UNIVERSITY OF NAIROBI

SCHOOL OF COMPUTING & INFORMATICS

AN ASSESSMENT OF RISKS OF ICT OUTSOURCING FUNCTIONS IN COMMERCIAL BANKS LISTED IN NAIROBI SECURITIES EXCHANGE, KENYA.

BY

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A project report submitted in partial fulfillment of the requirement for the award of Masters of Science in Information Technology Management of the University of Nairobi.

SEPTEMBER, 2016

DECLARATION

I declare that this research project is my original work and to the best of my knowledge has not been presented for a degree in any other university.

Sign: …….. Date: ……

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This research project has been submitted for examination with my approval as university supervisor

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ABSTRACT

Information and Communications Technology outsourcing is one of the successful strategies implemented to reduce an organization's ICT operational cost and to give more priority to their core business rather to ICT operational activities. However, it causes significant risks to the success of the outsourcing ventures. This study sought to assess the risks of outsourcing ICT functions in Kenyan commercial banks listed in Nairobi Securities Exchange.

The study was guided by the following specific objectives: to identify the extent of information security risks; capability risks; internal control risks; and financial risks in outsourcing ICT functions in Commercial Banks in Kenya. The study adopted descriptive research design. The target population of the study was five technical staff and one manager in ICT Department in the 11 commercial banks in Kenya listed in Nairobi Securities Exchange. Since the population and sampling frame for this study is small, a census study was considered appropriate and all the 66 ICT staff formed the sample size for the study. Primary data was collected through a questionnaire which had both closed and open-ended questions. A pre-test of the questionnaire was conducted prior to the actual data collection to test for validity and reliability of the instrument. Reliability coefficient was calculated through use of Cronbach's alpha test, whereby a co-efficient of above 0.8 was achieved which implies that the instrument was sufficiently reliable for the measurement while validity was established by the researcher and supervisor discussing and reviewing the items before the actual study. The researcher employed drop and pick later method to administer the questionnaire in order to allow the respondents adequate time to respond. The data collected was analyzed through descriptive and inferential statistics. Descriptive statistics used included measures of relative frequencies, mean scores and standard deviation. A multivariate linear regression analysis was employed to examine the relationship between the variables. Data was presented using appropriate tools such as tables, charts and graphs.

The study found out that commercial banks had outsourced helpdesk support services, connectivity services, ATM management, database management and application management services to a great extent. It was also found out that the commercial banks had experienced information security risks, capability risks as well as internal control risks as a result of outsourcing of ICT functions. The study concludes that use of third parties had exposed the banks to risks. On security risks, the banks were constantly at the risk of losing confidentiality, integrity and availability of the organization information. Moreover, outsourcing ICT functions had exposed commercial banks to internal control risks. Outsourcing of ICT functions had led to internal control loss of control over services outsourced data. The study recommends that banks need to constantly evaluate information security risks and derive a threat risk factor which lists all systems by priority to be used for ICT outsourcing.

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LIST OF ABBREVIATIONS AND ACRONYMS

ATM	Automated Teller Machine
CBK	Central Bank of Kenya
CRM	Customer Relationship Management
ERP	Enterprise Resource Planning
ICT	Information and communications technology
IPR	Intellectual Property Rights
IS	Information Systems
ISR	Information Security Risks
IT	Information Technology
ITO	Information Technology Outsourcing
LAN	Local Area Network
NSE	Nairobi Securities Exchange
RBV	Resource-Based View
SPSS	Statistical Package for Social Sciences
TRF	Threat Risks Factor
WAN	Wide Area Network

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Today, IT outsourcing is an increasingly important strategy for organizations and many are currently outsourcing key portions of their IT infrastructure. Pressures on corporate profitability, cost reduction and capital efficiency, greater focus on core skills and driving shareholder value, plus the need to meet business demands, whilst demonstrating increasing value from IT have led to a continued growth in entities outsourcing elements of their IT. Further, it is increasingly recognised that outsourcing can also act as a catalyst for change within an organisation, allowing fresh thinking, new expertise and the opportunity for a step-up in an organisation's performance (Maguire and Ojiako, 2008; Bensghir & Tekneci, 2008).

Information and communications technology (ICT) outsourcing can be described as the practice of turning over all or at least parts of an organisation's information technology functions to external service provider(s). ICT outsourcing refers to the contracting out of information technology services or functions, which have previously been carried out by internal staff (Currie, 2000). IT Outsource providers offer services for all aspects of an IT function including; Desktop services, Network services (including, WAN, LAN, telecoms), Mainframe, Midrange & Servers, Infrastructure projects, Service Centre/Helpdesk, Disaster Recovery, Security, Strategy & Architecture, systems development, software maintenance and support, hosting of websites, infrastructure and application specific management and 3rd Party IT Procurement(IT World Limited, 2006).

There are two driving forces when an organisation considers the option of outsourcing. One is the availability for specialists in external service providers to provide a more efficient and effective service than is possible within the organisation, and the other is the possibility of cost savings. By outsourcing non-core functions and processes, an organisation can devote more of its key resources to core business activities. ICT Outsourcing can cover a range of different services including application development and maintenance, network management, desktop management, IT helpdesk services and computer data centre management. IT Outsourcing can also be engaged on different scales, such as on a project basis or on a department-wide basis (Arshad, May-Lin & Mohamed, 2007).

Despite the benefits, outsourcing can also pose risks to an organization. There have been reports of the leakage of sensitive or personal information around the world in recent years. These have imposed significant financial loss and damage of reputation on the organisations concerned. Apart from realising the tangible and intangible benefits to be gained through IT outsourcing, organisations need to become more wary of an outsourcing vendor's security procedures for the protection of sensitive and personal information (Hong Kong Special Administrative Region, 2008).

In Kenya, the Banking Sector is composed of the Central Bank of Kenya, as the regulatory authority and the regulated Commercial Banks, Non-Bank Financial Institutions and Forex Bureaus. As at December 2013 Kenya had 43 licensed commercial banks and 1 mortgage company (www.centralbank.go.ke/). Out of the 44 institutions, 31 are locally owned and 13 are foreign owned. There are 11 banks which are listed in Nairobi Securities Exchange (NSE).

Over the last few years, the Banking sector in Kenya has continued to grow in assets, deposits, profitability and products offering. The growth has been mainly attributed to the industry's wide branch network expansion strategy both in Kenya and in the East African community region, the automation of a large number of services, and a move towards emphasis on the complex customer needs rather than traditional 'off-the-shelf' banking products. Players in this sector have experienced increased competition over the last few years resulting from increased innovations among the players and new entrants into the market (CBK, 2012).

In the past, commercial banks solely carried out most of their operations which includes Cash Centre operations and ATM management tasks. However, According to Mungai and Moturi (2015), the Kenyan banks have now outsourced various IT services which include helpdesk support, connectivity, ATM management, database management and application management.

ICT outsourcing has experienced a remarkable growth, received much attention and has become a widespread worldwide phenomenon both in the private and public sectors (Arshad, May-Lin & Mohamed, 2007). Organisations face the challenge of meeting the ever-increasing demands of customers and the marketplace with limited resources. Many have turned to outsourcing as one of their key organisational strategies. Therefore, outsourcing is an inescapable and basic part of financial organizations to survive in a turbulent business environment (Qin et. al, 2012). However, while enjoying the cost savings or other benefits brought about by IT outsourcing, management should bear in mind that an organisation can only outsource its operations, but not its responsibilities. Security impact analyses and risk assessments should be started as early as drafting of the

contract and cover the vendor's IT environment as well as the organisation's (Dhar & Balakrishnan 2006).

1.2 Problem Statement

In Kenya, commercial banks have outsourced various IT services which include helpdesk support, connectivity, ATM management, database management and application management. Outsourcing of Information technology functions in the banking sector has led to reduced operation costs, flexibility in term of technology change, enabled banks to focus and/or develop core competencies, and get access to specialized skill. However, it is important for the management to understand the various risks their organization gets exposed to while engaging in outsourcing (Mungai & Moturi, 2015).

A review of the locally conducted studies shows that Sang (2010) examined the challenges and opportunities of outsourcing in Kenyan Universities while Oduk (2013) also did a study on the factors influencing outsourcing at Kenya Union of Savings and Credit Cooperatives. On the other hand, Mungai and Moturi (2015) conducted a study on the effect of Information Technology Outsourcing on the Performance of Banks in Kenya: Application of the Balanced Scorecard. A review of the studies conducted shows that no notable study has been carried out to examine risks associated with outsourcing of ICT functions. It was against this foundation that the study sought to examine some of the risks involved with outsourcing ICT functions in commercial banks, to third party service provider(s).

1.3 Objectives of the Study

1.3.1 General Objective

To assess the risks of Information and Communications Technology outsourcing functions in Kenyan commercial banks listed in Nairobi Securities Exchange.

1.3.2 Specific Objectives

i. To identify the extent of information security risks in outsourcing of ICT functions in Commercial Banks in Kenya.
ii. To determine the extent of capability risks in outsourcing ICT functions in Commercial Banks in Kenya.
iii. To examine the extent of internal control risks in outsourcing ICT functions in Commercial Banks in Kenya.
iv. To assess the extent of financial risks in outsourcing ICT functions in Commercial Banks in Kenya.

1.4 Research Questions

The study was guided by the following research questions:

i. What is the extent of information security risks in outsourcing of ICT functions in Commercial Banks in Kenya?
ii. What is the extent of capability risks in outsourcing of ICT functions in Commercial Banks in Kenya?
iii. What is the extent of internal control risks in outsourcing ICT functions in Commercial Banks in Kenya?

iv. What is the extent of financial risks in outsourcing ICT functions in Commercial Banks in Kenya?

1.5 Significance of the Study

The study is expected to be of value to the following:

i) The study would be helpful to the management of commercial banks as it would provide the necessary knowledge and better understanding risks of outsourcing of ICT functions in commercial banks in Kenya. The findings may help commercial banks managers to understand the risks associated with Outsourcing of ICT functions and henceforth make appropriate decisions towards outsourcing of ICT services in future.

ii) The study findings may also be of value to ICT Outsourcing vendors and they will be informed of the perceived risks of outsourcing ICT functions and how it impacts on commercial banks decision to outsource. This may enlighten them and give insight on how they can improve or repackage their services to ensure commercial banks are satisfied with their services.

iii) The study would also be of value to policy makers in the banking industry. Central Bank of Kenya would formulate policies that minimize risks caused by ICT Outsourcing in the banking sector.

iv) The study may benefit the researchers and academicians by gaining valuable knowledge on risks associated with Outsourcing of ICT functions. The study may therefore contribute to the existing knowledge in the study area and also act as a

reference point literature review for researchers. It may also act as a basis for further research in this area.

1.6 Scope of the Study

The study was a survey of eleven (11) commercial banks listed in the NSE, Kenya. The study population consisted of five technical staff and one manager in ICT department. The study targeted the commercial banks due to the scope of the ICT functions they have outsourced; and bearing in mind the sensitivity of their business which involves customers' information which can pose risks and legal challenges to the bank if such information ends up into the hands of a third party. The study sought to examine the risks banks face as a result of outsourcing ICT functions to a third party service provider.

1.7. Assumptions of the Study

The study was based on the following assumptions:

i. The study assumed that the targeted respondents (staff in ICT department) have knowledge on the area under study. The study assumed that they are aware of the risks associated with ICT outsourcing functions in their organization.
ii. The study assumed that the questionnaire, as the data collection instrument would be efficient to collect reliable data for the study.

1.8 Limitations of the Study

The respondents of the study were reluctant to provide the necessary data because the research study deals with quite internal business issues. Employees feared to give information about their company, as some were not certain whether they were permitted to give such information, and would not want to be associated with such mistakes

because they would be victimized by management. To overcome this challenge, the respondents were guaranteed that the information collected would be kept confidential and used for study purposes only. The questionnaires used did not prompt the respondents' to disclose their identity and the name of the banking institution.

The administrators in some of the targeted commercials banks denied access to various sections of the bank departments because of their policy of denying public access to this kind of information. This was however be overcome by the researcher using an introduction letter indicating the purpose of the study and giving an assurance of confidentiality being upheld on the shared information.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents theoretical review, the empirical review and the conceptual framework. The theoretical review discusses the theories that inform the study while the empirical review discusses past studies by other authors on the research objectives; from where the research gaps are indentified. The chapter ends with a conceptual framework which presents the diagrammatic representation that shows the relationship between the independent variables and the dependent variable.

2.2. Theoretical Review

This section discusses the theories that are attributed by other authors and scholars and are critical in guiding the study. This study was informed by Resource Based View Theory, Transaction Cost Economics Theory and Agency Theory.

2.2.1 Resource-Based View (RBV)

This theory was developed by Birge Wenefeldt in 1984. The underlying premise of RBV is that a firm differs in fundamental ways because each firm possesses a "unique" bundle of resources-tangible and intangible assets and organizational capabilities to make use of those assets. Each firm creates abilities from these resources, and when developed especially well, these become the source of the firm's competitive advantage (Pearce & Robinson, 2007).

Barney (1991) suggests that firms succeed through developing resources that provide unique sources of competitive advantage. These may include physical, financial, human,

and organizational resources; and confer competitive advantages based on their value, rareness, uniqueness (inimitability), and embededness in the organization fabric. Learned et al., (1969) noted that the capability of an organization is its demonstrated and potential ability to accomplish against the opposition of circumstance or competition, whatever it sets out to do. Learned et al. proposed that the real key to a company's success or even to its future development lies in its ability to find or create 'a competence that is truly distinctive.

According to Su et al., (2009) capabilities can't be bought; rather, they must be built; with internal capabilities. Every organization has actual and potential strengths and weaknesses; it is important to try to determine what they are and to distinguish one from the other. Thus what a firm can do is not just a function of the opportunities it confronts; it also depends on what resources the organization can master. The core premise of the resource-based view is that resources and capabilities can vary significantly across firms, and that these differences can be stable. Outsourcing of ICT functions by commercial banks is therefore dependent on bundle of tangible and intangible resources that an organization has. The RBV theory/model can be presented as shown below.

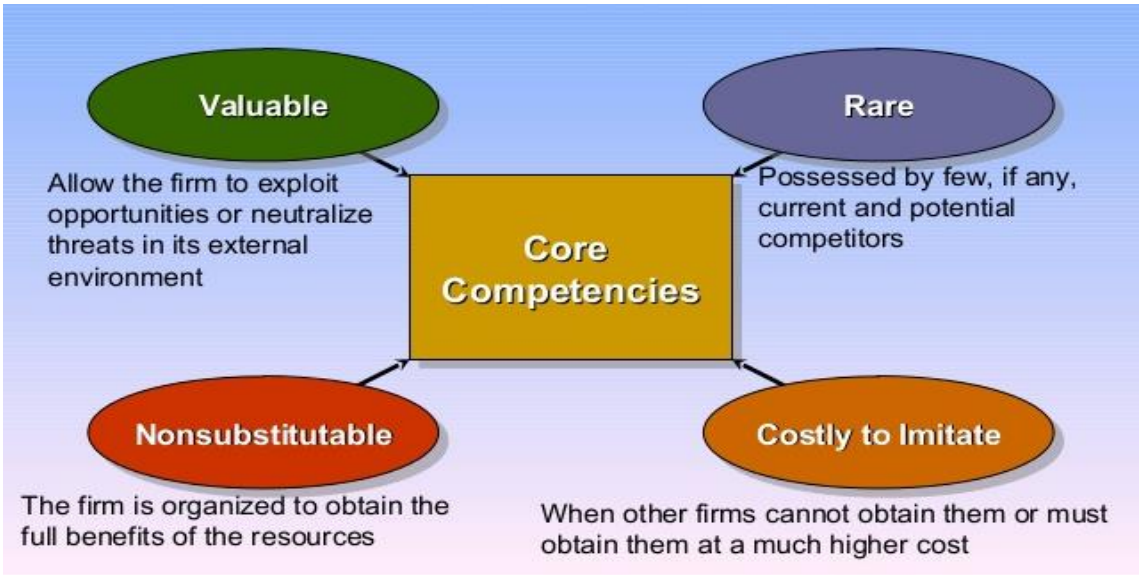

Figure 2.1: RBV Model

Adapted from Barney (1991)

2.2.2 Transaction Cost Economics Theory

Transaction costs occur in the exchange between client and vendor. According to transaction cost theory, transaction costs are positively associated with: the necessity of investments in durable, specific assets; infrequency of transacting; task complexity and uncertainty; difficulty in measuring task performance; and independencies with other transactions (Gottshalk & Solli-Saether, 2006). Williamson (1994) also asserts that transaction costs are comprised of the costs of seeking the suppliers, inspection of goods and establishing and formalizing the terms of agreement, including the means to both guarantee compliance with the terms and protect against the potential expropriation of the investments made, to ensure that contract conditions are fulfilled.

According to Espino-Rodriguez and Gil-Padilla (2006) the greater the transaction costs, that is the greater the costs that information, negotiation and supervision of compliance

entail, the less the tendency to outsource the activity. Transaction cost analysis combines economic theory with management theory to determine the best type of relationship a firm should develop in the market place. The concept of transaction cost analysis is that the properties of a transaction determine what constitute the efficient governance structure- market, hierarchy or alliance. The key factors producing transactional difficulties include: bounded rationality; opportunism; small numbers bargaining; information impactedness (McIvor, 2003).

Perunovic et al., (2006), indicated that the transaction cost economics has been the most applied theory of outsourcing. The author explained that the transaction cost economics is perceived to provide the best decision making tools to help organizations to decide whether to outsource or not, and to prepare themselves well for the task of the outsourcing arrangements. The governance features of the theory influenced that it has been applied in studying the managing relationship phase, whilst the concept of switching costs made the theory applicable in the reconsideration phase. Another useful issue for outsourcing provided by Transaction Cost Economics is explanation of contractual complexity. Though Transaction Cost Economics has not been utilized explicitly for studying the vendor selection phase, its sub-theory, thus, the theory of incomplete contracting has been applied in studying the structure and content of outsourcing contract, and related preparation and contract management activities.

2.2.3 Agency Theory

This theory describes the relation between the principle (the client) and an agent (the outsourcer). A basic assumption of this theory is that opportunism is an inherent characteristic of such a relationship. Opportunism leads the principal or the agent to seek

their interest "with guide" to deviate from the behavior prescribed by the contract whenever they benefit by doing so (Benoit et al., 2008). This is not to say that principals and agents will always adopt an opportunistic behavior, moral codes, social norms, the risk of prosecution and the possible detrimental effects on reputation tend to limit the extent of opportunism.

This theory is particularly relevant to the risk/challenges identified in the previous section. This is due to this aspect of opportunism which is an important risk factor in outsourcing contract. According to Benoit et al. (2008), there are three main manifestations of opportunism: Moral hazard, adverse selection and imperfect commitment. Moral hazard results from the fact that it is impossible for a principal to observe the behavior of the agent without incurring probative costs. Since the client cannot directly observe the level of effort deployed by its supplier, it cannot easily tell whether a problem is due to negligence on the part of its supplier or to an unforeseeable event. Adverse selection will develop when the principal cannot observe the characteristics of the Agent. The client must validate the suppliers' claims, which often is a difficult task. Finally, imperfect commitment is the imperfect capacity of both the client and the supplier to commit themselves, for instance, clients and outsourcers may be tempted to renege on their promises and commitments.

Other characteristics of the agent constitute sources of risk. The lack of experience and expertise of the agent with the outsourced activity is one of them (Earl, 2006). It may happen that a supplier eager to obtain a contract exaggerates the expertise it possesses with certain activities. Benoit et al. (2008) suggest another risk factor which is the lack of experience or expertise of the agent with the management of outsourcing relationships,

which could lead to disputes and to escalating costs. The extent of competition among agents, which is often related to the number of available vendors, is also a risk factor. A small number of vendors may bring about the lock-in problem, since it will be difficult for the client to find alternative sources of services (Nam et al., 2006).

Within this context, the service recipient acts as the principal and the agent is represented by the service provider. Given the existence of asymmetric information and different risk perceptions, it is important to allocate clear decision rights, formulate clear agreements on responsibilities and align goals (Logan, 2000). This implies that commercial banks should evaluate any sources of risk in regard to the third party providers of ICT functions. It's advisable to evaluate the experience and expertise of the provider, costs and risks in the outsourcing contract; this minimizes conflicts.

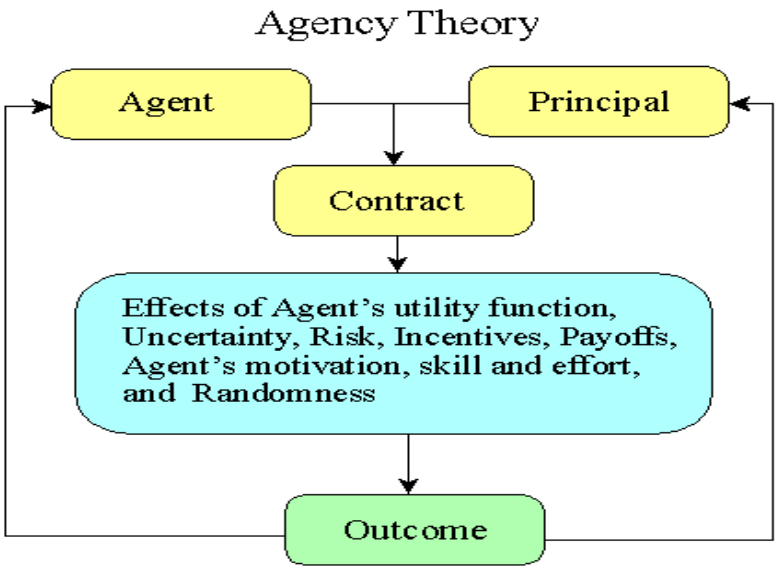

Figure 2.2: Agency Theory

Adapted from: Tiessen and Waterhouse (1983)

2.3 Empirical Review

For effective implementation of ICT outsourcing, Linder (2004) stated that managing risk explicitly is one of the critical success factors. Reed (2005) agreed that it is important to perform active risk management throughout all stages of the outsourcing lifecycle. However, the first step in a good risk management program is to identify the risks and produce a list of risks that have the potential to minimize IT outsourcing from delivering on time, within budget and to an acceptable level of quality. Identifying risks is the process of developing an understanding of the potential unsatisfactory outcomes associated with a particular project (Schwalbe, 2002).

According to Berthelemy (2003), organizations have to avoid the seven deadly sins commonly made in outsourcing. These mistakes include outsourcing activities that should not be outsourced, selecting the wrong vendor, writing a poor contract, overlooking personnel issues, losing control over outsourced activities, overlooking the hidden cost of outsourcing and failing to plan an exit strategy.

In Malaysia, Arshad et al., (2007) conducted a study to determine the ICT services that were being outsourced and to describe the inherent risks, issues and challenges in ICT outsourcing in the Malaysian public sector. The findings from this research showed that network services is the most common ICT services activity that is being outsourced and that outsourcers who do not comply with contract had the most influence on ICT outsourcing inherent risks. The main issue raised in ICT outsourcing is the inappropriateness of ICT projects being outsourced. Through the findings, organizations would be able to identify the most common ICT services outsourced, analyse the inherent

risks, and address the issues that are being raised. In so doing, the potential impact of failure can be anticipated and dealt with accordingly.

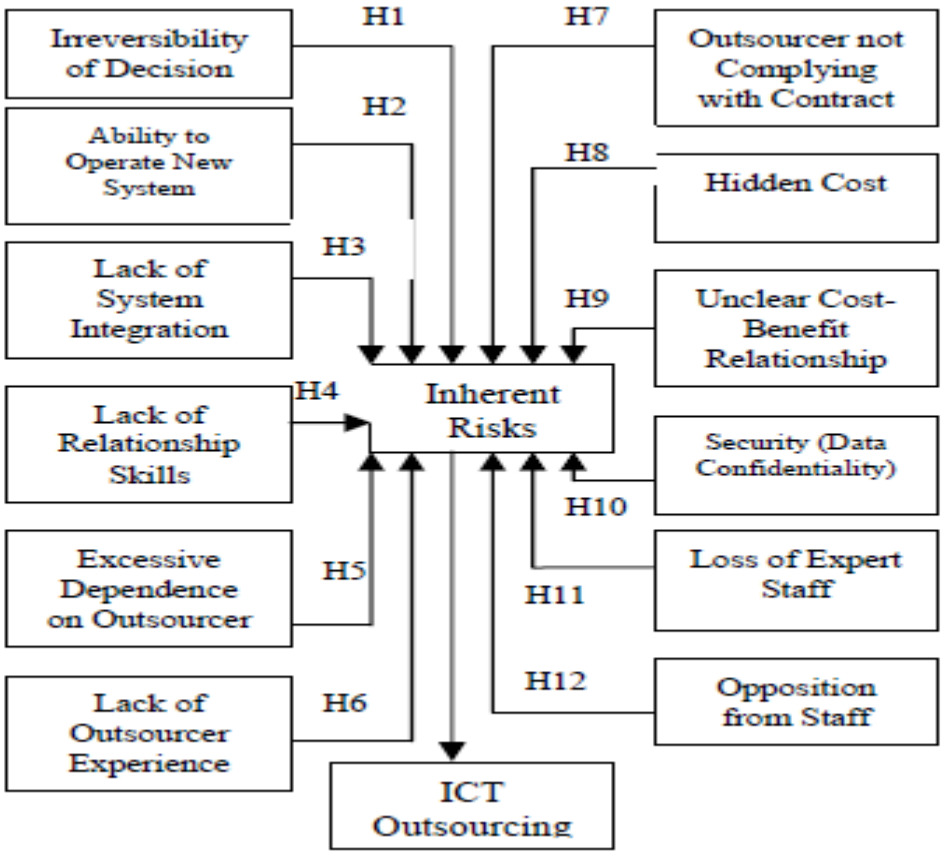

Figure 2.3: Research Model on ICT Outsourcing Inherent Risks

(Adapted from Arshad et al., 2007)

Dhar and Balakrishnan (2006) conducted a study to evaluate the risks, benefits, and challenges in global IT outsourcing: perspectives and practices. The study established that risks in knowledge/expertise, contract management, performance measurement, deciding the budget and schedule estimates, formulating scope, scope, cost and time estimates, quality standards, multi-vendor arrangements, and cross-culture issues as some of the risk associated with IT outsourcing.

Mohapatra and Das (2013) did a study on information technology outsourcing risks in banks in the India. The study established that outsourcing engagements lead to circumstances where: client organization end up relying too much on the outsourcing vendors for their IT, and business needs; organization end up exposing itself to the greater risks such as loss of: internal competencies; innovation capabilities; cross-functional skills; and loss of control over the process and/or the vendor.

In Turkey, Bensghir and Tekneci (2008) evaluated the outsourcing IS/ICT activities in Turkish ministerial computer departments. The study found out that, Turkish organisations had been increasingly outsourcing functions such as facilities maintenance, catering, security and IS/ICT activities. However, despite the benefits of outsourcing IT, there are risks involved. The study recommended that the organizations need to weigh the benefits, risks and costs involved before making decisions to outsource.

Kremic et al., (2006) evaluated the benefits, risks, and decision factors of outsourcing. The study identified the following factors as being potential challenges of outsourcing: knowledge/skills and/or corporate memory , loss of control/core competence, power shift to supplier, supplier related problems such as poor performance, bad relations, opportunistic behavior, not giving access to best talent or technology, losing customers, opportunities or reputation; uncertainty/changing environment, poor morale/employee issues, loss of synergy, conflict of interest, security issues, legal obstacles and skills erosion. These findings are also in line with those of Lonsdale and Cox (2010), who identified the major disadvantages of outsourcing as; the loss of core activities, being leveraged by suppliers, the loss of strategic flexibility, suffering interruptions to supply,

receiving poor quality of supply, a fall in employee morale, a loss of internal coherence, confidentiality leaks and the loss of intellectual property rights.

In Malaysia Khidzir et al. (2013) assessed the information security Threat Risks Factor (TRF) severity level for ICT Outsourcing project characteristics through exploratory analysis approach. Results of the analysis reveal the evidence of highly risk ICT outsourcing project characteristics exploited through TRF. These risks included Information Security Risks (ISRs), Information leakage, poor information security study, and Unauthorized Exploitation of Intellectual Property Right (IPR). The study recommended that organizations can re-evaluate potential risks and improve their practices managing information security risk and urgently address information security risks to gain optimum benefits from their ICT outsourcing ventures.

A study by De Sà-Soares et al. (2014) proposed a conceptual framework for interpreting the literature and presenting a catalog of information systems outsourcing risks. The conceptual framework articulates together six key risk elements, namely dangers, negative outcomes, undesirable consequences, factors and mitigation actions. The catalog condenses and categorizes the information systems outsourcing risk elements found on the literature reviewed, both from the perspective of the outsourcing customer and from the perspective of the outsourcing provider. The risks were categorized as capability and internal control, image and morale, and strategy and finance.

In Kenya, Mungai and Moturi (2015), looked at Information Technology Outsourcing (ITO) practices in the Kenyan banking sector and the effect it had on performance. The study revealed that Connectivity and Help desk support were the most outsourced IT

functions in the commercial banks. The study also revealed the two main drivers for ITO were strategic focus and cost reduction. However, the authors recommended that it is important for the management to understand the various risks their organization gets exposed to while engaging in outsourcing. This study seeks to fill that gap by identifying the risks of Information and Communications Technology outsourcing functions in Kenyan commercial banks.

2.4 Research Gaps

A review of the existing literature shows that various studies have identified varying risks associated with outsourcing of ICT functions. However, most of the studies available have been conducted on organization in more developed economies. The environment of outsourcing and the capability of third party service providers in those economies is different from those of developing countries such as Kenya and therefore the findings may not be generalized into Kenyan context. The most notable studies in Kenya are: Mungai and Moturi (2015), who examined the effects of Information Technology Outsourcing practices on performance of Kenyan banks; Sang (2010) who examined the challenges and opportunities of outsourcing in Kenyan Universities and Oduk (2013) who evaluated the factors influencing outsourcing at Kenya Union of Savings and Credit Cooperatives. None of these studies specifically examined the risks of outsourcing ICT functions in Kenyan commercial banks. This is the gap that this study seeks to fill.

2.5 Conceptual Framework

This section presents the conceptual framework developed. The conceptualization in this study is based on the following variables: information security risks, capability risks, internal control risks and financial risks as independent variables, resources, skills and nature of contract as the intervening variables and outsourcing of ICT functions as the dependent variable. The conceptual framework seeks to show the interaction between outsourcing of ICT functions in commercial banks and risks involved. The conceptual framework is presented in Figure 2.1.

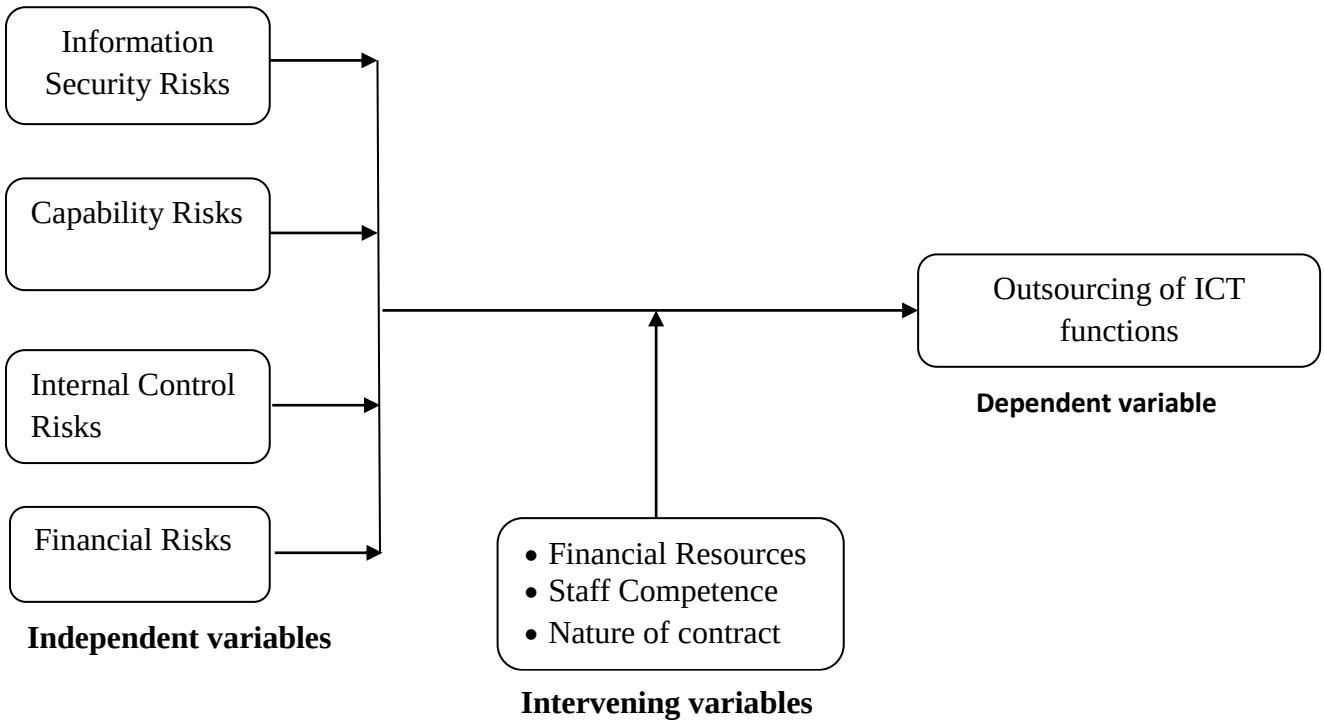

Figure 2.4: Conceptual Framework

Source: Author (2016)

2.6 Operationalization of Variables

Table 2.1: Operationalization of Variables

Independent Variables	**Indicators**	**Measurement scale**	**Data Analysis**
Information Security Risks	• Confidentiality • Integrity • Availability	Nominal Ordinal	Descriptive and Inferential Statistics
Capability Risks	• Loss of skilled staff • Loss of innovative capacity • Capability to change • Internal capabilities	Nominal Ordinal	Descriptive and Inferential Statistics
Internal Control Risks	• Loss of control over IS decisions • Loss of control over outsourced ICT functions • Loss of strategic alignment	Ordinal	Descriptive and Inferential Statistics
Financial Risks	• Unexpected transition costs • Switching costs • Transaction costs	Ordinal	Descriptive and Inferential Statistics
Dependent Variable			
Outsourcing of ICT functions	• Helpdesk Support • Connectivity • ATM management • Database management • Application management	Ordinal	Descriptive and Inferential Statistics

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter looked at the research methods that were used in the study in order to address the objectives of the study. The chapter covers the research design adopted, population of study, sample size and sampling technique, data collection instrument and procedures, pilot testing and data analysis methods.

3.2 Research Design

This research problem was best studied through the use of a descriptive research design. According to Cooper and Schindler (2007), a descriptive study is concerned with finding out the what, where and how of a phenomenon. Kothari (2004) also asserts that the descriptive design if well used will provide reliable, valid and meaningful information. This descriptive design is therefore considered suitable because it aids in collecting information from respondents on their attitudes, awareness and opinions in relation to the subject area.

The research design helped portray accurate current facts through collection of both qualitative and quantitative data through the use of a questionnaire hence the design was deemed fit for the study as it helped portray the risks associated with outsourcing of ICT functions in Kenyan Commercial Banks listed in NSE.

3.3 Target Population

A population is defined as a complete set of individuals, case or objects with some common observable characteristic (Mugenda & Mugenda 2003). The target population of the study was five technical staff and one manager in ICT Department in the 11 commercial banks in Kenya listed in NSE. The total target population was 66 employees as shown in Table 3.1.

Table 3.1: Target Population

Staff Category	Frequency
Management	11
Technical Staff	55
Total	**66**

3.4. Sampling and Sampling Procedures

Kothari (2004) defines sampling as a procedure, process or technique of choosing a sub-group from a population to participate in the study. Since the population for this study is small, a census study was adopted whereby the entire target population was considered for the study. According to Cooper and Schindler (2007) a census is feasible when the population is small and necessary when the elements are quite different from each other. When the population is small and variable, any sample drawn may not be representative of the population from which it is drawn. Therefore, a census study was deemed appropriate for study since the sampling frame was small; thus all the 66 ICT staff formed the sample size for the study.

3.5. Data Collection Instrument

The study collected primary data through use of a questionnaire. The questionnaire had both closed and open-ended questions. The closed ended questions enabled the researcher to collect quantitative data while open-ended questions enabled the researcher to collect qualitative data.

The study used the questionnaires as the main tool for data collection because it allowed wider coverage within a short period of time, and also enhanced confidentiality of information. The questionnaire is also convenient to the respondents as they can fill the questionnaire at their own free and convenient time (Kothari, 2004).

3.6. Pilot study

Pilot testing was carried out to examine the whether there was any weaknesses the data collection instrument and to provide alternative data for selection of a probability sample (Mugenda & Mugenda, 2008). A pre-test of the questionnaire was conducted prior to the actual data collection. The developed questionnaire was checked for its validity and reliability through pilot testing. The research subjected the questionnaire to 5 staff in selected banks to participate in the pilot study. According to Mugenda and Mugenda (2003) a successful pilot study would use 1% to 10% of the actual sample size. Pilot testing helped the researcher to correct inconsistencies arising from the instruments, thereby ensuring that they measure what is intended.

3.6.1. Reliability of the Instrument

Mugenda and Mugenda (2003) defined reliability as a measure of the degree to which a research instrument yields consistent results or data after repeated trials. An instrument is

reliable when it can measure a variable accurately and obtain the same results over a period of time. Reliability test measures the internal consistency of the questionnaire and also helps establish the internal consistency of the instrument.

Reliability coefficient was calculated through use of Cronbach's alpha test, whereby a co-efficient of above 0.8 was achieved which implies that the instrument was sufficiently reliable for the measurement. Cronbach's alpha test was carried out with the help of Statistical Package for Social Sciences (SPSS).

3.6.2 Validity Test of the Instrument

The term validity indicates the extent to which a test measures the construct under investigation. For a data collection instrument to be considered valid, the content selected and included must be relevant to the need or gap established (Saunders *et. al*., 2003).

Validity of the questionnaire used in this study was established by the researcher and supervisor discussing and reviewing the items before the actual study. The feedback from the supervisor and experts helped in modifying the instruments, which in turn ensured that the questionnaire was objective, collected reliable information and also improved the response rate.

3.7. Data Collection Procedure

Kothari (2008) describes data collection as the collective methodology and the instruments that the researcher employs during the data collection process. This study sought to collect data from the 66 respondents in the in the 11 commercial banks listed in the NSE, Kenya. An introductory letter for data collection was obtained from University of Nairobi and appointments made with the respective respondents. The researcher

employed drop and pick later method to administer the questionnaire in order to allow the respondents adequate time to respond.

3.8 Data Analysis

The data collected by the questionnaire was edited, coded, entered into Statistical Package for Social Sciences (SPSS) which also aided in the data analysis. The study adopted both descriptive and inferential statistics. The questionnaire had both open-ended and closed questions. The open ended questions generated qualitative data, which were categorized in themes in accordance with research objectives and reported in narrative form along with quantitative presentation from the closed questions.

Descriptive statistics provided simple summaries about the sample and the measures and formed a basis for the analysis of the quantitative data. The study employed the use of descriptive statistics such as frequency distribution tables and measures of central tendency (the mean, median and mode), measures of variability (standard deviation) and measures of relative frequencies. This study employed a multivariate linear regression model which established the relationship between the variables. Data was presented using appropriate tools such as tables, charts and graphs. The multivariate linear regression model adopted took the following form:

$$Y= \beta_0 + \beta_1 \chi_1 + \beta_2 \chi_2 + \beta_3 \chi_3 + \beta_4 \chi_4 + \epsilon$$

Whereby Y = Outsourcing of ICT functions

X_1= Information Security Risks

X_2= Capability Risks

X_3= Internal Control Risks

X_4= Financial Risks

β_1, β_2, β_3 and β_4 are the regression coefficient and ε is the error term.

The beta (β) values explained whether the relationship between the dependent and the independent variable is high or low, positive or negative. The ANOVA test showed the significance of regression model to give reliable results. The p value measured the significance of the variables in the regression model; whereby, if the p value of the variable is 0.05 (5%) and below, then the relationship was deemed significant while where the p value co-efficient of the variable is above 0.05, then the relationship of the variables were deemed to be insignificant.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents the results and findings as analyzed from the data collected. The data analysis was based on the study objective which sought to assess the risks of Information and Communications Technology outsourcing functions in Kenyan commercial banks listed in Nairobi Securities Exchange. The responses were analyzed using both descriptive and inferential statistics and results were presented in tables, pie charts and bar graphs.

The study targeted 66 respondents who included five technical staff and one manager in ICT Department in the 11 commercial banks listed in NSE in Kenya. A total of 52 responses were successfully received which translate to a response rate of 79%. The response was appropriate for the study to continue and provide reliable results. According to Mugenda and Mugenda (2003) a fifty percent response rate is adequate, sixty percent good and above seventy percent rated very well.

Table 4.1: Response Rate

Respondents	**Frequency**	**Percent**
Responded	52	79.0
Not Responded	14	21.0
Total Sample Size	**66**	**100.0**

4.2 Respondents Profile

This section presents the demographic information of the respondents. The respondents' demographic information reflects the relevant attributes of the population; it forms the basis under which the study can rightfully access the relevant information. The respondents' information captured included: gender, level of education and number of years worked in organization.

4.2.1 Gender of the Respondents

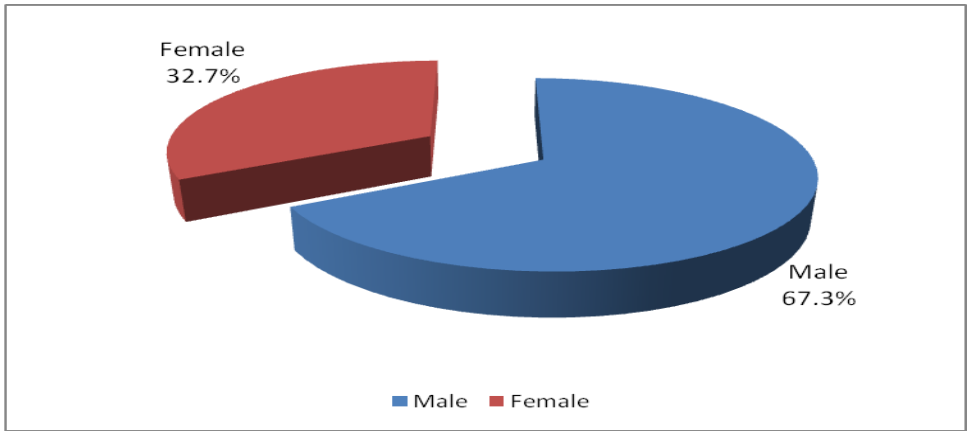

Figure 4.1: Gender of the Respondents

The study results show that majority of the respondents (67.3%) were male while 32.7% were female. This may imply that majority of the ICT staff in the commercial banks are male.

4.2.1 Level of Academic Qualification

The respondents were asked to indicate the highest level of academic qualification they had attained. The findings are presented in Table 4.2.

Table 4.2: Level of Academic Qualification

Education Level	Frequency	Percent
Diploma	8	15.4
Bachelors Degree	30	57.7
Masters	14	26.9
Total	**52**	**100.0**

The study results in Table 4.2 show that majority of the respondents (57.7%) had a Bachelors degree while 26.9% had a Masters degree. On the other hand, 15.5% of the respondents had reached diploma level. Majority of the respondents had a Bachelors degree and above which implies that majority of the ICT staff were well educated hence high reliability of the results.

4.2.3 Duration Worked in the Bank

The respondents were asked to indicate the duration they had worked in respective banks. The findings are presented in Figure 4.2.

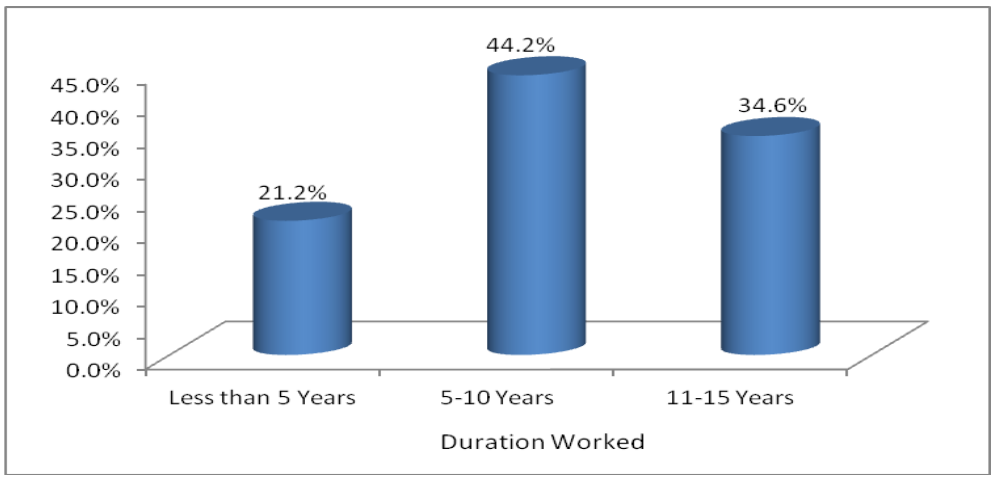

Figure 4.2: Duration Worked in the Bank

The study findings show that 44.2% of the respondents had worked in their respective banks for a duration of 5-10 years while 34.6% indicated that they had worked in their

banks for a duration of 11-15 years. On the other hand, 21.2% of the respondents indicated that they had worked in their respective banks for a duration of less than 5 years. From the results, majority of the respondents had worked in their respective banks for a substantial number of years, hence they were much were much aware of the operations of the bank. This improves the reliability of the information given.

4.3 ICT Functions Outsourced by the Commercial Banks

Table 4.3: ICT Functions Outsourced

	Not at all		Small extent		Moderate extent		Great extent		Very great extent	
	F	%	F	%	F	%	F	%	F	%
Helpdesk Support	6	11.5	3	5.8	23	44.2	14	26.9	6	11.5
Connectivity	-	-	-	-	15	28.8	25	48.1	12	23.1
ATM management		-	-	-	9	17.3	31	59.6	12	23.1
Database management		-	-	-	12	23.1	34	65.4	6	11.5
Application management		-	-	-	12	23.1	34	65.4	6	11.5

The study findings in Figure 4.3 show that 44.2% of the respondents indicated that their banks outsourced helpdesk support to a moderate extent. On the other hand 26.9% indicated they outsourced helpdesk support to a great extent while 11.5% indicated to a very great extent. On the other hand, 48.1% of the respondents indicated that they outsourced connectivity services to a great extent while 23.1% indicated to a very great extent. Majority of the respondents (59.6%) indicated that their banks outsourced ATM management services to a great extent. Moreover, 65.4% of the respondents indicated that they outsourced database management and application management services to a great extent, respectively.

The respondents further stated that they also outsourced infrastructure maintenance services (Desktops, Printers and Data Centre), business process systems management (CRM, Core Banking System and ERP), digital marketing and information systems security management.

4.4 Security Risks and Outsourcing of ICT functions

This section addresses the first objective of the study which sought to identify the extent to which the banks experience information security risks as a result of outsourcing of ICT functions in Commercial Banks in Kenya.

4.4.1 Existence of Data Security Risks

The respondents were asked to indicate whether their organizations had experienced data security risks. The findings are presented in Table 4.4.

Table 4.4: Existence of Data Security Risks

Responses	Frequency	Percent
Yes	52	100.0
No	-	-
Total	**52**	**100.0**

The study findings in Table 4.2 show that all the respondents (100%) agreed that their banks had experienced information security risks. The respondents stated that they experienced information security risks such as data leakage, user impersonation and unauthorized transactions on customer bank accounts through hacking. The respondents also explained that the authorization of the third parties to access bank systems has been a security threat. The use of third parties had exposed bank information to some extent.

4.4.2 Information Security Risks and Outsourcing of ICT Functions

The study sought to determine the extent outsourcing of ICT functions leads to information security risks in listed commercial banks in Kenya. A five point likert scale was used to interpret the responses whereby the scores of "strongly disagree" and "disagree" were represented by mean score, equivalent to 1 to 2.5 on the continuous Likert scale ($1 \leq$ disagree ≤ 2.5). The scores of 'neutral' were equivalent to 2.6 to 3.5 on the Likert scale ($2.6 \leq$ neutral ≤ 3.5). The score of "agree" and "strongly agree" represented were equivalent to 3.6 to 5.0 on the likert scale which shows a strong agreement with the statement.

Table 4.5: Information Security Risks and Outsourcing of ICT Functions

Statements	Mean	Std. Deviation
Outsourcing of ICT functions has led data confidentiality leaks	3.69	0.897
Outsourcing of ICT functions has led to loss of bank's data integrity	3.73	0.819
Outsourcing of ICT functions has led to loss of intellectual property rights.	3.62	1.032
The bank and the service provider has put proper security management processes and procedures to protect sensitive data	3.83	0.785

The study results show that the respondents agreed that outsourcing of ICT functions had led to loss of intellectual property rights as shown by a mean score of 3.62. They also agreed that outsourcing of ICT functions had led data confidentiality leaks; and that outsourcing of ICT functions had led to loss of bank's data integrity; this is shown by mean scores of 3.69 and 3.73 respectively. On the other hand, the respondents agreed that their banks and the service provider had put proper security management processes and procedures to protect sensitive data; this is shown by a mean score of 3.83.

4.5 Capability Risks and Outsourcing of ICT functions

This section addresses the second objective of the study which sought to determine the extent of capability risks in outsourcing ICT functions in Commercial Banks in Kenya listed in Nairobi Securities Exchange.

4.5.1 Existence of Capability Risks

The respondents were asked to indicate whether their bank had experienced capability risks as a result of outsourcing of ICT functions. The findings are presented in Figure 4.3.

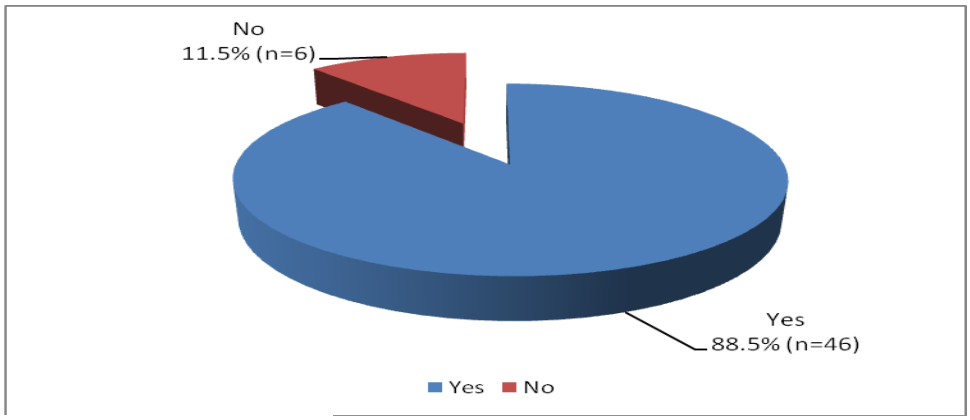

Figure 4.3: Existence of Capability Risks

The study results show that majority of the respondents (88.5%) indicated that their banks experienced capability risks as a result of outsourcing of ICT functions. However, 11.5% reported that their banks had not experienced capability risks as a result of outsourcing of ICT functions.

The respondents further explained that due to outsourcing, some staff lacked key ICT knowledge to perform some of IT problems. Because the staff are not well equipped with the ICT knowledge and the banks lacks the capacity to perform some operations which would cause problems in the event of a fallout with the contractor.

4.5.2 Capability Risks and Outsourcing of ICT Functions

Table 4.6: Capability Risks and Outsourcing of ICT Functions

Statements	Mean	Std. Deviation
Outsourcing of ICT functions has led to loss of in-house critical skills and competences on the domain of the services outsourced	3.58	0.848
Outsourcing of ICT functions has led to loss of innovative capacity on ICT in the bank	3.83	0.785
Outsourcing of ICT functions affects the bank's capability to change	3.73	0.819
Outsourcing of ICT functions has affected the banks internal capabilities in the services outsourced.	3.50	1.146

The study findings show that the respondents agreed that outsourcing of ICT functions had led to loss of in-house critical skills and competences on the domain of the services outsourced, as shown by the mean score of 3.58. The respondents also agreed that outsourcing of ICT functions affected the bank's capability to change and had also led to loss of innovative capacity on ICT in the bank; this is shown by mean scores of 3.73 and 3.83 respectively. The respondents however neither agreed nor disagreed whether outsourcing of ICT functions had affected the banks internal capabilities in the services outsourced, as shown by a mean score of 3.50.

4.6 Internal Control Risks and Outsourcing of ICT Functions

In this section, the study sought to examine the extent of internal control risks in outsourcing ICT functions in Commercial Banks in Kenya. A five point Likert scale was used to interpret the results, whereby 1 represented strongly disagree while 5 represented strongly agree.

Table 4.7: Internal Control Risks and Outsourcing of ICT Functions

Statements	Mean	Std. Deviation
Outsourcing of ICT functions has led to loss of control over ICT decisions	3.46	0.779
Outsourcing of ICT functions has led to Internal control loss of control over services outsourced data	3.83	0.857
Outsourcing of ICT functions has led to loss of strategic alignment between business and ICT in the bank	3.38	0.911

On internal control risks and outsourcing ICT functions, the respondents neither agreed nor disagreed when asked whether outsourcing of ICT functions has led to loss of strategic alignment between business and ICT in the bank as shown by a mean score of 3.38. The respondents were also neutral when asked whether outsourcing of ICT functions had led to loss of control over ICT decisions, as shown by am mean score of 3.46. However, the respondents agreed that outsourcing of ICT functions had led to internal control loss of control over services outsourced data as shown by a mean score of 3.83 on the likert scale.

4.7 Financial Risks and Outsourcing of ICT Functions

The study sought to assess the extent of financial risks in outsourcing ICT functions in Commercial Banks in Kenya. A five point Likert scale was used to interpret the results, whereby 1 represented strongly disagree while 5 represented strongly agree.

Table 4.8: Financial Risks and Outsourcing of ICT Functions

Statements	Mean	Std. Deviation
The bank has incurred unexpected transition costs of IS services due to outsourcing of ICT functions	3.38	1.051
The bank has incurred excessive switching costs due to outsourcing of ICT functions	3.71	0.936
Outsourcing of ICT functions has led to excessive transaction costs	3.60	1.015

On financial risks and outsourcing of ICT functions, the respondents neither agreed nor disagreed on whether the bank has incurred unexpected transition costs of IS services due to outsourcing of ICT functions as shown by a mean score of 3.38. On the other hand, the respondents agreed that outsourcing of ICT functions had led to excessive transaction costs; and that the banks had incurred excessive switching costs due to outsourcing of ICT functions; this is shown by the mean scores, 3.60 and 3.71 respectively.

4.8 Regression Analysis

A multiple regression analysis was conducted to establish the relationship between the risks and outsourcing of ICT functions in Kenyan commercial banks. The results are presented below.

Table 4.9: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.791(a)	0.626	0.594	0.407

a Predictors: (Constant), information security risks, capability risks, internal control risks and financial risks

The R is the correlation coefficient which shows the relationship between the study variables. The findings in Table 4.8 shows that there was a strong relationship between the study variables as shown by R = 0.791. The R squared is coefficient of determination which tells us the variation in the dependent variable due to changes in the independent variable, from the findings, the value of adjusted R squared was 0.594 an indication that there was a variation of 59.4% between outsourcing of ICT functions and risks. This implies that outsourcing explained 59.4% of risks in commercial banks in Kenya, at 95% confidence interval.

Table 4.10: Analysis of Variance – ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.031	4	3.258	19.641	0.000(a)
	Residual	7.796	47	0.166		
	Total	**20.827**	**51**			

a Predictors: (Constant), information security risks, capability risks, internal control risks and financial risks
b Dependent Variable: Outsourcing of ICT

The study used ANOVA to establish the appropriateness of the regression model to give reliable results. An F-significance value of p=0.000 was established. This shows that the regression model has a less than 0.001 (0.1%) probability of giving a wrong prediction. Hence the regression model has a confidence level of above 95%. This shows that the overall model was significant.

Table 4.11: Coefficients Results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.819	0.375		7.511	0.000
Information security risks	0.545	0.172	0.528	3.169	0.003
Capability risks	1.187	0.219	1.376	5.429	0.000
Internal control risks	0.445	0.221	0.551	2.010	0.050
Financial risks	0.142	0.121	0.203	1.175	0.246

Dependent Variable: Outsourcing of ICT

Results in Table 4.11 shows that there was a positive and statistically significant relationship between outsourcing of ICT functions and information security risks as shown by $\beta = 0.545$, $p= 0.003<0.05$. The study also found a positive and statistically significant relationship between outsourcing of ICT functions and capability risks as shown by $\beta =1.187$, $p=0.000<0.05$). The study also established a positive and statistically significant relationship between outsourcing of ICT functions and internal control risks in listed commercial banks in Kenya as shown by $\beta = 0.445$, $p= 0.05$. However, the study found a positive but insignificant relationship between outsourcing of ICT functions and financial risks as shown by $\beta = 0.142$, $p=0.246>0.050$). This implies that information security risks, internal control risks and capability risks are some of the major risks posed by outsourcing of ICT function in commercial banks.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

This chapter provides a summary of findings, conclusions and recommendations of the study based on the objectives of the study. It entails a synthesis of key issues of the objectives of the study as deduced from the entire research.

5.2 Summary of the Study

The study enquired from the respondents on the ICT functions outsourced by their banks. The respondents revealed that they had outsourced helpdesk support to a great extent. They had also outsourced connectivity services to a great extent. Majority of the respondents also indicated that their banks outsourced ATM management, database management and application management services to a great extent. The respondents further indicated that they outsourced infrastructure maintenance services (Desktops, Printers and Data Centre), business process systems management (CRM, Core Banking System and ERP), digital marketing and Information Systems Security management.

All the respondents agreed that their banks had experienced information security risks. The study results show that the respondents agreed that outsourcing of ICT functions had led to some extent loss of intellectual property rights; Outsourcing of ICT functions had led to data confidentiality leaks and that outsourcing of ICT functions had led to loss of bank's data integrity. However, the respondents agreed that their banks and the service provider had put proper security management processes and procedures to protect sensitive data and were continuously reviewing them to counter latest threats.

The study results show that majority of the respondents indicated that their banks experienced capability risks as a result of outsourcing of ICT functions. The respondents agreed that outsourcing of ICT functions had led to loss of in-house critical skills and competences on the domain of the services outsourced. The respondents also agreed that outsourcing of ICT functions affected the bank's capability to change and had led to loss of innovative capacity on ICT in the bank. The respondents however neither agreed nor disagreed whether outsourcing of ICT functions had affected the banks internal capabilities in the services outsourced.

On internal control risks and outsourcing ICT functions, the respondents neither agreed nor disagreed when asked whether outsourcing of ICT functions had led to loss of strategic alignment between business and ICT in the bank. The respondents also neither agreed nor disagreed on whether outsourcing of ICT functions had led to loss of control over ICT decisions. However, the respondents agreed that outsourcing of ICT functions had led to Internal control Loss of control over services outsourced data.

On financial risks and outsourcing of ICT functions, the respondents neither agreed nor disagreed on whether the bank had incurred unexpected transition costs of IS services due to outsourcing of ICT functions. On the other hand, the respondents agreed that outsourcing of ICT functions has led to excessive transaction costs; and that the banks had incurred excessive switching costs due to outsourcing of ICT functions.

5.3 Conclusion

The study concludes that commercial banks in Kenya have outsourced a wide range of ICT functions. They include helpdesk support, ATM management services, database management and application development management services, infrastructure maintenance services (Desktops, Printers and Data Centre), business process systems management (CRM, Core Banking System and ERP), digital marketing and Information Systems Security management.

The use of third parties had exposed the banks to risks. On security risks, the banks are constantly at the risk of losing confidentiality, integrity and availability of the organization information. However, banks and the service providers have put proper security management processes and procedures to protect sensitive data. Some banks have dedicated outsourced contractors of Information Systems Security to counter the constant threats.

The banks are also exposed to capability risks as a result of outsourcing of ICT functions. Through outsourcing of ICT functions, banks critical lose in-house skills, competences and innovative capacity which affects the bank's capability to change. The study also concludes that outsourcing of ICT functions exposed banks to financial risks such as excessive transaction costs; and that the banks had incurred excessive switching costs due to outsourcing of ICT functions. Moreover, outsourcing ICT functions have exposed commercial banks to internal control risks. Outsourcing of ICT functions had led to internal control loss of control over services outsourced data.

5.4 Recommendations

The study recommends that banks need to constantly evaluate information security risks and derive a threat risk factor which lists all systems by priority to be used for ICT outsourcing. The banks should prepare an appropriate mitigation plan strategically for their ICT outsourcing projects through certified information security and legal professionals. Industry best practices on information security should be used while drafting contracts for ICT outsourcing in banks with an ability to update the contract while it is running to counter any risks pertaining to information security risks.

The banks should also evaluate ICT systems that give them a strategic competitive advantage in the market and develop a mechanism to ensure internal capabilities and controls are maintained while outsourcing. The mechanism should also determine which to which extent or level ICT functions are outsourced.

It is therefore, recommended that a general set of measures that includes projected cost analysis be used as a decision-making tool and an aid in prioritizing and developing successful outsourcing in banking industry, so as to reduce the banks' exposure to risks.

5.5 Suggestions for Further Study

This study was limited to commercial banks listed in Nairobi Securities Exchange, as representatives of the banking sector in Kenya. The researcher suggests that a further study be conducted in other sectors for comparison of results. On the other hand, this study concentrated only on information security risks, capability risks, internal control risks and financial risks experienced through outsourcing of ICT functions. A further research should seek to identify other risks associated with outsourcing of ICT functions.

REFERENCES

Arshad, N. H., May-Lin, Y. & Mohamed, A. (2007), ICT Outsourcing: Inherent Risks, Issues and Challenges, *WSEAS Transactions on Business and Economics*, Volume 4, Issue 8.

Barney, J. B. (1991), Firm Resources and Sustained Competitive Advantage. *Journal of Management,* 17 (1), 99–120.

Barney, J.B. (2001), Is the Resource-Based Theory a Useful Perspective for Strategic Management Research? Yes. *Academy of Management Review*, 26 (1), 41–56.

Benoit, A. A., Aubert M. P. & Suzanne, R. (1998). *Assessing the Risk of IT Outsourcing*. CIRANO.

Bensghir, T., & Tekneci, A. (2008). An evaluation of the outsourcing IS/ICT activities in Turkish ministerial computer departments. Article in Public Administration and Development 28(2), 94 – 104.

Barthelemy, J. (2003). *The Seven Deadly Sins of Outsourcing*. Unpublished manuscript, Academy of Management Executive.

Central Bank of Kenya (CBK), (2012). *Bank Supervision Annual Report*. CBK, Nairobi.

Cooper, D.R., & Schindler, P.S. (2007), *Business Research Methods,* (9th ed.). Illinois, McGraw-Hill.

Currie, W. (1996) Outsourcing In The Public And Private Sectors: An Unpredictable IT Strategy. *European Journal of Information Systems*. Vol. 4, pp. 226-36.

Currie, W. (2000). The Global Information Society, John Wiley & Sons, New York, NY.

De Sà-Soares, F., Soares, D. & Arnaud, J. (2014). "A catalog of information systems outsourcing," *International Journal of Information Systems and Project Management*. Available at www.sciencesphere.org/ijispm

Dhar, S., Balakrishnan, B., (2006). Risks, benefits, and challenges in global IT outsourcing: perspectives and practices, *Journal of Global Information Management,* Vol. 14 No.3, pp 39-63

Earl, M.J. (2006), "The Risks of Outsourcing IT," *Sloan Management Review*, Spring, pp.26-32.

Espino-Rodriguez, T. F. & Padron-Robaina, V. (2006). A review of outsourcing from the resource-based view of the firm. *International Journal of Management Reviews,* 8, 49-70.

Gottschalk, P., & Solli-Saether, H. (2006). Maturity Model for IT outsourcing relationships, *Industrial Management & Data Systems*, Vol. 106, No.2, p. 200-212.

Hong Kong Special Administrative Region, (2008)

IT World Limited, (2006)

Khidzir, N. Z., Mohamed, A., Arshad, N. H. (2013) ICT Outsourcing Information Security Risk Factors: An Exploratory Analysis of Threat Risks Factor for Critical Project Characteristics. *Journal of Industrial and Intelligent Information*, 1:218-222.

Kothari, C. R. (2004). Research Methodology: Methods and Techniques (2nd ed.). New Delhi: New Age International limited.

Kremic, T., Tukel O., and Rom, W., (2006). Outsourcing decision support: a survey of benefits, risks, and decision factors, *Supply Chain Management: An International Journal,* Vol.11, pp 467–482

Learned, E. P., Christensen, C. R., Andrews, K. & Guth, W. D. (1969). *Business Policy: Text and Cases*. Homewood, IL: Irwin

Linder, J. C. (2004), *Outsourcing for Radical Change.* New Work: Amacom.

Logan, M. (2000), "Using Agency Theory to Design Successful Outsourcing relationships", *The international Journal of Logistics Management, 11*(2), 21-32.

Maguire, S., Ojiako, G.U., (2008).Market led systems development: When customers become users, *Industrial Management & Data Systems*, Vol. 108, No.2, pp173-90.

Mclvor, R. (2003), *"Outsourcing: insights from the telecommunications industry*", Supply Chain Management, Vol. 8 No.4, pp.380-94.

Mohapatra, S., & Das S., (2013). Information Technology Outsourcing Risks in Banks: A Study of Perception in the Indian banking industry, *Das XIMB Journal*, 10(2), 61-73.

Mugenda, A. (2008). *Social Science Research: Theory & Principles (1st Edition*). Nairobi: ARTS Press

Mugenda, O. M. & Mugenda A. G. (2003), *Research Methods. Quantitative and Qualitative Approaches,* Nairobi: Acts Press), 72.

Mungai, V. W., & Moturi, C. A. (2015), "Effect of Information Technology Outsourcing on the Performance of Banks in Kenya: Application of the Balanced Scorecard." *IOSR Journal of Business and Management, 17*(3), 83-89.

Nam, K., Rajagopalan, S., Rao, H.R., Chaudhury, A., (2006), "A Two-Level Investigation of Information Systems Outsourcing," *Communications of the ACM*, 39 (7), 37-44.

Oduk, P. M. (2013). Factors Influencing Outsourcing at Kenya Union of Savings and Credit Cooperatives. International Journal of Business and Commerce, 3 (1), 83-99.

Pearce, J.A. & Robinson, R.B. (2007). *Formulation, Implementation and Control of Competitive Strategy,* (9th ed.). Boston, MA: McGraw-Hill Irwin.

Perunovic, Christoffersen, Williams (2006). ”Vendor’s perception of outsourcer’s ICT utilisation in the outsourcing process”, *Proceedings of the 15 international conference Management of Technology IAMOT*, Beijing.

Qin, L., Wu, H., Zhang, N., and Li, X., (2012). Risk identification and conduction model for financial institution IT outsourcing in China, *Information Technology Management,* Vol. 13, pp 429–443

Reed, S. (2005), Managing Risk in IT Outsourcing. Retrieved May 29th, 2016 from http://www.alsbridge.com/outsourcing.

Sang, J.K. (2010). Outsourcing in Kenyan Universities: An Examination of Challenges and Opportunities. *International Journal of Business and Social Science*, 1(2).

Saunders, M., Lewis, P., & Thornhill, A. (2003). *Research method for business students*, 3rd edition. New York: Prentice Hall.

Schwalbe, K., *Information technology project management.* Canada: Course Technology, 2002.

Su, Y. S., Tsang, E. W. K. & Peng, M. W. (2009). "How do internal capabilities and external partnerships affect innovativeness?" *Asia Pacific Journal of Management*, 26(2), 309-331.

Tiessen, P., & Waterhouse, J. H. (1983). Towards a descriptive theory of management accounting. *Accounting, Organizations and Society 8*(2-3), 251-267.

Wernerfelt, B. (1984). *'A resource-based view of the firm', Strategic Management Journal*, 5(2), 171-180

Williamson, O. E. (1994). Transaction Cost Economics and Organization Theory. The Handbook of Economic Sociology. N. J. Smelser and R. Swedberg. Princeton, NJ, Princeton University Press.

APPENDICES

Appendix I: Letter for Data Collection

Dear Respondent,

RE: DATA COLLECTION

I am a student in University of Nairobi pursuing a Masters Degree of Science in Information Technology Management. I am conducting a research study **"To assess the risks of Information and Communications Technology outsourcing functions in Kenyan commercial banks listed in Nairobi Securities Exchange"** to fulfill the requirements of the award of the above mentioned degree program. Your organization has been chosen to take part in the study.

Kindly respond to all the questions in the questionnaire accurately and honestly as possible. The information in the questionnaire will be treated as confidential and it is for academic purpose only.

Your co-operation is highly appreciated. Thank you

Yours Sincerely,

Kennedy Murambi

Appendix II: Questionnaire

Instructions: Please read the answer the questions as appropriately as possible. It is advisable that you answer or fill in each section as provided. Tick (□) where appropriate.

Section A: Respondents Profile

1. Kindly indicate your gender

Male [ ] Female [ ]

2. Kindly indicate your highest level of academic qualification.

a) Certificate/Diploma [ ] b) Bachelors Degree [ ]

d) Masters [ ] c). PhD. [ ]

d). Other (specify)……..

3. How many years have you worked in this bank?

a) Less than 5 Years [ ] b) 5-10 Years [ ]

c) 11-15 Years [ ] d) 16-20 Years [ ]

d) Above 20 Years [ ]

Section B: ICT functions Outsourced by the Commercial Bank

4. To what extent has your bank outsourced the following ICT functions to a third party service provider? Use a scale of 1-5, where 1 Not at all, 2 is Small extent, 3 is Moderate extent, 4 is Great extent and 5 is Very great extent

Statements		**1**	**2**	**3**	**4**	**5**
i)	Helpdesk Support					
ii)	Connectivity					
(iIi)	ATM management					
iv).	Database management					
v)	Application management					

5. Are there any other ICT functions that your bank has outsourced to a third party service provider? .....

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Section C: Security Risks and Outsourcing of ICT functions

6. Has your bank experienced data security risks, for instance on bank's internal information, as a result of outsourcing of ICT functions?

Yes [ ] No [ ]

b). Explain your answer……

……

7. To what extent do you agree with the following statements on the confidentiality risks and outsourcing of ICT functions? Use a scale from 1 to 5, where 5 is strongly agree, 4 is agree, 3 is neutral, 2 is disagree and 1 is strongly disagree.

Statements		**1**	**2**	**3**	**4**	**5**
i)	Outsourcing of ICT functions has led data confidentiality leaks					
(ii)	Outsourcing of ICT functions has led to loss of bank's data integrity					
(iii)	Outsourcing of ICT functions has led to loss of intellectual property rights.					
iv)	The bank and the service provider has put proper security management processes and procedures to protect sensitive data					

Section D: Capability Risks and Outsourcing of ICT functions

8. Has your bank experienced capability risks as a result of outsourcing of ICT functions?

Yes [ ] No [ ]

b). Explain your answer……

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9. To what extent do you agree with the following statements on the capability risks and outsourcing of ICT functions? Use a scale from 1 to 5, where 5 is strongly agree, 4 is agree, 3 is neutral, 2 is disagree and 1 is strongly disagree.

Statements		**1**	**2**	**3**	**4**	**5**
i)	Outsourcing of ICT functions has led to loss of in-house critical skills and competences on the domain of the services outsourced					
(ii)	Outsourcing of ICT functions has led to loss of innovative capacity on ICT in the bank					
(iii)	Outsourcing of ICT functions affects the bank's capability to change					
iv)	Outsourcing of ICT functions has affected the banks internal capabilities in the services outsourced.					

Section E: Internal Control Risks and outsourcing of ICT functions

10. To what extent do you agree with the following statements on internal control risks and outsourcing of ICT functions? Use a scale from 1 to 5, where 5 is strongly agree, 4 is agree, 3 is neutral, 2 is disagree and 1 is strongly disagree.

Statements		**1**	**2**	**3**	**4**	**5**
i)	Outsourcing of ICT functions has led to loss of control over ICT decisions					
(ii)	Outsourcing of ICT functions has led to Internal control Loss of control over services outsourced data					
(iii)	Outsourcing of ICT functions has led to loss of strategic alignment between business and ICT in the bank					

Section F: Financial Risks and Outsourcing ICT functions

11. To what extent do you agree with the following statements on financial risks and outsourcing of ICT functions? Use a scale from 1 to 5, where 5 is strongly agree, 4 is agree, 3 is neutral, 2 is disagree and 1 is strongly disagree.

Statements		**1**	**2**	**3**	**4**	**5**
i)	The bank has incurred unexpected transition costs of IS services due to outsourcing of ICT functions					
(ii)	The bank has incurred excessive switching costs due to outsourcing of ICT functions					

Statements		1	2	3	4	5
iii).	Outsourcing of ICT functions has led to excessive transaction costs					

12. Which other risks has your bank encountered as a result of outsourcing of ICT functions? …….

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THANK YOU FOR YOUR PARTICIPATION

Appendix III: Listed Commercial Banks in Kenya

Barclays Bank Ltd
CFC Stanbic Holdings Ltd
I&M Holdings Ltd
Diamond Trust Bank Kenya Ltd
HF Group Ltd
KCB Group Ltd
National Bank of Kenya Ltd
NIC Bank Ltd 0
Standard Chartered Bank Ltd
Equity Group Holdings
The Co-operative Bank of Kenya Ltd

Appendix IV: Work Plan

Action plan for the year 2016	**March - May 2016**	**June 2016**	**June-July 2016**	**July – Sep 2016**	**Oct 2016**
Proposal writing					
Proposal Defense					
Data collection					
Data Analysis					
Final defense					
Submission of Final Document					