AN INVESTIGATION INTO INTERNET BANKING TECHNOLOGY ADOPTION AMONG COMMERCIAL BANKS IN KENYA

Okiemo, Millicent

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DECLARATION

This management Research Project is my original work and has not been presented for a degree in any other University.

Signed: .....**Date:** 03-11-2006.....

MILLICENT OTIENO

UNIVERSITY OF NAIROBI
SCHOOL OF BUSINESS
MBA OFFICE
P. O. Box 30197
NAIROBI

This Management Research Project has been submitted for examination with my approval as University Supervisor.

Signed: .....**Date:** 7-11-2006

NIXON MUGANDA

Lecturer, Department of Management Science.

School of Business, University of Nairobi

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ABSTRACT

Internet banking is a subset of electronic banking. It has been in operation since the 1960s, developing from a simplistic form to a sophisticated one. Internet banking is based on the Internet as a typical open network.

The new situation in the banking industry has diversified business strategies, resulting in the trespass on business borders (from ``virtual" or ``brick-and-mortar" to ``click-and-mortar" model). The situation has been changing rapidly. While more and more banks in other economies have offered a wider variety of e-banking services including Internet banking, Kenya seems to be lagging behind and not taking up this new technology promptly, thus the concern of this study.

The main objective of this study was to analyze the extent of Internet banking adoption, major factors responsible for and barriers to Internet banking technology adoption. Perhaps, the sluggish developments in Internet banking have shown a typical case to which the most modern competition forces business model applies.

The major focus of literature review was on the major developments in retail banking over time, various aspects of Internet banking technology, conceptual framework using a unified theory of acceptance and usage of technology model and finally, drivers and barriers to Internet banking technology adoption.

A survey of the 43 commercial banks was conducted with 31 valid responses. Data was collected using self- administered semi- structured questionnaires and analyzed using both descriptive and inferential statistics. The project found that, for the banking sector in Kenya, the determinants of Internet banking technology adoption decision revolved around the drivers of perceived ease of use, usefulness of the technology, facilitating conditions as well as prior intention to adopt the technology, thus confirming the venkatesh UTAUT model tested. Internet banking has contributed greatly to saving costs and has intensified the competition severely, making the banking industry more beneficial for customers, but less attractive for new entrants. A number of barriers were also identified from the survey.

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LIST OF ABBREVIATIONS

ATM- Automated Teller Machine

CBK- Central Bank of Kenya

CCK- Communication Commission of Kenya

ICT- Information and Communication Technology

I.T.- Information Technology

MIS- Management Information Systems

NBFI- Non banking Financial Institutions

OECD- Organization for Economic Co-operation and Development

PC- Personal Computer

PDA- Personal Digital Assistant

POS- Point of Sale

SACCO- Savings And Credit Co-operative Societies

TAM- Technology Acceptance Model

TPB- Theory of Planned Behavior

TRA- Theory of Reasoned Action

CHAPTER ONE: INTRODUCTION

1.1 Background

Internet Banking means communication with the Bank and/or performance of transactions through the international network, thus allowing the client to perform transactions in relation to the bank and to obtain other information in the scope shown at the website of the bank. "Internet Banking" can also be defined as "systems that enable bank customers to access accounts and general information on bank products and services through a PC or other intelligent device " or "any banking activity held on Internet (from promotion to sale)" (Mathias & Sahut, 1999).

Adoption means the process of accepting the initiation, implementation and use of a particular technological innovation, especially those that are regarded as new in an organization.

Technological developments particularly in the area of Telecommunications and Information Technology are revolutionizing the way business is done. Electronic commerce (e-commerce) is the activity in which consumers get information and purchase products using Internet technology (Olson and Olson, 2000). E-commerce is now thought to hold the promise of a new commercial revolution by offering an inexpensive and direct way to exchange information and to sell or buy products and services. This revolution in the market place has set in motion a revolution in the banking sector for the provision of a payment system that is compatible with the demands of the electronic marketplace. Consequently, the potential benefits of e-commerce have been widely touted (e.g. Gefen et al, 2003).

However, while recognizing that Internet technology has been there for sometime now, it needs to be acknowledged that its uptake been disappointingly low and well below expectations, in all developing countries except Korea (Firth and Kelly, 2001; Houghton and Morris, 2001; Zhang, 2002)

The electronic revolution in banking basically centers on changes in the distribution channels of financial institutions. The presence of computer and information technologies in today's banks has expanded dramatically. Some estimates indicate that, since the 1980s, about 50 percent of all new capital investment in organizations has been in information technology

(Westland and Clark, 2000). Yet, for technologies to improve productivity, they must be accepted and used by employees in those organizations.

Computerization in the Kenyan banking industry (Marketing Intelligence, 2003, p.81) got off to a slow start and only picked up momentum in the 2000's. The increasing volume of banking transactions was the inevitable motivator for the introduction of computers in Kenyan commercial banks. Then, by linking up technological developments in telecommunications and Information Technology, real-time on-line electronic funds transfer came into existence. A large part of the electronic funds transfer process takes place within the banking premises and thus may be invisible to the layperson.

Today, as indicated in here, Kenyan commercial banks have the privilege of various delivery channels for their products and services. This includes the brick and mortar branch office networks, automated teller machines (ATM's), telebanking or mobile banking via the telecommunication channel and Internet banking.

According to a global survey conducted by Booz-Allen and Hamilton (1997), the establishment of specialized Internet Banking requires only US$1-2 million, which is lower than branch-based banking setup. The traditional bank's running costs account for 50% to 60% of its revenues, while the running costs of Internet Banking is estimated at 15% to 20% of its revenues. Through the Internet, individual customers can interact with foreign banking and financial institutions from their homes or anywhere in the world. This decreasing importance of physical presence of a bank branch will diminish the competitive advantages of local banks.

Both setup and transaction costs of Internet Banking are not expensive. The "1997 Home Banking Report" revealed the relative costs to the US Banks per transaction for the various channels are as follows (see Table 1).

Among the five transaction channels, Internet Banking requires the lowest cost per transaction.

Channel	US $	Estimated Kshs at 73 per $
Branch full service	1.07	78.10

Mail Service	0.73	53.30
Telephone average	0.54	39.40
ATM full service	0.27	19.70
Internet banking	0.01	0.70

Table 1 Relative Costs per Transaction for the US Banks

Source: http://www.bah.com (Booz-Allen and Hamilton)

Internet banking research has tended to focus on the perspective of personal account customers (Gerrard and Cunningham, 2003; Ongkasuwan and Tantichattanon, 2002; Polatoglu and Ekin, 2001; Suganthi *et al.*, 2001). This research will explore the adoption of Internet Technology in provision of retail banking facilities, specifically using Unified Theory of Acceptance and Use of Technology also known as Venkatesh UTAUT model (Venkatesh et al, 2003) The concept of Internet adoption in banking environment forms the focal point of this research.

For technologies to improve productivity, they must be accepted and used by employees in organizations. Explaining user acceptance of new technology is often described as one of the most mature research areas in the contemporary information systems (IS) literature (e.g., Hu et al, 1999). Research in this area has resulted in several theoretical models, with roots in information systems, psychology, and sociology, that routinely explain over 40 percent of the variance in individual intention to use technology (e.g., Davis et al. 1989; Taylor and Todd 1995b; Venkatesh and Davis 2000). Researchers are confronted with a choice among a multitude of models and find that they must "pick and choose" constructs across the models, or choose a "favored model" and largely ignore the contributions from alternative models.

UTAUT model provides unified view of technology adoption because: 1) it reviews the extent of user acceptance models, 2) it empirically has compared the eight models 3) it was formulated based upon conceptual and empirical similarities across models and 4) has been empirically validated, so far the most current model (Venkatesh et al, 2003)

Relatively little research has addressed the issue of barriers to Internet banking adoption. Prior studies frequently focus on positive aspects of Internet banking, e.g. benefits (Polatoglu and Ekin, 2001; Suganthi *et al.*, 2001), trust (Suh and Han, 2002), innovations (Gerrard and Cunningham, 2003). There is little published work on banks about barriers to Internet

banking, particularly in the context of developing countries in the dynamic African region. Information technology (IT) resources in much of Africa are somewhat less well developed than in the West, and the role of personal relationships is somewhat stronger. Other than the barriers identified from literature review, absence of the critical adoption factors will be viewed as the barriers to Internet banking technology adoption. This research, therefore, aims to identify how banks perceive barriers to usage of the Internet banking.

There is therefore the need for well-formulated ICT strategies and communications policies to enable banks have a responsive infrastructure given the changing internal and external threats and opportunities facing these banking institutions.

1.2 Overview of the Banking Sector

The number of commercial banks in the sector declined to 46 in December 2005 from 48 in June 2005 following a merger between one bank and one building society and one bank going under. Other non-bank financial institutions (NBFIs) include mortgage finance companies, building societies and SACCOs, which also provide basic banking services. (Monthly economic review; Jan 2006 issue).

According to the Central Bank of Kenya, during the year to December 2005, the balance sheet of the banking sector expanded with total assets increasing by 10% to Ksh. 643 from Ksh. 514 billion in December 2004. The sector recorded an improved performance in 2005 with pre-tax profits increasing by 48% to stand at 20.1 billion from Ksh 13.6billion in 2004.

According to an Annual Bank Supervision report (2005), the Kenyan economy recovered to expand with a GDP growth of 5.2% in 2005 compared to overall 4.3% in 2004 During the year, the economy enjoyed a favorable macroeconomic environment, consistent with low and stable interest rates, strengthening shilling exchange rate and falling inflation.

The banking sector has embraced changes occurring in Information Technology with most banks having already achieved branchless banking as a result of the adoption of communications options. According to The Central Bank Annual Supervision report (2003), the increased utilization of modern information and communications technology has for example led to several banks acquiring ATMs as part of their branchless development strategy measures. The Central Bank notes that advancement in Information and

Communications Technology (ICT) in the banking industry has enhanced efficiency and improved customer service.

This is reflected particularly in the increased use of ATM cards resulting from broadening of ATM network, including additional ATM machines and a wider network of merchants that accept payment through credit/debit cards.

Several banks have also entered into the Internet Banking and established websites. Internet banking however is still at its infancy and more in terms of utilization is expected in this sector (Manjau 2005).

1.3 Research Problem

According to a journal article (Marketing Intelligence 2005) more than a third of account holders can access phone banking, Internet banking or both. The article explains that people are however not comfortable with these new services- only a quarter and 11% of those with the phone and the Internet banking facilities respectively have used it.

The Internet-user base in Kenya has peaked at over 500,000 by June 2005, which is considered to be one of the highest in Africa. The telecommunications sector in Kenya is also considered to be one of the most vibrant with the government actively taking steps to liberalization in order to spur competition in the sector (CCK, 2005). In addition, the growth of Internet users in Kenya is estimated at over 150% annually (IWS, 2005). With over 46 providers of banking services, it may seem that competition within the banking industry may be intense. Internet banking is becoming an increasingly visible technology, not only in other parts of the world, but also in Kenya.

Mukulu (2005) in the review of banking sector trends indicates that banks are investing heavily in technological innovations, in particular ATM and e-banking. Many have taken up international franchises for money transfers like Western Union and Money gram.

Retail banking is currently undergoing a great deal of change as new technologies and new ways of delivering banking services are being introduced. Some of these changes have provided more choices and variety for consumers. However, part of the changing environment has been the closure of bank branches as part of the banks' rationalization

strategies. Many rural Kenyans have experienced a decline or total loss of banking services within a reasonable distance from where they live.

The MI Banking Survey 2003 found out that fifteen percent (15%) of bank branches closed between 1989 and 2000. More branch closures are probably in the offing as banks proceed with their rationalization strategies. Unfortunately, there is no plan in place to ensure that rural Kenyans maintain access to essential financial services.

It is the researcher's feeling that if the government invests adequately in ICT, the rural population could still access banking services through Internet.

The dynamism of the banking environment in the current times is posing a lot of challenges to all banks and non-bank financial institutions. Following the background of this study, it is only those banks that are able to adapt to the changing environment and adopt new ideas and ways of doing business that can be guaranteed of survival. Some of the forces of change that have greatly influenced the banking industry include intense competition, globalization and technological advancement. Internet banking adoption may just offer the much-needed boost in the banking business.

Despite the world- wide attention to Internet banking there seems to be inadequate attention by developing countries on this new technology in terms of adoption determinants, views of stakeholders on the technology and the impact of this technology use.

Given the academic research it has been afforded, the following research questions guided this study:

- What is the extent of Internet banking technology adoption?
- What are the factors involved in the decision to adopt Internet Banking technology?
- What are the barriers to Internet Banking Technology adoption in Kenya?

Thus, this research provided insight into what drives Internet banking uptake in the Kenyan banking sector, especially given the fact that the technology is still not widespread in the local context.

1.4 Research Objectives

A broad objective of the study was to investigate Internet banking technology adoption. It focused on Internet banking technology adoption, not only as a technology to increase efficiency and effectiveness of Banking products delivery, but also as a technology that is enabling new possibilities, unfeasible before, especially through the interactive nature of the Internet.

Specific objectives of this research were therefore summarized as follows:

1. To determine the extent of adoption of Internet banking technology.
2. To establish the critical factors that influence adoption of Internet banking
3. To determine the barriers to Internet Banking Adoption

1.5 Importance of The Research

1. It would be significant to the ***banking industry***, especially to decision makers involved in implementation of electronic services delivery strategies for their banks.

Necessary improvements identified could be undertaken to enhance Internet banking usage in Kenya. Further, commercial banks that are still hesitant to go "Internet" can use the findings of this research to clarify issues of prevalence and to get a greater insight into the adoption of Internet banking in Kenya.

2. Implementation of the much talk about e-governance in Kenya would definitely get a lift from the findings of this study. The ***government*** can also use this research for comparative purposes. Internet banking adoption and network in Kenya could be compared to other economies to gauge the level of technological advancement.

The study would also be of importance to government policy makers, since an understanding of the environment of Internet banking technology adoption will enable them come up with appropriate policies that encourage market growth.

3. The Findings of this study would provide information and advise on the possible opportunities that ***research institutions*** can use to expand the reach, availability, and impact of information and knowledge of Internet banking for the development of the upcoming commercial banks.

The study would be of value to researchers as a basis for future empirical and conceptual research, which would be helpful in refining and validating findings especially when a significant number of experiences is collected and studied.

CHAPTER TWO: LITERATURE REVIEW

2.1 Chapter Overview

This chapter presents and discusses the literature relating to the adoption of Internet banking. The chapter begins by introducing the concept of Internet banking, reviewing the literature relating to the various approaches to understanding Internet banking technology. This shall then be followed by research into technology adoption by focusing on Unified Theory of Acceptance and Use of Technology i.e. Venkatesh UTAUT model (Venkatesh V. et al.2003) for understanding the concept of technology adoption. The literature review then focused on specific aspects of adoption relevant to this research in terms of how Internet banking technology has been conceptualized, the factors at play as well as research into the barriers to its adoption.

2.1.1 Trends in Retail Banking

In recent years there has been considerable interest in the development of electronic money schemes. Electronic money has the potential to take over from cash as the primary means of making small-value payments and could make such transactions easier and cheaper for both consumers and merchants. However, it also raises policy issues for central banks because of the possible implications for central banks' revenues, their implementation of monetary policy and their payment system oversight role. Having considered these issues, the G10 central bank governors announced in 1996 that they intended to monitor closely the evolution of electronic money schemes and, while respecting competition and innovation, to take any appropriate action if necessary (CBK, 2005).

Electronic money products are defined here as stored value or prepaid products in which a record of the funds or value available to the consumer is stored on a device in the consumer's possession. This definition includes both prepaid cards (sometimes called electronic purses) and prepaid software products that use computer networks such as the Internet (sometimes called digital cash). These products differ from so-called access products that allow consumers to use electronic means of communication to access otherwise conventional payment services (for example, use of the internet to make a credit card payment or for general "online banking").

The trend has been from 1) automated teller machines (ATM); 2) telebanking which according to Leow (1999), has numerous benefits for both customers and banks. As far as the customers are concerned, it provides increased convenience, expanded access and significant time saving. On the other hand, from the banks' perspective, the costs of delivering telephone-based services are substantially lower than those of branch based services; 3) PC banking where customers can use their personal computers at home or at their office to access their accounts for transactions by subscribing to and dialing into the banks' Intranet proprietary software system by use of password; 4) Automated self-banking centers- another multimedia banking delivery channel which incorporates an information counter, ATM's, telebanking and banking booths and finally 5)Internet banking.

Developments in information collection, storage, processing, transmission and distribution technologies have influenced for a long time, and continue to influence all aspects of banking activity, and have become an integral part of product/service offering, delivery channels and internal management. Internet banking is one of the many remote distribution channels banks have been deploying for more than 20 years, to complement branch and call centers to interact with their customers. Phone banking, electronic payment debit, credit and electronic purse cards to pay at retail outlets or POS, cash withdrawal machines and bank kiosk machines making use of ATM, PC banking, Internet banking, mobile banking,

PDA banking and interactive Digital TV banking are examples of the multitude of channels and technologies used. Of the different delivery channel applications, Internet banking, a content-based secure application based on the open information Internet infrastructure, has the most similarities with other IS services.

Traditionally, the banks made use of bank-owned infrastructures (although these were built on top of wired public telecommunication lines) to deliver ATM, POS and phone banking services. Then PC banking required customers to have a PC, PC skills and a dial-up modem to access a bank server through the phone line. Internet banking, however, requires customers to make use of non-proprietary Internet infrastructure and access, with lower penetration levels than phone lines and lower levels of security. Internet banking also requires a minimum level of user Internet skills. This move to an open environment such as the Internet represents a qualitative step with significant implications for all the actors, including banks, industry and users, and raises new policy issues.

In particular, banks offer Internet banking mainly to increase cost-effectiveness, increase customer reach, and retain market share. Estimates for banking transaction costs across delivery channels, e.g. physical branch, phone, ATM, PC-based dial-up.

2.1.2 Definitional Approach To Understanding Internet banking

In recent years, the banking sector has been an interesting case for service innovation as it moves toward using the Web for commercial purposes through Internet banking. Internet banking allows customers to have direct access to their financial information and to undertake financial transactions with no need to go to the bank. ACNielsen (2002) found that Internet banking is expanding in many Asian countries, including South Korea, Hong Kong, Singapore, China, and Taiwan. Kenyan banks have followed worldwide trends in implementing self-service technology via the Internet, although as a developing country, Kenya is slightly behind the more developed countries.

From the banks' viewpoint, use of Internet banking is expected to lead to cost reductions and improved competitiveness. This service delivery channel is seen as powerful because it can retain current Web-based customers who continue using banking services from any location. Moreover, Internet banking provides opportunities for the bank to develop its market by attracting a new customer base from existing Internet users (Suganthi *et al.*, 2001; Dannenberg and Kellner, 1998; Zineldin, 1995).

Internet Banking means that banking services such as services introduction, loan application, account balance inquiry, fund transfer and so forth are provided by a bank through the Internet (Cheung, 2001). According to Karlin (2000), the idea of Internet Banking is as follows:

"1) You do not have to purchase any software, store any data on your computer, back up any information, since all transactions occur on the bank server over the infrastructure of the Internet.

2) You will be able to conduct your banking services anywhere you like but you need to have a computer and a modem, no matter where you are (e.g. at home, at office, or in a place outside the country).

3) You can use the banking services 24 hours a day, 7 days a week, 365 days a year. You no longer have to reconcile a bank statement or manually track your ATM and paper cheques."

Internet Banking is different from PC Home Banking. The obvious difference is that Internet Banking is browser-based, whereas PC Home Banking requires customers to install a software package assigned by the bank on their PC.

Moreover, PC Home Banking allows customers to do their banking services only on PCs that have been installed the assigned software package, such as include Intuit, Inc.'s Quicken and Microsoft Corp.'s Money.

Banking on the Internet is not the same as banking via online services. (Cronin M.J.,2003) Internet banking is different from online banking in the following ways:

1. Consumers do not have to purchase any additional software (the web browser is sufficient), store any data on their computers, back up any information or wait months for new versions and upgrades, since all transactions occur over a secure server over the Internet.
2. Consumers can conduct banking anywhere as long as they have computers (not necessarily their own) and modems- whether it's at home, office or any place abroad. Banking via online services can be restrictive because the customer has to install a software package that resides in his or her computer. This limits banking transactions to only that computer and requires making a call to access a separate network and working with a separate software company and with a bank that may limit their hours of operations.
3. Consumers can download their account information into their favorite programs which means that they do not have to follow the dictates of a service provider
4. Internet banking allows banks to break from the hegemony of software developers. If bank customers (end-users) install personal financial management software on their PCs, they become direct consumers of software publishers. By controlling the software code behind these programs, publishers control the kind of transactions end users make and with whom these transactions occur.

2.1.3 Internet Banking as functionality

The functions provided by banks on the Internet have evolved from simple consultation of account to a full range of banking services. In the most developed applications, one can

access on the Internet nearly all services accessible at the branch or by phone. In addition to offering all ''branch-based'' services, technology allows banks to offer new added value services only available online such as personalized financial information menus, e-mail alerts, electronic commerce, real-time brokerage and third party services (management of electricity bills, tax payment or portals) which increase the benefits and interest of the service.

Table2. Classification of Internet banking services

Type of Product	Examples
Convenience	Mobile banking, *Mobile payment, SMS alerts, Secure e-mail*
3rd party	*Commerce payment (shopping), Tax payment on-line, Utilities bill & account management, e-Billing*
Other financial	Life insurance contract, Traffic insurance contract
Investment	Deposit account opening & management, Domestic / foreign equity investment, Mutual funds / bonds investment, Insurance investment
Credit	Loan application, Credit card application
Basic banking	Account opening / closing / management, Domestic / foreign money transfer, Standing orders, Direct debit, Debit card application

Source: C. Centeno / Telematics and Informatics 21 (2004) 293–315 297

Considering the low level of Internet adoption and computer literacy in Kenya, this study chose to concentrate on basic Internet banking services. One major disincentive to operating an account from abroad is limited access (Manjau, 2005). Long touted as a security measure by the banking industry, this standpoint currently suffers credibility and is viewed as a barrier to innovation and forward thinking. The outdated, inefficient and unreliable method of choice –postal mail service –between Kenyan banks and their international customers continues to deter Kenyans abroad from operating accounts locally (Kenya's club annual Bank survey 2005). Consequently, lack of innovation in introducing new and efficient ways of accessing banks accounts from abroad has stiffed growth of financial services and denied the Kenyan economy much needed impetus of considerable magnitude.

Nonetheless, advancements in information technology have greatly improved access to banks accounts in other parts of the world, with provision of relatively convenient and secure service to one 's finances. Of course security remains a fundamental aspect to the provision

of this service. This consideration has nonetheless had the effect of improving measures in other banking industries. Therefore the Kenyan banking fraternity, perhaps through Kenya Bankers ' Institute, ought to ensure in place are industry security standards that assist individual banks providing this service.

Technology has now availed new modes of access to your finances. The three main modes are Internet, telephone and text-phone banking. Of these three, Internet banking presents the greatest number of features, ease of use, remains highly reliable and is the height of convenience. If provided across the board by Kenyan banks, Internet banking would allow Kenyans abroad to: Check balances, view transactions, remit or make payments, transfer money between accounts abroad and Kenya, set up standing orders and direct debits.

Online account holders would finally have the luxury of accessing and managing their finances from wherever they are. However, online access as aforementioned calls for total security and complete reliability. Therefore the need for an array of firewalls, secure gateways and monitoring devices to keep hackers out cannot be gainsaid. With these features in place, Kenyans abroad would be able to comfortably access their financial information and carry out key management activities. The Kenyan banking industry ought to see the sense in instituting measures that allow this service to benefit all. Kenya Club has recognized and rewarded in this survey banks at the vanguard of providing such services to Kenyans abroad.

The survey, which was commissioned by London-based Kenya Club, indicates that Kenyans in Diaspora remit a total of $1 billion (Sh75billion) every year. (Gitau, 2005) Local financial institutions are missing out on a billion dollar business due to their failure to cater for the needs of the Kenyan community abroad. A large fraction of the remittances are done by post or money transfer services.

The objective of the survey was to establish the quality of banking services that are available to Kenyans in Diaspora. Kenya Club is an organization of Kenyan professionals and investors who are resident in Britain. The survey found out that the majority of local banks do not have the necessary infrastructure to manage foreign bank accounts.

Besides, most of the banks do not offer Internet banking services and expect customers to operate bank accounts by post.

The survey found that the majority of Kenyans in Diaspora prefer to operate local bank accounts in order to manage their domestic financial obligations rather than send money by post. It was further found that the banks have no standard rates or charges and that some banks are charging five to ten times as much for same services.

The survey, however, noted that banks such as Commercial Bank of Africa and National Industrial Credit (NIC) Bank have launched products that target Kenyans living abroad. The banks are, for example, exploring ways of tapping into the long-term goals of Kenyans in Diaspora by offering them mortgage finance services.

2.2. Factors affecting Technology Adoption

2.2.1 Performance Expectancy

Performance expectancy is defined as the degree to which an individual believes that using the system will help him or her to attain gains in job performance. The five constructs from the different models that pertain to performance expectancy are perceived usefulness, extrinsic motivation, job-fit, relative advantage, and outcome expectations. Even as these constructs evolved in this literature, some authors have acknowledged their similarities: usefulness and extrinsic motivation (Davis et al. 1989, 1992), usefulness and job-fit (Thompson et al., 1991), usefulness and relative advantage (Davis et al., 1989; Moore and Benbasat, 1991; Plouffe et al., 2001), usefulness and outcome expectations (Compeau and Higgins, 1995b; Davis et al., 1989), and job-fit and outcome expectations (Compeau and Higgins, 1995b).

The performance expectancy construct within each individual model is the strongest predictor of intention and remains significant at all points of measurement in both voluntary and mandatory settings consistent with previous model tests (Agarwal and Prasad, 1998; Compeau and Higgins, 1995b; Davis et al., 1992; Taylor and Todd, 1995a; Thompson et al., 1991; Venkatesh and Davis, 2000).

2.2.2 Effort Expectancy

Effort expectancy is defined as the degree of ease associated with the use of the system. Three constructs from the existing models capture the concept of effort expectancy: perceived ease of use, complexity, and ease of use. There is substantial similarity among the construct

definitions and measurement scales. The similarities among these constructs have been noted in prior research (Davis et al., 1989; Moore and Benbasat, 1991; Plouffe et al., 2001; Thompson et al., 1991).

The effort expectancy construct within each model is significant in both voluntary and mandatory usage contexts; however, each one is significant only during the first time period, becoming non- significant over periods of extended and sustained usage consistent with previous research (e.g., Agarwal and Prasad, 1997, 1998; Davis et al., 1989; Thompson et al., 1991, 1994). Effort-oriented constructs are expected to be more salient in the early stages of a new behavior, when process issues represent hurdles to be overcome, and later become overshadowed by instrumentality concerns (Davis et al., 1989; Szajna, 1996; Venkatesh, 1999).

Venkatesh and Morris (2000), drawing upon other research (e.g., Bem and Allen, 1974; Bozionelos, 1996), suggest that effort expectancy is more salient for women than for men. As noted earlier, the gender differences predicted here could be driven by cognitions related to gender roles (e.g., Lynott and McCandless, 2000; Motowidlo, 1982; Wong et al., 1985). Increased age has been shown to be associated with difficulty in processing complex stimuli and allocating attention to information on the job (Plude and Hoyer, 1985), both of which may be necessary when using software systems. Prior research supports the notion that constructs related to effort expectancy will be stronger determinants of individuals' intention for women (Venkatesh and Morris, 2000; Venkatesh et al., 2000) and for older workers (Morris and Venkatesh, 2000).

2.2.3 Social Influence

Social influence is defined as the degree to which an individual perceives that important others believe he or she should use the new system. Social influence as a direct determinant of behavioral intention is represented as subjective norm in TRA, TAM2, TPB/DTPB and C-TAM-TPB, social factors in MPCU, and image in IDT. Thompson et al. (1991) used the term social norms in defining their construct, and acknowledge its similarity to subjective norm within TRA. While they have different labels, each of these constructs contains the explicit or implicit notion that the individual's behavior is influenced by the way in which they believe others will view them as a result of having used the technology. None of the social influence constructs are significant in voluntary contexts; however, each becomes significant when use

is mandated. Venkatesh and Davis (2000) suggested that such effects could be attributed to compliance in mandatory contexts that causes social influences to have a direct effect on intention; in contrast, social influence in voluntary contexts operates by influencing perceptions about the technology- the mechanisms at play here are internalization and identification. In mandatory settings, social influence appears to be important only in the early stages of individual experience with the technology, with its role eroding over time and eventually becoming nonsignificant with sustained usage, a pattern consistent with the observations of Venkatesh and Davis (2000).

The role of social influence in technology acceptance decisions is complex and subject to a wide range of contingent influences. Social influence has an impact on individual behavior through three mechanisms: compliance, internalization, and identification (see Venkatesh and Davis, 2000; Warshaw, 1980). While the latter two relate to altering an individual's belief structure and/or causing an individual to respond to potential social status gains, the compliance mechanism causes an individual to simply alter his or her intention in response to the social pressure--i.e. the individual intends to comply with the social influence. Prior research suggests that individuals are more likely to comply with others' expectations when those referent others have the ability to reward the desired behavior or punish non-behavior (e.g., French and Raven, 1959; Warshaw, 1980). This view of compliance is consistent with results in the technology acceptance literature indicating that reliance on others' opinions is significant only in mandatory settings (Hartwick and Barki, 1994), particularly in the early stages of experience, when an individual's opinions are relatively ill-informed (Agarwal and Prasad, 1997; Hartwick and Barki, 1994; Karahanna et al., 1999; Taylor and Todd, 1995a; Thompson et al., 1994; Venkatesh and Davis, 2000). This normative pressure will attenuate over time as increasing experience provides a more instrumental (rather than social) basis for individual intention to use the system.

Theory suggests that women tend to be more sensitive to others' opinions and therefore find social influence to be more salient when forming an intention to use new technology (Miller, 1976; Venkatesh et al., 2000), with the effect declining with experience (Venkatesh and Morris, 2000). As in the case of performance and effort expectancies, gender effects may be driven by psychological phenomena embodied within socially constructed gender roles (e.g., Lubinski et al., 1983). Rhodes' (1983) meta-analytic review of age effects concluded that affiliation needs increase with age, suggesting that older workers are more likely to place

increased salience on social influences, with the effect declining with experience (Morris and Venkatesh, 2000). Therefore, we expect a complex interaction with these moderating variables simultaneously influencing the social influence-intention relationship.

The influence of social influence on behavioral intention will be moderated by gender, age, voluntariness, and experience, such that the effect will be stronger for women, particularly older women, particularly in mandatory settings in the early stages of experience.

2.2.4 Facilitating Conditions

I) Top management Commitment

The IT literature has clearly demonstrated that for IT projects to succeed top management support is critical (Horwitt, E.,1998). This also applies to Internet banking technology implementations. Implementing an Internet banking system is not a matter of changing software systems; rather it is a matter of repositioning the company and transforming the business practices. Due to enormous impact on the competitive advantage of the company, top management must consider the strategic implications of implementing Internet banking system. Management must ask several questions before embarking on the project. Does the Internet banking system strengthen the company's competitive position? How might it erode the company's competitive position? How does Internet banking system affect the organizational structure and the culture? What is the scope of the system implementation- only in head office or the entire branch network? Are there any alternatives that meet the company's needs better than an Internet banking system? If it is a multinational corporation, the management should be concerned about whether it would be better to roll the system out globally or restrict it to certain regional units? Management must be involved in every step of the Internet banking system implementation. Some companies make the grave mistake of handing over the responsibility of Internet banking implementation to the technology department. This would risk the entire company's survival because of the system's profound business implications. This commitment when percolated down through the organizational levels results in an overall organizational commitment. An overall organizational commitment that is very visible, well defined, and felt is a sure way to ensure a successful implementation.

ii) Reengineering

Implementing an Internet banking system involves reengineering the existing business processes to the best business process standard. Internet banking systems are built on best practices that are followed in the industry. One major benefit of Internet banking comes from reengineering the company's existing way of doing business. The cost and benefits of aligning with an Internet banking model could be very high. This is especially true if the company plans to roll out the system of branch network. It is not very easy to get everyone to agree to the same process. Sometimes business processes are so unique that they need to be preserved, and appropriate steps need to be taken to customize those business processes. Research shows that even a best application package can meet only 70 percent of the organizational needs. What happens to the rest? An organization has to change its processes to conform to the Internet banking package, customize the software to suit its needs, or not be concerned about meeting the balance 30 percent. If the package cannot adapt to the organization, then organization has to adapt to the package and change its procedures. When an organization customizes the software to suit its needs, the total cost of implementation rises. The more the customization, the greater the implementation costs. Companies should keep their systems "as is" as much as possible to reduce the costs of customization and future maintenance and upgrade expenses.

iii) Integration

There is a strong trend toward a single website solution for an entire company. Most companies feel that having a single vendor means a "common view" necessary to serve their customers efficiently and the ease of maintaining the system in future. Unfortunately, no single application can do everything a company needs. Companies may have to use other specialized software products that best meet their unique needs.

Banks implementing Internet banking face different kinds of problems with integration of information across the financial institutions. The major challenge is the impact automation has on the banking process. Automation changes the way banks deal with customers from enquiries, opening account to charges. Sharing and control of information seem to be major concerns. Banks are concerned about how much information they need to share with their customers and suppliers and how to control the information. Most banks do not want their competitors to see their prices or customer base. The general fear is that sharing too much information hurts their business. Regarding controlling information, companies are aware that

it is difficult to control what they own let alone control what they do not own. Banks need to trust their partners and must coordinate with each other in the network

iv) Selecting the Right Employees

Companies intending to implement an Internet banking system must be willing to dedicate some of their best employees to the project for a successful implementation. Often banks do not realize the impact of choosing the internal employees with the right skill set. The importance of this aspect cannot be overemphasized. Internal resources of a company should not only be experts in the company's processes but also be aware of the best business practices in the industry. Internal resources on the project should exhibit the ability to understand the overall needs of the company and should play an important role in guiding the project efforts in the right direction. Most of the consulting organizations do provide comprehensive guidelines for selecting internal resources for the project. Companies should take this exercise seriously and make the right choices. Lack of proper understanding of the project needs and the inability to provide leadership and guidance to the project by the company's internal resources is a major reason for the failure of most IS projects.

2.3 Theoretical Framework for Internet Banking Adoption

From a theoretical perspective, UTAUT model provides a refined view of how the determinants of intention and behavior evolve over time. It is important to emphasize that most of the key relationships in the model are moderated. For example, age receives very little attention in the technology acceptance research literature, yet UTAUT model indicate that it moderates all of the key relationships in the model. Gender, which has received some recent attention, is also a key moderating influence; however, consistent with findings in the sociology and social psychology literature (e.g., Levy, 1988), it appears to work in concert with age, a heretofore-unexamined interaction. For example, prior research has suggested that effort expectancy is more salient for women (e.g., Venkatesh and Morris, 2000). While this may be true, the model suggests this is particularly true for the older generation of workers and those with relatively little experience with a system. While existing studies have contributed to the understanding of gender and age influences independently, the present research illuminates the interplay of these two key demographic variables and adds richness to the current understanding of the phenomenon. One may interpret that the suggests that as the younger cohort of employees in the workforce mature, gender differences in how each

perceives information technology may disappear. This is a hopeful sign and suggests that oft-mentioned gender differences in the use of information technology may be transitory, at least as they relate to a younger generation of workers raised and educated in the Digital Age.

2.4 Description of UTAUT Model

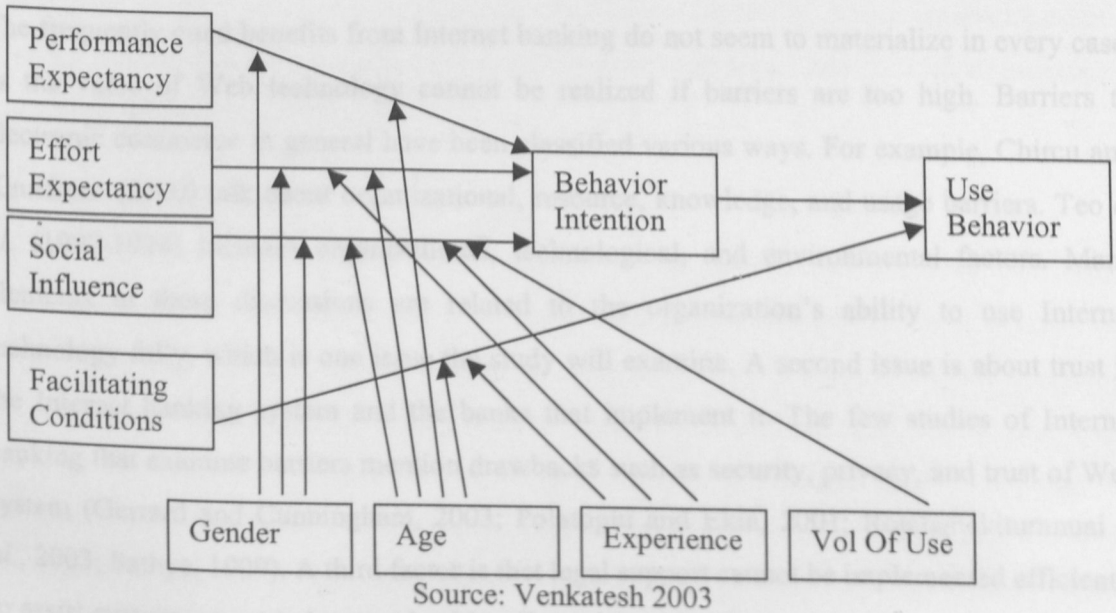
The present research set out to test UTAUT model in a less developed (developing) Kenyan economy. It integrates the fragmented theory and research on individual acceptance of information technology into a unified theoretical model that captures the essential elements of eight previously established models. First, the model identified and discussed the eight specific models of the determinants of intention and usage of information technology. Second, these models were empirically compared using within-subjects, longitudinal data from four organizations. Third, conceptual and empirical similarities across the eight models were used to formulate the Unified Theory of Acceptance and Use of Technology (UTAUT). Fourth, the UTAUT was empirically tested using the original data from the four organizations and then cross-validated using new data from an additional two organizations. These tests provided strong empirical support for UTAUT, which posits three direct determinants of intention to use (performance expectancy, effort expectancy, and social influence) and two direct determinants of usage behavior (intention and facilitating conditions). Significant moderating influences of experience, voluntariness, gender, and age were confirmed as integral features of UTAUT. UTAUT was able to account for 70 percent of the variance (adjusted R^2) in usage intention--a substantial improvement over any of the original eight models and their extensions. Further, UTAUT was successful in integrating key elements from among the initial set of 32 main effects and four moderators as determinants of intention and behavior collectively posited by eight alternate models into a model that incorporated four main effects and four moderators.

2.5 Application of UTAUT Model

UTAUT is a definitive model that synthesizes what is known and provides a foundation to guide future research in this area of technology acceptance and usage. By encompassing the combined explanatory power of the individual models and key moderating influences, UTAUT advances cumulative theory while retaining a parsimonious structure. It should be noted that performance expectancy appears to be a determinant of intention in most situations: the strength of the relationship varies with gender and age such that it is more

significant for men and younger workers. The effect of effort expectancy on intention is also moderated by gender and age such that it is more significant for women and older workers, and those effects decrease with experience. The effect of social influence on intention is contingent on all four moderators included here such that was found to be non significant when the data is analyzed without the inclusion of moderators. Finally, the effect of facilitating conditions on usage is only significant when examined in conjunction with the moderating effects of age and experience--i.e. they only matter for older workers in later stages of experience.

Figure 1 UTAUT Model



Source: Venkatesh 2003

2.6 Limitation of UTAUT Model

Prior to applying UTAUT model to this research, it is necessary to recognize some of its limitations. One limitation concerns the scales used to measure the core constructs. For practical analytical reasons, the researcher must operationalize each of the core constructs in UTAUT by using the highest-loading items from each of the respective scales. This approach is consistent with recommendations in the psychometric literature (e.g., Nunnally and Bernstein, 1994). Such pruning of the instrument is the only way to have the degrees of freedom necessary to model the various interaction terms at the item level as recommended by Chin et al. (1996). However, one danger of this approach is that facets of each construct

can be eliminated, thus threatening content validity. Specifically, it has been found that choosing the highest-loading items result in items from some of the models not being represented in some of the core constructs. Therefore, the measures for UTAUT should be viewed as preliminary and future research should be targeted at more fully developing and validating appropriate scales for each of the constructs with an emphasis on content validity, and then revalidating the model specified herein (or extending it accordingly) with the new measures. This research will employ standard measures of intention, but future research should examine alternative measures of intention and behavior in revalidating or extending the research presented here to other contexts.

2.7 Barriers to Internet Banking adoption

The frequently cited benefits from Internet banking do not seem to materialize in every case, as the value of Web technology cannot be realized if barriers are too high. Barriers to electronic commerce in general have been classified various ways. For example, Chircu and Kauffman (2000) talk about organizational, resource, knowledge, and usage barriers. Teo *et al.* (1997-1998) includes organizational, technological, and environmental factors. Many elements in these discussions are related to the organization's ability to use Internet technology fully, which is one issue the study will examine. A second issue is about trust in the Internet banking system and the banks that implement it. The few studies of Internet banking that examine barriers mention drawbacks such as security, privacy, and trust of Web system (Gerrard and Cunningham, 2003; Polatoglu and Ekin, 2001; Rotchanakitumnuai *et al.*, 2003; Sathye, 1999). A third factor is that legal support cannot be implemented efficiently to assist customer trust in Internet banking (Larpsiri *et al.*, 2002).

2.7.1 Organizational barriers

Organizational ability to utilize Web technology capabilities is one barrier to electronic commerce (e.g. Chircu and Kauffman, 2000; Farhoomand *et al.*, 2000), and may include management attitudes, resource constraints, and knowledge issues. A few studies have cited negative attitudes among some managers as a major hindrance (Farhoomand *et al.*, 2000; Teo *et al.*, 1997-1998). Negative attitudes cause resistance to change and lack of management commitment, reducing the company's resource allocation and motivation to use the technology (Basu *et al.*, 2002). Implementing Web technology as a business channel requires some additional investment and resources, such as hardware and software. Shortages of

information technology infrastructure remain a critical barrier in some cases to the continuing growth of online commerce (Chircu and Kauffman, 2000; Gilbert *et al.*, 1999).

In addition, simple lack of experience can inhibit adoption; higher usage intensity of information technology in firms helps them adapt more than is possible in less experienced firms (Noh and Fitzsimmons, 1999; Speece, 2000). Effective implementation of Web technology requires extensive adaptation of customer current business processes to enable them utilize the capability of new technology. New skills and new processes in an organization require employees to learn new things. New technology sometimes requires complex understanding and mental capability, and thus the technology may be difficult to manipulate due to limited capability of firm employees (Chircu and Kauffman, 2000). Knowledge barriers may come from a lack of diffusion capability, which is developed over time by gaining related knowledge and expertise in several areas, and the lack of investment in training for internal employees

Finally, technology readiness of banks plays a role in their attitudes toward technology. Parasuraman (2000) conceptualized technology readiness as a combination of positive and negative feelings/attitudes toward technology, roughly, people's confidence that technology helps improve their lives, or simply makes things more difficult and less secure. Other research has similarly indicated that customers' attitudes and beliefs about technology are correlated with intentions to use it (e.g. Dabholkar, 1996). In Thailand, research among customers of stockbrokerage firms showed that technology readiness influences customer satisfaction with the Internet as a transaction channel (Srijumpa, 2002). Thus, employees of customer firms have different levels of tolerance for innovation and organization changes, their personal characteristics may predispose them to be reluctant adopters.

2.7.2 Trust of the system

Opportunities from implementing Web technology could be restricted if there is a lack of customer trust in the Web system. Trust has been defined as:

... a willingness to rely on an exchange partner in whom one has confidence (Moorman *et al.*, 1993, p. 82).

Moorman viewed trust as an expectation of ability to perform, reliability, and intentionality of a partner, and proposed that trust has to be viewed as a behavioral intention or behavior that reflects dependence on the other partner. In addition, Morgan and Hunt (1994, p. 23) defined trust as:

... the perception of confidence in the exchange partner's reliability and integrity.

Both definitions underline the importance of confidence and reliability in the conception of trust.

Customers frequently do not trust Internet technology for three reasons: security of the system, distrust of service providers, and worries about the reliability of Internet services (Lee and Turban, 2001; Min and Galle, 1999; Paul, 1996; Ratnasingham, 1998). Strong concern about security is one common factor related to unwillingness to use Internet channels for commerce (Black *et al.*, 2001; Greaves *et al.*, 1999; Jones *et al.*, 2000; Madu and Madu, 2002). Security breaches can lead to numerous problems such as destruction of operating systems, or disruption of information access (Min and Galle, 1999). Most customers are not satisfied with the infrastructure of Web security systems (Black *et al.*, 2001; Gattiker *et al.*, 2000). In Internet banking, security is one of the most important future challenges, because customers fear higher risk in using the Web for financial transactions (Aladwani, 2001; Black *et al.*, 2001; Gerrard and Cunningham, 2003; Sathye, 1999).

Reputation is important, as distrust of the service provider is a related factor (Jarvenpaa *et al.*, 1999). Reputation can be defined as the extent to which customers believe a supplier or service provider is honest and concerned about its customers (Doney and Cannon, 1997). Companies must have experience in business functions, policy, and support personnel to build reputations as competent technology-based service providers to their customers. For banks, reputation is one of the major factors that affect customer adoption of new technology-based service delivery (Aladwani, 2001; Mols, 1998). Reputation depends on policy promises to customers, including privacy policy, as most customers do not like their personal information revealed in an inappropriate manner or misused by others over the Internet (Turban *et al.*, 2002). Customers who adopt electronic financial services are more likely to perceive problems related to loss of privacy, as the Internet seemingly allows other people to access their information easily (Gattiker *et al.*, 2000; Jones *et al.*, 2000). Customers do not

always believe privacy policies will keep customer information confident (Gerrard and Cunningham, 2003).

Perceived risk can also cause customers to reject new technology-based service delivery. Perceived risk is related to reliability and system failure (Mols, 1998; Walker *et al.*, 2002). Customers are also worried that technology-based service delivery systems will not work as expected, and lack confidence that problems can be solved quickly (Walker *et al.*, 2002). Westland (2002) found that transaction risk occurs when online markets fail to assure that service will be delivered with adequate quality. Frequently, slow response time after the Internet interaction leads to a delay of service delivery and causes customers to be unsure that the transaction was completed (Jun and Cai, 2001).

2.7.3 Legal Support Issues

Many customers are concerned about legal support for commercial usage of the Internet. Zugelder *et al.* (2000) mentioned that customer protection is the major legal issue associated with Internet marketing. Among other things, customer protection issues can cover unfair and deceptive trade practices by suppliers, unauthorized access and usage by others, such as hackers, or system failures. Customer protection is important for building online customer confidence because there is no face-to-face contact, and there is a great possibility (at least in customer perceptions) for having problems or making mistakes via the Web.

With a lack of specific laws governing Internet banking, bank customers hesitate to use it (Larpsiri *et al.*, 2002). For instance, in traditional payment, corporate customers prefer to issue a check or a transfer of money, which requires authorized persons to approve before the amount is paid. Payment by Internet banking is made just by one click, which might create financial loss. Financial loss could derive from malfunctions of the system, operational errors, or unauthorized use. Problems may also rise from intermediation by non-bank institutes, such as hardware vendors or Internet service provider.

In addition, Thomas *et al.* (1998) mentioned liability as a key legal issue. Responsibility must be determined when financial losses occur in Internet transactions, and losses must be borne by the bank, the customer, or even other related parties in the Internet banking system, such as the Internet service provider. In practice, banks normally issue Internet banking contracts or agreements with limitations of their liability, noting that the bank is not responsible for any

loss caused by the Internet banking service or customer use of the service (Attaran, 2000). Not surprisingly, customers might not be very enthusiastic about this sort of clause. Giannakoudi (1999) suggested that customer protection laws have to determine a ceiling on customer liability or render terms widely regarded as unfair to be unenforceable.

Another problem of legal support for using the Internet in commercial transactions is the jurisdiction of the courts and dispute resolution procedures. Disputes can arise from many issues. For instance, the Web site is not a branch of the bank, which makes it a complicated task for courts to define the location of the bank and decide whether they have jurisdiction. In addition, online transaction records are not accepted by some customers owing to the difficulties in providing authentication of electronic transmissions. Many businesses are still wary of making extensive transactions over the Web because of the lack of supporting law about electronic documents as legal evidence (Farhoomand *et al.*, 2000). Frequently it is unclear whether electronic documents and records are acceptable as sufficient evidence of transactions (Giannakoudi, 1999; Larpsiri *et al.*, 2002).

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Research Design

Since this was an initial and exploratory study of the adoption of Internet banking in Kenya, the researcher considered the survey method to be a suitable research method for this investigation. Previous research has revealed that the survey method appropriate when investigating technology and e-commerce adoption (Venkatesh, et al. 2000; Venkatesh and Brown, 2001) which is the circumstance surrounding this study

Thus a census survey of the Banking Industry was conducted. The study therefore adopted a cross-sectional design with the respondents being the IT senior/middle management staff in charge of Internet banking in the various banks.

3.2 The population

The study focused on all the 40 out of initial 43 commercial banks (Market Intelligence, 2006) shown in appendices, 3 of them having declined to participate in the study. The banking sector was selected largely because it has always taken a lead role in implementing ICT solutions and is reported to spend huge amounts on these ICT projects (Nyambati, 2001; Ngemu, 2005). OECD suggested similar findings in research (Christiansen, 2001), which indicates a strong correlation (with logarithmic shape) between Internet penetration and Internet banking, and that countries with an Internet penetration of between 30% and 50% are likely to find themselves in the take-off phase for Internet banking services.

The unit of analysis was the banks, presented through the relevant management staff. The study aimed at doing a census of the entire banking sector. Although census has its limitations including inaccuracies in the analysis, it provided a complete snapshot in time hence the reason it has been selected for this study.

3.3 Data Description and Collection

Primary data was collected for the purpose of this study. This was done using a self-administered questionnaire available in the appendices. The questionnaire was semi-

structured, having both open-ended and closed-ended questions. It was administered to the Managers at their offices as well as through their electronic mail.

The questionnaire was divided into two parts. The objective of the first part was getting the demographic information on the banks that was deemed relevant for the study. The second part of the questionnaire was used to examine the adoption factors and barriers to Internet banking. The 5-scale Likert type scale was adopted for the study. The tool was pre-tested with colleagues in IT Division of a commercial bank and found valid.

Secondary data was collected from the websites of the various banks, banking journals, MIS journals and relevant texts as indicated in the bibliography.

3.4 Data Analysis

The data collected was edited for accuracy, uniformity, consistency and completeness and arranged to enable coding and tabulation before final analysis (Cooper and Emory, 1998). The data collected from this study was mainly presented through the use of summarized percentages, proportions and tabulations in all the three sections of the questionnaire. Mean scores and standard deviations were evaluated and ranked to give the relative importance of the various variables of this study. Specifically, sections II was analyzed through the use of factor analysis.

3.5 Factor Analysis

Factor analysis is a systematic, statistical procedure used to uncover relationships amongst several variables. This procedure enables numerous correlated variables to be condensed into fewer dimensions known as factors. In the context of this research, the variables are the degree of agreement with various specific perception statements while the factors are the general underlying constructs. The factor analysis for this research will be conducted using a statistical package SPSS. The purpose of factor analysis is to discover simple patterns in the pattern of relationships among variables. In its procedure, rotation is applied to identify meaningful factor names or descriptions. A rotation, which requires that the factors remain uncorrelated, is an orthogonal rotation, while a rotation, which requires the factors to be correlated, is called Oblique rotation.

In this study, oblique rotation using Promax with Kaizer normalization was carried out because the proposed framework indicates that the underlying constructs and variables are inter-correlated. Factor rotation was used to re-orient the factor loadings so that the factors were more interpretable. Use of Oblique rotation allowed for correlations between factors since many attitudinal dimensions were in fact correlated. For easier interpretation of the factors, only the pattern matrix was examined (Rummel, 1970). The factor extraction method adopted for this study was principal component analysis.

CHAPTER FOUR: DATA ANALYSIS, PRESENTATION AND FINDINGS

4.1. Introduction

This section provides the data analysis and findings of the study. The data was analyzed using frequencies, means, standard deviations and factor analysis. It was presented in tables, pie charts and graphs. Part I was analyzed using proportions i.e. percentages, means and standard deviations. Part II was analyzed using factor analysis so as to reduce the variables to the underlying factors.

4.1 Bank demographic information

The variables considered in this section were mainly aimed at providing insight information of the various commercial banks in the banking industry.

4.1.1. Response rate

Respondents from 3 banks declined participate in the study. From a total of 40 banks, 31 questionnaires were returned within the specified periods. Of these, 30 questionnaires were usable for the analysis, whilst 1 was incomplete when returned. This yielded a response rate of 78%, considered adequate for the purposes of this study.

4.1.2 Ownership of banks

Out of the banks who participated in the survey 57% were publicly owned whereas 14% have partially public and private ownership and 29% are privately owned as shown in chart 1 below: -

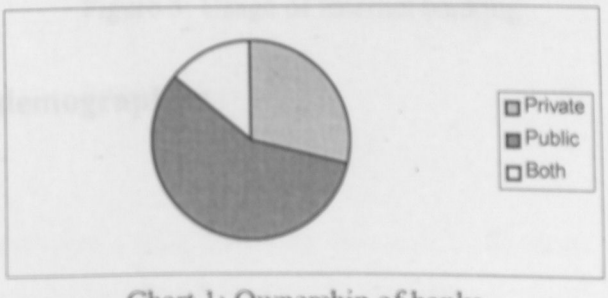


Chart 1: Ownership of banks

This implies that more banks in Kenya are publicly owned than private.

4.2.3 Management of Banks

Majority of the banks surveyed (89%) were indigenous 11 % have foreign management implying that major decisions are made in their home country office as shown below.

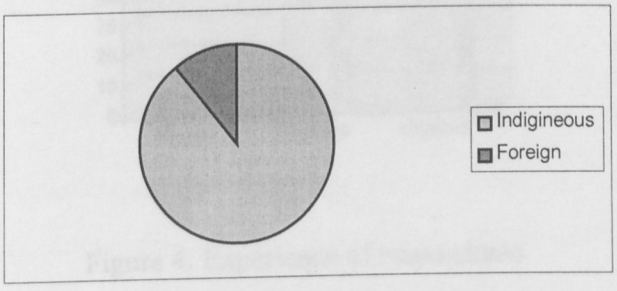


Chart 2: Management of banks

4.2.4 Usage of Internet Banking Technology

In terms of adoption, 65% of the banks offer basic personal banking over the Internet while 35% are non- adopters as shown in chart 3 below. 65% is a significant proportion, implying that Internet banking is definitely gaining acceptance, even if at a slow pace.

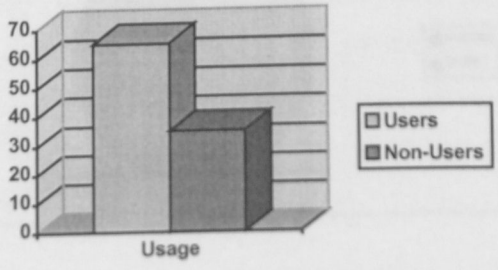


Figure 3: Usage of Internet banking

4.3 Respondents' demographics

4.3.1 Experience

6.7% of the respondents had held their positions in management for less than 1 year, 36.7% between 1 and 3 years while the majority 56.7% had experience of more than 3 years in their current positions as presented below:

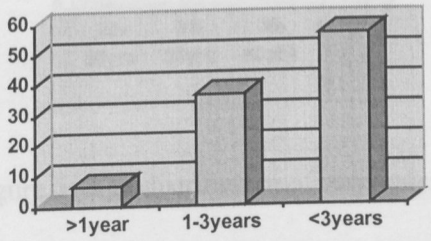


Figure 4: Experience of respondents

The implication of this finding is that people charged with I.T. responsibilities have handled their roles long enough to understand the importance of Internet banking technology.

4.3.2 Gender

23% of the respondents were female managers while 77% were male.

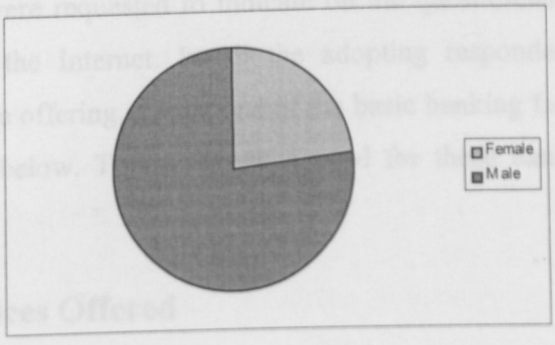


Chart 3: Gender of respondents

The implication here is that I.T. is a male-dominated area, especially at the management level in most banks.

4.3.3 Age

27% of the respondents were young managers between 25-30 years old, the majority 53% were between 31-35 years, 13% were between 36- 40 years while only 7% were over 40yeras old as shown below:

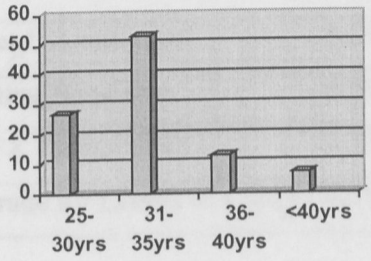


Figure 5: Age distribution of respondents

The finding that most banks engage young managers in this function of new technology adoption implies the importance they attach to such roles as the successful adoption of Internet banking technology. It could also imply that younger managers are more interested in knowledge creation and dissemination, or the older managers did not have time to participate in the study.

4.4 Extent of usage of Internet banking technology in the Banks

To establish the level of extent of adoption of Internet technology within the banking sector, the respondent banks were requested to indicate on the questionnaire, the various banking facilities offered over the Internet. In all the adopting respondents, there was a clear indication that they were offering at least one of the basic banking facilities over the Internet as shown in the table below. This points to a need for these banks to focus on Internet banking technology.

4.4.1 Banking Services Offered

Service Offered	Yes	No
Opening Account	35%	65%
Viewing Transactions	52%	48%
Inter-bank Transfers	35%	65%
Direct Debits	26%	74%
Checking Account Balances	45%	55%
Remittances	32%	68%
Standing Orders set up	32%	68%

Others:		
Credit card transactions	3.2%	
Information/Enquiries	3.2%	
Online FX Transactions	6.5%	
Online trade for Letters of Credit	6.5%	

Table 3: Banking services offered

From the information provided in the table above, banks through their websites, use Internet for two purposes: Information presentation and Banking transactions

i) Information presentation

Information is provided in connection with one or two way communication. One way communication means that the banks use the Internet only as a presentation medium for its products and services. The simplest way they use two way communication is to allow users to send electronic mails to the server in order to ask for further information or make suggestions with respect to their products on the website.

Interaction with customers requires quick information exchange. Information provided by the user controls the information offered by the bank server. If the customer is identified and authenticated, connecting to operative systems of the bank becomes possible. Then, often very little information has to be provided by the customer since data stored in the databases of the financial institution is used.

Banks also present product information to initiate new contacts. If actual contracting is desired transaction management is necessary. This research confirmed that viewing of transactions and checking account balances were the most adopted portions of Internet banking

ii) Internet Transactions

There were a large number of different banking transactions, e.g. account opening, inter bank transfers, direct debits and remittances confirmed from the study results.

4.4.2 Statistics of Determinants of Internet banking technology adoption

The descriptive statistics focused on an analysis of the individual variables in order to get an indication of the magnitude of importance attached to the various variables provided in the list. The following sections provide results:

When asked whether they would find Internet banking useful to their banks, 87% of the surveyed banks agreed or strongly agreed. Only 10% disagreed or strongly disagreed while the rest 3% were indifferent.

)eterminants of intention to use internet banking(I would find internet useful to this bank)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	3.2	3.2	3.2
	Disagree	2	6.5	6.5	9.7
	Indifferent	1	3.2	3.2	12.9
	Agree	6	19.4	19.4	32.3
	Strongly agree	21	67.7	67.7	100.0
	Total	31	100.0	100.0	

Table 4.1 Internet banking usefulness

2.) Variable 2 focused on whether Internet banking enabled their banks to serve many customers quickly. 87% of respondents agreed or strongly agreed, 7% were indifferent while only 6% disagreed or strongly disagreed.

Determinants of intention to use internet banking(Using internet banking enables this bank to serve many customers more quickly)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	3.2	3.2	3.2
	Disagree	1	3.2	3.2	6.5
	Indifferent	2	6.5	6.5	12.9
	Agree	13	41.9	41.9	54.8
	Strongly agree	14	45.2	45.2	100.0
	Total	31	100.0	100.0	

Table 4.2 Internet banking and customer service

3.) Variable 3 checked whether Internet banking increases banks' productivity. 84% agreed or strongly agreed, 3% were indifferent while only 13% disagreed.

Determinants of intention to use internet banking(Using internet banking increase productivity in this bank)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	4	12.9	12.9	12.9
	Indifferent	1	3.2	3.2	16.1
	Agree	16	51.6	51.6	67.7
	Strongly agree	10	32.3	32.3	100.0
	Total	31	100.0	100.0	

Table 4.3 Internet banking and productivity

4.) Variable 4 focused on whether full use of Internet banking would increase the banks' chances of expanding customer base. 84% agreed or strongly agreed, 7% were indifferent while only 9% disagreed or strongly disagreed.

Determinants of intention to use internet banking(If this bank uses internet banking fully, it will increase its chance of expanding customer base)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	3.2	3.2	3.2
	Disagree	2	6.5	6.5	9.7
	Indifferent	2	6.5	6.5	16.1
	Agree	10	32.3	32.3	48.4
	Strongly agree	16	51.6	51.6	100.0
	Total	31	100.0	100.0	

Table 4.4 Internet banking and customer base

5.) Variable 5 asked the respondents whether their interaction with Internet banking would be clear and understandable. 87% agreed of strongly agreed, 10% were indifferent while only 3% disagreed.

Determinants of intention to use internet banking(My interaction with the internet banking system would be clear and understandable)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	3.2	3.2	3.2
	Indifferent	3	9.7	9.7	12.9
	Agree	11	35.5	35.5	48.4
	Strongly agree	16	51.6	51.6	100.0
	Total	31	100.0	100.0	

Table 4.5 Internet banking and user interaction

6.) Variable 6 focused on whether it would be easy for employees to become skillful at using Internet banking system. 90% agreed or strongly agreed, 4% were indifferent while only 6% either disagreed o strongly disagreed.

Determinants of intention to use internet banking(It would be easy for me to become skillful at using internet banking system)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	3.2	3.2	3.2
	Disagree	1	3.2	3.2	6.5
	Indifferent	1	3.2	3.2	9.7
	Agree	13	41.9	41.9	51.6
	Strongly agree	15	48.4	48.4	100.0
	Total	31	100.0	100.0	

Table 4.6 Internet banking and skills

7.) Variable 7 checked whether employees would find Internet banking system easy to use. 90% agreed or disagreed 3% were indifferent while 7% disagreed or strongly disagreed.

Determinants of intention to use internet banking(I would find the internet banking system easy to use.)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	3.2	3.3	3.3
	Disagree	1	3.2	3.3	6.7
	Indifferent	1	3.2	3.3	10.0
	Agree	13	41.9	43.3	53.3
	Strongly agree	14	45.2	46.7	100.0
	Total	30	96.8	100.0	
Missing	System	1	3.2		
Total		31	100.0		

Table 4.7 Internet banking and ease of use

8.) Variable 8 focused on whether learning to operate Internet banking system would be easy for the employees. 90% agreed or strongly agreed, 7% indifferent while 3% disagreed

Determinants of intention to use internet banking(Learning to operate internet banking system is easy for me)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	3.2	3.3	3.3
	Indifferent	2	6.5	6.7	10.0
	Agree	9	29.0	30.0	40.0
	Strongly agree	18	58.1	60.0	100.0
	Total	30	96.8	100.0	
Missing	System	1	3.2		
Total		31	100.0		

Table 4.8 Internet banking and learning curve

9.) Variable 9 contended that using Internet banking was a good idea. 82% agreed or strongly agreed, 7% were indifferent while 11% disagreed or strongly disagreed.

Determinants of intention to use internet banking(Using the internet banking system is a good idea)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	3.2	3.6	3.6
	Disagree	2	6.5	7.1	10.7
	Indifferent	2	6.5	7.1	17.9
	Agree	8	25.8	28.6	46.4
	Strongly agree	15	48.4	53.6	100.0
	Total	28	90.3	100.0	
Missing	System	3	9.7		
Total		31	100.0		

Table 4.9 Internet banking system, a good/bad idea

10.) Variable 10 presupposes that Internet banking system makes work more interesting. 73% agreed, 13 % were indifferent while 14% disagreed or strongly disagreed

Determinants of intention to use internet banking(The internet banking system makes work more interesting)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	6.5	6.7	6.7
	Disagree	2	6.5	6.7	13.3
	Indifferent	4	12.9	13.3	26.7
	Agree	12	38.7	40.0	66.7
	Strongly agree	10	32.3	33.3	100.0
	Total	30	96.8	100.0	
Missing	System	1	3.2		
Total		31	100.0		

Table 4.10 Internet banking and work

11.) Variable 11 presupposes that working with Internet banking system is fun. 70% agreed, 20 % were indifferent while 10% disagreed or strongly disagreed

Determinants of intention to use internet banking(Working with the internet banking system is fun)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	6.5	6.7	6.7
	Disagree	1	3.2	3.3	10.0
	Indifferent	6	19.4	20.0	30.0
	Agree	10	32.3	33.3	63.3
	Strongly agree	11	35.5	36.7	100.0
	Total	30	96.8	100.0	
Missing	System	1	3.2		
Total		31	100.0		

Table 4.11 Internet banking and fun

12.) Variable 12 presupposes that the managers like working with Internet banking. 69% agreed, 28 % were indifferent while 3% disagreed or strongly disagreed

Determinants of intention to use internet banking(I like working with the internet banking system)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	3.2	3.4	3.4
	Indifferent	8	25.8	27.6	31.0
	Agree	11	35.5	37.9	69.0
	Strongly agree	9	29.0	31.0	100.0
	Total	29	93.5	100.0	
Missing	System	2	6.5		
Total		31	100.0		

Table 4.12 Internet banking and attitude

13.) Variable 13 presupposes that people whose decisions influence their banks thought that they should adopt Internet banking. 67% agreed, 23 % were indifferent while 10% disagreed.

Determinants of intention to use internet banking(People whose decisions inmfluence this bank think that we should adopt internet banking)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	3	9.7	10.0	10.0
	Indifferent	7	22.6	23.3	33.3
	Agree	9	29.0	30.0	63.3
	Strongly agree	11	35.5	36.7	100.0
	Total	30	96.8	100.0	
Missing	System	1	3.2		
Total		31	100.0		

Table 4.13 Internet banking and decision makers

14.) Variable 14 presupposed that people who are important to their banks thought that they should adopt Internet banking. 80% agreed or strongly agreed, 13 % were indifferent while 7% disagreed or strongly disagreed.

Determinants of intention to use internet banking(People who are important to this bank think that we should adopt internet banking)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	3.2	3.3	3.3
	Disagree	1	3.2	3.3	6.7
	Indifferent	4	12.9	13.3	20.0
	Agree	13	41.9	43.3	63.3
	Strongly agree	11	35.5	36.7	100.0
	Total	30	96.8	100.0	
Missing	System	1	3.2		
Total		31	100.0		

Table 4.14 Internet banking and key stakeholders

15.) Variable 15 presupposed that the senior management of the various banks had been supportive to the use of Internet banking. 64% agreed or strongly agreed, 10 % were indifferent while 16% disagreed or strongly disagreed

Determinants of intention to use internet banking(The seniour management of this bank has been helpful in the use of internet banking)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	6.5	6.5	6.5
	Disagree	6	19.4	19.4	25.8
	Indifferent	3	9.7	9.7	35.5
	Agree	11	35.5	35.5	71.0
	Strongly agree	9	29.0	29.0	100.0
	Total	31	100.0	100.0	

Table 4.15 Internet banking and senior management

16.) Variable 16 presupposed that generally, banks supported the adoption of Internet banking. 71% agreed or strongly agreed, 3 % were indifferent while 26% disagreed or strongly disagreed.

Determinants of intention to use internet banking(In general, the organization has supported the adoption of internet banking)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	3	9.7	9.7	9.7
	Disagree	5	16.1	16.1	25.8
	Indifferent	1	3.2	3.2	29.0
	Agree	12	38.7	38.7	67.7
	Strongly agree	10	32.3	32.3	100.0
	Total	31	100.0	100.0	

Table 4.16 Internet banking and organizational support

17.) Variable 17 presupposed that banks had the financial resources necessary to adopt Internet banking. 97% agreed or strongly agreed, 3 % strongly disagreed.

Determinants of usage behaviour(This bank has the finacial resource neccessary to adopt internet banking)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	3.2	3.2	3.2
	Agree	17	54.8	54.8	58.1
	Strongly agree	13	41.9	41.9	100.0
	Total	31	100.0	100.0	

Table 4.17 Internet banking and financial resources

18.) Variable 18 presupposed that banks had the technical resources necessary to adopt Internet banking. 97% agreed or strongly agreed, 3 % strongly disagreed.

Determinants of usage behaviour(This bank has the technical resource resource neccessary to adopt interent banking)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	3.2	3.2	3.2
	Agree	18	58.1	58.1	61.3
	Strongly agree	12	38.7	38.7	100.0
	Total	31	100.0	100.0	

Table 4.18 Internet banking and technical resources

19.) Variable 19 presupposed that staff had the necessary knowledge to use Internet banking. 61% agreed or strongly agreed, 29 were indifferent while10% disagreed or strongly disagreed.

Determinants of usage behaviour(The staff have the knowledge neccessary to use internet banking)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	3.2	3.2	3.2
	Disagree	2	6.5	6.5	9.7
	Indifferent	9	29.0	29.0	38.7
	Agree	11	35.5	35.5	74.2
	Strongly agree	8	25.8	25.8	100.0
	Total	31	100.0	100.0	

Table 4.19 Internet banking and staff knowledge

20.) Variable 20 presupposed that Internet banking system was not compatible with other systems in use. 19% agreed or strongly agreed, 13% were indifferent while 68% disagreed or strongly disagreed.

Determinants of usage behaviour(Internet banking system is not compatible with other systems in use)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	11	35.5	35.5	35.5
	Disagree	10	32.3	32.3	67.7
	Indifferent	4	12.9	12.9	80.6
	Agree	4	12.9	12.9	93.5
	Strongly agree	2	6.5	6.5	100.0
	Total	31	100.0	100.0	

Table 4.20 Internet banking and system compatibility

21.) Variable 21 presupposed that a specific person was available for assistance with system difficulties. 84% agreed or strongly agreed, 6% were indifferent while 10% disagreed or strongly disagreed

Determinants of usage behaviour(A specific person(or group)is available for assistance with system difficulties)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	6.5	6.5	6.5
	Disagree	1	3.2	3.2	9.7
	Indifferent	2	6.5	6.5	16.1
	Agree	18	58.1	58.1	74.2
	Strongly agree	8	25.8	25.8	100.0
	Total	31	100.0	100.0	

Table 4.21 Internet banking and system assistant

22.) Variable 22 presupposed that staff felt apprehensive about using Internet banking system. 12% agreed or strongly agreed, 10% were indifferent while 78% disagreed or strongly disagreed

Determinants of usage behaviour(I feel apprehensive about using internet banking)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	10	32.3	32.3	32.3
	Disagree	14	45.2	45.2	77.4
	Indifferent	3	9.7	9.7	87.1
	Agree	2	6.5	6.5	93.5
	Strongly agree	2	6.5	6.5	100.0
	Total	31	100.0	100.0	

Table 4.22 Internet banking and user apprehension

23.) Variable 23 presupposed that staff felt scared to think that the bank could loose a lot of information using Internet banking system. 22% agreed or strongly agreed, 13% were indifferent while 65% disagreed or strongly disagreed

Determinants of usage behaviour(It scares me to think that the bank could lose a lot of information using internet banking)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	13	41.9	41.9	41.9
	Disagree	7	22.6	22.6	64.5
	Indifferent	4	12.9	12.9	77.4
	Agree	5	16.1	16.1	93.5
	Strongly agree	2	6.5	6.5	100.0
	Total	31	100.0	100.0	

Table 4.23 Internet banking and fear of loss

24.) Variable 24 presupposed that staff hesitated to use the system for fear of making mistakes they could not correct. 6% strongly agreed, 10% were indifferent while 84% disagreed or strongly disagreed

Determinants of usage behaviour(i hesitate to use the system for fear of making mistakes i cannot correct)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	15	48.4	48.4	48.4
	Disagree	11	35.5	35.5	83.9
	Indifferent	3	9.7	9.7	93.5
	Strongly agree	2	6.5	6.5	100.0
	Total	31	100.0	100.0	

Table 4.24 Internet banking and fear of making mistakes

25.) Variable 25 presupposed that staff felt that Internet banking system was intimidating to them. 13% agreed or strongly agreed while 87% disagreed or strongly disagreed

Determinants of usage behaviour(Internet banking is somewhat intimidating to me)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	22	71.0	71.0	71.0
	Disagree	5	16.1	16.1	87.1
	Agree	1	3.2	3.2	90.3
	Strongly agree	3	9.7	9.7	100.0
	Total	31	100.0	100.0	

Table 4.25 Internet banking and perceived intimidation

26.) Variable 26 presupposed that the bank intended to use the Internet banking system in the next 12 months. 41% agreed or strongly agreed, 44% were indifferent while 15% disagreed or strongly disagreed.

Determinants of usage behaviour(This bank intends to use the system in the next 12 months)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	3	9.7	11.1	11.1
	Disagree	1	3.2	3.7	14.8
	Indifferent	12	38.7	44.4	59.3
	Agree	6	19.4	22.2	81.5
	Strongly agree	5	16.1	18.5	100.0
	Total	27	87.1	100.0	
Missing	System	4	12.9		
Total		31	100.0		

Table 4.26 Internet banking and intention to adopt

27.) Variable 27 presupposed that the staff predicted they would use Internet banking system in the next 12 months. 48% agreed or strongly agreed, 33% were indifferent while 19% disagreed or strongly disagreed

Determinants of usage behaviour(I predict we would use internet banking system in the next 12 months)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	6.5	7.4	7.4
	Disagree	3	9.7	11.1	18.5
	Indifferent	9	29.0	33.3	51.9
	Agree	7	22.6	25.9	77.8
	Strongly agree	6	19.4	22.2	100.0
	Total	27	87.1	100.0	
Missing	System	4	12.9		
Total		31	100.0		

Table 4.27 Internet banking and prediction to adopt

28.) Variable 28 presupposed that the planned to adopt Internet banking system in the next 12 months. 52% agreed or strongly agreed, 26% were indifferent while 22% disagreed or strongly disagreed

Determinants of usage behaviour(The bank plans to use the internet banking in the next 12 months)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	6.5	7.4	7.4
	Disagree	4	12.9	14.8	22.2
	Indifferent	7	22.6	25.9	48.1
	Agree	8	25.8	29.6	77.8
	Strongly agree	6	19.4	22.2	100.0
	Total	27	87.1	100.0	
Missing	System	4	12.9		
Total		31	100.0		

Table 4.28 Internet banking and plan to adopt

4.4.3 Confirmatory and Descriptive Data Analysis

In order to test the research model, statistical analysis was conducted to aid in finding answers to the research questions. Since the model assumes that Internet banking technology adoption construct is multidimensional, the analysis considered the three components of

determinants of intention to use technology, actual usage and barriers separately. That these three components influence the adoption of Internet banking technology amongst banks in Kenya. The following analyses ensue:

4.4.4 Determinants of intention to use Internet banking technology

This study of technology adoption research was carried out to determine the important factors influencing adoption through the use of the mean and standard deviation. The results are illustrated in Table 5.1 below:

	N	Mean		Std. Deviation
Learning to operate internet banking system is easy for me	31	4.4333	0.1639	0.8976
I would find internet useful to this bank	31	4.4194	0.1899	1.0575
My interaction with the internet banking system would be clear and understandable	31	4.3548	0.1433	0.7978
It would be easy for me to become skillful at using internet banking system	31	4.2903	0.1684	0.9379
I would find the internet banking system easy to use.	31	4.2667	0.1724	0.9444
Using internet banking enables this bank to serve many customers more quickly	31	4.2258	0.1717	0.956
If this bank uses internet banking fully, it will increase its chance of expanding customer base	31	4.2258	0.1896	1.0555
Using the internet banking system is a good idea	31	4.2143	0.208	1.1007
People who are important to this bank think that we should adopt internet banking	31	4.0667	0.179	0.9803
Using internet banking increase productivity in this bank	31	4.0323	0.1703	0.9481
I like working with the internet banking system	31	3.9655	0.1607	0.8653
People whose decisions influence this bank think that we should adopt internet banking	31	3.9333	0.1853	1.0148
Working with the internet banking system is fun	31	3.9	0.2109	1.1552
The internet banking system makes work more interesting	31	3.8667	0.213	1.1666
In general, the organization has supported the adoption of internet banking	31	3.6774	0.2427	1.3512
The senior management of this bank has been helpful in the use of internet banking	31	3.6129	0.2304	1.2826

Table 5.1 Ranked determinants of intention

Out of the top 5 ranked means 4 variables points to the fact that effort expectancy was of high significance in deciding to adopt Internet banking technology followed closely by Performance expectancy thus confirming the UTAUT model.

4.4.5 Confirmatory Factor Analysis for Determinants of Internet Banking Technology Adoption

Table 5.2 Pattern matrix

Pattern Matrix [a]

	Component		
	1	2	3
Determinants of intention to use internet banking(I would find internet useful to this bank)	-.216	.881	.235
Determinants of intention to use internet banking(Using internet banking enables this bank to serve many customers more quickly)	7.809E-02	.892	-4.71E-02
Determinants of intention to use internet banking(Using internet banking increase productivity in this bank)	-.171	1.090	-.180
Determinants of intention to use internet banking(If this bank uses internet banking fully, it will increase its chance of expanding customer base)	.144	.874	-.254
Determinants of intention to use internet banking(My interaction with the internet banking system would be clear and understandable)	.729	.115	-.102
Determinants of intention to use internet banking(It would be easy for me to become skillful at using internet banking system)	.681	8.554E-02	.277
Determinants of intention to use internet banking(I would find the internet banking system easy to use.)	.705	8.839E-02	.265
Determinants of intention to use internet banking(Learning to operate internet banking system is easy for me)	.571	.211	.271
Determinants of intention to use internet banking(Using the internet banking system is a good idea)	.773	3.848E-02	7.451E-02
Determinants of intention to use internet banking(The internet banking system makes work more interesting)	.976	-8.42E-02	-4.65E-02
Determinants of intention to use internet banking(Working with the internet banking system is fun)	1.097	-9.74E-02	-.124
Determinants of intention to use internet banking(I like working with the internet banking system)	1.123	-.207	-.213
Determinants of intention to use internet banking(People whose decisions inmfluence this bank think that we should adopt internet banking)	.334	.415	.132
Determinants of intention to use internet banking(People who are important to this bank think that we should adopt internet banking)	.449	.424	.191
Determinants of intention to use internet banking(The seniour management of this bank has been helpfui in the use of internet banking)	-.121	-.125	1.087
Determinants of intention to use internet banking(In general, the organization has supported the adoption of internet banking)	-2.98E-02	-9.66E-02	1.046

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Factor 1 was significantly loaded with the following variables:

Variable 5: Clarity and understandability of interaction with Internet banking system influences a bank's decision to adopt it, with a loading of 0.729

Variable 6: Ease of becoming skillful at using Internet banking system influences the decision to adopt the technology, with a loading of 0.681

Variable 7: Perceived ease of use of Internet banking system determines its adoption, with the highest overall loading of 0.705

Variable 8: Ease of learning to operate Internet banking system influences a bank's decision to adopt it with an average loading of 0.571

This factor was therefore named ***Effort Expectancy***

Factor 2 was significantly loaded with the following variables:

Variable 1 argues that the perceived usefulness of Internet banking influences the decision to adopt the technology, with a loading of 0.881

Variable 2: If a bank feels using Internet banking would enable them to serve many customers more quickly, they are likely to adopt it. This variable received a loading of 0.892

Variable 4: The desire to increase chances of expanding customer base influences a bank's decision to adopt Internet banking technology. This got a loading of 0.874

Variable 3: Expected increase in productivity influences a bank's decision to adopt Internet banking technology. This variable was however not confirmed. An indication the use of Internet banking may not necessarily increase productivity.

This factor was therefore named ***Performance Expectancy***

Factor 3 was significantly loaded with the following variables:

Variables 13 and 14: What key stakeholders think about Internet banking influences a bank's decision to adopt the technology, with a mere loading of 0.131 and 0.191 respectively.

Variables 15 and 16 were not confirmed.

This factor was therefore named ***Social Influence.*** It could therefore be concluded that social influence barely determined adoption of Internet banking technology in the Kenyan context.

4.4.4 Determinants of usage of Internet banking technology

	N	Mean		Std. Deviation
This bank has the financial resource necessary to adopt internet banking	31	4.3226	0.1421	0.7911
This bank has the technical resource necessary to adopt internet banking	31	4.2903	0.1406	0.7829
A specific person (or group) is available for assistance with system difficulties	31	3.9355	0.1851	1.0307
The staff have the knowledge necessary to use internet banking	31	3.7419	0.1853	1.0318
I predict we would use internet banking system in the next 12 months	31	3.4444	0.2285	1.1875
The bank plans to use the internet banking in the next 12 months	31	3.4444	0.2347	1.2195
This bank Intends to use the system in the next 12 months	31	3.3333	0.2265	1.1767
Internet banking system is not compatible with other systems in use	31	2.2258	0.2258	1.2572
It scares me to think that the bank could lose a lot of information using internet banking	31	2.2258	0.2397	1.3344
I feel apprehensive about using internet banking	31	2.0968	0.204	1.1359
I hesitate to use the system for fear of making mistakes I cannot correct	31	1.8065	0.1935	1.0776
Internet banking is somewhat intimidating to me	31	1.6452	0.2298	1.2793

Table 5.3: Ranked determinants of usage

Out of the top 5 ranked means 4 variables points to the fact that availability of essential resources and intention to use Internet banking technology were of high significance in deciding to adopt Internet banking technology. This confirmed the model applied in the study.

Factor 1 was significantly loaded with the following variables

Variable 5 Availability of specific persons or group of people to offer assistance when needed influences a bank's decision to adopt Internet banking had the highest loading of 0.971

Variable 8: Fear of making uncorrectable mistakes made banks hesitant to adopt Internet banking, with a loading of 0.962

Variable 4: Compatibility of Internet banking technology with other systems in the bank influences a bank's decision to adopt Internet banking with a loading of 0.873

Variable1: Availability of financial resources influence a bank's decision to adopt Internet banking technology with a loading of 0.524

Variable 2: Availability of necessary technical resources influences a bank's decision to adopt Internet banking technology with a loading of 0.526

This factor was therefore named ***Facilitating conditions***

Factor 2 was significantly loaded with the following variables:

Variable 3: Availability of knowledgeable staff in Internet banking insignificantly influences a bank's decision to adopt Internet banking technology with a loading of 0.835

Variable 11: Prediction that a bank would use Internet banking system in the next 12 months had a loading of 0.967.

Variable 12: Prediction that a bank plans to use the Internet banking in the next 12 months had a loading of 0.937

This factor was therefore named ***Intention to Use Technology.***

4.5 Barriers to Internet banking technology adoption

This study was carried out to determine the possible hindrances to adoption through the use of the mean and standard deviation. The results are illustrated in the table below:

Summary Statistics of Barriers to Internet banking technology adoption

	N	Mean		Std. Deviation
Limited growth of the technology sector	30	3.3667	0.217	1.1885
Bank jurisdiction is not defined in internet banking	29	3.3103	0.2487	1.3391
There are no laws governing internet banking	29	3.2414	0.2562	1.3798
I perceive risk in internet banking	30	3.2	0.1755	0.9613
The bank in hesitant to lose in dispute resolution	29	3.1034	0.2006	1.0805
Senior management commitment is lacking	30	2.9667	0.2647	1.4499
Little communication with more advanced countries	30	2.9	0.2109	1.1552
Reputation of services providers is wanting	30	2.9	0.1543	0.8449
Employees have negative attitude towards change	30	2.8333	0.1862	1.0199
Prevalent resource constraints	30	2.8333	0.2716	1.4875
Poor I.T infrastructure	30	2.8	0.2893	1.5844
Internet banking system is insecure	30	2.7333	0.1914	1.0483
The bank does not accept liability incase of loss	29	2.6897	0.228	1.2278
Internet service providers are not reliable	30	2.6333	0.1825	0.9994
Lack of motivated workforce	30	2.6	0.2609	1.4288
Distrust of services providers	29	2.5862	0.2017	1.0862
It is difficult to win customer confidence to use internet banking	29	2.5862	0.1891	1.0183
Low rate of growth of total population	29	2.5517	0.2196	1.1828
Lack of knowledge I.T Staff	29	2.2414	0.2792	1.5037
The bank does not offer customer protection	30	2.1667	0.2039	1.1167

Table 6: Barriers to Internet banking technology adoption

Limited growth of the technological sector ranked highest with a mean of 3.37. Undefined bank jurisdiction was second with mean ranking of 3.31, then lack of laws governing Internet banking with 3.24 followed by banks' hesitation to loose in dispute resolution. These variables confirmed that lack of proper legal support was highly significant a barrier to Internet banking adoption. Customer protection was the least significant variable with a mean ranking of 2.17 followed by winning of customer confidence 2.58. Trust of the system emerged a significant barrier with perceived risk getting a mean of 3.20 followed by wanting reputation of Internet service providers 2.90. Organizational barriers were neither strong nor weak determinants of adoption as the mean of the variables ranked 6^{th}, 9^{th}, 10^{th} and 11^{th}. Knowledgeable I.T. staff however ranked very low with a mean of 2.24, indicating its less significance.

The descriptive statistics focused on an analysis of the individual variables in order to get an indication of the magnitude of importance attached to the various variables provided in the list. The following sections provide results:

1.) When asked whether the low rate growth of total population was a possible hindrance to adoption of Internet banking, 27% of the surveyed banks agreed or strongly agreed. 17% were indifferent while the rest 56% disagreed or strongly disagreed.

The following are possible hinderance to adoption of internet banking(Low rate of growth of total population)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	6	19.4	20.7	20.7
	Disagree	10	32.3	34.5	55.2
	Indifferent	5	16.1	17.2	72.4
	Agree	7	22.6	24.1	96.6
	Strongly agree	1	3.2	3.4	100.0
	Total	29	93.5	100.0	
Missing	System	2	6.5		
Total		31	100.0		

Table 7.1 Low rate of growth of total population

2.) Variable 31 focused on the limited growth of the technological sector.67% of the respondents agreed or strongly agreed while 33% disagreed or strongly disagreed

The following are possible hinderance to adoption of internet banking(Limited growth of the technology sector)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	6.5	6.7	6.7
	Disagree	8	25.8	26.7	33.3
	Agree	17	54.8	56.7	90.0
	Strongly agree	3	9.7	10.0	100.0
	Total	30	96.8	100.0	
Missing	System	1	3.2		
Total		31	100.0		

Table 7.2-Limited growth of the technological sector

3.) Variable 32 focused on the limited communication with more advanced countries. 47% of the respondents agreed or strongly agreed, 10% were indifferent while 43% disagreed or strongly disagreed

The following are possible hinderance to adoption of internet banking(Little communication with more advanced countries)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	12.9	13.3	13.3
	Disagree	9	29.0	30.0	43.3
	Indifferent	3	9.7	10.0	53.3
	Agree	14	45.2	46.7	100.0
	Total	30	96.8	100.0	
Missing	System	1	3.2		
Total		31	100.0		

Table 7.3 Little communication with more advanced countries

4.) Variable 33 presupposed that adoption of Internet banking is hindered when employee have negative attitude towards change. 33% of the respondents agreed, 27% were indifferent while 40% disagreed or strongly disagreed.

The following are possible hinderance to adoption of internet banking(Empoyees have negative attitude towards change)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	3	9.7	10.0	10.0
	Disagree	9	29.0	30.0	40.0
	Indifferent	8	25.8	26.7	66.7
	Agree	10	32.3	33.3	100.0
	Total	30	96.8	100.0	
Missing	System	1	3.2		
Total		31	100.0		

Table 7.4 Negative attitudes toward change

5.) Variable 34 presupposed that adoption of Internet banking is hindered when senior management commitment is lacking. 40% of the respondents agreed or strongly agreed, 7% were indifferent while 53% disagreed or strongly disagreed

The following are possible hinderance to adoption of internet banking(Senior management commitment is lacking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	12.9	13.3	13.3
	Disagree	12	38.7	40.0	53.3
	Indifferent	2	6.5	6.7	60.0
	Agree	5	16.1	16.7	76.7
	Strongly agree	7	22.6	23.3	100.0
	Total	30	96.8	100.0	
Missing	System	1	3.2		
Total		31	100.0		

Table 7.5 Senior management commitment

6.) Variable 35 presupposed that adoption of Internet banking is hindered when there's a prevalent resource constraint. 40% of the respondents agreed or strongly agreed, 3% were indifferent while 57% disagreed or strongly disagreed

The following are possible hinderance to adoption of internet banking(Prevalent resource constraints)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	6	19.4	20.0	20.0
	Disagree	11	35.5	36.7	56.7
	Indifferent	1	3.2	3.3	60.0
	Agree	6	19.4	20.0	80.0
	Strongly agree	6	19.4	20.0	100.0
	Total	30	96.8	100.0	
Missing	System	1	3.2		
Total		31	100.0		

Table 7.6 Resource constraints

7.) Variable 36 presupposed that adoption of Internet banking is hindered by poor IT infrastructure. 43% of the respondents agreed or strongly agreed, 3% were indifferent while 53% disagreed or strongly disagreed

The following are possible hinderance to adoption of internet banking(Poor I.T infrastructure)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	9	29.0	30.0	30.0
	Disagree	7	22.6	23.3	53.3
	Indifferent	1	3.2	3.3	56.7
	Agree	7	22.6	23.3	80.0
	Strongly agree	6	19.4	20.0	100.0
	Total	30	96.8	100.0	
Missing	System	1	3.2		
Total		31	100.0		

Table 7.7 I.T infrastructures

8.) Variable 37 presupposed that adoption of Internet banking is hindered by lack of knowledgeable IT staff. 24% of the respondents agreed or strongly agreed, while 76% disagreed or strongly disagreed

The following are possible hinderance to adoption of internet banking(Lack of knowledge I.T Staff)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	12	38.7	41.4	41.4
	Disagree	10	32.3	34.5	75.9
	Agree	2	6.5	6.9	82.8
	Strongly agree	5	16.1	17.2	100.0
	Total	29	93.5	100.0	
Missing	System	2	6.5		
Total		31	100.0		

Table 7.8 Knowledgeable I.T staff

9.) Variable 38 presupposed that non-motivated workforce hinders adoption of Internet banking. 33% of the respondents agreed or strongly agreed, 7% were indifferent while 60% disagreed or strongly disagreed

The following are possible hinderance to adoption of internet banking(Lack of motivated workforce)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	8	25.8	26.7	26.7
	Disagree	10	32.3	33.3	60.0
	Indifferent	2	6.5	6.7	66.7
	Agree	6	19.4	20.0	86.7
	Strongly agree	4	12.9	13.3	100.0
	Total	30	96.8	100.0	
Missing	System	1	3.2		
Total		31	100.0		

Table 7.9 Motivated workforce

10.) Variable 39 presupposed that the feeling of insecurity hinders adoption of Internet banking. 33% of the respondents agreed, 17% were indifferent while 50% disagreed or strongly disagreed

The following are possible hinderance to adoption of internet banking(Internet banking system is insecure)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	3	9.7	10.0	10.0
	Disagree	12	38.7	40.0	50.0
	Indifferent	5	16.1	16.7	66.7
	Agree	10	32.3	33.3	100.0
	Total	30	96.8	100.0	
Missing	System	1	3.2		
Total		31	100.0		

Table 7.10 Insecurity

11.) Variable 40 presupposed that adoption of Internet banking was hindered by perceived risk. 47% of the respondents agreed or strongly agreed, 27% were indifferent while 26% disagreed or strongly disagreed

The following are possible hinderance to adoption of internet banking(I perceive risk in internet banking)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	3.2	3.3	3.3
	Disagree	7	22.6	23.3	26.7
	Indifferent	8	25.8	26.7	53.3
	Agree	13	41.9	43.3	96.7
	Strongly agree	1	3.2	3.3	100.0
	Total	30	96.8	100.0	
Missing	System	1	3.2		
Total		31	100.0		

Table 7.11 Perceived risk

12.) Variable 41 presupposed that adoption of Internet banking was hindered by mistrust with the service providers. 24% of the respondents agreed, 31% were indifferent while 45% disagreed or strongly disagreed

The following are possible hinderance to adoption of internet banking(Distrust of services providers)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	6	19.4	20.7	20.7
	Disagree	7	22.6	24.1	44.8
	Indifferent	9	29.0	31.0	75.9
	Agree	7	22.6	24.1	100.0
	Total	29	93.5	100.0	
Missing	System	2	6.5		
Total		31	100.0		

Table 7.12 Distrust of service providers

13.) Variable 42 presupposed that adoption of Internet banking was hindered if reputation of service providers is wanting. 27% of the respondents agreed, 40% were indifferent while 33% disagreed or strongly disagreed

The following are possible hinderance to adoption of internet banking(Reputation of services providers is wanting)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	3.2	3.3	3.3
	Disagree	9	29.0	30.0	33.3
	Indifferent	12	38.7	40.0	73.3
	Agree	8	25.8	26.7	100.0
	Total	30	96.8	100.0	
Missing	System	1	3.2		
Total		31	100.0		

Table 7.13 Reputation of service providers

14.) Variable 43 presupposed that adoption of Internet banking was hindered if Internet service providers are not reliable. 27% of the respondents agreed, 20% were indifferent while 53% disagreed or strongly disagreed

The following are possible hinderance to adoption of internet banking(Internet service providers are not reliable)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	3	9.7	10.0	10.0
	Disagree	13	41.9	43.3	53.3
	Indifferent	6	19.4	20.0	73.3
	Agree	8	25.8	26.7	100.0
	Total	30	96.8	100.0	
Missing	System	1	3.2		
Total		31	100.0		

Table 7.14 Reliability

15.) Variable 44 presupposed that adoption of Internet banking was hindered because banks do not offer customer protection. 13% of the respondents agreed or strongly disagreed, 20% were indifferent while 67% disagreed or strongly disagreed

The following are possible hinderance to adoption of internet banking(The bank does not offer customer protection)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	10	32.3	33.3	33.3
	Disagree	10	32.3	33.3	66.7
	Indifferent	6	19.4	20.0	86.7
	Agree	3	9.7	10.0	96.7
	Strongly agree	1	3.2	3.3	100.0
	Total	30	96.8	100.0	
Missing	System	1	3.2		
Total		31	100.0		

Table 7.15 Customer protection

16.) Variable 45 presupposed that adoption of Internet banking was hindered because it was difficult to win customers' confidence to use it. 17% of the respondents agreed or strongly disagreed, 35% were indifferent while 48% disagreed or strongly disagreed

The following are possible hinderance to adoption of internet banking(It is difficult to win customer confidence to use internet banking)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	12.9	13.8	13.8
	Disagree	10	32.3	34.5	48.3
	Indifferent	10	32.3	34.5	82.8
	Agree	4	12.9	13.8	96.6
	Strongly agree	1	3.2	3.4	100.0
	Total	29	93.5	100.0	
Missing	System	2	6.5		
Total		31	100.0		

Table 7.16 Customer confidence

17.) Variable 46 presupposed that adoption of Internet banking was hindered because banks did not accept liability incase of loss. 24% of the respondents agreed or strongly disagreed, 28% were indifferent while 48% disagreed or strongly disagreed

The following are possible hinderance to adoption of internet banking(The bank does not accept liability incase of loss)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	5	16.1	17.2	17.2
	Disagree	9	29.0	31.0	48.3
	Indifferent	8	25.8	27.6	75.9
	Agree	4	12.9	13.8	89.7
	Strongly agree	3	9.7	10.3	100.0
	Total	29	93.5	100.0	
Missing	System	2	6.5		
Total		31	100.0		

Table 7.17 Liability incase of loss

18.) Variable 47 presupposed that adoption of Internet banking was hindered because there are no laws governing its usage. 52% of the respondents agreed or strongly disagreed, 14% were indifferent while 34% disagreed or strongly disagreed

The following are possible hinderance to adoption of internet banking(There are no laws governing internet banking)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	12.9	13.8	13.8
	Disagree	6	19.4	20.7	34.5
	Indifferent	4	12.9	13.8	48.3
	Agree	9	29.0	31.0	79.3
	Strongly agree	6	19.4	20.7	100.0
	Total	29	93.5	100.0	
Missing	System	2	6.5		
Total		31	100.0		

Table 7.18 Governing laws

19.) Variable 48 presupposed that adoption of Internet banking was hindered because bank jurisdiction is not defined. 55% of the respondents agreed or strongly disagreed, 10% were indifferent while 35% disagreed or strongly disagreed

The following are possible hinderance to adoption of internet banking(Bank jurisdiction is not defined in internet banking)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	3	9.7	10.3	10.3
	Disagree	7	22.6	24.1	34.5
	Indifferent	3	9.7	10.3	44.8
	Agree	10	32.3	34.5	79.3
	Strongly agree	6	19.4	20.7	100.0
	Total	29	93.5	100.0	
Missing	System	2	6.5		
Total		31	100.0		

Table 7.19 Bank jurisdiction

20.) Variable 49 presupposed that adoption of Internet banking was hindered because banks are hesitant to lose in dispute resolution. 38% of the respondents agreed or strongly disagreed, 38% were indifferent while 24% disagreed or strongly disagreed

The following are possible hinderance to adoption of internet banking(The bank in hesitant to lose in dispute resolution)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	3	9.7	10.3	10.3
	Disagree	4	12.9	13.8	24.1
	Indifferent	11	35.5	37.9	62.1
	Agree	9	29.0	31.0	93.1
	Strongly agree	2	6.5	6.9	100.0
	Total	29	93.5	100.0	
Missing	System	2	6.5		
Total		31	100.0		

Table 7.20 Dispute resolution

Respondents were asked to list any other factors they thought to hinder adoption of Internet banking technology. All the listed factors could be grouped into 3 categories as follows:

- Organizational barriers (underdeveloped technological infrastructure, lack of adequate knowledge, poor telecommunication infrastructure, system incompatibility, negative attitude towards the system.)
- Trust of the System
- Legal support (international checking and validation process)

CHAPTER FIVE: SUMMARY AND CONCLUSIONS

The broad objective of the study was to investigate Internet banking technology adoption. It focused on Internet banking, not only as a technology to increase efficiency and effectiveness of banking service delivery, but also as a technology that is enabling new possibilities, unfeasible before, especially through the interactive nature of the Internet.

Specific objectives of this study were:

1. To determine the extent of adoption of Internet banking technology.
2. To establish the critical factors that influence adoption of Internet banking
3. To determine the barriers to Internet Banking Adoption

The approach to this study was to confirm the research framework highlighted in part three of this thesis, as well as to highlight other issues that were not captured in the research framework.

The literature review focused mainly on an understanding of the technology of Internet banking, review of literature on a unified adoption model, a snap-shot of the Kenyan Banking industry as well as provide a theoretical grounding to the major construct of Internet banking technology adoption, that is, the determinants and barriers of this technology.

This study is not a replica of another study but is based on the conceptual framework as outlined in other earlier sections of this study.

5.1 Discussions

From the research findings as presented in part four of the study, several conclusions can be drawn in support of the adopted framework. These are discussed in light of the objectives of the study.

5.1.1 Objective 1: Extent of adoption of Internet banking technology

From the information provided in chapter 4 above, banks through their websites, use Internet either for information presentation or banking transactions. The simplest way they use two way communication is to allow users to send electronic mails to the server in order to ask for further information or make suggestions with respect to their products on the website.

Banks also present product information to initiate new contacts. If actual contracting is desired transaction management is necessary. This research confirmed that viewing of transactions and checking account balances were the most adopted portions of Internet banking

There were a large number of different banking transactions, e.g. account opening, inter bank transfers, direct debits and remittances confirmed from the study results.

Due to the structure and the intention of the Internet to be an open network high security risks are involved with banking transactions. Various techniques and standards must therefore be offered in order to control or even avoid these risks. Basic requirements are as follows:

- Customer and financial institution have to authenticate each other.
- Private data must have been coded. Cryptographic algorithms used need to have certain characteristics. No third party should be able to quickly get access to messages or even to divert financial transactions.
- A digital signature is necessary to get binding legal contracts. These digital signatures have to secure the integrity of signed documents. It needs to be guaranteed that sender and receiver have the same intentions.

5.1.2 Objective 2: Determinants of Technology Adoption

The framework that was adopted in this research grouped the determinants of intention to use technology that were to be considered into three factors. These factors were:

- *Effort Expectancy, which consisted of four variables:* clear and understandable interaction with the system, ease of becoming skillful at it, ease of usage and ease of learning to operate Internet banking system. This emerged the most significant determinant with the highest means, confirming the UTAT model tested.
- *Performance Expectancy*, which consisted of the four variables of perceived usefulness, serving many customers more quickly, improved productivity and expanding customer base. This was second in significance when banks are deciding on adopting a new technology- Internet banking.
- *Social Influence too had four variable:* People who are either important or their decisions influence the bank, senior management's help and general organizational

support. This had the least significance in determining the intention to adopt Internet banking system in Kenyan context.

- *Facilitating Conditions:* Combined with a strong intention to adopt Internet banking system as explained by the above three factors, financial resources, technical resources, human resources adequacy strongly determine the ultimate adoption of Internet banking system. Kenyan banks however indicated having adequate resources to facilitate Internet banking adoption.

5.1.3 Objective 3: Barriers to Internet banking adoption

It was worth noting that the absence of significant adoption determinants was also considered barriers.

The content analysis determined nine critical barriers to Internet banking, which fall roughly into the three broad categories discussed above. Three barriers relate to trust issues: security, reliability of transactions, and trust in the service provider, including about privacy. Security is one of the major barriers. The feedback from adopters indicate that most of them have adopted Internet banking as an alternative channel for their customers to transact, but they do not use Internet banking for their own money transfers to customers. This is because of concerns about security of the communication network hence investing intensively in security infrastructure. The reason is that most hackers normally prefer to hack directly through the bank financial systems. If any financial loss occurs to bank customers (because of this), banks have to be responsible for that loss

Non-adopters prefer to provide services directly to customers, and have not even set up channels for their customers to use. These customers are not necessarily technology averse, e.g. some of them use non-Internet proprietary online banking software, which enables banks to transfer funds or pay bills directly to their accounts. However, non-adopters stay with services which are either less technologically advanced or are more closed systems, because they believe that the Internet is an open technology with easy accessibility, and thus, is not secure.

The two groups of banks also perceive reliability at different levels. Adopters believe that Internet banking has some level of reliability, even though in absolute terms, it is not considered highly reliable. Non-adopters are not confident at all about doing financial

transactions via the Web, and perceive Internet banking as highly untrustworthy. They claim that business transactions normally have a great amount of money and one click may create any fraud to the bank's financial system. They don't want to absorb the financial risk and responsibility, because their financial processes require originals and many copies of documents for internal control and signatures.

Another important issue which adopters brought up is that when problems occur while customers are transacting via the Internet, the problem cannot be immediately resolved. Customers have to go to the bank to solve such problems, which is time-consuming. One adopter indicated that they're preferred to many banks, because most of their branches are advanced and can be reached to have such problems solved.

In addition, some adopters are dissatisfied with the low speed of Internet banking response, which results from deficiencies in infrastructure for the Internet communication network. This causes slow feedback and slow transaction response. Customers' perception of convenience seems to shift once they are experienced on the Internet, and they view slow Web sites as inconvenient. Slow physical response to transactions is perceived as even more inconvenient.

Finally, adopters seemed to have staff with more experience in using technology-based service delivery, which is one major factor that contributes to customer trust and helps them decide whether to adopt the new technology. Adopters indicated that they have more confidence using technology-based channel because of their experience in the technology.

i) Legal Support Issues

Three concerns about legal support were prominent among respondents: ability of the courts to resolve Internet banking disputes efficiently, fair liability for adopters in responsibility for any financial mistakes, and privacy protection. Even though electronic commerce law may be implemented, courts may not yet resolve Internet cases efficiently. It may take time to learn the justice processes, especially how to trace online evidence. Furthermore, they are concerned about documentation which can be used as financial evidence, because such documents cannot be completely provided by Internet banking. Partly because of this, many adopters feel that Internet banking mainly provides information benefits to customers at the

moment. Customers are mostly not conducting higher- level complicated financial services, but mainly do such things as check balance, view statements, and sometimes transfer money.

Non-adopters are even more concerned about the liability agreement that they always impose upon customers, to avoid being the party responsible for any mistakes, whether caused by the customer or the system. They can however assist in tracing any mistakes made by bank customers. The bank also has log files to keep track of contact by its customers, which can assist in solving problems.

ii) Organizational Barriers

This research found three key aspects: management negative attitudes, lack of IT resources, and lack of knowledge to most effectively use Internet banking. Adopters seem to consider lack of management support as relatively unimportant. They have good management support for Internet banking adoption, which leads to information technology know-how and trained personnel in the use of Internet banking. For non-adopters, the lack of management support had the highest frequency of mentions, indicating that this is one of the most important drivers of Internet banking adoption.

Some respondents indicated that their management does not have the policy to have any financial transactions via the Internet. The corporate financial system is an important system and it has its own characteristics. They argue that if they use Internet banking and have problems with customer transactions, it could cause them to have financial loss that sometimes could put them in trouble.

Lack of information technology resources was cited frequently among non-adopters as one of the barriers to new information technology adoption. They're reluctant to invest more in Internet technology. One respondent mentioned that they did not have a policy to invest more in information technology, especially to subscribe for the high performance speed of Internet service for making financial transactions with the customers. To them, it was not worth enough to invest more and have transaction risk.

The knowledge barrier was the least mentioned among all the respondents. Most adopters have educated personnel who can use computer access through the Internet. However, non-adopters more likely have fewer knowledgeable personnel to deal with technical problems, whilst adopters reveal that this issue is quite trivial for them.

Overall, adopters had some level of positive attitude about using the Web channel, as it made their operations more efficient, decreased their costs and increases profit to them.

iii) Trust of the system

Reliability of transactions via the Internet banking system is major concern among all adopters, but again, stronger among non-adopters. Adopters do worry about reliability of this new service, but are more confident that they can solve problems that arise. However, they prefer to deal with problems at branch level, so that it is easy for customers to go to the bank when the problems do occur. This has important implications for staff training in the branches. Even though the branches are not responsible for implementing the Internet banking, there must be someone in each branch trained to handle common Internet problems, and who knows where to go for help within the bank for more complex problems.

Finally, trust is related to experience with the bank and bank policy, which contributes to customer trust in bank business practices. The bank's overall reputation combines with reputation in technology-based service provision to make banks more or less attractive. All of these trust issues would make it difficult for new entrants, especially purely virtual banks, to make much rapid progress in developing markets among Kenyan customers. With no prior relationships to customers, no strong reputation, and no visible prior experience with the technology, Employees, like customers are unlikely to trust Internet banking services.

5.2 CONCLUSION

Kenya does not have e-commerce law, and banks believe the country still lacks ability to protect bank customers sufficiently in cases of financial loss via Internet banking, and to trace online evidence and to resolve cases fairly. Even though there's legal support for privacy protection in Internet banking, banks do not have to wait for Kenyan law to catch up here, they can take the lead in devising policies and enforceable Internet banking contracts, which customers think are more fair than much of current practice.

Support or lack of desire from top management for beginning to use Internet banking seems to be critical in adoption. Non-adopters have quite negative attitudes toward adopting Internet banking to replace traditional banking procedures. In addition, non-Internet banking adopters do not want to invest much in information technology or training to support Internet banking

adoption. Internet banking adopters are not really concerned about this problem much because they already have more capability. However, even Internet banking adopters do not use this channel very extensively yet. Kenyan corporate customers still prefer face-to-face interaction with the banks. With trust such a strong issue, it is unlikely that this desire for close relationships will disappear. This suggests that banks will mainly develop their Internet banking from their current customer base. It seems unlikely to be an effective way to attract many new customers in the early stages of development.

To overcome employee/customer distrust of the system, banks need to visibly demonstrate concern for security, reliability, and liability with concrete solutions to reduce or eliminate costs to customers in case transactions fail or are processed inaccurately. Often, these are not purely technical issues, but rather, are related to process design, or, sometimes, partly to customer psychology and beliefs, which may or may not be consistent with the actual technology and system. The Internet channel must be well integrated into other channels so that customers can easily interact with people who are trained to handle problems efficiently, and banks must adopt strong customer orientations.

Aside from the usage barriers, this research indicates that current adopters feel Internet banking is the good channel for some interactions with the customers. If it is well integrated into the overall business, the Internet can enable banks to provide more customized service, and stronger personalized relationships. Thus, adopters do not seem to see the Internet as a channel to replace traditional relationships, but rather as a way to supplement and enhance the relationships. This is consistent with the cultural environment, and with the discussion in Howcroft and Durkin (2000), who caution that customer-bank relationships cannot be ignored when implementing Internet banking.

Banks frequently view Internet banking as essentially a cost reduction mechanism, both for themselves and for customers, but adopters see quite a lot of potential new costs, partly because the new channel is perceived as much more risky. Relationships are a mechanism for reducing risk in more traditional business, and probably must also be part of the Internet banking system if it is to be widely adopted in Kenya. Adopters clearly say that the Internet service channel offers potential, but even them feel that it does not deliver much value yet compared to the problems of operating on the Internet. Thus, improving patronage at this stage of development seems to be mainly a matter of lowering barriers not improving benefits, and much of the work on lowering barriers seems to be about banks learning how to

integrate the Internet into interpersonal relationships with customers. Kenya government too has a duty through the ministry of information and communication to address the underdevelopment in the technological sector.

5.3 Limitations of the Study and Suggestions for Further Research

These sections of the research considered the limitations of this study as well as suggestions for future research.

5.3.1 Limitations

The limitations of the study were summarized as follows:

i) Scope of the study

The coverage of this study was too wide and the model very comprehensive. Some areas of the study therefore received just enough attention.

ii) The mode of responses

The questionnaires were all sent by electronic email. Thus with regards to the questionnaire findings, these would have been strengthened had it been possible to also supplement them using interviews. This supporting tool had to be abandoned due to the limitations of time and manpower. The findings could also have been reinforced if the research had been a longitudinal one. However, this can be expanded over a longer period of time to offer a longitudinal study.

iii) Resource Constraints

Limited finances and time were constraining factors in this study. Money was required to purchase stationery among others. Combining this project with normal office duties ad family required the highest standard of time management.

iv) Confidentiality

Some of respondents were hesitant to return the questionnaires for fear of disclosing vital bank information. Even though the introduction letter accompanied every questionnaire, it was apparent that the mangers were observing their secrecy duties too much.

5.3.2 Suggestions for Further Research

Since this was a study testing UTAUT model in Kenyan context, further comparative studies may be appropriate between developing and developed economies.

Considering that this study focused only on the independent and dependent variables in the model used, further studies may include the intervening variables in determination of acceptance and usage of technology.

It would also be important to carry out a purely empirical research without reliance on a prior model, as was the case with this study.

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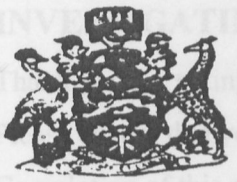
APPENDICES

Appendix A SAMPLING FRAME OF BANKS

1. African Banking Corporation
2. Bank of Africa
3. Bank of Baroda
4. Bank of India
5. Barclays bank of Kenya
6. CFC Bank
7. Charterhouse bank
8. Chase bank
9. Citibank
10. City Finance bank
11. Co-operative bank of Kenya
12. Commercial Bank of Africa
13. Consolidated bank
14. Daima bank (Statutory)
15. Development bank of Kenya
16. Diamond Trust bank
17. Dubai bank
18. EABS bank
19. Euro Bank
20. Equatorial Commercial bank
21. Equity bank
22. Fidelity Commercial
23. Fina bank
24. Giro commercial bank
25. Guardian bank
26. Habib A.G.Zurich
27. Habib bank
28. Imperial Bank
29. Investment and Mortgages bank
30. K-Rep bank

31. Kenya Commercial bank
32. Kenya Post Office Savings Bank
33. Middle East bank
34. National bank of Kenya
35. National Industrial Credit bank
36. Oriental Commercial bank
37. Paramount Universal bank
38. Prime Bank
39. Southern Credit bank
40. Stanbic bank
41. Standard Chartered bank
42. Trans-National bank
43. Victoria Commercial bank

Appendix B: Letter to the Respondents



UNIVERSITY OF NAIROBI

SCHOOL OF BUSINESS

Telephone: +2542-318262

Telegrams: "Varsity", Nairobi

P.O. Box 30197

Telex: 22095 Varsity

Nairobi, Kenya

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Dear Sir/Madam,

RE: An Investigation of Internet banking technology Adoption in Kenya

I am a Postgraduate student undertaking a Master of Business Administration (MBA) degree at the School of Business, University if Nairobi. I am currently carrying out research on Internet banking technology adoption amongst banks in Kenya. This is a requirement to complete my MBA course project at the University of Nairobi.

I intend my approach to this survey to be both consultative and ensure that it is not disruptive to your already tight schedule of activities. I kindly request you to provide the required information by responding to the questions in the questionnaire. The information required is purely for academic purposes and will be treated in the strictest manner. Your name or the name of your company will not be mentioned in this research.

A copy of this research project will be made available to you upon request. I will appreciate your cooperation in this academic exercise.

Thanking you in advance,

Yours faithfully,

Millicent

Student Number D61/P/7002/04

Appendix C: Study Questionnaire

INVESTIGATING ADOPTION OF INTERNET BANKING IN KENYA

Thank you for taking the time to complete this questionnaire.

Please ensure that you complete all questions by ticking all that apply.

Completion of this questionnaire is voluntary and all responses will remain confidential.

Section A: Demographics and Internet Banking Details

1. Name of the bank (Optional) _____
2. How can you describe the ownership of your bank _____

   a) Public [ ] b) Private [ ] c)Both [ ]
3. How can you describe the management of your bank _____

   a) Indigenous [ ] b) Foreign [ ]
4. Does your bank offer any personal banking facilities over the Internet?

   a) Yes [ ] b)No [ ]
5. If Yes, which ones? (tick as appropriate)

   a) Opening account [ ] e) Checking account balances[ ]

   b) Viewing transactions [ ] f) Remittances [ ]

   c) Interbank transfers [ ] g)Standing orders set ups [ ]

   d) Direct debits [ ]

   e) Others (Please specify)----------

   ---
6. While opening an account:

   a) Individuals open accounts abroad [ ]

   b) Individuals must be present in Kenya [ ]

Please tick as appropriate

Position: line manager [ ] Middle level[ ] Senior level[ ]

Period in this position <1year[ ] 1-3[ ] >3years[ ]

Gender Female[ ] Male[ ]

Age 25-30 years[ ] 31-35[ ] 36-40[ ] Over 40 years [ ]

Section B: Determinants of Internet Banking Adoption

I. Determinants of Intention to Use Internet Banking	Strongly disagree	Disagree	Indifferent	Agree	Strongly Agree
1. I would find Internet banking useful to this bank					
2. Using Internet banking enables this bank to serve many customers more quickly					
3. Using Internet banking increases productivity in this bank					
4. If this bank uses Internet banking fully, it will increase its chances of expanding customer base					
5. My interaction with the Internet banking system would be clear and understandable					
6. It would be easy for me to become skillful at using Internet banking system.					
7. I would find the Internet Banking system easy to use.					
8. Learning to operate Internet banking system is easy for me.					
9. Using the Internet banking system is a bad/good idea.					
10. The Internet banking system makes work more interesting.					
11. Working with the Internet banking system is fun.					
12. I like working with the Internet banking system.					
13. People whose decisions influence this bank think that we should use Internet banking.					
14. People who are important to this bank think that we should adopt Internet banking.					
15. The senior management of this bank has been helpful in the use of Internet banking.					
16. In general, the organization has supported the adoption of Internet Banking.					

11. Determinants of Usage Behavior	Strongly Disagree	Disagree	Indifferent	Agree	Strongly Agree
17. This bank has the financial resources necessary to adopt Internet banking.					
18. This bank has the technical resources necessary to adopt Internet banking					
19. The staff have the knowledge necessary to use Internet banking.					
20. Internet banking system is not compatible with other systems in use					
21. A specific person (or group) is available for assistance with system difficulties.					
22. I feel apprehensive about using Internet banking.					
23. It scares me to think that the bank could lose a lot of information using Internet banking.					
24. I hesitate to use the system for fear of making mistakes I cannot correct.					
25. Internet banking is somewhat intimidating to me.					
26. The bank intends to use the system in the next 12 months					
27. I predict we would use Internet banking system in the next 12 months.					
28. The bank plans to use the Internet banking in the next 12 months.					

29. Please indicate other factors that influence the usage of Internet banking technology in your bank:

a) ----------

b) ----------

c) ----------

d) ----------

Section C: Barriers to of Internet Banking Adoption

111. The following are possible hindrances to adoption of Internet Banking	Strongly Disagree	Disagree	Indifferent	Agree	Strongly Agree
30. Low rate of growth of the total population					
31. Limited growth of the technological sector					
32. Little communication with more advanced countries.					
Organizational Barriers					
33. Employees have negative attitude towards change					
34. Senior management commitment is lacking					
35. Prevalent Resource Constraints					
36. Poor I.T infrastructure					
37. Lack of Knowledgeable I.T. staff					
38. Non- Motivated workforce					
Trust of the System					
39. Internet Banking system is insecure					
40. I perceive risk in Internet banking					
41. Distrust of service providers					
42. Reputation of Service providers is wanting					
43. Internet Service providers are not reliable					
Legal Support					
44. The bank does not offer customer protection					
45. It is difficult to win customers confidence to use Internet banking					
46. The bank does not accept liability incase of loss					
47. There are no laws governing Internet banking					
48. Bank jurisdiction is not defined in Internet banking					
49. The bank is hesitant to lose in dispute resolution					

50. What other barriers may hinder transactions being managed remotely?

APPENDIX D: FACTOR ANALYSIS RESULTS (SPSS)

Factor Analysis

		Determinants of intention to use internet banking(I would find internet useful to this bank)	Determinants of intention to use internet banking(Using internet banking enables this bank to serve many customers more quickly)	Determinants of intention to use internet banking(Using internet banking increase productivity in this bank)	Determinants of intention to use internet banking(If this bank uses internet banking fully, it will increase its chance of expanding customer base)	D of u b i sy b un
Sig. (1-tailed)	Determinants of intention to use internet banking(I would find internet useful to this bank)		.000	.000	.000	
	Determinants of intention to use internet banking(Using internet banking enables this bank to serve many customers more quickly)	.000		.000	.000	
	Determinants of intention to use internet banking(Using internet banking increase productivity in this bank)	.000	.000		.000	
	Determinants of intention to use internet banking(If this bank uses internet banking fully, it will increase its chance of expanding customer base)	.000	.000	.000		
	Determinants of intention to use internet banking(My interaction with the internet banking system would be clear and understandable)	.055	.009	.030	.001	
	Determinants of intention to use internet banking(It would be easy for me to become skillful at using internet banking system)	.000	.001	.020	.005	
	Determinants of intention to use internet banking(I would find the internet banking system easy to use.)	.000	.000	.020	.005	
	Determinants of intention to use internet banking(Learning to operate internet banking system is easy for me)	.000	.000	.014	.002	
	Determinants of intention to use internet banking(Using the internet banking system is a good idea)	.006	.006	.040	.004	
	Determinants of intention to use internet					

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.377
Bartlett's Test of Sphericity	Approx. Chi-Square	659.311
	df	120
	Sig.	.000

Communalities

	Initial	Extraction
Determinants of intention to use internet banking(I would find internet useful to this bank)	1.000	.767
Determinants of intention to use internet banking(Using internet banking enables this bank to serve many customers more quickly)	1.000	.848
Determinants of intention to use internet banking(Using internet banking increase productivity in this bank)	1.000	.870
Determinants of intention to use internet banking(If this bank uses internet banking fully, it will increase its chance of expanding customer base)	1.000	.756
Determinants of intention to use internet banking(My interaction with the internet banking system would be clear and understandable)	1.000	.558
Determinants of intention to use internet banking(It would be easy for me to become skillful at using internet banking system)	1.000	.877
Determinants of intention to use internet banking(I would find the internet banking system easy to use.)	1.000	.907
Determinants of intention to use internet banking(Learning to operate internet banking system is easy for me)	1.000	.841
Determinants of intention to use internet banking(Using the internet banking system is a good idea)	1.000	.716
Determinants of intention to use internet banking(The internet banking system makes work more interesting)	1.000	.806
Determinants of intention to use internet banking(Working with the internet banking system is fun)	1.000	.936
Determinants of intention to use internet banking(I	1.000	.801

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotatio
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	9.726	60.784	60.784	9.726	60.784	60.784	8.91
2	1.951	12.195	72.979	1.951	12.195	72.979	7.08
3	1.344	8.401	81.380	1.344	8.401	81.380	5.93
4	1.022	6.386	87.765				
5	.651	4.070	91.835				
6	.477	2.979	94.814				
7	.222	1.386	96.200				
8	.202	1.260	97.461				
9	.135	.842	98.302				
10	9.544E-02	.597	98.899				
11	7.092E-02	.443	99.342				
12	5.885E-02	.368	99.710				
13	3.269E-02	.204	99.914				
14	9.038E-03	5.649E-02	99.971				
15	4.536E-03	2.835E-02	99.999				
16	1.406E-04	8.786E-04	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Component Matrix[a]

	Component		
	1	2	3
Determinants of intention to use internet banking(I would find internet useful to this bank)	.684	.423	.346
Determinants of intention to use internet banking(Using internet banking enables this bank to serve many customers more quickly)	.766	.498	.118
Determinants of intention to use internet banking(Using internet banking increase productivity in this bank)	.594	.704	.149
Determinants of intention to use internet banking(If this bank uses internet banking fully, it will increase its chance of expanding customer base)	.663	.563	-1.47E-02
Determinants of intention to use internet banking(My interaction with the internet banking system would be clear and understandable)	.711	-1.56E-02	-.228
Determinants of intention to use internet banking(It would be easy for me to become skillful at using internet banking system)	.919	-.181	-1.59E-02
Determinants of intention to use internet banking(I would find the internet banking system easy to use.)	.935	-.179	-2.86E-02
Determinants of intention to use internet banking(Learning to operate internet banking system is easy for me)	.912	-9.11E-02	3.280E-02
Determinants of intention to use internet banking(Using the internet banking system is a good idea)	.819	-.138	-.159
Determinants of intention to use internet banking(The internet banking system makes work more interesting)	.824	-.189	-.301
Determinants of intention to use internet banking(Working with the internet banking system is fun)	.871	-.185	-.377
Determinants of intention			

Pattern Matrix[a]

	Component		
	1	2	3
Determinants of intention to use internet banking(I would find internet useful to this bank)	-.216	.881	.235
Determinants of intention to use internet banking(Using internet banking enables this bank to serve many customers more quickly)	7.809E-02	.892	-4.71E-02
Determinants of intention to use internet banking(Using internet banking increase productivity in this bank)	-.171	1.090	-.180
Determinants of intention to use internet banking(If this bank uses internet banking fully, it will increase its chance of expanding customer base)	.144	.874	-.254
Determinants of intention to use internet banking(My interaction with the internet banking system would be clear and understandable)	.729	.115	-.102
Determinants of intention to use internet banking(It would be easy for me to become skillful at using internet banking system)	.681	8.554E-02	.277
Determinants of intention to use internet banking(I would find the internet banking system easy to use.)	.705	8.839E-02	.265
Determinants of intention to use internet banking(Learning to operate internet banking system is easy for me)	.571	.211	.271
Determinants of intention to use internet banking(Using the internet banking system is a good idea)	.773	3.848E-02	7.451E-02
Determinants of intention to use internet banking(The internet banking system makes work more interesting)	.976	-8.42E-02	-4.65E-02
Determinants of intention to use internet banking(Working with the internet banking system is fun)	1.097	-9.74E-02	-.124
Determinants of intention			

Structure Matrix

	Component		
	1	2	3
Determinants of intention to use internet banking(I would find internet useful to this bank)	.486	.853	.512
Determinants of intention to use internet banking(Using internet banking enables this bank to serve many customers more quickly)	.613	.919	.417
Determinants of intention to use internet banking(Using internet banking increase productivity in this bank)	.407	.898	.222
Determinants of intention to use internet banking(If this bank uses internet banking fully, it will increase its chance of expanding customer base)	.539	.847	.243
Determinants of intention to use internet banking(My interaction with the internet banking system would be clear and understandable)	.739	.528	.404
Determinants of intention to use internet banking(It would be easy for me to become skillful at using internet banking system)	.907	.645	.739
Determinants of intention to use internet banking(I would find the internet banking system easy to use.)	.925	.657	.743
Determinants of intention to use internet banking(Learning to operate internet banking system is easy for me)	.872	.698	.723
Determinants of intention to use internet banking(Using the internet banking system is a good idea)	.843	.562	.571
Determinants of intention to use internet banking(The internet banking system makes work more interesting)	.894	.511	.519
Determinants of intention to use internet banking(Working with the internet banking system is fun)	.958	.538	.510
Determinants of intention			

Component Correlation Matrix

Component	1	2	3
1	1.000	.632	.620
2	.632	1.000	.466
3	.620	.466	1.000

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.

SECTION 2

Factor Analysis

		Determinants of usage behaviour(This bank has the finacial resource neccessary to adopt internet banking)	Determinants of usage behaviour(This bank has the technical resource resource neccessary to adopt interent banking)	Determinants of usage behaviour(The staff have the knowledge neccessary to use internet banking)	Determinants of usage behaviour(Internet banking system is not compatible with other systems in use)
Sig. (1-tailed)	Determinants of usage behaviour(This bank has the finacial resource neccessary to adopt internet banking)		.000	.051	.015
	Determinants of usage behaviour(This bank has the technical resource resource neccessary to adopt interent banking)	.000		.061	.005
	Determinants of usage behaviour(The staff have the knowledge neccessary to use internet banking)	.051	.061		.308
	Determinants of usage behaviour(Internet banking system is not compatible with other systems in use)	.015	.005	.308	
	Determinants of usage behaviour(A specific person(or group)is available for assistance with system difficulties)	.003	.006	.431	.000
	Determinants of usage behaviour(I feel apprehensive about using internet banking)	.074	.110	.156	.023
	Determinants of usage behaviour(It scares me to think that the bank could lose a lot of information using internet banking)	.069	.037	.081	.087
	Determinants of usage behaviour(i hesitate to use the system for fear of making mistakes i cannot correct)	.000	.002	.475	.003
	Determinants of usage behaviour(Internet banking is somewhat intimidating to me)	.023	.045	.060	.003
	Determinants of usage behaviour(This bank Intends to use the system in the next 12 months)	.009	.035	.026	.022
	Determinants of usage behaviour(I predict we would use internet banking system in the	.001	.007	.000	.211

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.721
Bartlett's Test of Sphericity	Approx. Chi-Square	271.099
	df	66
	Sig.	.000

Communalities

	Initial	Extraction
Determinants of usage behaviour(This bank has the finacial resource neccessary to adopt internet banking)	1.000	.589
Determinants of usage behaviour(This bank has the technical resource resource neccessary to adopt interent banking)	1.000	.501
Determinants of usage behaviour(The staff have the knowledge neccessary to use internet banking)	1.000	.576
Determinants of usage behaviour(Internet banking system is not compatible with other systems in use)	1.000	.624
Determinants of usage behaviour(A specific person(or group)is available for assistance with system difficulties)	1.000	.813
Determinants of usage behaviour(I feel apprehensive about using internet banking)	1.000	.491
Determinants of usage behaviour(It scares me to think that the bank could lose a lot of information using internet banking)	1.000	8.908E-02
Determinants of usage behaviour(i hesitate to use the system for fear of making mistakes i cannot correct)	1.000	.808
Determinants of usage behaviour(Internet banking is somewhat intimidating to me)	1.000	.650
Determinants of usage behaviour(This bank Intends to use the system in the next 12 months)	1.000	.762
Determinants of usage behaviour(I predict we would use internet banking system in the next 12 months)	1.000	.930
Determinants of usage behaviour(The bank plans to use the internet banking in the next 12 months)	1.000	.848

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	5.762	48.013	48.013	5.762	48.013	48.013	5.15
2	1.919	15.992	64.006	1.919	15.992	64.006	4.22
3	1.542	12.848	76.853				
4	.872	7.269	84.123				
5	.617	5.139	89.262				
6	.481	4.012	93.274				
7	.375	3.127	96.401				
8	.174	1.447	97.848				
9	.122	1.015	98.863				
10	6.848E-02	.571	99.434				
11	3.747E-02	.312	99.746				
12	3.045E-02	.254	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Component Matrix[a]

	Component	
	1	2
Determinants of usage behaviour(This bank has the finacial resource neccessary to adopt internet banking)	.767	2.683E-02
Determinants of usage behaviour(This bank has the technical resource resource neccessary to adopt interent banking)	.708	-2.46E-02
Determinants of usage behaviour(The staff have the knowledge neccessary to use internet banking)	.442	.617
Determinants of usage behaviour(Internet banking system is not compatible with other systems in use)	-.608	.504
Determinants of usage behaviour(A specific person(or group)is available for assistance with system difficulties)	.749	-.502
Determinants of usage behaviour(I feel apprehensive about using internet banking)	-.690	.118
Determinants of usage behaviour(It scares me to think that the bank could lose a lot of information using internet banking)	-.298	-1.23E-02
Determinants of usage behaviour(i hesitate to use the system for fear of making mistakes i cannot correct)	-.759	.482
Determinants of usage behaviour(Internet banking is somewhat intimidating to me)	-.790	.160
Determinants of usage behaviour(This bank Intends to use the system in the next 12 months)	.866	.115
Determinants of usage behaviour(I predict we would use internet banking system in the next 12 months)	.744	.614
Determinants of usage behaviour(The bank plans to use the internet banking in the next 12 months)	.692	.607

Extraction Method: Principal Component Analysis.

Pattern Matrix[a]

	Component	
	1	2
Determinants of usage behaviour(This bank has the finacial resource neccessary to adopt internet banking)	-.524	.370
Determinants of usage behaviour(This bank has the technical resource resource neccessary to adopt interent banking)	-.526	.290
Determinants of usage behaviour(The staff have the knowledge neccessary to use internet banking)	.223	.835
Determinants of usage behaviour(Internet banking system is not compatible with other systems in use)	.873	.250
Determinants of usage behaviour(A specific person(or group)is available for assistance with system difficulties)	-.971	-.185
Determinants of usage behaviour(I feel apprehensive about using internet banking)	.596	-.186
Determinants of usage behaviour(It scares me to think that the bank could lose a lot of information using internet banking)	.202	-.146
Determinants of usage behaviour(i hesitate to use the system for fear of making mistakes i cannot correct)	.962	.161
Determinants of usage behaviour(Internet banking is somewhat intimidating to me)	.703	-.187
Determinants of usage behaviour(This bank Intends to use the system in the next 12 months)	-.516	.505
Determinants of usage behaviour(I predict we would use internet banking system in the next 12 months)	5.062E-03	.967
Determinants of usage behaviour(The bank plans to use the internet banking in the next 12 months)	3.611E-02	.937

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization

Structure Matrix

	Component	
	1	2
Determinants of usage behaviour(This bank has the finacial resource neccessary to adopt internet banking)	-.694	.611
Determinants of usage behaviour(This bank has the technical resource resource neccessary to adopt interent banking)	-.660	.532
Determinants of usage behaviour(The staff have the knowledge neccessary to use internet banking)	-.162	.733
Determinants of usage behaviour(Internet banking system is not compatible with other systems in use)	.758	-.151
Determinants of usage behaviour(A specific person(or group)is available for assistance with system difficulties)	-.886	.262
Determinants of usage behaviour(I feel apprehensive about using internet banking)	.681	-.460
Determinants of usage behaviour(It scares me to think that the bank could lose a lot of information using internet banking)	.269	-.239
Determinants of usage behaviour(i hesitate to use the system for fear of making mistakes i cannot correct)	.888	-.282
Determinants of usage behaviour(Internet banking is somewhat intimidating to me)	.789	-.510
Determinants of usage behaviour(This bank Intends to use the system in the next 12 months)	-.749	.743
Determinants of usage behaviour(I predict we would use internet banking system in the next 12 months)	-.440	.964
Determinants of usage behaviour(The bank plans to use the internet banking in the next 12 months)	-.395	.920

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.

Component Correlation Matrix

Component	1	2
1	1.000	-.460
2	-.460	1.000

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.

Component Score Coefficient Matrix

	Component	
	1	2
Determinants of usage behaviour(This bank has the finacial resource neccessary to adopt internet banking)	-.117	.112
Determinants of usage behaviour(This bank has the technical resource resource neccessary to adopt interent banking)	-.118	.087
Determinants of usage behaviour(The staff have the knowledge neccessary to use internet banking)	.057	.263
Determinants of usage behaviour(Internet banking system is not compatible with other systems in use)	.201	.085
Determinants of usage behaviour(A specific person(or group)is available for assistance with system difficulties)	-.223	-.065
Determinants of usage behaviour(I feel apprehensive about using internet banking)	.134	-.054
Determinants of usage behaviour(It scares me to think that the bank could lose a lot of information using internet banking)	.045	-.044
Determinants of usage behaviour(i hesitate to use the system for fear of making mistakes i cannot correct)	.220	.057
Determinants of usage behaviour(Internet banking is somewhat intimidating to me)	.159	-.053
Determinants of usage behaviour(This bank Intends to use the system in the next 12 months)	-.114	.154
Determinants of usage behaviour(I predict we would use internet banking system in the next 12 months)	.008	.302
Determinants of usage behaviour(The bank plans to use the internet banking in the next 12 months)	.015	.293

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.

Component Score Covariance Matrix

Component	1	2
1	1.212	-.920
2	-.920	1.212

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.

APPENDIX E: WORK SCHEDULE

Item	Phase	Duration	Start by
1	**Problem Definition**: Identify and develop a research topic, find background information, frame a central research question and a set of sub-questions, problem statement.	1 month	April
2	**Literature Review:** Locate materials, use catalogues to find books and media, use indices to find periodical articles, find Internet resources, evaluate findings, cite what you find using a standard format	1 month	May
3	**Selection of Research Design**, Subjects and Data Collection Techniques	1 month	June
4	**Data Gathering**	1/2month	July
5	**Data Processing and Analysis**	1/2month	July
6	**Implications, Conclusion and Recommendations:** Revise, edit, proof read	1 month	August