FACTORS AFFECTING THE ADOPTION OF INTERNET BANKING IN COMMERCIAL BANKS: A SURVEY OF COMMERCIAL BANKS IN NAIROBI

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A Project Report Submitted to the School of Business in Partial Fulfillment
of the Requirement for the Degree of Masters in Global Executive Masters
of Business Administration (GeMBA)
DECLARATION

I, the undersigned, declare that this is my original work and has not been submitted to any other college, institution or university other than the United States International University in Nairobi for Academic Credit.

Signed .................................................. Date........................................
Alice Muthoni Muraguri (ID 636202)

This proposal has been presented for examination with my approval as the appointed supervisor.

Signed .................................................. Date........................................
Prof. Francis W. Wambalaba

Signed .................................................. Date........................................
Director of GeMBA
DEDICATIONS

I dedicate this research paper to my wonderful family. Particularly to my understanding and patient husband, Robert, who has put up with the many months of research, and to our precious Sons who are the joy of our lives. I must also thank my loving mother who has continuously encouraged me to reach for the stars.
ACKNOWLEDGEMENTS

I wish to acknowledge my supervisor for his endless commitment and in providing the guidance and support throughout the research project period. I also wish to thank the staff of commercial banks in Kenya, for their constant and valuable guidance in my research project. I would like to extend my gratitude to United States International University for giving me an opportunity to undertake my Executive MBA course. Special thanks to my colleagues at the University, for their input and constant encouragement.
ABSTRACT

The main purpose of the study was to examine the factors affecting adoption of internet banking in commercial banks in Kenya. The study narrowed its research undertakings towards finding out; how technological infrastructure; E-transaction security; and the regulatory framework affected the adoption of internet banking in commercial banks in Kenya.

The study adopted a descriptive research design and the target population comprised of 46 banking organizations in Kenya. The study used a non-probability sampling design by applying a purposive sampling method to select a sample size of 90 respondents who were Customer Service and IT Department managers. Questionnaires were used as the main data collection instruments and a pilot study was undertaken to pretest the questionnaires for validity and reliability. The study used a descriptive statistics data analysis method to analyze numerical data gathered using closed ended questions.

The study found out that existence of poor technological infrastructure characterized by poor information communication technology (ICT) systems created unfavorable environment for the application of internet banking services. The study noted that the major technological infrastructure issues affecting the adoption of internet banking included; data network, computer hardware and software and internet speed and access. Besides the poor technological infrastructure the study observed that the existing E-transaction security systems were not strong enough to support effective execution of internet banking functions as online transaction remained vulnerable to hacking, phishing and internet viruses and this greatly hampered effective adoption of internet banking in commercial banks. The study further found that there lacked effective regulatory framework in place to govern on application of internet banking in commercial banks, this in turn discouraged many customers from embracing internet banking services. Lack of such a regulatory framework makes it difficult for the government to enforce commercial banks that do not employ effective security systems that protects customers’ financial information from hackers.

The study concluded that; lack of effective ICT systems comprising of ineffective computer hardware and software greatly weakened the technological infrastructure and this created unsupportive environment for the adoption of internet banking in commercial banks; E-transaction security lowers the level of confidence among many customers on the safety of
internet banking application and this hinders many customers from adopting internet banking; Lack of effective regulatory framework that guides application of internet banking services is a key factor that has not been given much emphasis by the government and this makes some banks to poorly execute internet banking services.

The main recommendations were; to strengthen the technological infrastructure, commercial banks should improve on organization ICT infrastructure through acquisition of better computer hardware and software and implementation of effective telecommunication equipment; to improve on E-transaction security, commercial banks should implement effective internet security systems that protect customers’ financial data from hackers and internet viruses, the banks management should also enable controlled access to internet banking services by leveraging established user authentication and provisioning processes for their on-premise applications; the government should enact new and effective Internet banking regulations that promotes the adoption of internet banking in commercial banks, further the government should also enforce policies that supports installation of better ICT infrastructure like fiber optic cable, reduction of internet costs, enhance better internet service accessibility, and enhance existence of better internet security in the country’s ICT infrastructure.
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ABBREVIATIONS AND ACRONYMES

AML  Anti-Money Laundering
ATMs  Automated-Teller-Machine
CBK  Central Bank of Kenya
GPS  Global Positioning Systems
IB  Internet Banking
OTC  Over-The Counter
CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Problem

The benefits of any technology on the growth on an economy can only be realized when there is significant use and diffusion of the technology. Technology adoption is important because it is the vehicle that allows most people to participate in a rapidly changing world where technology has become central to our lives. Individuals who do not or cannot adapt to technology will increasingly limit their ability to participate fully in the financial and convenience benefits associated with technology (Bridges, 2012).

Understanding the factors influencing technology adoption helps us predict and manage who adopts, when, and under what conditions. Armed with this information we can assess where people are in the adoption process and support them as they move from technology acceptance through to usage (Bridges, 2012). Unfortunately there is no clear definition of technology adoption, in large part due to the tremendous variability in types of technology and circumstances under which people adopt them. For some people technology adoption is synonymous with computer and internet usage. But people adopt a wide range of technologies that are not obviously computer based. Devices such as in-store kiosks, digital cameras, Global Positioning Systems (GPS) in cars, telephone banking, ATMs, and self-medication devices are all forms of technology widely available to consumers (Bridges, 2012).

The banking industry has been significantly influenced by evolution of technology. The growing applications of computerized networks being used by banks has reduced the cost of transactions and increased the speed of service delivery substantially. The nature of financial intermediaries made banks improve their production technology by focusing on distribution of products. In other words, the evolution of banking technology has been mainly driven by changes in distribution channels as we see evidence from over-the-counter (OTC), automated-teller-machine (ATM), telephone-banking, and most recently internet banking (IB) (Yoonhee, 2007).

As banking technology has focused on reducing cost of distribution, internet banking is characterized as a process innovation by making customers handle their own banking without
physically going to the bank. It also allows non-customers to visit virtual banks via public web-network while telephone-banking or PC-banking provide only closed network limited to the existing clients. Considering new products and services specifically designed and offered on the internet given the new technology feature, one might argue that internet banking has also an aspect of product innovation as well (Yoonhee, 2007).

Internet banking is defined as the delivery of banking services to customers through the internet (Chi, Chang and Lee, 2007). Over the last few years, it has become a popular channel for banks to provide banking services to their customers. The widespread of internet banking is probably due to its benefits. For instance, internet banking provides conveniences as banking transactions and other related activities can be performed at the comfort of customers' home or office as well as at their most convenient time. The conveniences associated with this new mode of banking have tremendously eliminated the hassles associated with traditional banking such as the inconvenience of physically going to the bank, spending hours in bank queues, not to mention reduced cost of banking associated with the use of internet Banking. Internet banking also allows customers to perform banking transactions 24 hours a day, 365 days a year (Khalil, Philip and Nelly, 2010).

Another definition according to Maher and Hossain (2010), internet banking (e-banking) is an automated delivery of new and traditional banking products and services directly to customers through interactive electronic communication channels. E-banking includes the systems that enable customers, individuals or businesses, to access accounts, transact business or obtain information on products and services through a public or private network, including the Internet. Commercial banking is undergoing rapid changes, as the international economy expands and advances toward institutional and market

According to Alan (2009) during the last decade, internet banking has attracted a great deal of attentions from various stakeholders such as bankers, financial service participants, and regulators. Improving the efficiency of internet banking is now considered to be important to the banking industry as it is considered that it will help the banks maintain profitable growth by enabling them to automate work done by employees, reduce costs and retain customers simultaneously. Further internet banking may help reduce expenditure on “bricks and mortar”, and save high expenses. Meanwhile, internet banking gives customers 24-h access to banking services and hence results in efficient service delivery as well as customer
satisfaction attributed to its convenience with such cost-effective measures attract many bank customers’ to use the online banking services.

In USA, internet banking has experienced phenomenal growth in recent years. In 2006, Pew Internet and American Life Project reported that nearly half of internet users in the United States – 63 million adults – bank online (Fox and Beier, 2006). Nonetheless, the growth rate in e-banking has not kept pace with that of internet usage and this has been attributed to the lack of trust among bank customers, particularly among internet users aged 65 and older. News headlines in USA about e-mail scams, identity theft, and “phishing” that undeservedly distort consumer perceptions may be one of the several reasons why such a lack of trust persists (Kenneth, Peter, Ruben and George, 2010).

In June 2000, the Malaysian Central Bank officially allowed banks to use internet banking. Amongst the very first adopters of internet banking was Malayan Banking Berhad (Maybank) which is the largest bank in Malaysia by asset size and market capitalization. The services they offered through the internet banking portal includes banking enquiry functions, bill payment, credit card payment, funds transfer, accounts summary and transaction history. Currently, most major banks in Malaysia offer internet banking services (Khalil et al, 2010).

In India Internet banking arrived in the late 1990s, ICICI was the first bank to champion its usage and introduced internet banking to its customers in 1996. With lower internet costs and increased awareness about electronic media, online banking established itself only in 1999. Other banks followed suit, including HDFC, Citibank, IndusInd and the now redundant Times Bank (Jhumkee and Manisha, 2012). Once banking institutions in India recognized the low processing cost per transaction via the internet, they began viewing online banking as an extension of the bank rather than as an add-on service. The motivation to introduce online banking now also included new business potential, additional funds from new and existing customers, expansion in geographical reach, image as a tech-savvy bank especially if targeting the youth and the threat of customers shifting loyalty if they did not introduce it (Jhumkee and Manisha, 2012).

In China, Internet banking changed both the banking industry as well as banks’ services to its customers. ‘Anywhere banking’ came to be recognized as an opportunity also for differentiated and competitive services. Ancillary online services like checking account
status, fund transfer, ordering demand drafts, loan applications, credit card verifications, shopping portals etc. as well as not requiring a visit to the branch during office hours were viewed as high-value offerings and increasingly started to become a necessity rather than a service. (Jhumkee and Manisha, 2012)

In developed countries the success of Internet banking can be gauged by identifying the number of current registered I-banking users and the frequency with which they use the service. In USA over 10 million customers used online banking and the number was expected to grow to 35 million by the end of 2003, 7% of UK customers used Internet banking and this was expected to rise to 28% by 2004. The same trend was observed in Sweden, Germany and Norway (Gerrard, 2007).

A study by Simone and Jean-Paul (2012) revealed that in South Africa, change in the banking industry was mainly driven by technology and globalization. Competition was driven by IT developments and the emergence of alternative delivery channels. Internet banking was seen as one of the more successful markets. Change enablers were client sophistication, new information technologies and the Internet. However, the most pressing issues were service quality, client focus and profit performance.

Eight out of nine commercial banks in South Africa had a formal strategy in place to switch customers to electronic channels, against only half of the investment banks. Of the nine banks that offered Internet banking facilities, only one believed this area to be profitable. However, most banks believed that the Internet could be used to reduce costs and generate revenues. At less than 1% penetration rate, web enabled mobile phones were experiencing limited acceptance by bank customers who believed the technology to be slow and cumbersome (Simone and Jean-Paul, 2012).

According to Joyce and Chris (2010) it is evident that banks and other financial institutions in developing and emerging markets are embracing e-banking. For example, in Kenya there is steady increase in use of e-banking technologies such as automated teller machine (ATM), mobile and Internet (online) banking, electronic funds transfer, direct bill payments and credit card (CBK 2008).

Internet banking in Kenya is on its way to become the centerpiece of direct banking
strategies, with world’s leading banks developing new financial services or modifying existing ones to suit customers need to carry out financial transactions and services without necessarily going to the bank. According to Mr. Isaac Awuondo the Managing Director Commercial Bank of Africa, I-banking is an umbrella term for the process by which a customer may perform banking transactions electronically without visiting a brick-and-mortar institution. It’s this diffusion of financial services that has attracted investigation of self-service technologies in banking, with an increasing number of banks in Kenya and the whole world offering Internet banking. In Kenya, commercial banks have introduced I-banking due to: Rapidly changing customers’ needs and preferences, Competitive forces and product differentiation strategies, enhancement of customer relationship management and pressure to reduce transactional and operation costs and pass the benefits to customers (Wang, 2007).

Most bank customers in Kenya, lack awareness on internet banking and its benefits which stand out as being the obstacles to the adoption of Internet banking. Another concern which leads to resistance to adoption of internet banking in Kenya is security concern. Many Kenyans are afraid to make transactions on-line as they are afraid of losing their money as they would rather physically make the transaction as proof of payment. This is not the case as seen by the Managing Director, Commercial Bank of Africa Isaac Awuondo who pointed out the features and benefits of Internet banking as: Transact wherever and whenever it suits, Access your account information and transactions, Make electronic funds transfers, View, download and print statements, View banks up-to-date daily exchange rates, Transfer funds between your personal accounts (Awoundo,2007).

Although many banks in Kenya have introduced internet banking, there are constraints that hinder its development. These constraints are; majority of the customer shy away from I-banking services due to security concerns; customers still value personalized and responsive services from their bankers (Paul,2009); Ignorance as on average 30% of bank customers do not even know whether their banks provide online services; computer illiteracy among majority of the population is still significantly high especially in Africa; Poor and/or lack of technological infrastructure and reliable power supply; Lack of proper legislation governing e-transactions and preference to paper money, as opposed to “virtual” cash in transactions (Awoundo, 2007).
A study by Joyce and Chris (2010) revealed that adoption of e-banking in Kenya introduced new risks requiring new risk management strategies. A survey conducted on all banks revealed that they had at least experienced at least an internal or external and in some instances both electronic security threats. Further the study revealed that the presence of internet banking has magnified traditional banking risks. For instance, although system failure is rare (example at an ATM terminal), their occurrence causes the banks reputational damage which may take long to overcome. At the same time such a failure can cause customer dissatisfaction resulting is their migration to other competing banks. To counter this banks have employed various mechanisms such as staff training on issues related to e-banking. Additionally, physical security measures were noted in all banks surveyed and they included installation of back-up servers and use of removable hard disks among others. Banks have also employed specific security features. These include: fire walls, authentication, encryption, personal computer hardware security, and smart cards among others.

1.2 Statement of the Problem

According to Gitugu (2012) despite the fact that internet banking makes the transaction faster and more convenient, several commercial banks in Kenya are yet to fully adopt this new banking product. The banks that have adopted the product have been faced with various obstacles leading to poor application of internet banking services. According to Paul (2009), the key challenges that the banking industry in Kenya face are, technological infrastructure, E-transaction security and legislative framework that.

Auwuor (2009) highlighted that weak technological infrastructure hampers effective adoption of internet banking since accessibility of internet banking calls for well laid down ICT infrastructure and high quality computer software and hardware. Moreover, there is no proposed solution on technological infrastructure problem and this has hence created gap on technological improvements for internet banking adoption in commercial banks. According to Brian (2008) insecurity lowers the level of confidence among many. Most customers find internet banking to be characterized by high rates of fraud as a result of phishing and hacking of various websites that hosts internet banking services. Application of high quality security systems that leads to confidentiality of online transactions remains a critical problem that has influenced customers to resist the use of internet banking services hence slowing the pace of adoption of internet banking by the commercial banks. Further, according to Miguel (2007) effective adoption of internet banking in Kenya commercial banks is affected by absence of
effective regulatory framework on internet banking operations. Miguel (2007) highlighted that most commercial banks in Kenya finds it difficult to adopt internet banking since the existing banking regulations do not provide clear guidelines on how banks should embrace internet banking.

However, in spite of having many studies undertaken on internet banking, to the best of my knowledge no major study has been undertaken to address the factors affecting the adoption of Internet banking in commercial banks in Kenya and this has created a major knowledge gap amongst banks managers on effective management of the factors hindering the success of the internet banking services. This study therefore aimed to fill the missing gap by specifically ascertaining the factors affecting adoption of Internet banking in Kenya commercial banks and hopes to give recommendations on effective management of internet banking adoption challenges.

1.3 Purpose of the Study
The main purpose of the study was to examine the factors affecting adoption of internet banking in commercial banks in Kenya.

1.4 Research Questions
The study was guided by the following research questions;
1.4.1 How does technological infrastructure affect adoption of internet banking in commercial banks in Kenya?
1.4.2 What is the effect of E-transaction security on the adoption of internet banking in commercial banks in Kenya?
1.4.3 How does regulatory framework affect adoption of internet banking in commercial banks in Kenya?

1.5 Significance of the Study
1.5.1 Management of Commercial Banks
The study is of great significance to the management of commercial banks in Kenya since the findings obtained will give a clear insight of the nature and characteristics of the internet banking adoption problems in Kenya. The study will also give recommendations on how commercial banks could effectively adopt internet banking by providing solution to the current experienced internet banking challenges. This would also help in minimizing banks
operational costs since internet banking considerably reduces transaction costs for the banks.

1.5.2 Banking Industry
The study is of importance to the banking industry since it will provide updated and current information to stakeholders and management of various banks on factors affecting adoption of internet banking in Kenya. This will influence bank IT managers to employ effective IT application strategies like implementation of better anti-fraud security systems to guarantee high level of confidentiality on internet banking transactions. This may lead to attraction of more customers leading to realization of increased bank growth and development.

1.5.3 Bank Customers
The study is of great significance to various customers banking with commercial banks since the findings obtained will help customers realize the benefits of internet banking. The most significant benefit of Internet banking is the ready accessibility of bank accounts at all times. The inconvenience of visiting and waiting at the banks is also eliminated. This will result in, enhanced customer satisfaction, reduced customer attrition and increased customer base.

1.5.4 Other Researchers
The study is of great significance to various scholars and researchers since the findings obtained will provide ready reference that would be used as literature for other researchers conducting studies on internet banking. This will stimulate interest among academicians on internet banking applications leading to more research on effective adoption of internet banking in commercial banks.

1.6 Scope of the study
The study was undertaken at commercial banks located within Nairobi Central Business District. The study population comprised of the management staff working in 27 commercial banks within the NCBD. The study was undertaken within a time frame of one month. Since the study only covered commercial banks within Nairobi Central Business District, the geographical scope limited the study from including other commercial banks that are situated outside NCBD.
1.7 Definition of Terms

1.7.1 Internet Banking
Internet banking (E-banking) is defined as the automated delivery of new and traditional banking products and services directly to customers through interactive electronic communication channels. E-banking includes the systems that enable customers, individuals or businesses, to access accounts, transact business or obtain information on products and services through a public or private network, including the Internet (Maher and Hossain, 2010).

1.7.2 Phishing
Phishing is a form of electronic identity theft in which a combination of social engineering and Web site spoofing techniques is used to trick a user into revealing confidential information with economic value (Maher and Hossain, 2010).

1.7.3 Technological Infrastructure
Technological infrastructure is the information and communication systems required for the widespread sharing and use of information or resources such as computers, software and all the components of telecommunication infrastructure for processing data and information (Rexwhite, 2007).

1.7.4 Regulatory Framework
Regulatory framework is a system of regulations and the means to enforce, usually established by the government to regulate a specific activity. Is the existence of the necessary infrastructure which supports the control, direction or implementation of a proposed or adopted course of action, rule, principle or law (Chorafas, 2008).

1.8 Chapter Summary
The chapter introduced the research study by explaining the research back ground and highlighting the major problems affecting adoption of internet banking in commercial banks. The study main purpose was determined and the research questions were formulated. The significance and the scope of the study were discussed followed by the definition of the major terms used in the study. Chapter two explains the literature review of the study by covering major theoretical and empirical issues on adoption of internet banking. Chapter three discusses the research methodology by describing the methods and procedures used to carry
out the research study. Chapter four elaborates the processes, techniques and procedures applied to analyze, present and interpret data gathered using the questionnaires. Chapter five discusses the summary of the major findings, conclusions and study recommendations.
CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature related to the study. A literature review is an account of what has been published on a topic by accredited scholars and researchers. The purpose is to convey to the reader what knowledge and ideas have been established on a topic, and what their strengths and weaknesses are (Orodho, 2009). Literature review helps to orient the reader on past theoretical and empirical issues on factors affecting adoption of internet banking in commercial banks.

2.2 Theoretical Literature

2.2.1 Technological infrastructure

According to Rexwhite and George (2007) technological infrastructure reflects technological tools, methods and access models needed to facilitate efficient knowledge management and transfer in today's massive flow of information from various sources. They are information and communication systems required for the widespread sharing and use of information or resources such as computers, software and all the components of telecommunications infrastructure for processing data and information.

Popoola (2009) highlighted information technology infrastructure as “human regulation, telecommunications, information technology, government support and other information institutions. Rexwhite and George (2007) contended that technology infrastructure comprises of IT infrastructures that build on centralized systems architectures such as Web servers. It can be seen as IT and other basic infrastructures needed in the acquisition, processing, storage and dissemination or transfer of information by means of computers, office machines and telecommunications. Computers provide the processing, inputting, storage and retrieval facilities; while telecommunications provide the facilities for the transfer or communication of data and information that further facilitates the establishment and use of the information highway (internet), a network of independent information and communication technologies (telephone lines television) cables, communication satellites, computers, data transmitters etc) that are converging into an integrated system (Rexwhite and George, 2007). Popoola (2009) affirmed that effective adoption of internet banking depends on the nature and characteristics of the employed technological infrastructure. Lack of effective technological infrastructure
creates unfavorable environment for the application of internet banking systems in many commercial banks.

According to Venkatesh (2009) Unified Theory of Acceptance and Use of Technology (UTAUT) is one of theories that attempts to explain user intentions to use an Information System and subsequent usage behavior. The theory holds that four key constructs (performance expectancy, effort expectancy, social influence, and facilitating conditions) are direct determinants of usage intention and behaviour. Gender, age, experience, and voluntariness of use are posited to mediate the impact of the four key constructs on usage intention and behavior.

In diffusion of innovation theory, numerous models have been developed facilitating the mapping of diffusion of innovation within various industries (Abrahamson, 2008). These studies have identified the main factors that impact on the rate of diffusion of an innovation. These include achievement of competitive advantage, reducing costs, and protecting an organization’s strategic position (Johannessen, 2009). In addition, organizational structure and size, number of previous adopters and entry of new competition to the industry may also affect the uptake of a particular innovation (Tushman and Anderson, 2007).

A few studies of diffusion of innovation have been undertaken within the retail banking industry. Jayawardhena and Foley (2008), in a survey of UK Internet banking facilities, revealed that Internet banking is diffusing at a very slow pace. The drivers of this change remain ambiguous. It is difficult to establish up to what point innovation has been a management objective and how far it has been influenced by factors beyond management’s control (Chorafas, 2008).

Contrary to these motivating factors, security concerns have been highlighted as the most important issue delaying the diffusion of Internet banking (Long, 2000). Lack of user-friendly technology and consumer demand, high initial set-up costs, redundancy of existing high-cost legacy systems and lack of suitable skills have also acted as delay factors, if not determents, to many banks regarding the decision to adopt Internet banking (Daniel and Esser, 2009).

Developments in technology have dominated the revolution in the banking sector during the last decade (Gandy, 2008). The world-wide development in technologies for connection has
supported increased globalization of capital flows and financial organizations. Technology has also facilitated the proliferation of new products and services supporting new consumer demands. Competitive pressures will intensify as organizations seek ever greater productivity and efficiency improvements to sustain profitability (Gandy, 2008).

With the possible exception of regulatory reform, technological change is likely to have the greatest impact on the banking sector over the next decade (Bednar, 2007). Technology is frequently touted as a, if not the, key element in the formulae for productivity and profitability in the 1990s and beyond. It is likely to be the key factor driving change within the banking sector for the foreseeable future (Bednar, 2007).

According to Shu-Hsun and Ying-Yin (2008) existence of effective technology infrastructure influences conventional face-to-face services to be replaced with innovative self-service technology (SST), as in Internet banking which sets the standards for future SSTs such as telephone banking and ATMs. In the financial service industry, entry barriers have been removed as a result of deregulation and growing information and communication technology, leading most financial institutions to transform from the traditional approach of brick-and-mortar into click-and-mortar (Pooja and Balwinder, 2007). This transformation saves the institutions money as operating expenses of Internet banking are estimated at only 25 to 30 percent of the cost of traditional retail banks. The introduction of SST has revolutionized service delivery systems as it enables customers to access a service through technological interfaces independent of service professionals' involvement thereby transforming interactions between service providers and customers. In order to sustain this competitive advantage, SST has continually been developed in the banking industry hence facilitating adoption of internet banking in many financial institutions (Shu-Hsun and Ying-Yin, 2008).

2.2.2 E-transaction security
According to Hutchinson (2007) E-transaction security is a core problem that hinders adoption of internet banking in many banking institutions. Hutchinson (2007) argued that while it is acknowledged that Australian banks have an excellent record concerning security of customer information, surveys indicate that Internet users are weary about privacy issues including transparency, collection, use and disclosure of their personal information. This concern primarily relates to authentication. The banking and finance industries report the
highest incidence of misuse being 57 percent, which is directly related to these industries having one of the highest dependencies on computers in the workplace (Hutchinson, 2007).

The Citibank breach of security six years ago is still extensively recalled in banking and security circles, since it is one of the few successful electronic bank frauds on record (Barlotta, 2009). The incident portrays hackers who penetrated Citibank’s security system and progressively wired money to banks around the world. When the heist was discovered in September 1994, $10 million was gone. All but $400,000 was eventually recovered (Barlotta, 2009).

One of the latest security threats is a computer program known as “Nmap” which is a network exploration tool and security scanner. On execution it causes a bank’s intrusion-detection system to falsely believe it is being attacked by hundreds of hackers across the globe, when it is actually just one person (Shu-Hsun and Ying-Yin, 2008).

According to Chellappa (2008) the security protections offered by banks and which customers anticipate should include: Careful reference to their authorized Web sites in their publications; verification via the use of a digital certificate; evidence of security protection displayed on the screen; e.g. Padlock icon; protection of PINs and passwords; on-screen and mouse-operated keypads for sensitive information; virus protection; at least 128-bit encryption; firewall implementation and stated limits to customer liability for unauthorized use of access codes. From a consumer perspective the issue of trust can be ensured by having the following trust elements embedded within the trust model. Protection which is the process through which customers are satisfied that their personal information is sufficiently preserved by the entity collecting the information (Shu-Hsun and Ying-Yin, 2008).

According to Chellappa (2008), the majority of electronic commerce transactions are carried out through Web browsers that are connected to merchant sites that in turn connect to some form of financial institution. Like any sound information system, the transition when conducting such a transaction should be seamless and transparent for the user but feedback needs to be displayed in order to generate a feeling of control. Some assurance of security is displayed in browsers and Web sites in the form of symbols for consumers conducting transactions that conform somewhat with these frameworks. Typically, an unbroken padlock is used to indicate a secure session facilitating integrity and confidentiality via encryption,
statements about data protection and firewalls representing protection, familiar and verifiable domain names for verification and digital certificates ensuring authentication from trusted third parties (Chellappa, 2008). With no tangible way for an everyday user to validate the actual security of Internet Banking systems, there is little evidence to support that these symbols have not been fabricated. This framework provides the basis of identifying the necessary security requirements and mapping them to suitable security architecture for the corresponding environment.

2.2.3 Regulatory framework

According to Filipkowski, (2008), lack of effective regulatory framework makes internet banking vulnerable to illicit activities such as fraud and hacking of banks accounts. There are few features of the internet which attract criminals, including anonymity, non-face-to-face contacts, speed of the transactions, globalization process and new payment technologies, and cross-border activity. Obvious gap exists between the rapid development of the internet payment industry and the lagged financial regulation and countermeasures in this field. Indeed, regulatory blank spaces or gray zones of the online payment services in China ranged from the industry entry permission to the business procedures. The securities and risk issues hidden in the online payment services eventually raised a great and wide attention at both the international and national level.

According to Liu, (2010), new economy developed on the basis of internet web site and information technology was launched 1990s. Developed countries enacted sets of strategic plan to promote rapid development in this sector, and accordingly, escalate national competitive advantage. China turned its eyes on the new business model and new technology development since 1999. From then on, Chinese Government adopted active supports and loose regulations towards the electronic business, especially regarding on the innovation of business model and business expansion of the privately owned enterprises. “In China, the internet economy is actually the pronoun for the private economy. To be more blunt, Chinese internet economy is equal to Chinese private economy in nature”. As the result of government supports and lax regulation, internet payment services in China have developed and expanded rapidly. In the above-mentioned case, Alipay only took ten months to hold its users number from 100 to 200 million, and its total number transacted in a calendar year has increased by 200-300 percent. The current service types of Alipay comprise cross-border payment transactions, loans for the medium and small e-business vendors, credit card
repayment, and portable payment. On the other hand, regulations imposed to internet payment systems in China are evidently lagged, and it is the very long-existing problems in the e-commerce industry (Liu, 2010).

Businesses are becoming increasingly global and interconnected as they continue to engage in e-commerce. This will enhance the risks of identity-related financial crime through use of modern technology. International anti-money laundering (AML) theory holds that money launderers universally want to use the weaknesses of financial regulation system to combine the dirty money into legitimate economic system, and the possibility of being monitored and detected in the regulatory blind pot or regulatory weak point where is relatively low. Internet payment, as an emerging payment instrument with loose regulation, can be exploited in any step of the three stages of money laundering, namely placement, layering, and integration (Liu, 2010).

The complicated nature and characteristics of the internet payment services make the effective AML regulation in this area hard to meet (Filipkowski, 2008). The People’s Bank of China (PBC) enacted Administrative Measures for the Payment Services Provided by Non-financial Institutions on 21 June 2010 (hereafter referred to as Administrative Measures 2010), officially putting the third-party payment under the Chinese AML regulation and supervision. Article 2 of the Administrative Measures 2010 provides four categories of the payment services provided by non-financial institutions in China, including internet payment services, prepaid-card services, POS machine business, and other payment services designated by PBC. In fact, internet payment services occupy the largest proportion among all the third-party payment services (Filipkowski, 2008).

According to Sirluck, Liley, Nelson and Stan (2007) many customers are concerned about legal support for commercial usage of the Internet. Zugelder, Maze, Shull and Smith (2009) mentioned that customer protection is the major legal issue associated with Internet banking. 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 for having problems or making mistakes via the Web. With a lack of specific laws governing Internet banking, bank customers hesitate to use (Larpsiri, Pyun, Scruggs and Shcklett, 2008). 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 arise from intermediation by non-bank institutes, such as hardware vendors or Internet service provider. In addition, Thomas, Wolf, Allan and Nadra (2008) 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 (Sir luck at el, 2007).

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, Liao, Cheng and Lee, 2009). Frequently it is unclear whether electronic documents and records are acceptable as sufficient evidence of transactions (Larpsiri et al., 2008).

2.3 Chapter Summary
The chapter explored the existing theoretical and empirical literature on factors affecting adoption of internet banking in commercial banks. The study noted that, past theoretical and empirical studies addressed different aspects of internet banking while they left the major factors affecting adoption of internet banking in commercial banks unaddressed. This influenced development of a major knowledge gap on management of internet adoption challenges hence necessitating the need to conduct a more effective study on internet adoption problems. Chapter three discusses the research methodology by describing the methods and procedures used to carry out the research study. Chapter four elaborates the processes, techniques and procedures applied to analyze, present and interpret data gathered
using the questionnaires. Chapter five discusses the summary of the major findings, conclusions and study recommendations.
CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the methods and procedures used to carry out the research study. The chapter comprises the research design, population and sampling design, data collection methods, research procedures and data analysis and presentation methods.

3.2 Research Design

Research design is the overall operational pattern or framework of the project that stipulates what the information is to be collected from which source and by which procedure, research design acts as a guiding framework within which the research activities are carried out (Green and Tull, 2003). Research design can be experimental, descriptive, exploratory, historical or longitudinal research design (Mugenda and Mugnda, 2008). Experimental research design is a blue print of the procedure that enables the researcher to maintain control over all factors that may affect the result of an experiment, the researcher attempts to determine and predict what may occur (Mugenda and Mugnda, 2008).

An exploratory research is a design conducted about a research problem when there are few or no earlier studies to refer to. The focus is on gaining insights and familiarity for the later investigation or undertaken when problems are in a preliminary stage of investigation (Sekeran, 2003). According to Sekeran (2003), descriptive research design is type of design used to obtain information concerning the current status of the phenomena to describe "what exists" with respect to variables or conditions in a situation. Mugenda and Mugenda (2008) describes descriptive research as including surveys and fact-finding enquiries adding that the major purpose of descriptive research is description of the state of affairs of the variables under the investigation without manipulation of the current variables state. The study dependent variable was adoption of internet banking and the independent variables are; technological infrastructure, E-transaction security and regulatory framework. The study adopted a descriptive research design since it intended to gather quantitative and qualitative data that described the nature and characteristics of variables affecting adoption of internet banking in commercial banks in Kenya. The study considered this design appropriate since it facilitated gathering of reliable and accurate data describing the true characteristics of factors affecting adoption of internet banking in commercial banks in Kenya.
3.3 Population and Sampling Design

3.3.1 Population

Target population is the entire set of units for which the study data are to be used to make inferences. The target population comprised of 46 commercial banks operating in Kenya CBK (2012). The study population comprised of 180 employees working in six major commercial banks within the Nairobi Central Business District. The study considered these banks since they have been facing internet banking adoption challenges (CBK, 2012). The banks strategic location also eased data collection activities. According to the human resource management of these banks, on average there are at least 30 members of staff involved in the implementation of internet banking resulting in 180 employees for the 6 commercial banks selected. These employees have technical knowledge and understanding on internet banking implementation process and hence provided the study with accurate and reliable data on the study problem. The employees were targeted as 36 top management staff, 60 middle level management staff and 84 lower management staff as shown in table 3.1 below.

Table 3.1: Population Distribution

<table>
<thead>
<tr>
<th>Population Strata</th>
<th>No</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top Management</td>
<td>36</td>
<td>20</td>
</tr>
<tr>
<td>Middle Level Management</td>
<td>60</td>
<td>33</td>
</tr>
<tr>
<td>Lower Management</td>
<td>84</td>
<td>47</td>
</tr>
<tr>
<td>Total</td>
<td>180</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Commercial Banks Human Resource Management (2012)

3.3.2 Sampling design and sample size

3.3.2.1 Sampling Frame

Sampling frame is the source list, it is a group of items or respondents from which sample has to be drawn, it constitute all the components of the target population (Dempsey, 2003). In this study the sampling frame was a list of 180 IT management staff and customer service personnel working in the 6 commercial banks. The list was obtained from the respective banks human resource management department.

3.3.2.2 Sampling Technique

The study used a non-probability sampling design by applying a purposive sampling method
to select the study respondents (Kothari, 2008). Since the implementation of internet banking is a technical issue, non-probability sampling method like purposive sampling helped in selecting respondents with technical knowledge and experience on factors affecting adoption of internet banking in commercial banks.

Non-probability sampling represents a group of sampling techniques that help researchers to select units from a population that they are interested in studying. Collectively, these units form the sample that the researcher studies (Orodho, 2009). Purposive sampling is also known as judgmental, selective or subjective sampling, reflects a group of sampling techniques that rely on the judgment of the researcher when it comes to selecting the units (e.g. people, cases/organizations, events, pieces of data) that are to be studied (Orodho, 2009). The main goal of purposive sampling is to focus on particular characteristics of a population that are of interest and enables the researcher to answer the research questions (Kothari, 2008). In many commercial banks, IT department are the ones concerned with the execution of internet banking functions. The sampling frame of the study was a list of IT management staff working in each of the six commercial banks. The study hence purposively selected the IT management staff from each of the population category.

3.3.2.3 Sample Size
Sample size is the number of units used in calculating estimates of a given population (Kothari, 2008). In this study the sample size was 50% of the study population. A sample size of 62% is justifiable since according to Orodho (2009) 50% of the sample gives unbiased representation of all respondents’ opinions in the target population and this assists in generalization of research findings when the study design is descriptive. According to Dane (2007), purposive sampling ensures adequate selection of numbers of subjects with appropriate characteristics to the study problem. The sample size thus comprised of 90 respondents distributed as presented in table 3.2 below;
Table 3.2: Sample Size

<table>
<thead>
<tr>
<th>Population Strata</th>
<th>No</th>
<th>Percentage (%)</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top Management</td>
<td>36</td>
<td>50</td>
<td>18</td>
</tr>
<tr>
<td>Middle Level Management</td>
<td>60</td>
<td>50</td>
<td>30</td>
</tr>
<tr>
<td>Lower Management</td>
<td>84</td>
<td>50</td>
<td>42</td>
</tr>
<tr>
<td>Total</td>
<td>180</td>
<td>50</td>
<td>90</td>
</tr>
</tbody>
</table>

Source: Commercial Banks Human Resource Management (2012)

3.4 Data collection methods

The study collected both primary and secondary data. Primary data presents the actual information that was obtained for the purpose of the research study which was gathered through the use of semi-structured questionnaire (open and close ended questions). The study thus used questionnaires as the main data collection instruments to collect primary data from the respondents. Questionnaire is a device used to collect data in an objective and a systematic manner for the purpose of the research (Orodho, 2009). Questionnaires are preferred because according to Dempsey (2003) they are effective data collection instruments that allow respondents to give much of their opinions regarding the researched problem. According to Kothari (2008) the information obtained from questionnaires is free from bias and researchers influence and thus accurate and valid data will be gathered. The questionnaires were divided into four sections; respondent’s personal information; effect of technological infrastructure, E-transaction security and regulatory framework on adoption of internet banking in commercial banks in Kenya. The questionnaires sought to obtain reliable information on the subject matter.

Secondary data is the data that was collected for other purpose but it will still be used in this type of research study, it involves past data that had been previously collected and tabulated through use graphs, charts and reports. This type of data was collected from reference materials, with key information on the study problem. Collection of secondary data was obtained through desk research mainly from past published material and this formed part of literature review of the study.

3.5 Research Procedures

A pilot study was carried out to test the reliability and validity of the questionnaires.
According to Sekeran (2003), a pilot study is necessary for testing the reliability of data collection instruments. The pilot test involved selecting 10 respondents from different banks and issuing them with the questionnaires. The data gathered from the pilot study was then subjected to cronbach’s alpha a coefficient of reliability that gives an unbiased estimate of data in general (Zinbarg, 2005). An alpha coefficient higher than 0.75 indicates that the gathered data has a relatively high internal consistency and could be generalized to reflect opinions of all respondents in the target population. After obtaining an alpha coefficient of higher than 0.75, questionnaires were issued to respondents in the sample size after the questionnaires were reviewed and improved based on the results of the pilot study.

The questionnaires were self-administered to a total of 90 respondents and later picked for data analysis. The researcher used self-administered questionnaires since they allowed respondents to answer the questionnaires at their own convenience, lowers the cost of administering the questionnaires and there is less data bias (Orodho, 2009).

The study employed effective quality measures to ensure that valid and reliable data is gathered. These involved having only questions with relevant information required for the study included in the questionnaire. The researcher also pre-tested the questionnaire before administering to the actual respondents. Respondents were given enough time and constantly reminded through emails on completing the questionnaires.

The researcher requested the respondents not to disclose their names in order to allow anonymity; the researcher also attached an introduction letter detailing the academic purpose and intention of the study. This helped in increasing level of response rate and hence contributed towards gathering of adequate data on factors affecting adoption of internet banking in Kenya commercial banks.

3.6 Data Analysis Methods
Since the study used both closed and open ended questionnaires, quantitative and qualititative data was generated. The raw data from the questionnaires were cleaned, edited and organized in accordance with the research questions. The study used descriptive statistics data analysis method to analyze numerical data gathered using closed ended questions. The Statistical Package for Social Sciences (SPSS) computer software was used for analysis to generate data array that will be used for subsequent analysis of the data. SPSS Version 17 has got
descriptive statistics features that assist in variable response comparison and gives clear indication of responses frequencies, percentages, mean, standard deviation and variance results. Inferential statistics through the use of Pearson correlation was carried out to establish the relationship between the research variables. The findings were presented using tables, since tables are user friendly and shows response frequencies as well as percentages of the respondents’ opinions on effects of the independent variables on adoption of internet banking. Qualitative data analyses method was applied to analyze the data gathered using open ended questions.

3.7 Chapter Summary
This chapter gave a detailed account of the methods and procedures that were adopted to carry out the research study. The chapter covered the research design, population, sample design and sample size, data collection and data analysis methods. Chapter four elaborates the processes, techniques and procedures applied to analyze, present and interpret data gathered using the questionnaires. Chapter five gives an in-depth explanation of the major findings, draws the study conclusions and suggests the major study recommendations.
CHAPTER FOUR

4.0 DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

The main purpose of the study was to examine the factors affecting adoption of internet banking by commercial banks in Kenya. The study research questions were; how does technological infrastructure affect adoption of internet banking by commercial banks in Kenya?; what is the effect of E-transaction security on the adoption of internet banking by commercial banks in Kenya; and how does regulatory framework affect adoption of internet banking by commercial banks in Kenya.

This chapter elaborates the processes, techniques and procedures applied to analyze, present and interpret data gathered using the questionnaires. The chapter provides quantitative data analysis, cross tabulation tables, percentages and means scores on factors affecting the adoption of internet banking by Commercial Banks in Kenya.

4.2 Demographic Data

4.2.1 Response Rate

To establish the actual number of the respondents who submitted back the questionnaires for data analysis, analysis of the response rate was conducted as shown in Table 4.1. The response rate was 62% of the total sample size and the non-response was 38%. The 62% respondents facilitated towards gathering sufficient data that was generalized to reflect the opinions of respondents on factors affecting adoption of internet banking by commercial banks in Kenya. This was in tandem with Dempsey (2003) that a response rate above 50% of the total sample size contributes towards gathering of sufficient data that could be generalized to represent the opinions of respondents in the target population on the study problem. The study therefore based the overall analysis from the 56 respondents who constituted a response rate of 62% of the total sample size.
### Table 4.1 Response Rate

<table>
<thead>
<tr>
<th>Response rate</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response</td>
<td>56</td>
<td>62%</td>
</tr>
<tr>
<td>Non Response</td>
<td>34</td>
<td>38%</td>
</tr>
<tr>
<td>Total</td>
<td>90</td>
<td>90%</td>
</tr>
</tbody>
</table>

Source: Field Research by Author

#### 4.2.2 Reliability Analysis

To determine the reliability and validity of the questionnaires, the study conducted a pilot study and analyzed data using Cronbach's alpha which is a coefficient of reliability. According to Zinbarg (2005), Cronbach’s alpha is a coefficient of reliability that gives an unbiased estimate of data generalizability. The table 4.2 indicates that the obtained data was reliable since data obtained from all independent variables had a value of 0.915 to 0.971 and this was above 0.75 satisfying Zinbarg (2005) that an alpha coefficient higher than 0.75 indicates that the gathered data had relatively high internal consistency and could be generalized to reflect opinions of all respondents in the target population.

### Table 4.2 Cronbach's Alpha Results

<table>
<thead>
<tr>
<th>Constructs</th>
<th>No. of Items</th>
<th>Cronbach's Alpha Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technological infrastructure</td>
<td>5</td>
<td>0.923</td>
</tr>
<tr>
<td>E-transaction security</td>
<td>5</td>
<td>0.971</td>
</tr>
<tr>
<td>Regulatory framework</td>
<td>5</td>
<td>0.956</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
<td>0.915</td>
</tr>
</tbody>
</table>

Source: Field Research by Author

#### 4.2.3 Respondent’s Education Level

To ascertain the reliability of the data collected the respondents were required to state their education level. As presented in figure 4.1, majority (64%) of the respondents were university graduates, 22% had college diploma education level only and 14% had professional qualifications professional banking and IT certifications. This demonstrated that most of the banking staff were qualified professionals and provided the study with reliable information on factors affecting adoption of internet banking in commercial banks in Kenya.
4.2.4 Work Experience

The figure 4.2 below shows that majority (50%) of the respondents had a working experience of 6-10 years, 20% had a working experience of 11-15 years, 16% of the respondents had a working experience of 16 years and above and finally 14% of the respondents had a working experience of less than 5 years. This indicates that majority of the respondents had been working in banking industry for a long time and thus stood higher chances of providing the study with reliable and accurate information on the subject matter. This was in tandem with findings by Braxton (2008) that respondents with a high working experience assist in providing reliable data on the sought problem since they have technical experience on the issues surrounding the problem being investigated.
4.3 Technological Infrastructure

4.3.1 Effect of Technological Infrastructure

The question intended to find out if technological infrastructure supported adoption of internet banking. As presented in the table 4.3 majority (82%) of the respondents were of the opinion that the existing technological infrastructure did not support the adoption of internet banking. The table also indicates that only (18%) of the respondents felt that the existing technological infrastructure supported the adoption of internet banking. The respondents affirmed that lack of effective telecommunication network, effective computer hardware and software created unsupportive environment for the adoption of internet banking.

Table 4.3 Effect of Technological Infrastructure

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>10</td>
<td>18%</td>
</tr>
<tr>
<td>No</td>
<td>46</td>
<td>82%</td>
</tr>
<tr>
<td>Total</td>
<td>56</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Field Research by Author
4.3.2 Poor Technological Infrastructure

The question sought to ascertain the effect of poor technological infrastructure in terms of data network and telecommunication facilities on the adoption of internet banking. Table 4.4 thus indicates that majority (54%) of the respondents agreed that poor technological infrastructure hindered effective adoption of internet banking, 34% strongly agreed, 8% were not sure and 4% disagreed. The respondents affirmed that the existing data networks hindered accessibility of high internet speed and this slowed the transaction processing time during the execution of internet banking functions.

Table 4.4 Existence of Poor Technological Infrastructure

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>19</td>
<td>34</td>
</tr>
<tr>
<td>Agree</td>
<td>30</td>
<td>54</td>
</tr>
<tr>
<td>Not sure</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Disagree</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>56</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Field Research by Author

4.3.3 Extent of the Effect of Technological Infrastructure Issues

To determine the extent to which technological infrastructure issues influences the effectiveness of technological infrastructure to affect adoption of internet banking, the study used a likert/ordinal scale of 1-5 where 5=very large extent, 4=large extent, 3=moderate extent, 2=small extent and 1= not at all. The findings are presented in table 4.5 using mean standard deviation and variance results. As presented in the table, a mean score of 4.69 was obtained on data networks; a mean score of 4.46 was recorded on computer hardware and software and finally a mean score of 4.28 on internet speed and access and hence a clear indication that these factors adversely affected adoption of internet banking to a large extent.
Table 4.5: Technological Infrastructure Issues Results

<table>
<thead>
<tr>
<th>Factors influencing the effectiveness of technological infrastructure</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data networks</td>
<td>56</td>
<td>4.6964</td>
<td>0.60059</td>
<td>0.361</td>
</tr>
<tr>
<td>Computer hardware and software’s</td>
<td>56</td>
<td>4.4643</td>
<td>0.63143</td>
<td>0.399</td>
</tr>
<tr>
<td>Internet speed and access</td>
<td>56</td>
<td>4.2857</td>
<td>0.867898</td>
<td>0.753</td>
</tr>
<tr>
<td>Valid N</td>
<td>56</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Field Research by Author

4.4 Effect of E-Transaction Security

4.4.1 Effective E-Transaction Security Systems
The study sought to establish if the bank had embraced effective E-transaction security systems and as presented in the table 4.6 majority (73%) of the respondents indicated that the bank had not embraced effective E-transaction security systems. The table also indicates that only (27%) of the respondents expressed that the bank had embraced effective E-transaction security systems. The respondents argued that the existing E-transaction security systems were not strong enough to support effective execution of internet banking functions as online transaction remained vulnerable to hacking, phishing and internet viruses.

Table 4.6 Effective E-Transaction Security Systems

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>15</td>
<td>27%</td>
</tr>
<tr>
<td>No</td>
<td>41</td>
<td>73%</td>
</tr>
<tr>
<td>Total</td>
<td>56</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Field Research by Author

4.4.2 Effect of E-Transaction Security
The question intended to find out if E-transaction security affected adoption of internet banking by the bank. Table 4.7 thus presents that majority (82%) of the respondents were of the opinion that E-transaction security affected adoption of internet banking by the bank. However a few (18%) of the respondents felt that E-transaction security did not affect adoption of internet banking by the bank. The respondents explained that lack of effective
online security systems subjected customer’s financial information to risks of unauthorized access by fraudsters and this greatly discouraged application of online banking services.

Table 4.7 Effect of E-Transaction Security

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>46</td>
<td>82%</td>
</tr>
<tr>
<td>No</td>
<td>10</td>
<td>18%</td>
</tr>
<tr>
<td>Total</td>
<td>56</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Field Research by Author

4.4.3 Extent of the Effect of E-Transaction Security Issues

To determine the extent to which E-transaction security issues influences effective adoption of internet banking, the study used a likert/ordinal scale of 1-5 where 5=very large extent, 4=large extent, 3=moderate extent, 2=small extent and 1= not at all. The findings were presented in table 4.9 using mean standard deviation and variance results. As presented in table 4.8, a mean score of 4.50 was obtained on internet hacking, a mean score of 4.39 was obtained on fraud and finally a mean of 4.35 shows that weak online security systems and all these affected adoption of internet banking to a large extent. The table further presents that all the E-transaction security factors recorded a low variance and standard deviation and this demonstrated that the respondents rated all the factors in almost the same way and the differences between the respondents’ answers was very narrow.

Table 4.8: Extent of the Effect of E-Transaction Security Issues

<table>
<thead>
<tr>
<th>Factors influencing E-transaction security</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet Hacking</td>
<td>56</td>
<td>4.5000</td>
<td>.85280</td>
<td>.727</td>
</tr>
<tr>
<td>Fraud</td>
<td>56</td>
<td>4.3929</td>
<td>.82415</td>
<td>.679</td>
</tr>
<tr>
<td>Weak online security systems</td>
<td>56</td>
<td>4.35714</td>
<td>.961600</td>
<td>.925</td>
</tr>
<tr>
<td>Valid N (list wise)</td>
<td>56</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Field Research by Author
4.5 Effect of Regulatory Framework

4.5.1 Availability of Effective Regulatory Framework

The study sort to establish if there was effective regulatory framework in place for monitoring the application of internet banking and as presented in table 4.10, majority (86%) of the respondents indicated that there lacked effective regulatory framework in place for monitoring the application of internet banking and (14%) of the respondents differed with majority and expressed that there was effective regulatory framework for monitoring the application of internet banking.

Table 4.9 Availability of Effective Regulatory Framework

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>8</td>
<td>14%</td>
</tr>
<tr>
<td>No</td>
<td>48</td>
<td>86%</td>
</tr>
<tr>
<td>Total</td>
<td>56</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Field Research by Author

4.5.2 Effect of Regulatory Framework

The study aimed to determine if the regulatory framework affected adoption of internet banking in commercial banks in Kenya. Table 4.11 thus presents that majority (91%) of the respondents were of the opinion that regulatory framework affected adoption of internet banking by commercial banks in Kenya. However a few (9%) of the respondents felt that regulatory framework did not affect adoption of internet banking in commercial banks in Kenya.

Table 4.10 Effect of Regulatory Framework

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>51</td>
<td>91%</td>
</tr>
<tr>
<td>No</td>
<td>5</td>
<td>9%</td>
</tr>
<tr>
<td>Total</td>
<td>56</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Field Research by Author

4.5.3 Lack of Effective Regulatory Framework

The question sought to rate the respondents opinions on whether lack of effective regulatory
framework hinders effective adoption of internet banking in commercial banks. Table 4.12 thus indicates that majority (71%) of the respondents strongly agreed that lack of effective regulatory framework hinders effective adoption of internet banking in commercial banks, 20% agreed and 9% were not sure.

Table 4.11 Lack of Effective Regulatory Framework

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>40</td>
<td>71</td>
</tr>
<tr>
<td>Agree</td>
<td>11</td>
<td>20</td>
</tr>
<tr>
<td>Not sure</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>56</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Field Research by Author

4.5.4 Extent of the Effect of Regulatory Framework Issues

To determine the extent to which E-transaction security issues influences effective adoption of internet banking, the study used a likert/ordinal scale of 1-5 where 5=very large extent, 4=large extent, 3=moderate extent, 2=small extent and 1= not at all. The findings were presented in table 4.13 using mean standard deviation and variance results. As presented in table, a mean score of 4.71 was obtained on banking policies, a mean score of 4.66 was obtained on changes in the banking industry and finally a mean score of 4.66 obtained on the financial regulations indicate that this three variable affected adoption of internet banking to a large extent. The results are in tandem with findings by Rogers (2007) that lack of effective online banking policies and weak financial regulations are key impediments to the success of internet banking in many commercial banks in Kenya. The table further presents that all the regulatory framework factors had a low variance and standard deviation and this was a clear indication that the respondents rated all the factors in almost the same way and the differences between the respondents’ answers was very narrow.
Table 4.12: Extent of the Effect of Regulatory Framework Issues

<table>
<thead>
<tr>
<th>Factors influencing Regulatory framework</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banking Policies</td>
<td>56</td>
<td>4.7143</td>
<td>.52964</td>
<td>.281</td>
</tr>
<tr>
<td>Change in banking industry</td>
<td>56</td>
<td>4.6607</td>
<td>.61131</td>
<td>.374</td>
</tr>
<tr>
<td>Financial regulations</td>
<td>56</td>
<td>4.66071</td>
<td>.640363</td>
<td>.410</td>
</tr>
<tr>
<td>Valid N (list wise)</td>
<td>56</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Field Research by Author

4.6 Inferential Statistics

Inferential statistics was conducted through the use of correlation analysis to determine the relationship between the independent variables and the dependent variable.

4.6.1 Correlation Analysis

Pearson correlation was carried out to determine how the research variables related to each other. Pearson’s correlation reflects the degree of linear relationship between two variables. It ranges from +1 to -1. A correlation of +1 means that there is a perfect positive linear relationship between variables (Serekan, 2003). As presented in table 4.14, all the independent variables had a strong positive correlation with adoption of internet banking. Technological infrastructure had a strong positive correlation with adoption of internet banking (r = 0.959). This correlation was found to be statistically significant at 95% significance level (p-value = 0.000). E-transaction security was also found to have a statistically strong positive correlation with adoption of internet banking (r=0.879, p-value = 0.000). Finally regulatory framework was also found to have a strong positive correlation with adoption of internet banking (r=0.839). The relationship was found to be statistically significant at 83% significance level (p-value = 0.000).
The strong correlation of all independent variables indicates that technological infrastructure—transaction security and regulatory framework greatly affects effective execution adoption of internet banking in commercial banks.

4.7 Summary

This chapter described the data analysis and presentation methods applied by the study. The chapter demonstrated the descriptive statistics techniques used to analyze numerical data where response frequency, mean, standard deviation and variance results were computed. Finally the chapter applied inferential statistics by using the Pearson’s correlation analysis to determine the relationship between the research variables. The next chapter five gives an in-depth explanation of the major findings, draws the study conclusions and suggests the major study recommendations.
CHAPTER FIVE

5.0 SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction
This chapter provides a detailed summary of the major findings on factors affecting adoption of internet banking in commercial banks in Kenya. The Study further draws the study conclusions and highlights the major recommendations to enhance effective adoption of internet banking in commercial banks.

5.2 Summary of the Study
The main purpose of the study was to examine the factors affecting adoption of internet banking in commercial banks in Kenya. The study narrowed its research on the following factors; how technological infrastructure; E-transaction security; and the regulatory framework affected the adoption of internet banking in commercial banks in Kenya. The study adopted a descriptive research design and the target population comprised of 46 banks in Kenya. The study used a non-probability sampling design by applying a purposive sampling method to select its respondents.

A sample size of 90 respondents comprising the Customer Service and IT managers were extensively used for the study. Questionnaires were used as the main data collection instruments and a pilot study was undertaken to pretest the questionnaires for validity and reliability. The study used descriptive statistics data analysis method to analyze numerical data gathered using closed ended questions and findings were presented in chapter four of this paper.

5.3 Discussions
5.3.1 Effect of Technological Infrastructure
The study sought to find out how technological infrastructure affected adoption of internet banking in commercial banks in Kenya. Technological infrastructure characterized by poor information communication technology systems created unfavorable environment for the application of internet banking services. The study noted that majority (83%) of the respondents felt that the existing technological infrastructure hindered effective adoption of internet banking whilst 54% of the respondents contended that existence of poor technological infrastructure in terms of data networks and telecommunication facilities
hindered effective adoption of internet banking.

These findings concurred with Hall (2009) that technological infrastructure weakness in terms of weak telecommunication networks, lack of latest and better computer systems hinders effective adoption of internet banking by many banking institutions. The study therefore deduced that technological infrastructure is a major factor that greatly affects adoption of internet banking in many commercial banks in Kenya.

5.3.2 Effect of E-Transaction Security
The study aimed to find out how E-transaction security affected adoption of internet banking in commercial banks in Kenya. Majority (73%) of the respondents indicated that commercial banks had not embraced effective E-transaction security systems and 82% of the respondents felt that E-transaction security problems hindered effective adoption of internet banking in many commercial banks. The study further revealed that many customers failed to utilize internet banking services since they feared exposure of confidential financial information to internet hackers or fraudsters.

The study observed noted that the existing E-transaction security systems were not strong enough to support effective execution of internet banking functions as online transaction remained vulnerable to hacking, phishing and internet viruses. This contended with findings by Sylvie and Xiaoyan (2007) that the slow pace of internet banking adoption in many commercial banks in developing nations is as result of lack of effective E-transaction security systems that protects online transaction to internet viruses, phishing and hacking of customer bank accounts.

5.3.3 Effect of Regulatory Framework
The study was interested in finding out how regulatory framework affected adoption of internet banking in commercial banks in Kenya. The study noted that there lacked effective regulatory framework for monitoring application of internet banking operations in commercial banks. This was expressed by 91% of the respondents who indicated that the existing banking regulatory framework affected adoption of internet banking since it failed to provide clear guidelines on how commercial banks should adopt and execute internet banking functions.

It was observed that there lacked effective regulatory framework in place to guide on
application of internet banking in commercial banks and this discouraged many customers from embracing internet banking services. This echoed findings by Paul (2009) that lack of effective regulatory framework discourages many customers from applying internet banking services and this lowers the pace of internet banking adoption in commercial banks.

The study identified that the key regulatory framework issues affecting adoption of internet banking in commercial banks included; lack of effective online banking policies, change in banking industry and weak financial regulations. These findings concurred with findings by Rogers (2007) that lack of effective online banking policies and weak financial regulations are key impediments to the success of internet banking in many commercial banks in Kenya.

5.4 Conclusions
Based on the research findings, the study drew conclusions that the major factors affecting effective adoption of internet banking in Kenya commercial banks includes; weak technological infrastructure, weak E-transaction security and lack of effective E-transaction regulatory framework. The success of internet banking adoption in commercial banks is therefore determined by how the bank management employs strategic measures to improve on these three impediments.

5.4.1 Effect of Technological Infrastructure
Existence of weak technological infrastructure characterized by poor information communication technology systems and data network creates unfavorable environment for the application of internet banking and disrupts effective delivery of internet banking services. Lack of effective ICT systems and the use of ineffective computer hardware and software determine the strength of the commercial banks technological infrastructure this creates unsupportive environment for the adoption of internet banking in commercial banks in Kenya.

5.4.2 E-Transaction Insecurity
Lack of effective E-transaction security systems greatly affects effective adoption of internet banking in many commercial banks since many customers fails to utilize internet banking services since they fear exposure of confidential financial information to internet hackers. E-transaction insecurity lowers the level of confidence among many customers on the safety of internet banking application. Most customers consider internet banking to be vulnerable to
fraud through phishing and hacking of confidential customers’ financial data. Most customers therefore resist the use of internet banking services and this affects adoption of internet banking in many commercial banks. Lack of effective E-transaction security is hence a major challenge affecting effective adoption of internet banking in many commercial banks in Kenya.

5.4.3 Effect of Regulatory Framework
The issue of effective regulatory framework that guides application of internet banking services is a key factor that has not been given much emphasis by the government and this makes some banks to poorly execute internet banking services. In the absence of effective regulatory framework, many commercial banks fail to employ effective customer’s protection systems such as security systems and this lowers the level of customer’s confidence on the effectiveness of internet banking services. Lack of effective regulatory framework for monitoring application of internet banking operations in commercial banks hinders the government from guiding the commercial banks on how to effectively implement internet banking. The existing banking regulatory framework is thus a key hindrance to effective adoption of internet banking since it fails to provide clear guidelines on how commercial banks should adopt internet banking.

5.5 Recommendations
As an effort to offer an effective solution to the challenges affecting effective adoption of internet banking in commercial banks, the study suggested the following recommendations.

5.5.1 Recommendations for Improvement
Recommendations for improvement will help the commercial banks to strategically respond to the experienced internet adoption challenges.

5.5.1.1 Technological Infrastructure
To strengthen the technological infrastructure, commercial banks should improve on ICT infrastructure through acquisition of better computer hardware and software and implementation of effective ICT equipment. Bank staff and customers should be continuously trained on effective use of computer hardware and software used for the facilitation of internet banking. Commercial banks should also invest in information technology research and development activities in order to be ahead in identification and implementation of latest
and modern internet banking technology

5.5.1.2 E-Transaction Security
To improve on E-transaction security, commercial banks should implement effective internet security systems that protect customers’ financial data from hackers, fraudsters and internet viruses. The banks management should enable controlled access to internet banking services by leveraging established user authentication and provisioning processes for their on-premise applications. In this instance, access to internet banking services should be managed as part of existing security systems and processes, thus satisfying relevant security and compliance requirements.

5.5.1.3 Regulatory Framework
The government should enact new and effective Internet banking regulations that promotes the adoption of internet banking in commercial banks. The government should come up with a regulatory framework with guidelines on how commercial banks should implement internet banking. The government should enforce application of policies that supports installation of better ICT infrastructure like fiber optic cable, reduction of internet costs, enhance better internet service accessibility, and enhance existence of better internet security in the country ICT infrastructure.

5.5.2 Suggestion for Further Studies
The study was guided by three research questions that addressed the major factors found affecting adoption of internet banking in commercial banks. The study thus narrowed its research undertaking into finding out how technological infrastructure, E-transaction security and regulatory framework affected adoption of internet banking in commercial banks. These limited the study to explore other internet banking adoption challenges faced by commercial banks in Kenya. The study findings therefore portrays internet banking problems within the context of the three research questions and hence does not to give an overall presentation of the other challenges facing adoption of internet banking in all commercial banks in Kenya. Challenges such as the user’s inability to use internet banking due to low levels of computer awareness in the remote parts of the country that may hinder internet adoption in the entire country. A suggestion for further studies is hence highly encouraged to explore further how users challenge of computer and internet use throughout the country hinders adoption of internet banking in commercial banks. Further studies should also help to explore other
factors hindering effective adoption of internet banking in commercial banks and were not covered by the study. Since internet banking challenges are dynamic as more challenges emerge with the growth and development of banking industry, future studies will greatly help in addressing new internet banking challenges and advising on appropriate measures to support effective adoption of internet banking in commercial banks.
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APPENDICES

APPENDIX I: COVER LETTER

Sample Survey Cover letter

Date

Dear Participant

My name is Alice M Muraguri, a graduate student at United States International University (USIU) undertaking a Global Executive MBA (GeMBA). For my final project, I am examining “Factors Affecting the Adoption of Internet Banking in Commercial Banks: A Survey of Commercial Banks in Nairobi”. Because you are a key player in this industry, and particularly the subject matter, I am inviting you to participate in this research study by completing the attached questionnaire.

The questionnaire will require approximately 10 minutes completing it. There is no compensation for responding nor is there any known risk. In order to ensure that all information will remain confidential, please do not include your name. Copies of the project will be provided to my USIU Professor and to the Director of GeMBA.

If you choose to participate in this project, please answer all questions as honestly as possible and return the completed questionnaires promptly. Participation is strictly voluntary and you may refuse to participate at any time.

Thank you for taking the time to assist me in my educational endeavors. The data collected will provide useful information regarding internet banking. If you would like a summary copy of this study please complete and detach the Request for Information Form and return it to me in a separate envelope. Completion and return of the questionnaire will indicate your willingness to participate in this study. If you require additional information or have questions, please contact me at the number listed below.

If you are not satisfied with the manner in which this study is being conducted, you may report (anonymously if you so choose) any complaints to the Director of GeMBA at the USIU.

Sincerely,

Alice M Muraguri
APPENDIX II: QUESTIONNAIRES

Background information

Fill in the provided spaces

1. Education level
   - Primary level
   - Secondary level
   - College level
   - University level
   - Professional qualification

2. Working experience
   - 0 - 5 years
   - 5 – 10 years
   - 10 – 15 years
   - 16 Years and above

SECTION 1

1. Technological Infrastructure

   (i) Does the existing technological infrastructure support adoption of internet banking?
      - Yes
      - No

      If yes, explain……………………………………………………………………………………………………
      ……………………………………………………………………………………………………………………………

   (ii) Existence of poor technological infrastructure in terms of data networks and telecommunication facilities hinders effective adoption of internet banking?

      - Strongly agree
      - Agree
      - Disagree
      - Strongly disagree
      - Not sure

   (iii) Using a scale of 1-5 where 5=very large extent,4=large extent,3=moderate extent,2=small extent and 1= not at all. Could you rate the extent to which the following factors influence the effectiveness of technological infrastructure to affect adoption of internet banking?

<table>
<thead>
<tr>
<th>Factors influencing the effectiveness of technological infrastructure</th>
<th>5-Very Large extent</th>
<th>4-Large extent</th>
<th>3-Moderate Extent</th>
<th>2-Small extent</th>
<th>1-Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data networks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer hardware and software’s</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet speed and access</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
(iv) Could you briefly explain how technological infrastructure affects adoption of internet banking in commercial banks in Kenya?

(v) From your own opinion, how could the technological infrastructure be improved in order to support adoption of internet banking?

2. **E-transaction security**

(i) Has the bank embraced effective E-transaction security systems?

- [ ] Yes
- [ ] No

If yes, explain…

(ii) Does E-transaction security affect adoption of internet banking by the bank?

- [ ] Yes
- [ ] No

If yes, explain...

(iii) Low level of E-transaction security hinders effective adoption of internet banking?

- [ ] Strongly agree
- [ ] Agree
- [ ] Strongly disagree
- [ ] Disagree
- [ ] Not sure

(iv) Using a scale of 1-5 where 5=very large extent, 4=large extent, 3=moderate extent, 2=small extent and 1= not at all. Could you rate the extent to which the following factors influence E-transaction security to affect adoption of internet banking?

<table>
<thead>
<tr>
<th>Factors influencing E-transaction security</th>
<th>5-Very Large extent</th>
<th>4-Large extent</th>
<th>3-Moderate Extent</th>
<th>2-Small extent</th>
<th>1-Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet Hacking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fraud</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weak online security systems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
(v) Could you briefly explain how E-transaction security affects adoption of internet banking in commercial banks in Kenya?

……………………………………………………………………………………
……………………………………………………………………………………
……………………………………………………………………………………

(vi) From your own opinion, how could commercial banks improve on the E-transaction security in order to support adoption of internet banking?

……………………………………………………………………………………
……………………………………………………………………………………
……………………………………………………………………………………

(vii) In your opinion, how could commercial banks improve on the E-transaction security in order to support adoption of internet banking?

……………………………………………………………………………………
……………………………………………………………………………………
……………………………………………………………………………………

3. Regulatory Framework

(i) Is there an effective regulatory framework for monitoring the application of internet banking?

☐ Yes
☐ No

If yes, explain………………………………………………………………………
……………………………………………………………………………………
……………………………………………………………………………………

(ii) Does regulatory framework affect adoption of internet banking in commercial banks in Kenya?

☐ Yes
☐ No

If yes, explain………………………………………………………………………
……………………………………………………………………………………
……………………………………………………………………………………

(iii) Lack of effective regulatory framework hinders effective adoption of internet banking in commercial banks?

☐ Strongly agree
☐ Agree
☐ Disagree
☐ Strongly disagree
☐ Not sure
(iv) Using a scale of 1-5 where 5=very large extent, 4=large extent, 3=moderate extent, 2=small extent and 1= not at all. Could you rate the extent to which the following factors influence Regulatory framework to affect adoption of internet banking?

<table>
<thead>
<tr>
<th>Factors influencing Regulatory framework</th>
<th>5-Very Large extent</th>
<th>4-Large extent</th>
<th>3-Moderate Extent</th>
<th>2-Small extent</th>
<th>1-Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banking Policies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in banking industry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial regulations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(v) Could you briefly explain how Regulatory framework affects adoption of internet banking in commercial banks in Kenya?

……………………………………………………………………………………
……………………………………………………………………………………
……………………………………………………………………………………

(vi) From your own opinion, how Regulatory framework should be improved in order to support adoption of internet banking?

……………………………………………………………………………………
……………………………………………………………………………………
……………………………………………………………………………………
### APPENDIX III: WORK PLAN

<table>
<thead>
<tr>
<th>Activity</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>Aug</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
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<th>Jan</th>
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<tr>
<td>Presentation of proposal</td>
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<td>Corrections and Pretest of the Questionnaires</td>
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<td>Data Analysis</td>
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<td>Presentation of the project</td>
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## APPENDIX IV: BUDGETS AND COST ESTIMATES

<table>
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<tr>
<th>ITEM</th>
<th>QUANTITY</th>
<th>UNIT COST (KSHS)</th>
<th>TOTAL COST (KSHS)</th>
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<tr>
<td>Stationary</td>
<td>5 reams</td>
<td>500</td>
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<td>Traveling (Fuel)</td>
<td>21 kms (6 days)</td>
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<td>Typing services</td>
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<tr>
<td>Binding</td>
<td>80 pages (5 copies)</td>
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<td>500</td>
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<td>Photocopying</td>
<td>80 pages (5 copies)</td>
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<td>Internet</td>
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<td>Research assistant</td>
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<tr>
<td><strong>Total</strong></td>
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