THE CRITICAL SUCCESS FACTORS FOR INFORMATION SYSTEM (IS) RISK MANAGEMENT IMPLEMENTATION IN THE NIGERIAN BANKING SECTOR

SANUSI FASILAT ARAMIDE

MASTER OF INTERNATIONAL ACCOUNTING
UNIVERSITI UTARA MALAYSIA
November 2015

THE CRITICAL SUCCESS FACTORS FOR INFORMATION SYSTEM (IS) RISK MANAGEMENT IMPLEMENTATION IN THE NIGERIAN BANKING SECTOR

By

SANUSI FASILAT ARAMIDE

Thesis Submitted to
Othman Yeop Abdullah Graduate School of Business
Universiti Utara Malaysia
In Fulfillment of the Requirement for the Degree of Master of International Accounting

PERMISSION TO USE

In presenting this thesis in fulfillment of the requirements for a Post Graduate degree from the University Utara Malaysia (UUM), I agree that the university Library may have free access to this thesis for academic purpose. I further agree that the permission to copy this thesis in any form, whole or in part for scholarly purposes, may be granted by my supervisor(s) or in their absence, by the Dean of Othman Yeop Abdullah Graduate School of Business where I did my thesis. It is understood that any copy, publication or use of this thesis, or parts of it for financial gain shall not be allowed without my written permission. It is also understood that due recognition should be given to me and to the UUM in any scholarly use which may be made of any material in my thesis.

Request for permission to copy or to make other use of materials in this thesis in whole or in part should be addressed to:

Dean of Othman Yeop Abdullah Graduate School of Business
Universiti Utara Malaysia
06010 UUM Sintok
Kedah Darul Aman

ABSTRACT

Information system (IS) risk management is an important area of study in the banking sector. Banks are service-oriented businesses that deal with the multitudes of customers and other stakeholders' information on a daily basis. This information is, however, subjected to a number of uncertainty, threat, and risk. Hence, IS risk management implementation becomes a necessity. The objectives of this study are to identify the critical success factors for IS risk management implementation and to examine the effect of IS risk management implementation on bank performance. The critical success factors for IS risk management implementation covers both internal (i.e., top management commitment and support, organization structure, organization culture, trust, strategy, and resources) and external (i.e., competitive pressure) factors. Survey questionnaire is employed for data collection. The respondents involve 30 senior managers of the Nigerian banks.

SPSS is used for data analysis. The findings show that top management commitment and support, organization structure, and resources significantly influence IS risk management implementation. Organization culture, trust, strategy, and competitive pressure, however, do not influence the IS risk management implementation. In addition, IS risk management implementation influences bank performance. The study's findings contribute to the body of literature on the critical success factors for IS risk management implementation in the banking sector.

Keywords: Information system (IS), risk management, critical success factors, performance.

ABSTRAK

Sistem maklumat pengurusan risiko merupakan salah satu bidang yang penting di dalam sektor perbankan. Bank merupakan perniagaan yang berorientasikan kepada penawaran perkhidmatan kepada pelanggan dan penyaluran maklumat pihak berkepentingan setiap hari. Walau bagaimanapun, maklumat ini terdedah kepada pelbagai ketidakpastian, ancaman, dan risiko. Oleh itu, adalah menjadi kemestian kepada pihak bank untuk mempunyai sistem maklumat pengurusan risiko. Objektif kajian ini adalah untuk mengenal pasti faktor-faktor penyumbang kejayaan sesebuah sistem maklumat pengurusan risiko dan mengkaji kesan pelaksanaan sistem maklumat pengurusan risiko ini ke atas prestasi bank. Faktor-faktor ini meliputi faktor dalaman (i.e., komitmen dan sokongan daripada pengurusan tertinggi, struktur organisasi, budaya organisasi, kepercayaan, strategi, dan sumber) dan faktor luaran (i.e., tekanan persaingan). Kaji selidik digunakan bagi tujuan pengumpulan maklumat. Responden kajian adalah terdiri daripada 30 orang pengurus atasan bank di Nigeria.

SPSS digunakan untuk menganalisa data. Dapatan kajian menunjukkan komitmen dan sokongan pihak atasan, struktur organisasi, dan sumber mempengaruhi pelaksanaan sistem maklumat pengurusan risiko. Manakala budaya organisasi, kepercayaan, strategi, dan tekanan persaingan tidak memberi kesan terhadap pelaksanaan sistem maklumat pengurusan risiko. Di samping itu, pelaksanaan sistem maklumat pengurusan risiko ini mempengaruhi prestasi bank. Penemuan kajian ini menyumbang kepada literatur faktor-faktor kejayaan dalam pelaksanaan sistem pengurusan risiko dalam sektor perbankan.

ACKNOWLEDGEMENT

"It seems impossible until it is done" (Nelson Mandela)

With sincere gratitude to God almighty for all the great things He has done in my life. God in His infinite mercy bestowed upon me health, knowledge, and necessary material to complete this programme (Alhamdulillah). Also, I am grateful to my supervisor Dr Haslinda Hassan for the support and guidance given to me throughout the period of the study. Thank you, for all that you did. My sincere appreciation and gratitude go to the Dean of OYA, all the lecturers that taught me in all the courses that I studied, the management of OYA for their support and cooperation as well as the entire University (UUM).

On the home front, I will forever be grateful and appreciate my husband, a mentor indeed Associate Professor Abdul Yaqeen K. Sanusi for his relentless effort, support, understanding, and encouragement that kept me focused and strong all the time, and to my adorable children, Ayatullah Sanusi, Abdul Qoyyum Sanusi, Hauwau Sanusi, and Abdul Azeem Sanusi for the immeasurable support and endurance from the beginning to the end of the programme thank you very much. Also, I appreciated my Mother and Father for their prayers and parental support, may God almighty rewards you. My appreciation goes to well and truly friends who are actively involved in the successful completion of this programme. Before I close this chapter, I will like to thank my siblings, Jibril Ibrahim Sahban and other relatives for their support and prayers may God bless you all.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURE

LIST OF ABREVIATIONS

IS	Information System
CRF	Critical Success Factor
IT	Information Technology
COSO	Committee of Sponsoring Organizations of Tradeway Commission
IRM	Institute of Risk Management
SPM	Supervisory Policy Manual
NSW	New South Wales
TQM	Total Quality Management
ICT	Information and Communication Technology
EIU	Eastern Illinois University

CHAPTER 1 INTRODUCTION

1.1 Overview

This section starts with background of the study, problem statement, research questions, objectives of the study, scope of the study, significance of the study, and the organization of the study.

1.2 Background of the Study

During the last two decades, one of the most impressive developments in the global financial markets is to improve the ability of an organization to encounter the uncertainties arising from both internal and external business environment, especially with its negative impact at the organizational level. In view of this, risk management has been emphasized as a major area of business practice with the aim of identifying, analyzing, and controlling causes and effects of uncertainties and risk in an organization.

Several ways have been used by researchers to classify risk in organization. Jorion and Khoury (1995), for instance, classified risk into financial and business risk. Business risk is related to the activity of the company itself, focusing on the factors affecting the products and/or the market. Financial risk refers to potential losses in the financial markets caused by fluctuations in financial variables. Gleason (2000) classified risk into two: systematic and unsystematic risk. Systematic risk is linked to the market or state of the economy in general. Unsystematic risk, on the other hand, is associated with a property or a specific organization. Unsystematic risk can be mitigated by diversifying the portfolio, while systematic risk does not improve diversification (Gleason, 2000).

The emergence of electronic commerce as an innovative model of doing business has led organizations to successfully incorporating information system (IS) in their business strategies, products, and services. IS needs to be accurate and up-to-date to enable an organization to make good business decisions and needs to be available when the business requires access to it. Failure of IS risk management to meet various transaction needs in an organized and secured environment could create losses of both reputation and sales. For example, Ernst and Young (2008) reported that an enterprise's IS breaches significantly resulted to reputation and brand losses. Hence, IS risk management has been of critical concern to any organization as well as a source of competitive advantage. It needs to become a real enterprise-wide strategic issue by aligning it with a corporate governance approach. Nonetheless, the IS risk management is easily overlooked by those who focus only on the information technology (IT) side of the equation, failing to see that human resources and policies are the most likely causes of any risks in IS (Dameri, 2008; Kim, Robles, Cho, Lee, & Kim, 2008).

IS risk management has recently become a prospering and fast-moving research area. Researchers and practitioners have putting more efforts to understand and to assess on how an organization should go about implementing the effective IS risk management. This involves combination of technical, procedural, and people-orientated components for the purpose of minimizing risks posed to information assets as well as enhancing an organization's capability to manage risks (Remus & Wiener, 2009).

In today's fast-moving business environment, financial institutions especially banks, are exposed to different kind of risks. Due to such risk exposure, efficient IS risk management is required. The IS risk management in the banking sector is very critical as the main objective of the institution is to maximize revenues and to offer the maximum value to the shareholders

wealth (Al-Tamimi & Al-Mazrooei, 2007). Therefore, IS risk management is essential to achieve the goal of wealth maximization (Ernst & Young, 2008).

The key factors of how IS risk management should be successfully implemented or practiced are called critical success factors (Gosain, 2004). As a result of rapidly changing business environment, organizations encounter a high number of risk sources arising from internal or external business environment originated from markets, competitors, infrastructure, partners, and business processes (Ranong & Phuenngam, 2009). From the literature review, it is found that there is a lack of holistic view on the literature about the extent to which each of the critical success factors are important to the IS risk management implementation. There is no comprehensive approach exists on characterizing a collective set of critical success factors to manage IS risk effectively. Hence, a more deliberate study to manage IS risk effectively is essential. In an organization, IS risk management can only be effectively implemented if there is a holistic support for all the policies and procedures of the risk management (Zafar & Clark, 2009).

1.3 Problem Statement

Effective IS risk management practice is an essential tool in planning, executing, and controlling the overall running of an organization which is critical to good performance in any business. In particular, bank needs to understand how to carry out the IS risk management in order to reduce loss and to increase bank performance.

Generally, there is no globally accepted standard available to assist organizations with a successful implementation of IS risk management (Stoneburner & Low-Beer, 2004). Although there are existing risk management standards and guidelines that lack global

acceptances or universality, the said procedures are, however, limited to a small range of business organization (ISO, 2008).

IS risk management has become a rapid-moving research area especially in the financial institutions. Researchers have been trying to understand and investigate how business organization can go about IS risk management implementation effectively. From the literature review, it is discovered that there are limited studies on the IS risk management implementation in the banking sector. Several existing studies on risk management (see, for example, Ingram, Biermann, Cannon, Neil, & Waddle, 2000; Lee & Kim, 2007; Biehl, 2007) explained the process and the importance of managing risk in an organization. Other studies (see, for example, COSO, 2004; McLeod & McDonell, 2011) discussed the factors that drive to effective IS risk management implementation.

The extent to which the critical success factors for IS risk management implementation is worthy of exploration particularly in the Nigerian banking sector. Although there are several existing literature focused on risk management implementation in Nigeria, however, none of the studies covered the critical success factors for IS risk management implementation in the banking sector. In particular, the existing literature focus on the importance of risk management practice mostly, in health sector (see, for example, Campell et al., 2014), construction industry (see, for example, Augustine, Ajayi, Ade, & Adakole, 2013; Uwadia, Ifinedo, Nwamarah, Eseyin, & Sawyerr, 2006; Dada & Jagboro, 2007; Salawu & Abdullah, 2015), education (see, for example, Ifinedo, 2008), and oil and gas (see, for example, Zuofa & Ochieng, 2014) sectors. Nonetheless, a study on the critical success factors for IS risk management implementation, especially in the Nigerian banking sector, is lacking. The present study, therefore, aims to identify the critical success factors for the IS risk

management implementation in the banking sector and to investigate the relationship between IS risk management implementation and bank performance.

1.4 Research Questions

The research questions of this study are as follows:

1. What are the critical success factors of IS risk management implementation in the banking sector?
2. Is there any relationship between IS risk management implementation and bank performance?

1.5 Objectives of the Study

To achieve the research objectives identified in section 1.4, the objectives of this study as follows:

1. To identify the critical success factors for IS risk management implementation in the banking sector, and
2. To investigate the relationship between IS risk management implementation and bank performance.

1.6 The Scope of the Study

The present study is carried out in banks located at Oyo State of South-Western part of Nigeria. Oyo State is one of the biggest states in Nigeria where banks are highly concentrated.

The study specifically focuses on the critical success factors for IS risk management implementation in the banks and how this IS risk management implementation affects the

banks performance. The study employs a quantitative research approach where survey questionnaire is used for data collection.

1.7 Significance of the Study

The global financial crisis was characterized by market volatility, a lack of liquidity in many financial markets and enhanced systemic risk (Al-Tamimi & Al-Mazrooei, 2007). This trouble has underscored the critical importance of risk management. Many institutions are rethinking of their risk management governance models. An active role was undertaken in providing an oversight of risk management, establishing the risk management policy and framework, and approving the institution's risk management. The main reason of adopting risk management does not mean to minimize risk; indeed, its purpose is to optimize the risk-reward trade off and to avoid probable failure in the future (Scott & Vessey, 2002).

IS risk management as a technical discipline has become a standard area of business practice in recent years. Robust IS risk management practices in the banking sector is important for both financial stability and economic development. The development of adequate capacity to measure and manage IS risks is also important for banks to effectively perform their roles in financing economic activities, especially the task of continuously providing credit to a large number of enterprises whose activities underpin economic growth. Thus, the study's findings will enable the bank management to understand the critical success factors that influence the IS risk management implementation. This is important for the banks to minimize losses and to increase their business performance. It will also act as a source of literature for other scholars who intend to carry out further research on the effect of IS risk management implementation on the bank performance.

1.8 Organization of the Study

This dissertation is structured as follows. Chapter one introduces the study by explaining the background of the study, problem statement, research questions, research objectives, scope of the study, and significance of the study. Chapter two presents the literature review of IS risk management implementation and the critical success factors for IS risk management implementation in the banking sector. Chapter three explains the research model of the study and the hypotheses development. Chapter four presents the research methodology. Chapter five discusses the study's findings. Chapter six concludes the study and suggests for future research.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

This chapter presents the literature review of the study. The overview of IS, the concept of risk and IS risk management, and the critical success factors for IS risk management implementation are discussed in detail in this chapter.

2.2 Overview of Information System

The recent industrial booming had promoted speedy technological expansion and development, to the extent that every aspect of our daily life has been affected by IS. In a nutshell, IS is known as a product of information and communication technology (ICT), which includes the hardware, software, and communication elements. Nonetheless, this is not all about the IS because it also involves the combination of IT and its application in the organization as well as the users and other parties that enable the technology to be implemented in the organization and useful for the organization.

The information in the organization can be related to customers, product, operating procedures, suppliers, equipment, competitors, and regulating environment (Dameri, 2008). IS in a bank may be restricted to safeguard customers' accounts, employees payment, and the efficiency of the branches operation (Carey, 2001). Hence, IS comprises of people, hardware, software, communication devices, network, and data resources, which can be processing, storing, regaining, and conveying data for a particular purpose.

Mathrani and Viehland (2010), in their study of the critical success factors of enterprise system implementation in New Zealand, describe IS as a software package that is integrated into the business to achieve the functional requirement of an organization. Salmeron and Herrero (2005), in their study of IS in Indonesia, define IS as a structured means of gathering,

entering, processing and storing data, managing, controlling, and reporting information for a business to achieve its objectives and goal. Avison and Torkzadeh (2009) refers IS as a system where activities are focused on controlling, conveying, storing, regaining, influencing, and displaying information. Based on these definitions, IS can generally be regarded as an essential tool for businesses to enhance their performance and competitive advantage. This definition is used in the present study.

Prior literature (see, for example, Avison & Torkzadeh, 2009) remark the positive effect of IS on the productivity of the organization.

2.3 Concept of Risk and Risk Management

Risk is a probability issue that can be referred to as how frequent something bad is likely to happen, and how much loss is likely to result. The probability of loss can come from the combination of threat, vulnerability, and asset characteristics. SPM (2000) refers risk as an undesirable situation or circumstance that has a probability of happening and a negative outcome of the project. Raisingghani, Starr, Hickerson, Morrison, and Howard (2008) and Szczepaankiewicz et al. (2006) describe risk as any phenomenon that is likely to affect the achievement of organizational objectives.

Different perception of the definition of risk leads to different identifications of risks and, therefore, different outcomes of a risk assessment. From the concept of risk, the fundamental nature of risk is universal, regardless of its context. Every business environment, with financial sectors inclusive, is exposed to a number of risks factors. These risks include investment risk, market risk, credit risk, operational risk, liquidity risk, IS risk, and others risks that are peculiar to businesses, government policies, and other life activities. As a result

of these risks exposure, an effective risk management is required. Risk management is one of the basic tasks required for an organization to achieve its business goal.

2.3.1 IS Risk Management

In a modern society, technology serves as a blockbusters, which enables an organization to employ automated IT to process information to support the organization's mission and objectives. As a result of this, an organization needs to protect its information assets, thereby automatically protecting its mission from IT-related risk.

IS risk management plays a significant role to the success of the organization. An efficient IS risk management operation is highly required for successful IT security in an organization. Hence, IS risk management should not be regarded as a technical job that should be handled by IT experts; it should be seen as an important management function.

IS risk management is the process that allows IT managers to balance the operational and economic costs of protective measures and achieve gains in mission capability by protecting the IS and data that support their organizations' missions. IS risk management encompasses the application of risk management procedures to manage or mitigate the IS risk. These risks are related to ownership, operation, usage, and implementation. The present study, however, focuses on the factors that drive the IS risk management implementation and the effect of the IS risk management implementation on bank performance.

Nah, Lau, and Kuang (2001) and Schechter (2004) argued that the major goal of IS risk management is to increase performance efficiency through improving business processes and reducing the operating costs. Sudhakar (2012), in his study of IS and software development in U.S., concluded that IS risk management enhances and standardizes processes of data and information within the organization with best practices. Standardization and integration of

activities and data enable an organization to generalize operating processes, enhance capacity to disseminate new IS function, and decrease IS running expenses.

Carey (2001), in his study of IS risk management in the financial institutions in England, found that IS risk management is more relevant and highly applicable to the financial institutions than in any other parts of the economy. This is due to the nature of their businesses as a service delivery industry. Financial institutions process a huge amount of customers' and other stakeholders' information, both financial and non-financial data, on a daily basis. This information can be subjected to a number of risk factors, such as theft, vandal, disturbances, and information insufficiency. All of these risks may pose threat to the survival of the organizations, hence, IS risk management implementation becomes crucial to the business.

2.3.2 IS Risk Management Implementation

IS risk management implementation is the process of identifying vulnerabilities in the organization`s IS and taking carefully essential steps to ensure confidentiality, integrity, and availability of all the components in the IS. Halliday, Badenhorst, and von Solms (1996) argued that the fundamental concern of IS risk management is to support the mission of the organization.

IS risk management implementation involves a series of steps, such as identifying, measuring, monitoring, and controlling IS related risks in an organization. The process is to ensure that individual clearly understands risk management procedures in order to achieve business strategy and objective. IS risk management implementation can also reduce the negative impact of the business and increase the emerging market opportunities.

Ryba (2005) identified three major objectives of IS risk management implementation in an organization. These include: (1) building IS that process, store, and disseminate information; (2) allowing management to formulate useful decisions to indicate that IS budgeted expenditure are judiciously used; and (3) assisting management to give necessary authority regarding the documentation of risk management performance.

IS risk management implementation consists of different activities by which, when undertaking in sequence, will allow continual improvement in decision making. This includes establishing the context, identifying the risk, evaluating the risk, and risk treatment.

Stoneburner, Goguen, and Feringa (2002) emphasized that effective IS risk management should be based on the following major elements: IS risk management should support the business objectives or mission of organization. IS risk management is a vital component for fundamental care. Senior management is enriched with two fundamental obligations, namely, obligation of dedication and obligation of care. An obligation of dedication implies that the decisions shall be made in the best interest of the enterprise. Obligation of care implies that senior management shall protect the assets of the enterprise and make informed business decisions.

IS risk management must be practical. Implementation of controls must be proposed and it is necessary to confirm that a significant risk exists. Implementing a timely information risk management can fulfill this. IS risk management responsibilities and accountabilities should be made specific and clear.

IS risk management policy should establish the roles and responsibilities of all employees. To make the policy more effective the language of the policy must be incorporated into understandings for all work force and experts. IS risk management should be always

reviewed in respect to time, need, and objectives. A good IS risk management implementation examines itself on a regular basis and makes changes wherever and whenever necessary.

2.4 Overview of Critical Success Factors

During the study, extant literature on the critical success factors for IS risk management implementation are reviewed. The concept of critical factors of IS risk management is always considered as the factors that influence the effective implementation of IS risk management.

The critical success factors are factors whose presence increases the probability of negative outcomes in an organization (Remus & Wiener, 2009). Galorath (2006), in his study of investigating what constitute critical success factors, argued that the critical success factors may include individual factors, such as size of the project, new software, and malicious employee. Jennex and Adelakun (2003) reported that critical success factors are a combination of various factors, such as task, technology, individual group, or team. Some studies (see, for example, Poon & Wagner, 2001) classified these factors into different categories focusing on factors related to specific team or group.

Identification of critical success factors would enable the organization to focus their limited resources on these factors for the effective IS risk management implementation in their businesses. Rockart (1982), one of the pioneer researchers in IS critical success factors, concludes that critical success factors are those area of activities in which favorable results are absolutely available for management of an organization to achieve their goals. Leidecker and Bruno (1984) argued that critical success factors for risk management are important things that must go right for the business to progress in term of performance.

Rockart (1978) built up the concept of critical success factors idea to assist the chief executive officers (CEOs) with outlining their hierarchical requirements for firms to accomplish desired needs. Rockart suggested that the concept of critical success factors could be an effective way of defining the management information needs of managers. He suggested that a critical success factor analysis would be beneficial in identifying the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization. The identification of critical success factors may provide a clear definition of the kinds of information that must be collected and allow the organization to focus on its efforts on meeting the needs of the business rather than what the available technology will allow.

Sundberg and Sandberg (2004) pointed out that critical success factors may be used by managers as descriptions, predictors, and guidelines for the improvement of business performance. Westerveld (2003) highlighted the importance of critical success factors by acknowledging the fact that one of the key shortcomings of strategy implementation in an organization is a failure to translate statements of strategic purpose. Baba, Deros, Mohd Yusof, Azhari, and Salleh (2006) reported the critical success factors as tools by which, when put into practice, will enhance the chance for successful implementation and adoption of risk management in an organization.

In the present study, the critical success factor is defined as those elements that constitute risk free business environment.

2.5 Critical Success Factors for IS Risk Management Implementation

Prior studies of IS risk management implementation are presented in Appendix 1. Most of the studies on the critical success factors for IS (see, for example, Roland, 2008) employed

qualitative as the research technique. The unit of analysis was organization, ranging from SMEs to large organizations. Most of the countries of origin of the literature included U.S., U.K., Malaysia, and Australia.

A number of critical success factors that may influence IS risk management implementation in an organization were identified from the literature review. These factors are discussed below.

Top Management Commitment and Support: Dembo and Freeman (1998) conducted their study in U.S. to examine the concept of critical success factors to be implemented in a business environment. The factors considered in their study include executive top management support, integrating risk management into decision-making process, creating efficiencies in procedures, and controls and a common risk language. Galorath (2006) studied the importance of risk management and evaluates processes which are required for the effective implementation of IS risk management in SMEs. The study considered the critical success factors that influence the IS risk management implementation as top-level executive support, entire management of structure and processes, cultural imperative, and a pattern for measurement. Westerveld (2003) identified the needs for relationship between project success and critical success factors. He drew out a project model involving critical success factors, such as policy and top management support. Belassi and Tukel (1996) identified critical success factors for MIS project implementation as top management support. Silver (2010) examined the critical success factors in complex industrial projects and identified top management support among others as critical success factors. A holistic survey conducted by EIU (2009) revealed the most important element necessary for IS risk management implementation in the organizations, include attitude towards risk monitoring systems and practice, and support from executive board. Henriksen and Uhlenfeldt (2006) and Young and

Jordan (2008) remarked the importance of top management support as a key component of IS risk management implementation for improvement of decision making in managing risk. Studies carried out by Carey (2001), Galorath (2006), Grabowski and Roberts (1998), and Hasanali (2002) concluded that commitment from top management support activities are important in the IS risk management implementation. Successful implementation of risk management is, thus, highly dependent upon commitment and support of the top management.

Organization Structure: Grabowski and Roberts (1998) conducted their study in U.S. about the problem of risk mitigation and came out with a process to support high performance in an organization. They identified organizational structure as a critical success factor for IS risk management implementation. Silver (2010) examined critical success factors in complex industrial projects and identified organizational structure as a critical success factors. DeLoach (2004), from the study conducted in U.S on risk imperative, stated that organizational structure is the main critical success factor for IS risk management implementation. Grabowski and Roberts (1998), and Hasanali (2002) concluded that the organizational structure is an important factor in the IS risk management implementation. Hunter (2002) presented the idea that organizational structure provides the authority to predict the way employees work. Therefore, one of the most important factors for effective IS risk management implementation is organizational structure. This is because organizational structure gives the concept, guidelines, direction, and support to the member of staff that is conducted by the steering committee.

Resources: Westerveld (2003) identified the needs for relationship between project success and critical success factors. He drew out a project model involving critical success factors, such as policy and resources. In addition, Belassi and Tukel (1996) carried out an empirical

study to investigate the critical success factors for MIS project implementation and their impact on software project across multiple companies. They identified critical success factor for MIS project implementation as adequate resources. Furthermore, Remus and Wiener (2009) studied the critical success factors for software project implementation in U.S., India, and Europe. They identified twenty-nine critical success factors with models consisting of both internal and external factors. The internal factors include resources. New South Wales (NSW) Australia department of state and regional development (NSW, 2005) provided a guideline to assist organizations with IS risk management implementation which contained appropriate commitment to the risk management, clear goals and objectives of the risk management, reasonable resource allocation, appropriate training, and systems to monitor and review risks. Grabowski and Roberts (1998) asserted that trust permits organization's members to concentrate on their mission undisturbed by doubts of other members' roles, responsibility, and resources. In addition, Flamholtz (1974) recognized that resource allocation for risk management practice should be at the appropriate level given the severity of the risk and should take into account any necessary trade-offs due to resource constraints.

Trust: Mayer, Davis, and Schoorman (1995) refers trust as the circumstance where an individual (a trustor) is willing to rely on the activities of another (a trustee) based on the expectation that the trustee performs a particular action that is important to the trustor, not considering the capability of that trustee to monitor and control that trustor. Trust is a very sensitive element or factor in an organization; it is the effective way of creating co-operation within an organization. Hence, trust is a key critical success factor as it enables holistic support and smooth IS risk management operation. Nonetheless, effective implementation of IS risk management requires trust to ensure transparency in the process. Grabowski and Roberts (1998) conducted study about the problem of risk mitigation and came out with a process to support high performance in an organization. To achieve the goal of better

performance, the researchers identified trust as a critical success factor for IS risk management implementation. Westner and Strahringer (2010) conducted empirical study about German companies on offshore project risk management implementation. They explained that trust is the major determinant of success in organization's software risk management implementation. Remus and Wiener (2009) studied critical success factors for software project implementation. During the process of study, they identified critical success factors with models consisting of both internal and external management factors which include trust. Studies carried out by Carey (2001), Galorath (2006), Grabowski and Roberts (1998), and Hasanali (2002) concluded that trust is an important factor in the IS risk management implementation. Grabowski and Roberts (1998) asserted that trust permits organization's members to concentrate on their mission undisturbed by doubts of other members' roles, responsibility, and resources. Since effective IS risk management process requires activities that share commitment, one of the ways of encouraging effective IS risk management is through trust enhancement.

Strategy: Westerveld (2003) identified the needs for relationship between project success and critical success factors. He drew out a project model involving critical success factors, such as policy and strategy. Silver (2010) examined critical success factors in complex industrial projects and identified strategy among others as critical success factors. Henriksen et al. (2006) and Hoyt and Liebenberg (2006) examined integrating risks business model and business process risk management in Australia, were of the opinion that, process management as a strategy is considered as another critical success factor which is a substantial factor to identify potential risks involved in the way by which processes and activities will be handled, and decided on the way the risks would be mitigated. Harris (2005) and Kaplan and Norton (2008) investigated risk management and strategic execution underlined a framework for strategic risk management which describes the type of business strategy and activities

required to run superior performance which gives valuable insight into IS risk management practice. Furthermore, to discover the cause-and-effect linkages in critical risk events and how those events would play out in the business strategy and impact revenue, earnings, and share value. The framework was used to evaluate business strategy, and to identify and assess risk in the strategic plans. The study concluded that companies should develop a strategy, conduct strategic risk assessment, and formulate strategic risk management plans for good performance. Hasanali (2002) concluded that strategy is an important factor in the IS risk management implementation.

Culture: Grabowski and Roberts (1998) conducted study about the problem of risk mitigation and came out with a process to support high performance in an organization. The researchers identified organizational culture as a critical success factors for IS risk management implementation. Galorath (2006) studied the importance of risk management and evaluates processes which are required for the effective implementation of IS risk management in SMEs. The study considered the critical success factors that influences the IS risk management implementation as entire management of structure and processes, cultural imperative, and a pattern for measurement. Avison and Torkzadeh (2009) conducted study on organization's software development in New York and concluded that the success of the system software depends on communication and culture. Huang and Trauth (2007) conducted an interview on twelve IS software specialist from U.S. and China about software development and implementation. They found organizational culture as the major critical success factor that influences organizational software risk management implementation, and that culture also reduces conflicts and improves team efficiency. Rai, Maruping, and Venkatesh (2009) identified culture among other critical success factors as a determinant of IS software project implementation. Furthermore, Remus and Wiener (2009) studied critical success factors for software project implementation, they identified critical success factors

with models consist of both internal and external management factors, which include culture. Raisinghani et al. (2008) in their own contribution to knowledge identified five critical success factors for software project implementation, these include, risk analysis, culture, risk control implementation, legal control, and contracts.

Competitive Pressure: Mahilum-Tapay et al. (2007) considered IT as an important factor for effective IS risk management implementation in order to achieve high competitive advantages, which includes higher performance levels, globalization, and organizational liberalization. Ma (2000) concluded that competitive perfection is conceivably far and wide used term in strategic management yet it is inadequately stated and practiced. Ma further examined three relationship patterns between competitive edge and firm's performance, namely unique advantage leading to higher performance, unique advantage without better performance, and superior performance without unique advantage. Ordóñez de Pablos (2006) explained the competitive advantage of a global organization. He analyzed that competitive advantage lies to a great degree in its aptitude in order to recognize and transfer tactical knowledge among various geographic locations.

2.6 Summary of the Chapter

This chapter is divided into three main parts. The first part represents overview of IS risk management. The second part introduces the concept of risk and risk management with respect to previous researches in an organizational environment. The third part describes how critical success factors can help influencing effective IS risk management implementation in an organization with respect to existing literature.

From the literature reviews conducted, it has been discovered that IS risk management implementation alongside with the use of critical success factors improved organizational

performance including in the financial sectors. The present study proposes the critical success factors that drive the IS risk management implementation in the Nigerian banks.

This research promotes further discovery of a more developed framework that to my belief, will develop a further explanation of the subject matter, that empirically incorporates financial organizational perspectives related to IS risk management implementation. Since the financial environment is dynamic in terms of IT, multidisciplinary research would be advantageous in the process of investigating issues about IS risk management implementation.

CHAPTER 3 RESEARCH MODEL AND HYPOTHESES DEVELOPMENT

3.1 Introduction

In this chapter, the research model is presented and discussed. Each of the hypotheses is explained in detail.

3.2 Research Model and Underpinning Theory

The research model of the study is premised on the previous studies of risk management (see Figure 1 for the research model). The research model is developed based on the contingency theory and on prior research on IS risk management. Based on the contingency theory, the usefulness of a particular variable or factor should be contingent or rely upon other variables. This theory allows researcher to methodically introduce variables to illustrate or forecast anticipated phenomena. Additionally, contingency theory is different from other theories because it forms hypothetical relationship between two or more independent and dependent variables which were subjected to empirical examination (Krishnamoorthy, 2002; Umanath, 2003; Van de Ven & Drazin, 1985).

Contingency theory is one of the theories that is commonly used in management, accounting, and auditing researches (Abushaiba & Zainuddin, 2012; Reid & Smith, 2000; Sudsomboon & Ussahawanitchakit, 2009; Valanciene & Gimzauskiene, 2015). Although the findings obtained from the use of the theory may be vary, its efficiency rests upon the proposed study (Chenhall, 2003; Van de Ven & Drazin, 1985).

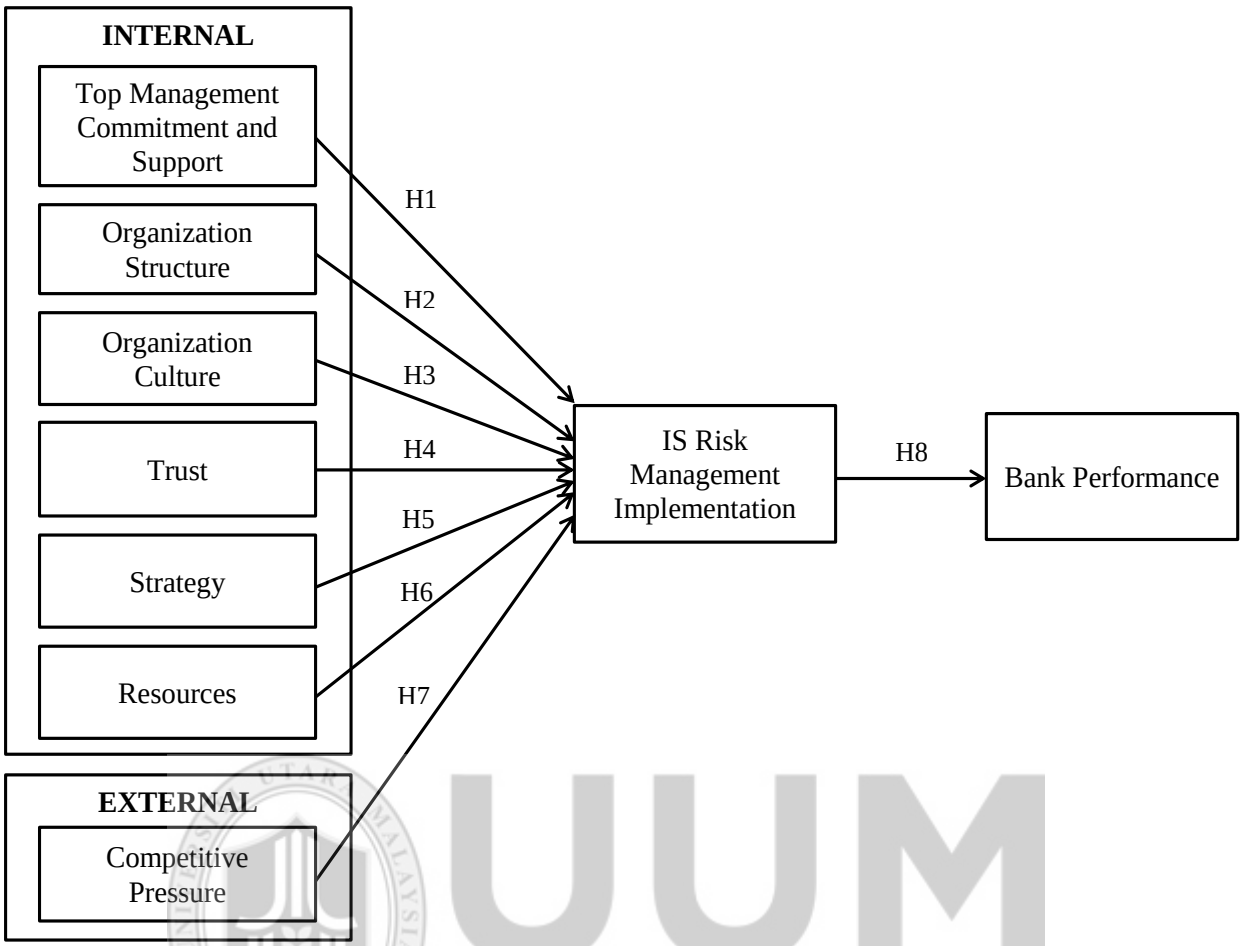

Figure 1 Research Model

In this study, the critical success factors for IS risk management implementation are categorized into two: internal and external. Internal factors are factors that are restricted within the organization activities. These factors include top management commitment and support, organization structure, organization culture, trust, strategy, and resources. External factors are factors that relate to the environment in which an organization operates. The only external factor considered in this study is competitive pressure. These factors are discussed in detail in section 3.3.

3.3 Hypotheses Development

As mentioned in section 3.2, the critical success factors for IS risk management implementation are categorized into internal and external factors. The internal factors covered in the research model include top management commitment and support, organization structure, organization culture, trust, strategy, and resources. The external factor covers only the competitive pressure.

3.3.1 Top Management Commitment and Support and IS Risk Management Implementation

The commitment and support from top management plays a major role in influencing the success in all the initiative and development within an organization. Top management has a broad range of activities, such as effective decision-making in managing the IS risk, developing training programs, supporting quality management, formulating and deciding objectives and strategies for IS risk management implementation, and establishing a project management office (Carey, 2001). Commitment and support from top management is very essential in every management of any organization and it is one of the key critical success factors for IS risk management implementation. Hence, the following hypothesis is postulated:

H_1 : There is a relationship between top management commitment and support and IS risk management implementation.

3.3.2 Organization Structure and IS Risk Management Implementation

Organization structure is a form of directions in which the authority and communication flow along with allocation of tasks, resources, and provision of means of coordination within an organization. Hunter (2002) confirms that the idea of organizational structure gives authority to decide in respect to the way individual works within the organization. Organization

structure and operation of organization are most effective when their purpose have a positive influence on the IS risk management implementation. Organization structure plan, train staff to share, and use common techniques, thereby provides team work within employees; it gives concepts, guideline and support to the staff (DeLoach, 2004; Hunter, 2002). Therefore, organization structure is considered as one of the critical factors to implement IS risk management. Hence, the following hypothesis is postulated:

H_2 : There is a relationship between organization structure and IS risk management implementation.

3.3.3 Organizational Culture and IS Risk Management Implementation

Culture is the collective programming of shared history, expectations, unwritten rules, and social customs that represent the characteristics of different groups (Grabowski & Roberts, 1998). Culture can be referred as the aggregation of individual's mind that distinguishes the member of group of people from another group. Therefore, in any organization, culture is the major factor for individual to express and exchange best practice, such as pattern of values, idea, thoughts, and feeling. Organizational culture is very important for IS risk management implementation as it creates knowledge transference that requires individual to come together for interaction, exchange ideas, encourage to provide new ideas, and share knowledge and solution within an organization (EIU, 2009; Hasanali, 2002). Hence, the following hypothesis is postulated:

H_3 : There is a relationship between organization culture and IS risk management implementation.

3.3.4 Trust and IS Risk Management Implementation

Trust can be defined as a belief, reliability, truth, and ability of a party or someone in a system. Tyler (2003) argued that the success of an organization is associated to its ability to manage a good co-operation (i.e., trust). Hence, for the successful implementation of IS risk management in business organization, a good co-operation and team work that is built on trust is required. Hence, the following hypothesis is postulated:

H_4 : There is a relationship between trust and IS risk management implementation.

3.3.5 Strategy and IS Risk Management Implementation

Strategy is a plan of action or policies designed to achieve the overall objectives of an organization. Business strategy attempts to establish several activities necessary to drive superior performance that can give valuable perceptive in managing risk (Kaplan & Norton, 2008). Hence, for the business organization to practice effective IS risk management, it needs to establish a strategic plan to carry out strategic risk assessment process and formulate strategic risk management plan (Hunter, 2002; Kaplan & Norton, 2008). The following hypothesis is, therefore, postulated:

H_5 : There is a relationship between strategy and IS risk management implementation.

3.3.6 Resources and IS Risk Management Implementation

Resources are a stock or supply of money, staff, materials, and other assets that can be drawn by organizations to perform efficiently. Having adequate resources is necessary especially when it comes to stability, efficient, and effectiveness in operation of an organization. However, moderate and appropriate resources allocation is highly necessary in managing the IS risk in any business organization. Ramamoorti and Weidenmier (2004) asserted that resource allocation for IS risk management implementation should be at the appropriate level

according to the degree of the risk and should take into account any necessary trade-offs due to resource restriction. Hence, the following hypothesis is postulated:

H_6 : There is a relationship between resources and IS risk management implementation.

3.3.7 Competitive Pressure and IS Risk Management Implementation

Competitor is a rival in the same line of business. Rival gives rise to rivalry, where individual business organization attempts to perform effectively or to provide the best practicable combination of price, quality, and services. An organization should be able to introduce and make a development on a business basis, a series of technology changes in order to improve the efficiency of the production system and lowering cost, or introducing a new commodity with superior functionality (Roland, 2008). However, failure to compete effectively with such innovation may lead to sales and profit reduction which will eventually lead to organizational risk. Hence, for the effective IS risk management practice and long-term business success, all business organizations have to be constantly responsive to its operational environment such as competitors. The following hypothesis is, therefore, postulated:

H_7 : There is a relationship between competitive pressure and IS risk management implementation.

3.3.8 IS Risk Management Implementation and Bank Performance

IS risk management encompasses the identification of risk, measurement of risk, monitoring risk, and controlling risk in an organization. Generally, the four main activities of the IS risk management implementation are carried out simultaneously at different authority levels. At strategic level, the IS risk management implementation activities are operated by top management and board of directors. Examples include defining risks, and formulating strategy and policies for managing risk.

Organization performance (to be specific, bank performance, in the present study) is a process of assessing progress and development towards achieving fore-determined goal. Risk management practice assists organization in achieving the business objectives and in providing performance improvement (Selma, Abdelghani, & Rajhi, 2013). The concept of organization performance in any business organization especially in financial institutions include accountability, cash flow impact, income generation, reputation, and good governance (Al-Tamimi & Al-Mazrooei, 2007; Ahmad & Ahmad, 2009; Ahmed, 2009).

Existing literature (see, for example, Biehl, 2007; Liebenberg & Hoyt, 2003) argued the importance of IS risk management implementation in increasing performance efficiency through improving business processes and reducing the operating costs. Particularly, bank needs to understand how the implementation of IS risk management may reduce loss and may increase the bank productivity and performance. The following hypothesis is, therefore, postulated:

H_8 : There is a relationship between effective IS risk management implementation and bank performance.

3.4 Summary of the Chapter

This chapter explained about the proposed research model and hypotheses development of the present study. The critical success factors for IS risk management implementation are categorized into two, namely, internal (i.e., top management commitment and support, organization structure, organization culture, trust, strategy, and resources) and external (i.e., competitive pressure) factors.

CHAPTER 4 RESEARCH METHOD

4.1 Introduction

This chapter presents the research methodology of the study. Details information about the research design, sources of data, data collection technique, unit of analysis and key informant, study's population, measurement of variables, pre-testing, and data analysis technique are explained.

4.2 Research Design

Research design is the activities that are carried out to obtain all necessary information on the research and adequate series analysis of result. Research design can be classified into exploratory, descriptive, casual, and correlational research designs (Hair, Black, Babin, & Anderson, 2010). The present study employs descriptive and correlational research designs. Descriptive research is used to acquire data based on the portraiture of the research topic. Generally, descriptive research involves the use of questionnaires, interview, and observation (Sekaran & Bougie, 2010). For the purpose of the present study, questionnaires are used to obtain data. The aim of correlational research design is to examine the relationship between both independent and dependent variables (Hair et al., 2010).

This study employs a quantitative method of data collection. The quantitative method of data collection involves the use of survey questionnaire, which will enable the interpretation of the results based on the views expressed by the respondents.

4.3 Sources of Data

The sources of data to employ for a research work depend on the kind of data to be collected. Sources of data can be in the form of primary or secondary data. The primary source of data is the data acquired in the field using various types of tool, such as questionnaire, structured

or unstructured, and interview. The primary source of data provides data that reflect the true situation of be study because it gives first-hand information that yet to be manipulated. On the other hand, secondary source of data includes text books, journal articles, information from Internet that are relevant to the research work, and data that are already obtained by researchers which are in line with the research theme. In the present study, the source of data comes from primary data.

4.4 Data Collection Technique

The most common method of data collection technique in quantitative study is questionnaire and interview. Questionnaire is a list of series of questions properly constructed and administered to a set of people, specific group, or entire population to secure essential and useful information about the study (Sekaran & Bougie, 2010). Questionnaire is commonly used in social science research work. It is a valuable and vital instrument for obtaining a wide range of information from specific groups or people that are referred to as respondents. A proper constructed and adequate administered questionnaire is an important tool for the success of any research survey.

Interview is a form of interaction between the researcher and the respondents in which the researcher will ask some questions verbally to the respondents in order to obtain useful information about the research under study. The interaction may be formal or informal, structured or unstructured. It may also be conducted one-to-one or in groups, face-to-face, or by telecommunications, such as via telephone, telefax, and email. Like questionnaire, interview is also frequently used by social scientists as this method of data collection attracts a great deal of commentary and discussion (Sekaran & Bougie, 2010).

The present study employs the use of questionnaire, via closed-ended questions. Sekaran (2001) argued that questionnaire enables researcher to have a personal confrontation with the respondents in order to give details of the study's objectives and the research instrument.

The questionnaire is divided into ten (10) sections with fifty-two (52) questions. The first part of the questionnaire (i.e., sections A to I) deals with the questions about independent and dependent variables of the study. The score of responses ranges on a five-point Likert scale from strongly agree (5) to strongly disagree (1). The second part of the questionnaire (i.e., section J) is about the organization and respondents background, such as year of establishment, number of employees, job position, academic qualification, and gender. A copy of questionnaire is attached in Appendix 2.

4.5 Unit of Analysis and Key Informants

The unit of analysis in the present study is organization (i.e., banks in Nigeria). Key informants are senior managers of the banks. Senior managers, such as chief executive officers, directors, managers of the banks, are the group of people or suitable respondents who have knowledge about the research topic. In addition, they are the responsible persons behind the implementation of IS risk management in the bank sectors. In line with the organization's duties and responsibilities, the board of directors delegates the power of authority to the managers to organize, direct, and control the affairs of the organization. One of these duties is the implementation of IS risk management to enhance performance.

4.6 Population

The population of a study comprises of all the possible group of people or measurements of interest in a specific field (Mason, McKenney, & Copeland, 1997). In this study, the population comprises of banks located at Oyo State of South-Western part of Nigeria.

Overall, 30 banks were selected for the study in this State with one respondent from each bank.

4.7 Measurement of Variables

The variables in the present study are taken from prior literature (see Table 1). The variables are classified into two categories: internal (i.e., top management support, organization structure, organization culture, trust, strategy, and resources) and external (i.e., competitive pressure).

Table 1 *Measurement of Variable*

Variable	Measurement of Variable	Source
Top management support	Total commitment and support of top management in IS risk implementation	Young & Jordan (2008)
Organization structure	Allocation of authority and responsibility	New South Whale (NSW) (2005)
Organization culture	Staff moral and commitment	Hasanali (2002)
Trust	Display of good intent behavior	Grabowski & Robert (1998)
Strategy	Adequate planning and goal accomplishment	Sherer & Alter (2004)
Resources	Availability of infrastructure resources and human capacity	Sherer & Alter (2004)
Competitive pressure	Market shares and innovation	Sherer & Alter (2004)
IS risk management implementation	Reducing costs and improving bank performance	Mighri, Mokni, & Mansouri (2014)
Bank performance	Service efficiency and financial capability	Selma et al. (2013)

Top management support is measured by the level of commitment and active participation with the end result of improved decision making, service or production efficiency, and successful risk reduction. Organization culture is measured by the level of collaborative and corporate organization. Organization structure is measured in terms of efficiency in the level of authority, guideline, direction, including resources allocation. Trust and strategy are

measured in terms of trust and transparency among the organization's stakeholders and the level of innovation and competitive advantage, respectively. Resources are measured by the availability of effective and efficient human and material resources. Competitive pressure is measured by the level of market shares and organization sustainability.

4.8 Pre-testing

The questionnaire was pre-tested prior to actual distribution to the respondents. The aim of pre-testing the questionnaire is to examine the reliability and the validity of the questionnaire and to ascertain whether the questions asked are appropriate for each factor. Questionnaire was developed to identify the critical success factors for IS risk management implementation and to examine the effect of IS risk management implementation on bank performance. In a nutshell, this process helps researcher to improve the construct validity of the questionnaire (Nunnally & Bernstein, 1994).

The questionnaire was pre-tested by 10 respondents from different backgrounds. They included Ph.D. students, bank officers, officers from audit firms, and administrative staff in the field of management. The respondents' feedback and comments are noted and addressed accordingly.

4.9 Reliability of the Instrument

Reliability is an assessment of the degree of consistency between multiple measurements of variables as provided by Hair et al. (2010). The most common reliability measure is Cronbach's Alpha (α). The reliability test was performed with all the items tapping in the independent variables and dependent variables included in the study. Thus, the reliability tests were conducted based on the data collected from 30 cases.

Cronbach's Alpha for the entire variable was re-examined based on the responses of the data main study. The Cronbach Alpha from 0.713 to 0.926 indicates that all scales are acceptable. Alpha values greater than 0.60 are suggested as being adequate for testing the reliability of factors, as noted by Hair et al. (2010). From the results obtained, Cronbach's Alpha for IS risk management (0.713), top management (0.805), organizational culture (0.926), organizational structure (0.885), trust (0.930, strategy (0.882), resource (0.885), competitive pressure (0.909), and bank performance (0.907). Hence, it can be concluded that this instrument has high internal consistency and is therefore reliable (refer Table 2).

Table 2 *Reliability of the Instrument*

	No. of Item	Cronbach's Alpha
IS risk management implementation	5	0.713
Top management commitment and support	5	0.805
Organizational culture	5	0.926
Organizational structure	5	0.885
Trust	5	0.930
Strategy	5	0.882
Resources	5	0.885
Competitive pressure	5	0.909
Bank performance	5	0.907

4.10 Validity of the Instruments

Every item that is intended to quantify a construct should possess higher loading factors in their construct, rather than their loadings in different construct. Table 3 demonstrates that each item has a loading of more than .40 as suggested by Hulland (1999). Hence, none of the items are removed from the dataset.

Table 3 *Validity of Instrument*

Item	Loading	Item	Loading
IS risk management implementation (ISrisk)		*Trust*	
ISrisk1	.576	Trust1	.825
ISrisk2	.617	Trust2	.891
ISrisk3	.690	Trust3	.906
ISrisk4	.610	Trust4	.903
ISrisk5	.576	Trust5	.908
Top management commitment and support (TMCS)		*Strategy*	
TMCS1	.619	Strategy1	.904
TMCS2	.654	Strategy2	.919
TMCS3	.757	Strategy3	.846
TMCS4	.650	Strategy4	.943
TMCS5	.607	Strategy5	.918
Organization culture (OC)		*Resources*	
OC1	.747	Resources1	.867
OC2	.742	Resources2	.945
OC3	.836	Resources3	.676
OC4	.878	Resources4	.533
OC5	.431	Resources5	.922
Organization structure (OS)		*Competitive pressure (CP)*	
OS1	.864	CP1	.924
OS2	.882	CP2	.895
OS3	.791	CP3	.893
OS4	.876	CP4	.777
OS5	.751	CP5	.700
Bank performance (BP)			
BP1	.937		
BP2	.937		
BP3	.798		
BP4	.774		
BP5	.797		

4.11 Data Analysis Technique

In the present study, data are analyzed using the SPSS, version 19. In particular, descriptive analysis is carried out to analyze general information on organizations' and respondents' profiles. Linear regression, on the other hand, is conducted for hypotheses testing. Linear regression does not allow researcher to assess the quality of the measurement model. Hence, only the results for the structural model could be compared. Each construct is operationalized by adding up the item scores.

4.12 Summary of the Chapter

This chapter presented the research methodology of the study. The research methodology involved correlational study, examining the relationship between independent and dependent variables of the study. This chapter also explained the research design, sources of data, data collection technique, and data analysis technique.

CHAPTER 5 RESULTS AND DISCUSSION

5.1 Introduction

This chapter discusses the results of the study. The results cover survey response rate, organization and respondent profiles, and model testing.

5.2 Survey Response Rate

Data were collected to answer the research questions (see section 1.4 for details of the research questions). A quantitative research technique, via survey questionnaire, was used to obtain the data. The questionnaire was distributed to 30 banks in Oyo State, Nigeria.

The questionnaires were targeted to senior managers of the banks. In particular, thirty (30) questionnaires were personally administered to the senior managers of the banks by a senior staff of one of the banks. Using this procedure, it is hoped that high responses will be obtained.

After a month, all questionnaires were returned, giving a response rate of 100%. The questionnaires went through data cleaning process and none of the returned questionnaires was found to contain missing values. All of the questionnaires are, therefore, used for the analysis.

5.3 Organization and Respondent Profiles

Demographic information of all respondents is discussed in two sections: organization profiles (in section 5.3.1) and respondent profiles (in section 5.3.2).

5.3.1 Organization Profiles

The organization profiles include year of establishment, number of employees, and the officer in charge of IS risk management implementation.

5.3.1.1 Year of Establishment

The year of establishment of the banks is summarized in Table 4. The result shows that 10% of the banks are established before year 1900. The least year of establishment is from 1900 to 1930 (6.7%). This is followed by 13.3% banks established from 1931 to 1960, 46.7% of the banks set up between 1961 to 1990, and 23.3% banks established between 1991 to 2010. This is an indication that majority of the banks have adequate experience in the IS risk management implementation due to the long years of establishment. Hence, the data obtained are considered accurate and reliable for further analysis.

Table 4 *Year of Establishment*

Year of Establishment	Frequency	Percentage
Before 1900	3	10.0
1900 - 1930	2	6.7
1931 - 1960	4	13.3
1961 - 1990	14	46.7
1991 - 2010	7	23.3
Total	30	100.0

5.3.1.2 Number of Employees

Table 5 presents the number of employees in the banks. The number of employees range from 11 to 15 (3.3%), 16 to 20 (13.3%), 21 to 25 (6.7%), and above 26 (76.7%).

Table 5 *Number of Employees*

No of Employee	Frequency	Percentage
11 - 15	1	3.3
16 - 20	4	13.3
21 - 25	2	6.7
26 and above	23	76.7
Total	30	100.0

5.3.1.3 Party Responsible for IS Risk Management Implementation

A question was directed to the respondents to identify who has the responsibility to establish IS risk management in their organizations. Here, respondents were given free option to select more than one answer to ascertain the level of respondents' understanding on the subject matter.

Table 6 *Party Responsible for Establishing IS Risk Management*

Party for IS risk management implementation	Frequency	Percentage
Chief Executive Officer (CEO)	4	12
Manager	26	78
Total	30	100.0

As presented in Table 6, the majority of the respondents (78%) indicate that the manager has the authority to establish the IS risk management. This is followed by the CEO (12%).

5.3.2 Respondent Profiles

The respondent profiles include gender, job position, and their educational level.

5.3.2.1 Gender

Table 7 indicates that most of the respondents is male (63.3%), while female constitutes 36.7%. This shows that the view of both gender are well represented and the information obtained are good for the analysis.

Table 7 *Gender*

Gender	Frequency	Percentage
Male	19	63.3
Female	11	36.7
Total	30	100.0

5.3.2.2 Job Position

From Table 8, 78% of the respondents are managers. Only 12% of them are the chief executive officers of the organizations. The reason for low participation of CEO is due to the nature of their position in the organization. This result reveals that a significant number of the respondents are senior staff who can make informed decisions about IS risk management implementation.

Table 8 *Job Position*

Job Position	Frequency	Percentage
Chief Executive Officer (CEO)	4	12
Manager	26	78
Total	30	100.0

5.3.2.3 Educational Qualification

Table 9 presents the percentage of the respondents' academic background. From the data gathered, the finding shows that more than half of the respondents (53.3%) have bachelor degree/higher national diploma (HND), followed by 40.0% with master degree. Only 3.3% of them have Ordinary National Diploma. This implies that the respondents are well educated, suggesting that they are both knowledgeable about their organizations and capable to understand the survey questions.

Table 9 *Educational Qualification*

Educational Qualification	Frequency	Percentage
Ordinary National Diploma (OND)	1	3.3
Bachelor Degree/Higher National Diploma (HND)	16	53.3
Master Degree	12	40.0
Others	1	3.3
Total	30	100.0

5.4 Model Testing

To test the hypotheses, linear regression is carried out. As explained in section 4.11, linear regression allows researcher to assess the structural model, but not the measurement model. The major idea behind regression analysis is to summarize the relationship between the variables. The results of the hypotheses testing are presented in Table 10 below.

Table 10 *Hypotheses Testing*

		β	t-value	p. value	Decision
H_1	TMCS → IS risk management implementation	.674	5.333	.000	Supported
H_2	OS → IS risk management implementation	.515	1.941	.065	Supported
H_3	OC → IS risk management implementation	-.117	-.742	.465	Not supported
H_4	T → IS risk management implementation	-.106	-.487	.631	Not supported
H_5	S → IS risk management implementation	-.279	-.996	.329	Not supported
H_6	R→ IS risk management implementation	.427	2.073	.050	Supported
H_7	CP → IS risk management implementation	-.175	-.719	.479	Not supported
H_8	IS risk management implementation → bank performance	.623	4.285	.000	Supported

CP – competitive pressure; OC - organization culture; OS – organization structure; S – strategy; R – resources; TMCS - top management commitment and support; T – trust.

The result reveals that only three factors influence IS risk management implementation. These factors are top management commitment and support ($\beta = .674$, $p<0.01$), organization structure ($\beta = .515$, $p<.01$), and resources ($\beta = .427$, $p<0.05$). Hence, H_1, H_2, and H_6 are supported. H_3, H_4, H_5, and H_7 are, however, not supported.

IS risk management implementation, on the other hand, influence bank performance ($r=0.623$, $p<0.01$). Hence, H_8 is supported. The results are discussed in detail in sections 5.4.1 to 5.4.8.

5.4.1 H_1: Relationship between Top Management Commitment and Support and IS Risk Management Implementation

The level of capability in all management skills and project management administration in an organization has a connection with the good implementation of risk control in the organization. Top management is the first segment of an organization which ought to be mindful of risk management execution, including its devices, systems, applications prerequisites, and advantages (Silver, 2010).

Commitment and support can be in the forms of skills, monetary asset, and involvement in the implementation. Top management clearly has a key part in practicing and running business activities in an organization (Dong, 2001; Kakabadse, Alderson, Randlesome, & Myers, 1993).

In the present study, it is found that top management commitment and support is positively related to IS risk management implementation. This result is consistent with prior studies (see, for example, Keller & Huwaishel, 1993; Mayer, Davis, & Schoorman, 1995) who reported the impact of top management as a critical success factor in diverse management enterprises. Top management competency, instruction, and awareness about IS risk management practice plays significant role in building a good strategy and joining it with risk management technique in both present and the future.

5.4.2 H2: Relationship between Organization Structure and IS Risk Management Implementation

Organization structure is found to statistically influencing IS risk management implementation. This result is in line with the results of Mu, Peng, and MacLachlan (2009) who conducted a study on the critical success factors for risk management. Mu et al. discovered that organizational structure was ranked as the second most important success

factor in risk management system design and implementation. A plausible reason of why organization structure has significant influence on IS risk management implementation is because organizational structure gives a preview of hierarchical organizational activities. Additionally, organization structure characterizes the lines of authority and communication, serves to share duties and resources as well as system of coordination. Bennett and Gabriel (1999) argued that informal structures enables IS dissemination in an industrial settings and pave way for people's willingness to change. Teambuilding exercise and improve informal communication among organization's staff will enhance the processes of risk management performance.

5.4.3 H3: Relationship between Organization Culture and IS Risk Management Implementation

Hasanali (2002) described culture as the blend of shared history, desires, unwritten guidelines, and social traditions that influence practices. It is the arrangement of basic attitudes that is constantly reinforces the behavior and pattern of communication of employee. In any circumstances where collaboration is critical to solve misunderstanding issue, culture is the key element for readiness to gain from misconduct and to encourage best behavior in an organizational setting. In other words, culture is like a supply chain in diverse enterprises, by so doing single culture will be very difficult to come by. It is not just the one component which urges the individuals to work more efficiently and productively.

Grabowski and Roberts (1998) recommend that risk management requires the blend of many culture that make the organization into a unique sitting that is built around value of each member of an organization to achieve cultural reliability. Nonetheless, in the present study, organizational culture is not found significant to IS risk management implementation. Hence, a good or bad culture in an organization does not influence the IS risk management

implementation. The implementation of IS risk management in the banks is more influenced by top management commitment and support (see section 5.4.1), organization structure (see section 5.4.2), and resources (see section 5.4.6).

5.4.4 H4: Relationship between Trust and IS Risk Management Implementation

Trust, as indicated by Mayer et al. (1995), is the ability of a member to have utmost belief on the deeds of another member based on the trust that the other will conduct a set action significant to the trustor, in relation to the capacity to control the concern party. Erden (2003) supported the view by saying trust improves power of joint relationships, strong partnering roles, and boost the ability of different partners to coordinate. Risk management needs participation and co-operation supports of all parties to achieve success. In the present study, however, trust is not found significant to influence the IS risk management implementation. This results can possibly be explained by the importance of top management commitment and support in the IS risk management implementation (as discussed in section 5.4.1). Once support is given by the top management, the IS risk management needs to be established in the organization although trust factor is absence.

5.4.5 H5: Relationship between Strategy and IS Risk Management Implementation

Courson (2008) affirmed that strategy is a logical discipline and framework for addressing risk management implementation in any sectors. Clear vision, mission, and long-term strategy towards risk management in an organization, including well-defined strategy for IS risk management, has significant influence in achieving the organizational goal. Nonetheless, similar to organization culture and trust, strategy has also been found not significant for IS risk management implementation. Although adequate planning or policies is crucial for

implementing the IS risk management, the respondents, however, perceive this factor as not important.

5.4.6 H6: Relationship between Resources and IS Risk Management Implementation

From the analysis, resources has significant role in influencing the IS risk management implementation in the bank sectors. This result indicates that having adequate resources is necessary for IS risk management implementation (Ramamoorti & Weidenmier, 2004).

Business resources and infrastructure may include human resources as an asset, financial asset, organizational and technical validity, cost, and time. Core skills and resources are highly required to partake in the ever competitive market. Therefore, competitors will always look for core value in terms of skill and resources and unwillingness to disclose the differences that produce the perceived value regarding the cost and performance. Varadajaran (1989) argued that resources are failure preventers, but not success producers.

5.4.7 H7: Relationship between Competitive Pressure and IS Risk Management Implementation

Competitive pressure has not been found significant to influence the IS risk management implementation. This result suggests that pressures from competitor does not play an important role for the banks to implement the IS risk management. The factors that lead to IS risk management implementation in the banks comes from internal factors (such as top management commitment and support) rather than external factor.

5.4.8 H8: Relationship between IS Risk Management Implementation and Bank Performance

The study conducted by Mighri et al. (2015) reveals that 62.5% of the banks have internal auditors in charge of evaluating and establishing risk management procedure, rules, and risk

reporting. In today's quick moving business environment, banks are prone to a number of risks, including credit risk, liquidity or cash risk, market risk, operational risk, interest, and exchange rate risk as earlier said in the previous chapter. Because of such risks, effective risk management is required. Risk control is one of the fundamental duties to be done, once the risk has been recognized and known.

Additionally, Shafiq and Nasr (2010) argued that dealing with a risk ahead of its occurrence is better than treating the occurrence. The center of good risk control is the identification and treatment of the risks. Its goal is to increase the value of the organizations activities (IRM, 2002).

Risk management is more crucial in financial sector of economy than other segments. This is due to the fact that fundamental target of the sector is to generate revenue to boost income and offer the most extreme value to the shareholder. In this manner, risk management is crucial to accomplish the objective of wealth maximization (Al-Tamimi & Al-Mazrooei, 2007). Supporting this, the implementation of IS risk management in the Nigerian banks leads to increasing the banks performance.

5.5 Summary of the Chapter

This chapter presented and discussed the results of the study. The demographic information of the organizations and respondents were examined. Linear regression analysis was used to test the hypotheses. Top management commitment and support, organization structure, and resources were found significant to IS risk management implementation. Organization culture, trust, strategy, and competitive pressure, on the other hand, were not found significant. In addition, the IS risk management implementation influences bank performance.

CHAPTER 6 CONCLUSION AND RECOMMENDATION

6.1 Introduction

This chapter marks the end of discussion in this research work by summarizing the results obtained in the previous chapter based on the stated objectives. The major findings, contribution, limitation of the study, and future research are also explained. The objectives of the present study are two-fold: (a) to identify the critical success factors for IS risk management implementation; and (2) to examine the effect of IS risk management implementation on bank performance.

6.2 Contributions of the Study

This research aims to identify the critical success factors that are necessary for effective IS risk management implementation in the banking sector. The study revealed that top management commitment and support, organization structure, and resources positively influence the IS risk management implementation. These results suggest that when top management commitment and support, organization structure, and resources are presence, the banks will implement the IS risk management. The results may enable the bank managers to make judgments on what factors influencing the IS risk management implementation in the Nigerian banking sector.

In addition, the implementation of IS risk management does influence the bank performance. This result may encourage other organizations in other industries to establish the IS risk management in their organizations in order to enhance their organization's performance.

6.3 Limitations of the Study and Future Research

There are three limitations in the present study. First, the data were limited to banking sector only and, hence, the critical success factors considered in this study were mainly for banking

sector only. However, the results obtained cannot be generalized to other organizations within the economic sector. Therefore, further research should be carried out in various types of organizations or industries.

Second, the data collected were relied on the co-operation and trustworthiness of the respondents who are professionals in the field. These respondents may, however, fail to disclose their holistic view of IS risk management implementation when filling up the survey. This can pose limitation to the study.

Third, the time frame of carrying out the present study is limited. If more time is available, other data collection methods, such as interview and case study, may have been carried out.

For the future research, the size of sample should be larger than in this study for more reliable results. Not only the banking sector is facing with risk, other financial institutions, organizations, and industries could be selected as samples for further research.

6.4 Conclusion

The objectives of this study are to identify the critical success factors for IS risk management implementation in the banking sector and to investigate the relationship between the IS risk management implementation and bank performance. The research model was developed based on the contingency theory and on prior research on IS risk management. The research model was tested against empirical data collected in a survey of banks in Nigeria.

The findings indicate that top management commitment and support, organization structure, and resources affected IS risk management implementation. Other finding confirms the influence of IS risk management implementation on bank performance. These results suggest that the implementation of IS risk management in the Nigerian banks is more influenced by the internal factors, rather than the external factor.

REFERENCES

Abideen, Z. U., & Saleem, S. (2011). Effective advertising and its influence on consumer buying behavior. *European Journal of Business and Management*, *3*(3), 55-65.

Abotsi, A. K., Dake, G. Y., & Agyepong, R. A. (2014). Factors Influencing Risk Management Decision of Small and Medium Scale Enterprises in Ghana. *Contemporary Economics*, *8*(4), 397-414.

Abushaiba, I.A. & Zainuddin, Y. (2012). Performance measurement system design, competitive capability, and performances - A conceptual like. *International Journal of International Journal of Business and Social Science, 3*(11), 184-193.

Acharyya, M., & Johnson, J. E. V. (2006). Investigating the development of enterprise risk management in the insurance industry: an empirical study on four major European insurers. *The Geneva Papers on Risk and Insurance: Issues and Practice*, 55-80.

Ahmad, N. H., & Ahmad, S. N. (2004). Key factors influencing credit risk of Islamic bank: A Malaysian case. *The Journal of Muamalat and Islamic Finance Research*, *1*(1), 65-80.

Ahmed, A. (2009). Liquidity risk and performance of banking system Shaheed Zulfiqar Ali Bhutto Institute of Science and Technology, Islamabad, Pakistan.

Al-Tamimi, H. A., & Al-Mazrooei, F. (2007). Banks' risk management: a comparison study of UAE national and foreign banks. *The Journal of Risk Finance*, *8*(4), 394-409.

Al-Wohaibi, M. A., Masoud, F. A., & Edwards, H. M. (2004). Fundamental risk factors in deploying IT/IS Projects in Omani government organisations. *Advanced Topics in Global Information Management*, *3*, 179.

Avison, D., & Torkzadeh, G. (2009). *Information systems project management*. New York: Sage Publications, Inc.

Augustine, I. E., Ajayi, J. R., Ade, B. A., & Adakole, A. (2013). Assessment of Risk Management Practices in Nigerian Construction Industry: Toward Establishing Risk Management Index. *Int. J. Pure Appl. Sci. Technol*, *16*(2), 20-31.

Baba, Deros, M., Mohd Yusof, S. R., Azhari, & Salleh, M. (2006). A benchmarking implementation framework for automotive manufacturing SMEs. *Benchmarking: An International Journal*, *13*(4), 396-430.

Belassi, W., & Tukel, O. I. (1996). A new framework for determining critical success/failure factors in projects. *International Journal of Project Management*, *14*(3), 141-151.

Bennett, R., & Gabriel, H. (1999). Organisational factors and knowledge management within large marketing departments: an empirical study. *Journal of knowledge management*, *3*(3), 212-225.

Biehl, M. (2007). Success factors for implementing global information systems. *Communications of the ACM*, *50*(1), 52-58.

Butt, H. A., Nazir, M. S., & Daniel, A. (2012). Are Foreign Banks more Vigilant than Domestic Banks Regarding Risk Management?. *American Journal of Scientific Research*, (83), 109-117.

Carey, A. (2001). Effective risk management in financial institutions: The Turnbull approach.

Chenhall, R. H. (2003). Management control systems design within its organizational context: findings from contingency-based research and directions for the future. *Accounting, organizations and society*, *28*(2), 127-168.

COSO. (2004). *Enterprise risk management –Integrated framework (AICPA, Trans.)*. New York, NY: *Committee of Sponsoring Organizations of the Tread way Commission.*

Courson, W. M. (2008). Liability-driven investing: an enterprise risk management strategy. *Healthcare financial management: Journal of the Healthcare Financial Management Association*, *62*(8), 58-62.

Dada, J. O., & Jagboro, G. O. (2007). An evaluation of the impact of risk on project cost overrun in the Nigerian construction industry. *Journal of Financial Management of Property and Construction*, *12*(1), 37-44.

Dameri, R. P. (2008). Using an enterprise information management system to enhance IT compliance and information value. In *Proceedings of the 2nd European Conference on Information Management and Evaluation* (pp. 111-121). Academic Conferences Limited.

DeLoach, J. (2004). The new risk imperative-an enterprise-wide approach. *Handbook of business strategy*, *5*(1), 29-34.

Dembo, R.S., & Freeman, A. (1998). *Seeing tomorrow: Rewriting the rules of risk.* John Wiley and Sons, INC: New York.

Didraga, O. (2013). The Role and the Effects of Risk Management in IT Projects Success. *Informatica Economica*, *17*(1), 86-98.

Dong, L. (2001). Modeling top management influence on ES implementation. *Business Process Management Journal*, *7*(3), 243-250.

EIU. (2002). Managing risk in perilous times: Practical steps to accelerate recovery. Written by the Economist Intelligence Unit and Sponsored by ACE, Kpmg, SAP and Towers Perrin, Retrieved form: http://www.aceeuropeangroupversionofmanagementrisk.pdf.

Ernst & Young. (2008). Moving beyond compliance. Global Information Security. Survey. Retrieved from http://www.ey.com/AU/en/About-us/Ouralumni/ Moving-beyond-compliance.

Feurer, R., & Chaharbaghi, K. (1995). Dynamic strategy formulation and alignment. *Journal of* General *Management*, *20*, 76-76.

Flamholtz, E. (1974). *Human Resource Accounting* (Encino California: Dickenson Publishing).

Hardy, G. (2005). "E-serials Collection Management: Transitions, Trends and Technicalities." *Library Management* 26, no. 8/9 (2005): 541-542.

Galorath, D. (2006). Risk management success factors. *PM World Today*, *8*(11).

Gleason, J. T. (2000). *Risk: The new management imperative in finance* (Vol. 16). UNC Press Books.

Gosain, S. (2004). Enterprise information systems as objects and carriers of institutional forces: the new iron cage?. *Journal of the Association for Information Systems*, *5*(4), 6.

Grabowski, M., & Roberts, K. H. (1998). Risk mitigation in virtual organizations. *Journal of Computer-Mediated Communication*, *3*(4), 0-0.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis: A global perspective*. Pearson Education.

Halliday, S., Badenhorst, K., & von Solms, R. (1996). A business approach to effective information technology risk analysis and management. *Information Management & Computer Security*, *4*(1), 19-31.

Harris, J. (2005). Hybrid Vehicles, Consumer Choice, and the Ethical Obligation of Business. *Business and Professional Ethics Journal*, *24*(1/2), 163-170.

Hasanali, F. (2002). Critical success factors of knowledge management. Retrieved from www.kmadvantage.com/docs/km_articles/Critical_Success_Factors_of_KM.pdf

Hassan, A. (2009). Risk management practices of Islamic banks of Brunei Darussalam. *The Journal of Risk Finance*, *10*(1), 23-37.

Henriksen, P., & Uhlenfeldt, T. (2006). Contemporary enterprise-wide risk management frameworks: a comparative analysis in a strategic perspective. *Perspectives on Strategic Risk Management*, 107-29.

Hoyt, R. E., & Liebenberg, A. P. (2008). The value of enterprise risk management: Evidence from the US insurance industry. In *unpublished paper, accessed at: http://www. aria. org/meetings/2006papers/Hoyt_Liebenberg_ERM_070606. pdf*.

Huang, H., & Trauth, E.M. (2007). Cultural influences and globally distributed ISs development: Experiences from Chinese IT professionals. In SIGMIS-(PR 07, 19-21 April 2007 (PP.36-45). St. Louis, Missouri, USA.

Huber, C. (2012). Operational Risk Management in Practice: Implementation, Success Factors and Pitfalls. *Risk and Finance*, (34), 56-71.

Hunter, J. (2002). Improving organizational performance through the use of effective elements of organizational structure. *Leadership in Health Services*, *15*(3), 12-21.

Hwang, S. N., Chen, C., Chen, Y., Lee, H. S., & Shen, P. D. (2013). Sustainable design performance evaluation with applications in the automobile industry: Focusing on inefficiency by undesirable factors. *Omega*, *41*(3), 553-558.

Ifinedo, P. (2008). Impacts of business vision, top management support, and external expertise on ERP success. *Business Process Management Journal*, *14*(4), 551-568.

Ingram, H., Biermann, K., Cannon, J., Neil, J., & Waddle, C. (2000). Internalizing action learning: a company perspective. Establishing critical success factors for action learning courses. *International Journal of Contemporary Hospitality Management*, *12*(2), 107-114.

International Standard Organization (2008). Quality management system requirement. Report, TC/SC:ISO/TC 176/SC2.

IRM (2002). A Risk management standard. *The Institute of Risk management*.

Jennex, M. E., & Adelakun, O. (2003). Success factors for offshore information system development. *Journal of Information Technology Case and Application Research*, *5*(3), 12-31.

Jorion, P., & Khoury, S. J. (1995). *Financial risk management: Domestic and international dimensions*. Blackwell Publishers.

Kakabadse, A. P., Alderson, S., Randlesome, C., & Myers, A. (1993). Austrian boardroom success: a European comparative analysis of top management. *Journal of managerial psychology*, *8*(4), 2-32.

Kaplan, R. S., & Norton, D. P. (2008). Mastering the management system. *Harvard business review*, *86*(1), 62.

Keller, A. Z., & Huwaishel, A. M. (1993). Top-management attitude towards safety in the western European chemical and petrochemical industries. *Disaster Prevention and Management: An International Journal*, *2*(3).

Kim, N. Y., Robles, R. J., Cho, S. E., Lee, Y. S., & Kim, T. H. (2008, October). SOX act and IT security governance. In *Ubiquitous Multimedia Computing, 2008. UMC'08. International Symposium on* (pp. 218-221). IEEE.

Krishnamoorthy, G. (2002). A multistage approach to external auditors' evaluation of the internal audit function. *Auditing: A Journal of Practice & Theory*, *21*(1), 95-121.

Lee, S., & Kim, K. J. (2007). Factors affecting the implementation success of Internet-based information systems. *Computers in Human Behavior*, *23*(4), 1853-1880.

Leidecker, J. K., & Bruno, A. V. (1984). Identifying and using critical success factors. *Long range planning*, *17*(1), 23-32.

Liebenberg, A. P., & Hoyt, R. E. (2003). The determinants of enterprise risk management: Evidence from the appointment of chief risk officers. *Risk Management and Insurance Review*, *6*(1), 37-52.

Ma, H. (2000). Competitive advantage and firm performance. *Competitiveness Review: An International Business Journal*, *10*(2), 15-32. Martensson, M. (2000). A critical review of knowledge management as a management tool. *Journal of Knowledge Management*.

Mahilum-Tapay, L., Laitila, V., Wawrzyniak, J. J., Lee, H. H., Alexander, S., Ison, C., ... & Goh, B. T. (2007). New point of care Chlamydia Rapid Test—bridging the gap between diagnosis and treatment: performance evaluation study. *Bmj*, *335*(7631), 1190-1194.

Mason, R. O., McKenney, J. L., & Copeland, D. G. (1997). An historical method for MIS research: Steps and assumptions. *MIS Quarterly*, 307-320.

Mathrani, S., & Viehland, D. (2010). Critical Success Factors for the Transformation Process in Enterprise System Implementation. In *PACIS* (p. 13).

Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). An integrative model of organizational trust. *Academy of management review*, *20*(3), 709-734.

McLeod, L., & MacDonell, S. G. (2011). Factors that affect software systems development project outcomes: A survey of research. *ACM Computing Surveys (CSUR)*, *43*(4), 24.

Mighri, Z., Mokni, K., & Mansouri, F. (2010). Empirical analysis of asymmetric long memory volatility models in value-at-risk estimation. *Journal of Risk*, *13*(1), 55.

Mu, J., Peng, G., & MacLachlan, D. L. (2009). Effect of risk management strategy on NPD performance. *Technovation*, *29*(3), 170-180.

Muehlen, M., & Rosemann, M. (2005, November). Integrating risks in business process models. In *16th Australasian Conference on Information Systems* (Vol. 29).

Mutsaers, E. J., Van der Zee, H., & Giertz, H. (1998). The evolution of information technology. *Information Management & Computer Security*, *6*(3), 115-126.

Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). An integrative model of organizational trust. *Academy of management review*, *20*(3), 709-734.

Nah, F., Lau, J., & Kuang, J. (2001). Critical factors for successful implementation of enterprise systems. *Business process management journal*, *7*(3), 285-296.

National Treasury (2002). Treasury regulations for departments, trading entities, constitutional institutions and public entities. *Issue in terms of the public finance Act*, 1999.

NSW Department of State and Regional Development (2005). Risk management guide for small business. Retrieved from www.partnershipsbc.ca

Nunnally, J.C., & Bernstein, I.H. (1994). *Psychometric Theory* (3 ed.). NY: McGraw Hill.

Okolo, N., Ifeoma, O. R., & Amakor, I. (2013). Effective Risk Management In Organizations: The Nigerian Experience. *INTERNATIONAL JOURNAL OF COMPUTERS & TECHNOLOGY*, *10*(8), 1878-1883.

Olson, D. L., & Wu, D. (2011). Risk management models for supply chain: a scenario analysis of outsourcing to China. *Supply Chain Management: An International Journal*, *16*(6), 401-408.

Ordóñez de Pablos, P. (2006). Transnational corporations and strategic challenges: An analysis of knowledge flows and competitive advantage. *The Learning Organization*, *13*(6), 544-559.

Poon, P., & Wagner, C. (2001). Critical success factors revisited: success and failure cases of information systems for senior executives. *Decision Support Systems*, *30*(4), 393-418.

Rai, A., Maruping, L. M., & Venkatesh, V. (2009). Offshore information systems project success: the role of social embeddedness and cultural characteristics. *MIS quarterly*, 617-641.

Raisinghani, M. S., Starr, B., Hickerson, B., Morrison, M., & Howard, M. (2008). Information technology/systems offshore outsourcing: key risks and success factors. *Journal of information technology research*, *1*(1), 72.

Ramamoorti, S., & Weidenmier, M. (2004). The pervasive impact of information technology on internal auditing. *Supplemental chapter for Research Opportunities in Internal Auditing, edited by A. Bailey, A. Gramling, and S. Ramamoorti. Altamonte Springs, FL: IIA Research Foundation*.

Ranong, P., & Phuenngam, W. (2009). Critical Success Factors for effective risk management procedures in financial industries: A study from the perspectives of the financial institutions in Thailand.

Reid, G. C., & Smith, J. A. (2000). The impact of contingencies on management accounting system development. *Management Accounting Research*, *11*(4), 427-450.

Remus, U., & Wiener, M. (2009). Critical success factors for managing offshore software development projects. *Journal of Global Information Technology Management*, *12*(1), 6-29.

Rikhardsson, P., & Kræmmergaard, P. (2006). Identifying the impacts of enterprise system implementation and use: Examples from Denmark. *International Journal of Accounting Information Systems*, *7*(1), 36-49.

Rockart, J. F. (1982). *The changing role of the information systems executive: a critical success factors perspective*. Boston: Massachusetts Institute of Technology.

Rockart, J. F. (1978). Chief executives define their own data needs. *Harvard business review*, *57*(2), 81-93.

Roland, H. (2008). Using IT to drive effective risk management. *Risk Management*, *55*(1), 43-44.

Ryba, M. (2005). *Analysis and management of Information Systems risk* (In Polish), Ernst & Young. http://www.mimuw.edu.pl/~sroka/archiwalne/2005ey/materialy/

Salawu, R. A., & Abdullah, F. (2015). Assessing Risk Management Maturity of Construction Organisations on Infrastructural Project Delivery in Nigeria. *Procedia-Social and Behavioral Sciences*, *172*, 643-650.

Salmeron, J. L., & Herrero, I. (2005). An AHP-based methodology to rank critical success factors of executive information systems. *Computer Standards & Interfaces*, *28*(1), 1-12.

Schechter, S. E. (2004). *Computer security strength & risk: A quantitative approach* (Doctoral dissertation, Harvard University Cambridge, Massachusetts).

Scott, J. E., & Vessey, I. (2002). Managing risks in enterprise systems implementations. *Communications of the ACM*, *45*(4), 74-81.

Sekaran, U. (2001). *Research methods for business: A skill-building approach*. NYC: John Willey and Sons, INC.

Sekaran, U., & Bougie, R. (2010). *Research methods for business: A skill-building approach*. 5th (ed). NYC: John Willey and Sons, publication INC.

Selma, M. R. B., Abdelghani, E., & Rajhi, M. T. (2013). Risk management tools practiced in Tunisian commercial banks. *Studies in Business and Economics*, *8*(1), 55-78.

Shafiq, A., & Nasr, M. (2010). Risk management practices followed by the commercial banks in Pakistan.

Sherer, S. A., & Alter, S. (2004). Information systems risks and risk factors: Are they mostly about information systems?. *Communications of the Association for Information Systems*, *14*(1), 2.

Silver, N. (2010). Critical success factors in complex projects. Retrieved from www.niksilver.com

Stedman, R. C. (1999). Sense of place as an indicator of community sustainability. *The Forestry Chronicle*, *75*(5), 765-770.

Stoneburner, R. L., & Low-Beer, D. (2004). Population-level HIV declines and behavioral risk avoidance in Uganda. *Science*, *304*(5671), 714-718.

Stoneburner, G., Goguen, A., & Feringa, A. (2002). Risk Management Guide for Information Technology Systems: Recommendations of the National Institute of Standards and Technology, retrieved November 25, 2009.

Sudhakar, G. (2012). A model of critical success factors for software projects. *Journal of Enterprise Information Management*, *25*(6), 537-558.

Sudsomboon, S., & Ussahawanitchakit, P. (2009). Professional audit competencies: the effects On Thai's CPAS audit quality, reputation, and success. *Review of Business Research*, *9*(3), 66-85.

Sundberg, H.P., & Sandberg, K.W. (2004). Critical success factors from a social insurance IT-project in Sweden. In *IADIS International conference e-society 2004*, 16-19 July 2004 (pp.87-94). Avila, Spain.

Tyler, T. R. (2003). Trust within organisations. *Personnel review*, *32*(5), 556-568.

Umanath, N. S. (2003). The concept of contingency beyond "It depends": illustrations from IS research stream. *Information & Management*, *40*(6), 551-562.

Uwadia, C. O., Ifinedo, P. E., Nwamarah, G. M., Eseyin, E. G., & Sawyerr, A. (2006). Risk factors in the collaborative development of management information systems for Nigerian universities. *Information Technology for Development*, *12*(2), 91-111.

Valanciene, L., & Gimzauskiene, E. (2015). Dimensions of performance measurement system in changes research. *Engineering Economics*, *64*(4).

Van de Ven, A. H., & Drazin, R. (1984). *The Concept of Fit in Contingency Theory* (No. SMRC-DP-19). MINNESOTA UNIV MINNEAPOLIS STRATEGIC MANAGEMENT RESEARCH CENTER.

Westerveld, E. (2003). The Project Excellence Model®: linking success criteria and critical success factors. *International Journal of Project Management*, *21*(6), 411-418.

Westner, M., & Strahringer, S. (2010). Determinants of success in IS offshoring projects: Results from an empirical study of German companies. *Information & management*, *47*(5), 291-299.

Wong, K. (2005). Critical success factors for implementing knowledge management in small and medium enterprises. *Industrial Management & Data Systems*, *105*(3), 261-279.

Yeo, A. C., Rahim, M. M., & Miri, L. (2007). Understanding factors affecting success of information security risk assessment: the case of an Australian higher educational institution. *PACIS 2007 Proceedings*, 74.

Young, R. C. (2003). The role of the board, senior management and IT governance in IT success and failure. *Adelaide: PACIS doctoral consortium*.

Young, R., & Jordan, E. (2008). Top management support: Mantra or necessity?. *International Journal of Project Management*, *26*(7), 713-725.

Zafar, H., & Clark, J. G. (2009). Current state of information security research in IS. *Communications of the Association for Information Systems*, *24*(1), 34.

Zhang, Q., Irfan, M., Zhu, X., & Khattak, M. A. O. (2013). Six Sigma in Synergy with Risk Management. *European Journal of Business and Management*, *5*(12), 184-188.

Zuofa, T., & Ochieng, E. G. (2012). Towards The Advancement of Project Management Practice in Developing Countries: The Case of Nigeria. PMI Research and Education Conference Limerick Ireland, 15-18 July 2012, Limerick, Ireland.