of ATMs***

Even with the best the internet has to offer in banking services, customers still need to visit an ATM or a bank branch to withdraw cash. Findings from the study indicate that ATM's are the most used electronic delivery channel and currently the most convenient means of acquiring paper money.

#### ***5.1.3.2 Security Risk and Access to Internet***

Also, customers who use internet banking indicated security as a major concern in their use of online banking alongside issues such as access to internet connectivity and internet banking service availability.

### ***5.1.4 Effect of Internet Banking on Customers***

Due to the numerous advantages internet banking offers, both bank officials and customers are enthused about the facility. The results indicate that a high percentage of

respondents agreed that Internet banking would lead to an increased customer loyalty and customer-banker relationship. These findings seem to confirm the notion advocated by many that Internet banking can create more loyal customers by offering multiple financial services through banks web sites.

#### ***5.1.5 Internet Banking Fraud***

Internet banking like any other business is susceptible to fraud. In Ghana, internet banking fraud has not been uncontrolled as the results of the study shows. Banks have however put in place some measure of security to protect their customers' online transactions. Automatic session timeouts, digital certificates and encryption are some measures put in place by banks. High risk transactions such as funds transfers are protected using one time Passwords.

#### ***5.1.6 Internet Banking and its Operational Value***

Internet banking attracts customers due to the convenience it provides. Operationally, it's a tool in the service delivery arsenal of banks and improves customer service delivery. The introduction of internet banking has reduced the cost of maintaining customer accounts given that the use of passbooks, withdrawal slips and other stationary have significantly reduced. This assertion was confirmed by bank officials' responses to questionnaires and interviews even though they were reluctant to give figures to support it. However, with the incidents of internet fraud cases rising in Ghana, the risk of internet banking fraud is imminent.

### **5.2 Conclusion**

The internet banking services provided by banks in Ghana generally cover information-push where customers can access banking information, information download where customers can access account information and simple transactional banking involving



fund transfer. Full transactions such as bill payments and short-term recurring payments are services provided by a few internet banks in Ghana. Most of the products and services enumerated are only banking services. Thus, the internet banking providers have a wide range of services they can offer as they amalgamate existing products and services.

Considering analysis of the data for the study, it can be deduced that the future holds a lot of prospects for internet banking in Ghana. However, the phenomenon in Ghana is plagued with difficulties that can understandably be considered as teething problems. The few banks in Ghana that have implemented internet banking are chalking up some successes even with the problems that come with it. These challenges include the problems of internet connectivity, high cost of implementation, Security concerns for customers, perceived customer readiness and other problems they encounter. The banks have demonstrated enough zeal for internet banking and are taking measures to enroll more customers.

### **5.3 Recommendations**

The expectations of customers in recent years have increased with internet banking. This study sought to look at the perceptions of banks and their customers regarding the impact of internet banking services in Ghana.

In order for internet banking to positively impact the banking industry of Ghana and create customer satisfaction, the study recommends the following:

#### **5.3.1 Ensure Internet Banking Security**

It is particularly important that banks in Ghana that are providing Internet banking products and services ensure that the privacy and security of their Internet banking

customers are effectively guaranteed. This will embolden customers to continue using the service.

### **5.3.2 *Ensure Constant Availability of Service***

Banks must ensure that the internet banking service is always available. Periodic routine maintenance and replacement of faulty equipment must be prompt to prevent service disruptions.

### **5.3.3 *Marketing of Internet Banking products and services***

Banks should intensify the campaign on internet banking services to prospective customers by ensuring to provide customers with quality internet banking service which is always available.

## **5.4 SUGGESTIONS FOR FURTHER RESEARCH**

Other related areas of research that can be advanced from this work and in the context of Ghana are:

- Impact of Internet banking on businesses in Ghana. It is important for businesses to know the risk and benefits of Internet banking on their business, thus a study on the impact of Internet banking on the businesses in Ghana will be relevant.
- Determinants of Internet banking service quality, consumer satisfaction and behavioral intentions. Banks need to know these determinants to improve their competitive advantage through the adoption of Internet banking strategies.
- Demographic analysis of potential internet banking users.

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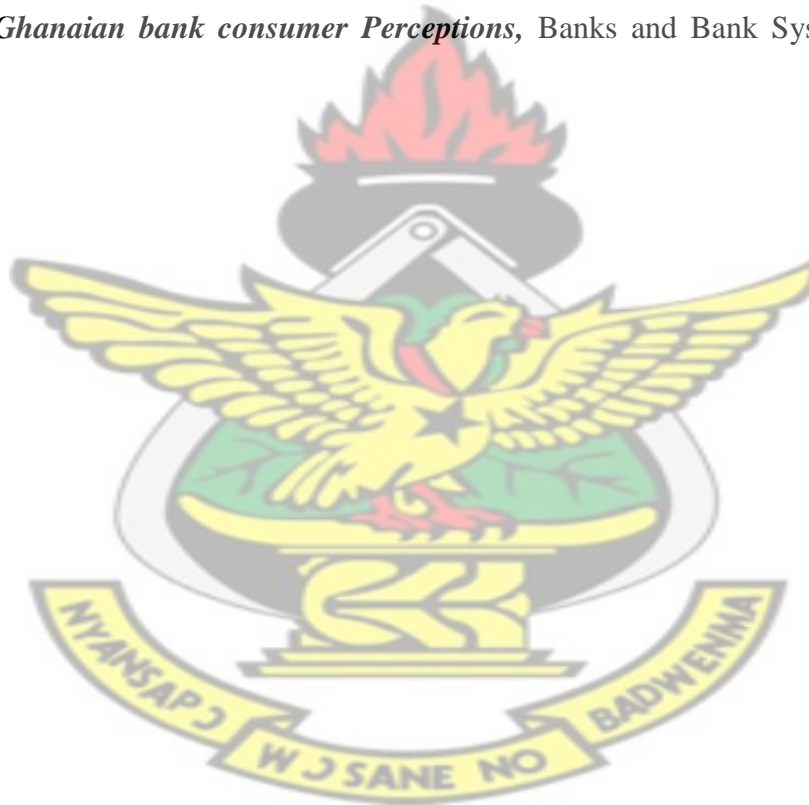


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## APPENDIX A

### Questionnaire on Internet Banking for Customers

**The purpose of this questionnaire is to assess customer perception of internet banking delivery channels employed by banks.**

1. What is your occupation?

\_\_\_\_\_

2. What is the name of your bank?

\_\_\_\_\_

3. Please indicate your gender?

- ☐ Male
- ☐ Female

4. Select your age range?

- ☐ 15-25 years
- ☐ 26-40 years
- ☐ Above 40 years

5. How often do you use the internet?

- ☐ Daily
- ☐ Once a week
- ☐ Every fortnight
- ☐ Once a month

6. Do you subscribe to internet banking?

- ☐ Yes
- ☐ No

7. How long have you been using the Internet for your banking transaction?

- ☐ 1 to 6 months
- ☐ 7 to 12 months
- ☐ More than 1 year

8. How frequently do you visit your bank branch per month?

- ☐ 1 to 3 times

- ☐ 3 to 8 times
- ☐ 8 to 12 times

9. On average, how long do you take to transact physically at your bank branch?

- ☐ Less than an hour
- ☐ 1-2 hours
- ☐ 3 and above

10. I do Internet banking because it is time saving?

- ☐ Yes
- ☐ No

11. I do Internet banking because it is reliable?

- ☐ Yes
- ☐ No

12. I do Internet banking because it is convenient?

- ☐ Yes
- ☐ No

13. How frequently do you use internet banking per month?

- ☐ 1 to 3 times
- ☐ 3 to 8 times
- ☐ 8 and more

14. How reliable is the Internet Banking service provided by your bank?

- ☐ Very Reliable
- ☐ Reliable
- ☐ Somewhat Reliable
- ☐ Unreliable
- ☐ Very unreliable

15. Is the Internet Banking service always available?

- ☐ Yes
- ☐ No

16. If No, How often does the service go down?

- ☐ Not often

- ☐ Often
- ☐ Vey Often

17. Does your bank inform customers when there are problems with internet banking system?

- ☐ Yes
- ☐ No

18. Does staff of your bank give personal attention to customers with internet banking related problems?

- ☐ Yes
- ☐ No

19. Is your bank aware of the needs of its customers with respect to Internet banking?

- ☐ Yes
- ☐ No

20. Do you regularly visit the branches since you started using online banking?

- ☐ Yes
- ☐ No

21. How regular do you visit the branch premises?

- ☐ Daily
- ☐ Weekly
- ☐ Monthly
- ☐ Bi-Monthly

22. What is the main reason that make you typically visit your bank branch (please choose the single most important reason)?

- ☐ to make a deposit
- ☐ to get advice for investment options
- ☐ to inquire about a balance
- ☐ to withdraw cash
- ☐ other

23. What Problems do you face from the Internet Banking service provided you by your Bank?

.....  
 .....

.....  
.....

24. Do you find any security laps in the Internet Banking services provided by your Bank?

- ☐ Yes
- ☐ No

If Yes, name them. ....

25. What are the most important reasons you subscribe to internet banking? (Please prioritize the following list in the order of importance. 1: the most important 6: the least important) Please use each number only once.

- \_\_\_ Convenience (24 hours service, anywhere connectivity)
- \_\_\_ Curiosity
- \_\_\_ Better rates
- \_\_\_ Safe and secure
- \_\_\_ Low service charge
- \_\_\_ Easy to track my banking transaction activity

26. What banking services do you use through Internet banking? (Please check all you are currently using)

- ☐ Search for product and rate information
- ☐ Calculate loan payment information
- ☐ Download loan applications
- ☐ Download personal bank transaction activity
- ☐ Check balances on-line
- ☐ Apply for consumer loans or credit cards online
- ☐ Inter-account transfers
- ☐ On-line bill payments
- ☐ Others
- ☐ Not Applicable

27. Do you have ample information about online banking?

- ☐ Yes
- ☐ No

28. What is your main concern in using internet banking?  
(Choose one)

- ☐ Access to Internet Connectivity



- ☐ Concerned about security
- ☐ Service Availability

29. Have you experienced internet banking fraud on your account since you started using the service?

- ☐ Yes
- ☐ No

30. Which electronic delivery channels do you often use?

- ☐ ATMs
- ☐ Mobile banking (SMS)
- ☐ Internet banking
- ☐ Electronic Funds Transfer
- ☐ Telephone Banking Other

31. What can banks do to improve the delivery of services through Internet banking channel?

.....

.....

.....

.....

32. How satisfied are you with Internet banking services?

- ☐ Very Satisfied
- ☐ Satisfied
- ☐ Somewhat Satisfied
- ☐ Unsatisfied
- ☐ Very unsatisfied

33. In all, to what degree has your expectation and requirements been met?

- ☐ Very Good (70 – 90%)
- ☐ Good (60 – 69%)
- ☐ Average (50 – 59%)
- ☐ Poor (40 – 49%)
- ☐ Very Poor (30 – 39%)

## APPENDIX B

### RESEARCH QUESTIONNAIRE FOR BANK STAFF

**The purpose of this questionnaire is to assess internet banking on the growth of banks in Ghana.**

1. What is the name of your bank?

.....

2. What position do you hold in your bank?

-----

3. Please indicate your gender?

- ☐ Male  
☐ Female

4. Has internet banking reduced the number of customers that come to the banking hall?

- ☐ Yes  
☐ No

5. What internet banking services do you offer?

- ☐ Check balances and account activity  
☐ Transfer funds between customer accounts at the Bank  
☐ Transfer funds to same Bank customers  
☐ Transfer funds to other customers in different domestic banks  
☐ View and print statement of accounts  
☐ Request cheque books  
☐ Stop cheque payments  
☐ Term Deposit Transactions  
☐ View status of cheques  
☐ Loan/Standing Instructions Enquiries  
☐ Initiate loan repayments  
☐ Request for bank Draft  
☐ Third Party Bill presentment and payment  
☐ Send a secured message to customer care

6. Are customers patronising internet banking services?

- ☐ Yes
- ☐ No

7. Has the introduction of internet banking increased your Customer base?

- ☐ Yes
- ☐ No

8. Internet banking has positively improved service delivery of our bank.

- ☐ Yes
- ☐ No

9. Which electronic delivery channels do customers highly patronise? Tick more than one.

- ☐ ATMs
- ☐ Mobile banking (SMS)
- ☒ Internet banking
- ☒ Electronic Funds Transfer
- ☐ Telephone Banking
- ☐ Others

10. Which of these security measures have your bank put in place with respect to Internet banking?

- ☒ Identity Verification
- ☐ Encryption
- ☐ Digital Certificates
- ☐ Automatic Session time-out

11. Is Internet Banking Security a concern for customers?

- ☐ Yes
- ☐ No

12. Do you record internet banking fraud?

- ☐ Yes
- ☐ No

13. How often do you record internet banking fraud in your bank?

- ☐ Very Often( 12 times)
- ☐ Often ( 6 times)
- ☐ Sometimes ( 2 times)
- ☐ Never

14. Which of these measures have your bank put in place to reduce internet fraud?

- ☐ One Time passwords (OTP)
- ☐ USB Tokens
- ☐ OTP by SMS
- ☐ Transaction Specific OTPs
- ☐ Transaction Monitoring

15. The following are some challenges companies face when adopting e-business.  
Please indicate those applicable to you

Challenges	Yes	No
a. Limited skills base of staff		
b. Lack of familiarity		
c. cultural reluctance		
d. Availability of information and communication infrastructure		
e. Security concerns		
f. perceived customer readiness		
g. knowledge of IT and e-Business		
h. high costs associated with investments in ICTs		
i. lack of technical and managerial skills		
j. Reduces customers trust in bank		
k. Reduces customer – bank relationship		
l. Any other challenge? Please state ..... .....		

16. The following are some benefits companies derive from adopting e-business.  
Kindly indicate those applicable to you

Benefits	Yes	No
a. Value creation or value enhancement		
b. lower cost of doing business		
c. Improvement in Productivity		
d. cost saving		
e. revenue generation		
f. Increased market share		
g. improving customer service		
h. speed and efficiency		
i. Increase in Customer base		

17. What are your General impressions about Internet Banking?

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18. What kind of feedbacks do you receive from your customers on your Electronic Banking Services?

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19. What is the percentage up-time of the internet banking service?

- ☐ 50% - 75%
- ☐ 80% - 90
- ☐ 91% - 99%

20. Which of the following account for the down time?

- ☐ Connectivity
- ☐ Routine maintenance
- ☐ Virus attack
- ☐ Unavailable backup power supply



21. Customers mind paying a monthly fee for Internet banking

- ☐ Yes
- ☐ No

22. Have Staff been trained on internet banking?

- ☐ Yes
- ☐ No

23. How will you rate your banks level of investment in Internet banking?

- ☐ High
- ☐ Average
- ☐ Low

24. Is management committed to Internet banking?

- ☐ Yes
- ☐ No

25. Managements involvement in internet banking can be said to be

- ☐ High
- ☐ Average
- ☐ Low

26. Are measures in place to encourage internet banking to customers?

- ☐ Yes
- ☐ No

27. Name some of the measures

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28. Please indicate the number of internet banking customers from 2006 – 2010

Bank Name	2006	2007	2008	2009	2010	Total

## APPENDIX C

### INTERVIEW GUIDE

1. Why do you think your bank introduced internet banking?
2. What banking services are available through internet banking?
3. Which additional services do customers desire to be made available through internet banking?
4. When is your bank introducing the desired services?
5. Has internet banking reduced the cost of doing business?
6. If yes, by how much?
7. In what way has it reduced the cost of doing business?
8. Do you think internet banking increases customer loyalty?
9. If yes how?
10. Which other electronic delivery channels does your bank have?
11. Which of these electronic channels are highly patronized by customers?
12. Any explanations to why customers patronize those

