



**Determinants for the Effectiveness of Risk based Internal Audit
in Ethio telecom**

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Partial Fulfillment of the Requirements for the Degree of Master of
Science in Accounting and Finance**

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Addis Ababa, Ethiopia
March, 2020**

Statement of Declaration

I declare that the ideas enclosed in this thesis are entirely my own, except where otherwise acknowledged. I also certify that the work is original and has not been submitted for any other award.

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Date: March 2020

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This is to certify that this research paper entitled ‘Determinants for the effectiveness of risk based internal audit in Ethio telecom’ is the work of Tilahun Gebremeskel Gadlu. It complies with the regulations of the university and meets the accepted standards in respect to originality and quality. It is submitted in partial fulfillment of the requirement of Master of Science (Msc) in Accounting and Finance

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ACRONYMS

COSO:	Committee of Sponsoring Organizations
ERBA:	Effectiveness of risk based internal audit
ERM:	Enterprise risk management
ERP:	Enterprise resources planning
ETC:	Ethiopian Telecommunications Corporation
ET:	Ethio telecom
IAF:	Internal audit function
IIA:	Institute of internal audit
IT:	Information technology
OLS:	Ordinary Least Square
RA:	Risk analysis
RIA:	Role of internal audit division
RTC:	Risk analysis and information technology competency of internal auditors
RM:	Risk maturity level of an organization

ABSTRACT

The main purpose of this study was to establish the determinants for the effectiveness of risk based internal audit in Ethio telecom. The research used explanatory research design to conduct the study. It also adopted a mix of qualitative and quantitative research methods to collect and analyze both primary and secondary data. The primary data was collected using likert scale questionnaires distributed to internal auditors, risk analysts, and senior managers of Ethio telecom while the secondary data was gathered through documentary reviews. From the results of the study, it was discovered that 55.17% of the variation in the effectiveness of risk based internal audit accounted due to changes on the role of an internal audit function, the risk maturity level of a company, risk analysis and IT competency of internal auditors, risk based audit planning of an internal audit function, and the implementation of ERP in a company. The findings of the study confirmed most of the research hypotheses (H1, H2, and H4). The result demonstrated that all the independent variables are positively associated with effectiveness of risk based internal audit. Based on the magnitudes of the coefficients, the highest and least contribution for the effectiveness of risk based internal audit come from the role of internal audit function and the risk and IT competency of internal auditors respectively. It has been recommended that the Board and the management of Ethio telecom to take additional measures by understanding the combined impact of the variables that add values significantly for the effectiveness of the risk based internal audit in Ethio telecom. It is also advised to them to capitalize the big effect of the role of the internal audit division through the elimination of the weaknesses observed in this regard.

Key words: Risk based internal audit, Effectiveness of internal audit

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

For most of its history, internal audit pursued an approach that served as a simple administrative procedure comprised mainly of checking documents, counting assets, and reporting on past events to various types of management. This approach has now become an old and traditional way of auditing. More recently, a paradigm change occurred towards value-adding role as a result of organizational changes, complexity and diversity. The emphasis of internal audit works has been transformed from system-based audit to process based audit and then to risk-based audit (IIA UK and Ireland, 2003). Thus, risk based audit is the latest evolution of internal audit aimed at maximizing the impact of audit by focusing on the major strategic, regulatory, reputational, financial and operational risks factors that confront an organization (Griffith D., 2006).

Various scholars define effectiveness of internal audit differently. The Institute of Internal Audit (2010) describes internal audit effectiveness as the degree to which established objectives are achieved. The audit approach pursued by an internal audit function determines its audit objectives. A given audit methodology can affect both the nature of the required knowledge for auditing and the processes employed to have effective audit performance (Libby and Luft ,1993). Unlike previous approaches, risk based audit methodology expands largely the objectives of internal auditing. It moves the focus of the audit from identifying and testing internal controls to addressing and managing risks. This major shift in role brought transformation in terms of auditing techniques and required technical skills and competency.

In risk based audit methodology, audit effectiveness is materialized only when the audit provides assurance that risks have been properly managed (Alexander, 1991). Internal audit achieves effectiveness as it primarily provides assurance on the proper management of risks. This means its audit objectives are assurance services by conducting review and evaluation on the effectiveness of management's risk management processes, internal controls, and governances. These objectives are realized in effective manner when an internal audit function directs its limited resources

towards risks that pose serious threats to its organization, thereby creating value for the organization (Griffiths D., 2006). Thus, the effectiveness of the internal audit has been made contingent on new factors such as risk management of a company owing to the risk based audit approach followed.

Ethio telecom (ET), previously known as the Ethiopian Telecommunications Corporation (ETC), is an integrated telecommunications services provider in Ethiopia, which was reestablished near the end of 2010. It is owned by the Ethiopian government and maintains a monopoly over all telecommunication services in Ethiopia. It provides a long range of services including fixed and mobile telephones, broadband internet, and other voice and data value added services. For effective and efficient provision of such services, it undertakes activities that include deployment of big infrastructure projects, automation of internal processes, marketing and technical jobs, sale of products and services, human resource management, cash control, disbursement, collection of revenue, foreign and local procurements, maintenance, store, and treatment of fixed assets.

Over the past two decades, the telecom service in Ethiopia has shown tremendous changes and expansion beyond and above what it went through more than a half century before. Being stayed sole provider of the service, having huge telecom infrastructure, the occurrence of ever dynamic telecom frauds, the advent of internet service, diversification of the different value added services, and the need to offer uninterrupted and quality network availability for the core economic units of the country require Ethio telecom to give special attention to its internal audit service. Accordingly, it has adopted a risk based audit approach for its internal audit division so as to obtain independent and objective assurance on the adequacy and effectiveness of the risk management of the company.

1.2. Statement of the Problem

There is no one cut consensus on the conceptual meaning of internal audit effectiveness. Scholars have been expressing divergent views on the subject matter for quite some time. In any context, effectiveness is determined by setting standards against which performances are compared to and secondly by ensuring that the performance and the standards are directed towards the achievement of an entity's objectives. The IIA (2010) describes internal audit effectiveness as the degree to which established objectives are achieved. Based on the definition of the institute, the ultimate

objective of the internal audit function is creation of value addition to an organization. Therefore, internal audit is effective when it actually contributes to create added value to an organization (Mihret et al. 2010).

Internal audit effectiveness and risk based internal audit effectiveness are not one and the same concepts. The effectiveness of the latter is contingent upon the quality of the risk based approach applied. It requires appraisal of the fulfillment of the contemporary and wider roles of internal auditing. Since it links an audit approach with internal audit effectiveness, it qualifies the effectiveness with attributes of an audit method. A given audit methodology can affect both the nature of the required knowledge for auditing and the processes employed to have effective audit performance (Libby and Luft,1993). Previous and current audit methodological differences influence a desired audit objective and thereby the effectiveness of the audit.

Risk based internal audit effectiveness is materialized only when the audit provides assurance that risks have been properly managed (Alexander, 1991). This requires evaluating the effectiveness of the internal audit from the context of a company's risk management framework. Albrecht et al. (1988) argued that risk management is a very crucial factor that impacts on internal audit. Mihret et al. (2007) also contended that risk management is a determinant of the quality of internal that bode well for a good internal audit function profile.

Without considering the audit methodology pursued, the effectiveness of internal audit has been examined by different authors. They identified various organizational drivers for internal audit effectiveness. In the global stage, Arena and Azzone (2009) explained characteristics of the internal audit team, the audit processes and activities as well as organizational links as factors that influenced effectiveness of internal audit. Cohen and Sayag (2010) singled out management support, proficiency of internal audit staff, career development, and independence of internal auditors as vital to the effectiveness of internal audit in Israeli organizations.

Locally, a number of studies on the effectiveness of internal audit have been undertaken too. All of them overlooked in their researches audit methodologies that determine the scope of audit objectives which ultimately become a base for the measurement of audit effectiveness. Mihret et al. (2007) indicated internal audit quality, support from management, organizational structure and

internal auditors' competency as impactful factors for the effectiveness of internal audits in public bodies. Other authors, in subsequent domestic researches, identified additional variables like Management perception as important drivers for the success of internal audit activities (Shewamen 2014, Tadios 2016, Abreham 2015, Arafayne 2019, Ephrem 2019).

There are scanty researches that have been carried out on internal audit effectiveness with emphasis on the risk-based nature of the auditing. In researches conducted abroad, it has been argued that the effectiveness of risk based internal audit is conditioned upon the quality of audit planning, availability of internal audit charter, professional development of internal auditors, quality assurance programs, policies and procedures, resources management, risk management and communication of audit results of the audits (Vahit and Duygu 2014, Selim and McNamee 1999, Beasley et al. 2008). Moreover, Wambui (2013) and Lutta (2012) showed in their studies the determinant effect of risk maturity of a company and the role of internal audit function on risk based internal audit activities.

In past researches in Ethiopia, the effectiveness of risk based internal audit has not been adequately addressed. With all his efforts, the researcher has not found any local study that targeted risk based methodology to investigate internal audit effectiveness. However, a number of researchers studied in general form the effectiveness of internal audit in Ethiopia. In these studies, the influence of methodological differences in the application of internal audit activity was utterly ignored. Mihret et al. (2007) indicated in their studies that internal audit quality and management support strongly influence internal audit's effectiveness of public bodies. Subsequent studies too, that were conducted on government institutions and commercial banks, considered obvious factors to evaluate the effectiveness of internal audit functions by disregarding risk variables that affect the service (Wubishet and Dereje 2014, Belay 2007, and Tadios 2016).

There has been so far only one research conducted on the effectiveness of the internal audit function of Ethio telecom. Using survey questionnaires' responses as a sole evidence, Meseret (2016) studied the subject matter by considering determinants that are equally applicable for the effectiveness of control or system based internal audits. She didn't address the effectiveness issue from the perspective of the risk based nature of the audit. Like former researchers, she took audit quality, proficiency of auditors, and support from the management, and independence of the audit

as factors affecting the effectiveness of the audit. In the development of conceptual model, an important and crucial audit theory (risk based audit theory) was ignored and other theories were not adequately considered. Moreover, the research method used only survey questionnaires to conduct the study. It didn't use some important documents which could have been useful to support the research results. Even in the use of the survey questionnaires, the target population was limited to internal auditors. It didn't include risk experts and senior managers who have huge connection with the internal audit service.

In conclusion, the researcher of this study attempted but found no domestic research that studied comprehensively the important risk variables that determine the effectiveness of internal audit activities of organizations both in the telecom and other business or non-business sectors. Hence, lack of research in this regard necessitated the current study which sought to bridge the existing gap. In view of this, the proposed study will attempt to examine those factors that determine the effectiveness of the risk based internal audit in Ethio telecom.

1.3. Objectives of the Study

The general objective of this study is to establish the determinant factors that affect the effectiveness of the risk based internal audit in Ethio telecom. Based on this general objective, the researcher plans specifically:

1. To examine how the role of the internal audit division (IAD) affects the successful performance of the risk based internal audit in Ethio telecom
2. To determine the influence of the risk maturity level of Ethio telecom on the effectiveness of the risk based internal audit in Ethio telecom
3. To examine the impact of the risk analysis and information technology competency of internal auditors on the effectiveness of the risk based internal audit in Ethio telecom
4. To investigate the effects of the risk based audit planning of the internal audit division (IAD) on the effectiveness of the risk based internal audit in Ethio telecom, and
5. To determine the impact of the implementation of enterprise resource planning (ERP) in Ethio telecom on the effectiveness of the risk based internal audit in the company

1.4. Research Hypotheses

Pursuant to the existing theoretical and empirical literatures, the following hypotheses are framed for the research:

H1: The role of an internal audit division (IAD) has a positive and strong association with the effectiveness of risk based internal audit

H2: The risk maturity level (RM) of a company is positively and significantly associated with the effectiveness of risk based internal audit

H3: The risk analysis (RA) and information technology (IT) competency of internal auditors has a positive significant impact on the effectiveness of risk based internal audit

H4: The risk-based audit planning (RBP) of an internal audit division has a positive significant relationship with the effectiveness of risk based internal audit, and

H5: The implementation of enterprise resource planning (ERP) affects positively and significantly the effectiveness of risk based internal audit

1.5. Significances of the Study

The research has some essential benefits. It provides for Ethio telecom top management and members of the internal audit division vital insight on the importance of the variables in the study so that it helps them to identify the direction of their focus to improve internal audit function in the company. It also gives the Board of Directors and audit committee of Ethio telecom a clear guidance as to how they get the most effective internal audit service from the internal audit division of the company. Additionally, it broadens the knowledge and understanding of readers with theories that are related with risk based internal audit since it combines different theories to interpret the factors determining the effectiveness of internal auditing, and lastly serves as a reference for other potential scholars or researchers who are interested to conduct further research in the field of risk based internal audit and related areas.

1.6. Scope of the Study

Since there is no other telecom service provider in Ethiopia, the research focused on the risk-based audit practices of the internal audit division of Ethio telecom. The relevant factors selected for this study were restricted to the role of an internal audit division, risk maturity level of a company,

competency of auditors on risk analysis and information technology, risk based audit planning of the internal audit division, and implementation of enterprise resource planning (ERP). The study covered head and branch offices of the internal audit division of the company.

1.7. Limitation of the Study

In the telecom sector of Ethiopia, Ethio telecom is the sole telecom operator in the country. Consequently, the study targeted the risk based internal audit practices of one telecom organization only. So, the study may not give a chance to draw comparison and make a holistic judgment about its findings in different settings. In addition, the research mainly focuses on internal work environment risk variables that affect the effectiveness of risk based internal audit. The roles played by other organizational and environmental factors such as corporate governance, complexity, formalization, and interaction with external auditors are overlooked in the research model. Furthermore, the study was partly based on perceptions of the internal auditors, top managers, and risk experts of Ethio Telecom.

1.8. Organization of the Paper

The study paper is organized in five chapters: the first chapter introduces about the research problem, the objectives it addresses, the significance of the study, the research hypothesis, scope and limitation of the study. In the second chapter, the paper tries to discuss all theoretical concepts and empirical explanations which will lay the foundations for all the arguments and justifications of the subsequent analysis of data. Chapter three outlines the research methodology followed in the study. The fourth chapter deals with data presentation and analysis. In the final chapter, findings and conclusions are summarized, and recommendations are forwarded.

CHAPTER TWO

LITRATURE REVIEW

2.1. Introduction

This chapter looks at theoretical reviews and empirical studies which have been carried out in the research area both in the global and local arenas. It presents the relevant academic and professional literatures that help to draw a picture in mind about what theories and empirical evidences raised about the factors that determine the effectiveness of risk based internal audit. It is organized in three sections. The first section reviews theoretical studies on internal audit practices, risk management, benefits of risk-based audit approach, and the various auditing theories while the second section presents the empirical works on the effectiveness of risk based internal audit and its determinants. The final section identifies the knowledge gap that has been addressed in the study.

2.2. Theoretical Literature

2.2.1. Enterprise Risk Management

In general terms, enterprise risk management denotes a dynamic process for taking all reasonable steps to find out and deal with risks that impact on a business's objectives. A lack of a widely accepted enterprise risk management conceptual framework led the Committee of Sponsoring Organizations (COSO) to initiate an effort to develop common terminology and an accepted framework for enterprise risk management. In 2004, COSO issued enterprise risk management integrated framework that defines enterprise risk management as a process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives (Shuhai et al, 2010).

Enterprise risk management is a central part of any organization's strategic management. It methodically addresses risks attaching to the activities of organizations with the goal of achieving sustained benefit within each activity and across the portfolio of all activities. It also helps to add

maximum sustainable value to all the activities of an organization. Furthermore, it marshals the understanding of the potential upside and downside of all those factors which can affect the organization. Thus, it increases success and reduces both the probability of failure and the uncertainty of achieving the organization's overall objectives (Picket, 2010).

Enterprise risk management looks holistically at all the risks an organization faces and considers how those risks affect the accomplishment of goals. It is a tool which seeks to better handle risks and to achieve the greatest gains at the lowest cost. Once deployed, enterprise risk management permits companies to assess risk continually, and to identify the steps and resources needed to overcome or mitigate risk (Funston, 2003).

2.2.2. Risk based internal audit methodology

Risk based internal audit methodology is a kind of audit approach that determines companies risk characteristics through strategic analysis and risk assessment and design audit processes in line with the risk matrix or risk map of an organization (Ayvaza&Pehlivanli,2010). The IIA defines risk based internal audit as a methodology that links internal auditing to an organization's overall risk management framework. Accordingly, the IIA's standards require the establishment of risk-based internal audit functions to make audit priorities consistent with organizational goals. This helps organizations to identify and evaluate risks in a way which moves the profession into the front line of risk management (Goodwin-Stewart and Kent, 2006).

Enterprise wide risk assessment is at the base of risk based internal auditing to form risk based audit plans (Vadim,2009). Risk based internal audit allows internal audit function to provide assurance to the board of directors that risk management processes are managing risks effectively. It provides assurance that risks are being managed to within an organization's risk appetite. It highlights both risks that are not properly controlled and those that are overly controlled. It assists internal audit resources to be directed towards risks that pose serious threats to organizations. It therefore has the potential to make the internal audit function more focus, effective and efficient in its operations and resource usage, thereby creating value for the organization (Griffiths D., 2006).

2.2.3. Theories of Internal Audit

Audit approach or audit methodology pursued by internal audit functions is a component of an audit theory. Audit theory postulates the groundwork level of auditing knowledge. It explains why some of the postulates and key concepts of auditing are so important. It also uncovers some of the laws that govern the audit process and its activities. Thus, it provides a framework for understanding the relationships and interrelationships between different phenomena of an organization (Flint 1988).

There are three important theories which are relevant for studying the effectiveness of risk based internal audit. These are the agency theory, the institutional theory and the Risk based audit theory. They serve us to build the theoretical framework of the effectiveness of risk based internal audit.

2.2.3.1. The Agency Theory

Agency theory describes the difficulties that arise from conditions of incomplete and asymmetric information. The separation of ownership and management functions and the presence of information asymmetry introduce the possibility of principal-agent conflicts. The theory assumes that agents have more information than principals and that this information asymmetry adversely affects the principal's ability to monitor whether or not its interests are being properly served by agents (Eisenhardt, 1989).

According to Adams (1994), agency theory lays the basis for the existence and assessment of the activities of an internal audit function. For tackling problems arising from separation of ownership and control, companies adopt corporate governance system that minimize agency costs and protect the interests of board of directors and other stakeholders. They establish internal audit function to be agent of the board of directors with a function of providing to the board independent assurance on the effectiveness of risk management, control and governance processes.

Goodwin-Stewart and Kent (2006) used agency theory to explore the existence of internal audit function from risk management, control, and governance perspectives. They argued that internal

audit function is either a complementary or substitution mechanism that aligns with other risk management or governance mechanisms.

2.2.3.2. The Institutional Theory

The institutional theory is a philosophical view that explains about institutional pressures effect on organizational structures and practices (Abu-Azza, 2012). It examines the processes and mechanisms by which structures, rules, and routines become guidelines for social behavior. DiMaggio and Powell (1983) explain three institutional pressures, i.e. coercive, mimetic and normative isomorphism, that influence organizational structures and practices. Coercive isomorphism takes place as a consequence of organizational attempts to gain legitimacy; mimetic isomorphism occurs when organizations respond to uncertainty by emulating practices of other organizations; and normative isomorphism arises when institutional changes happen due to organizations recognition of professions.

According to institutional theory, isomorphic processes can increase the effectiveness of internal audit activities since being similar to other organizations in a given industry rewards organizations DiMaggio Powell (1983). Coercive isomorphism is a pressure applied to establish internal audit functions. Normative isomorphism suggests basing the measurement of internal audit effectiveness on the existence of a distinct professional identity in which compliance with the IIA standards is central.

The theory views organizations as systems of roles and cycle of behaviors. It defines roles in terms of relationships to others. Organizational, personality, and interpersonal factors are considered by the theory as highly relevant to internal audit effectiveness. It requires them to respond to the pressures coming from coercive, normative, and mimetic forces. Accordingly, the theory argues that the effectiveness of internal audit is dependent upon the reaction of the organizations to these forces through compliance with laws and regulations, adherence to professional practices, and mimicking best practices of others (DiMaggio and Powell, 1983).

2.2.3.3. The risk-based audit Theory

The risk-based audit theory is applied to the internal control system and risk management that require all units of a company to record a variety of risks, to take appropriate measures to control them, and to create risk-based internal audit. The theory argues that the key role of internal audit is to provide assurance that those risks have been properly managed (Alexander, 1991).

The theory describes internal audit activity in the context of the organization's own risk management framework by positioning its work. This involves looking at the way managers identify, assess, respond to and report risks, as well as how well managers monitor how responses to risks are working (Doolin and Lawrence, 1997).

The theory claims the management is responsible for recognizing and managing risks while internal audit function gives guarantee that the identified risks have been controlled appropriately. The internal audit function must position its engagement in the context of risk management policy. This encompasses the way management identify, evaluate, analyze, react to and report the risks, and also look how it effectively management examines the manner in which reactions to risks are functioning (Riungu, 2018).

Risk based audit theory argues that clients specific experience increases an auditor's ability to assess future client risks accurately (Bell and Solomon, 2002). This design examines the consequences of prior, positive client-specific experience and efficiency pressure, represented by costly risk cues, on the ability to generate an effective risk assessment. Responses of internal auditors to assessed risks are auditing standards that specifically set out the risk based audit approach, with other auditing standards containing specific risk-related principles and procedures appropriate to their subject matter.

2.2.3.4. Linking Audit theories

Research in auditing has been for long conducted under the framework of agency theory (Pilcher et al., 2011). However, some researchers began lately to break with this practice (Mihret et al., 2010). Accordingly, this research has combined the above three theories as stated below to lay down the determinants that affect the effectiveness of risk based internal audit.

The Agency theory is used to describe what assignments the internal auditing will take to play its roles in the risk management of an organization. This means the effectiveness of a risk-based auditing services of an internal audit division depends on its scope of auditing activities in its organization.

The institutional theory suggests that the work of internal audit to be more standardized and conform to the standards set by IIA. According to the standards of IIA, there should be competent internal auditors so as to make the internal audit function effective. It also recommends the new institution, such as enterprise resource planning (ERP), can change work roles and activities, which require substantial modifications of the function's existing technological base (Barley, 1990). ERP systems have embedded institutional logics which are significant catalysts for the evolution of the internal audit function.

The risk-based audit theory requires the presence of certain elements in an organization. Presence of matured risk environment in an organization and usage of risk based audit planning are some among the major requirements of the theory. It also demands internal audit functions to discharge their assurance and consulting roles fully for the successful performance of risk based internal audits (Griffith D., 2006).

2.3. Empirical Literature

The empirical literature will provide us information from studies on determinants that affect the effectiveness of risk based internal audit. It will examine the findings of various scholars and authors who concluded on the subject matter. It will also situate the existing literature in a broader scholarly and historical context. This means it will report the claims made in the existing literature. In short, this examination of the literature will enable us to distinguish what has been learned and accomplished in the area of study and what still need to be learned and accomplished.

2.3.1. Effectiveness of Risk Based Internal Audit

There is no one cut consensus on the conceptual meaning of internal audit effectiveness. Scholars have been expressing divergent views on the subject matter for quite some time. In any context, effectiveness is determined by setting standards against which performances are compared to and secondly by ensuring that the performance and the standards are directed towards the achievement of an entity's objectives. The IIA (2010) describes internal audit effectiveness as the degree to which established objectives are achieved. Based on the definition of the institute, the ultimate objective of the internal audit function is creation of value addition to an organization. Therefore, internal audit is effective when it actually contributes to create added value to an organization (Mihret et al., 2010).

Internal audit effectiveness and risk based internal audit effectiveness are not one and the same concepts. The effectiveness of the latter is contingent upon the quality of the risk based approach applied. It requires appraisal of the fulfillment of the contemporary and wider roles of internal auditing. Since it links an audit approach with internal audit effectiveness, it qualifies the effectiveness with attributes of audit method. A given audit methodology can affect both the nature of the required knowledge for auditing and the processes employed to have effective audit performance (Libby and Luft 1993). Previous and current audit methodological differences influence a desired audit objective and thereby the effectiveness of the audit.

Risk based audit effectiveness is materialized only when the audit provides assurance that risks have been properly managed (Alexander, 1991). Albrecht et al. (1988) argued that risk management is a very crucial factor that impacts on internal audit. This requires evaluating the effectiveness of internal audit from the context of a company's risk management framework. Mihret et al. (2007) contended that risk management is a determinant for the effectiveness of risk based internal audit that bode well internal audit function profile.

Without considering the audit methodology pursued, the effectiveness of internal audit has been examined by different authors in the global arena. They identified various organizational drivers for internal audit effectiveness. Arena and Azzone (2009) explained characteristics of the internal audit team, the audit processes and activities as well as organizational links as factors that

influenced effectiveness of internal audit. Cohen and Sayag (2010) singled out management support, especially in relation to provision of proficient internal audit staff, career development and independence of internal auditors as vital to the effectiveness of internal audit in Israeli organizations.

Locally, Mihret et al. (2007) discovered that internal audit quality, support from management, organizational structure and internal auditor's competency are impactful phenomena for the effectiveness of internal audits in public bodies. In subsequent domestic researches, additional variables like Management perception were identified as important drivers by other authors (Shewamen 2014, Tadios 2016, Abreham 2015, Arafayne 2019, Ephrem 2019).

There are scanty researches that have been carried out on internal audit effectiveness with emphasis on the risk-based nature of the auditing. In researches conducted abroad, it has been disclosed that the effectiveness of risk based internal audit is conditioned upon the quality of audit planning, availability of internal audit charter, professional development of internal auditors, quality assurance programs, policies and procedures, resources management, risk management and communication of audit results of the audits (Vahit and Duygu 2014, Selim and McNamee 1999, Beasley et al., 2008). Moreover, Wambui (2013) and Lutta (2012) showed in their studies the determinant effect of maturity of risk management processes and the role of internal audit function on risk based internal audit activities.

With all his efforts, the researcher has not found any local study that targeted risk based audit methodology to investigate internal audit effectiveness. There are a number of researches on the effectiveness of internal audit in Ethiopia. However, none of these studies have examined the audit effectiveness with emphasis on the risk based methodology of the service.

So far, there has been only one research conducted on the effectiveness of the internal audit function of Ethio telecom. Meseret Eshetu (2016) studied this issue but pursued the same way like her predecessors with little emphasis for the risk based nature of the audit service. She took audit quality, proficiency of auditors, and support from the management, and independence of the audit as factors affecting the effectiveness of the audit.

2.3.2. Determinants of Risk Based Internal Audit

From the combination of agency, institutional, and risk based audit theories, it is inferred certain important factors that provide appropriate framework for internal audit function to provide effective risk based auditing. These factors are viewed as critical aspects that affect the effectiveness of risk based internal audit. Therefore, for the purpose of this study, the determinants for the effectiveness of risk based internal audit include:

- The role of an internal audit function
- The risk maturity level of a company
- The risk analysis and information technology (IT) competency of internal auditors
- Risk based audit planning of an internal audit function, and
- Implementation of enterprise resource planning (ERP) in an organization

2.3.2.1. The Role of Internal Audit Function

The traditional role of internal audit focused merely on financial estimations and monitoring of internal controls. It applies a methodology which has a narrower scope that limits the functions of internal auditing. It obliges an internal audit function to focus on establishing whether internal controls were operating effectively and whether there was noncompliance of these controls in the past as well as during the period of audit. It typically drives the internal audit unit to examine the control activities designed at some previous time to deal with issues that may have been forgotten. The response of the function is reactive by looking into the past and the present (Griffiths, D., 2006).

Contemporarily, internal audit functions have embarked on more expanded roles. According to the institute of internal auditors (IIA), internal audit functions provide an independent, objective assurance and consulting activities which add value to an organization's operations. They have roles of evaluating and improving the effectiveness of risk management, controls and governance processes (IIA, 2010). The scope of audit activities is not restricted to the area of assurance services, but also include consulting activities. In addition to embracing the traditional audit areas, the assurance service is made to include more recent assurance forms such as control and risk

management issues. The consulting service assists an organization in the identification, evaluation, and implementation of risk management methodologies and controls to address significant risks. The internal audit function supports in the identification of risks, provided it does not affect its objectivity and takes no role in managing the risks.

Mihret et al. (2010) indicated that the sufficiency of internal audit's scope is an important illustration of internal audit effectiveness. The success of internal audit increases when internal audit function plays its roles of assessing and improving the risk management through adopting of systematic and disciplined approach (D 'Onza et al 2015). Puttick (2007) found out in his research that internal audit function becomes effective when it provides assurance that management processes are adequate to identify and monitor significant risks. In support of this notion, Aghghaleh et al (2014) stated that the clarity of the role of internal audit function in risk management helps to enhance internal audit effectiveness. Findings of the study conducted by (Lutta, 2012) on determinants for the adoption of risk based internal audit showed that there is a high positive correlation between the roles of internal audit function and the effectiveness of risk based internal audit. It was argued in this study that the roles of internal audit function are vital pre-requisite for the well-functioning of a risk based audit activity.

On the other hand, the research results of Rensburg and Coetze (2016) showed that the internal audit function's role in risk management is not key for audit effectiveness mainly because of lack of objectives focusing on positive changes. In line with this finding, Coetze and Lubbe (2014) indicated that the internal audit role in risk management has not yet been fully implemented for granting effectiveness towards the objectives of internal audit. According to Lenz and Hahn (2015), risk management as a tool is misleading for internal audit effectiveness that causes defeat in its purpose. Chambers and Odar (2015) and Arena and Sarens (2015) revealed in their studies that internal audit functions' engagement in different activities creates complexity in their role so that it ultimately hinders the function's effectiveness. Alzeban and Sawan (2013) found no relationship between internal audit effectiveness and risk management. Ramachandran et al. (2012) concluded that there is no significant relationship between internal audit activities and internal audit effectiveness in commercial banks in Tanzania.

2.3.2.2. Risk Maturity Level of an organization

Risk maturity denotes the extent to which a robust risk management approach has been adopted and applied, as planned, by management across an organization to identify, assess,

decide on responses to and report on opportunities and threats that affect the achievement of the organization's objectives (Griffiths, D., 2006). The IIA – UK and Ireland position statement defined five levels of risk maturity: risk enabled, risk managed, risk defined, risk aware and risk naïve (IIA-UK and Ireland, 2003).

According to the IIA – UK and Ireland, in risk enabled, risk management and internal control fully embedded into the operations. In risk managed, enterprise wide approach to risk management is developed and communicated. In risk defined, risk strategies and policies are in place and risk appetites are set. In risk aware, scattered silo approach to risk management is enforced. In risk naïve, no formal approach is developed for risk management.

The activities of internal audit functions are highly influenced by the risk maturity level of their organization (IIA UK and Ireland 2003). Before adopting a risk based internal audit methodology, it is important to assess first the quality of the risk management framework or the risk maturity level of the organization. This means an organization must first evaluate its risk management processes so as to apply risk based audit approach for its internal audit activities (Vahit and Duygu , 2014). Board of directors must assure itself that the risk maturity of the organization and the accuracy of the enterprise risk register are at the right level before introducing risk based audit approach.

An organization's risks determine where and when internal audit functions should conduct risk based internal audits (Griffiths D., 2006). Organizations which are risk naïve (developed no formal approach) or risk aware (follow solo based risk approach) need to improve their risk maturity level at least to the level of risk defined in order to start applying risk based approach. If the risk management framework of a given entity is not very strong or does not exist, internal audit functions should use their risk assessment as a means to enable the organization to focus on the key risks and to establish risk management processes (Hafiz, I. et al., 2015).

Thompson (2013) concluded in his research that the value addition of an internal audit function to an organization is achieved through management's effective and successful implementation of risk management. Supporting this, Badara and Saidin (2012) asserted in their study result that risk management influences the effectiveness of internal audit function. They showed that risk management information from management positively affects internal audit effectiveness. Feizizaden (2012) argued that an effective risk based audit is built upon the availability of risk management information. Substantiating this, Wen-Hsien Tsai et al (2017) found out that the success of the internal audit function enhances as the extent of enterprise risk management implementation grows. Similarly, Watts and Zimmerman (1983) indicated in the findings of their study that an effective risk based internal audit is dependent on the execution of suitable governing processes. Beasley et al (2006) concluded that enterprise risk management had the greatest impact on internal auditing when the enterprise risk management process is mature.

2.3.2.3. Risk Analysis and Information Technology Competency of Internal Auditors

Competency of internal auditors is a key element for the effectiveness of internal audit activity (IIA, 2006). Standards setters have consistently highlighted the importance of internal auditors possessing the knowledge, skills and other competencies necessary to undertake internal audit duties and responsibilities. The IIA's standard 1210 which deals about proficiency requires internal auditors to possess the knowledge, skills and other competencies that are needed to perform their responsibilities (IIA, 1999).

In risk based audit approach, internal auditors need to have knowledge that related with risk analysis and information technology. It is crucial that they are experienced and well-equipped with specific knowledge and in-depth understanding of business processes, risk management, and control activities so that they can perform their tasks effectively. Knowledge of business processes and operations, company-specific awareness on risk and control matters, and work experience in areas of accounting and auditing are important criteria for the internal auditors (Sarens et al., 2009).

The changing role of internal auditors has determined the creation of new skills that are more closely related to risk management and corporate governance. Risk management requires competencies that are different from competencies of control compliance. Internal auditors must

have the ability to catalogue inherent risks for use in risk assessment. They must establish the obstacles that will prevent from bad implications resulted from the assessed inherent risks. They should also understand adequately the main drivers of business performance in order to deal with different sources of risk as well as involve and obtain the management's confidence in risks and controls (Arena and Azzone, 2009). Similarly, the complexity of technology demanded internal auditors to increase their knowledge on information technology. They must know and ensure that a system is automating processes correctly (Brazel et al., 2005). They must also have the skill to provide management with more relevant information without delay by automated processes, real time facilities and integrated internal auditing.

A number of past studies showed in their findings that the competency of internal auditors has strong and statistically significant effect on the effectiveness of internal audit (Miheret and Yesmaw 2007, Meseret 2016, Tadios 2016, Shewamen 2014). According to the study of Madani (2009), technical knowledge and practical experience are essential for the success of risk based internal auditing. Wen-Hsien Tsai et al (2017) showed that internal audit becomes more effective when internal auditors have higher knowledge on information technology. Arena and Azzone (2009) argued that competency and professional proficiency of internal auditors are drivers of internal audit effectiveness.

Nevertheless, some researchers disclosed in their studies that the impact of the competency of internal auditors on the effectiveness of internal audit is minimal (Alamzewed 2019, Arafayene 2019). Dehali and Omri (2016) found no significant relationship between internal audit competency and internal audit effectiveness. They argued that internal audit effectiveness and internal audit competency depend on each other more on managerial characteristics than on qualification. Smet and Mention (2012) contended that internal auditors' competency is not guarantee enough that will lead to an effective internal audit function. Whalen and Holt (2012) alluded that lack of competency does not affect the performance of internal audit function.

2.3.2.4. Risk Based Audit Planning

Audit planning is a vital audit activity which is crucial to audit success (Ridge, 2006). A well and properly structured audit plan is essential to evaluate risk management practices, internal control

systems and compliance with corporate policies. Risk based audit methodology requires effective, efficient and economic audit planning as a means to achieve audit objectives such as appropriate risk and control coverage, as well as effective risk assessment. The IIA standard 2010 requires chief audit executive of an internal audit function to establish risk based audit plans to determine the priorities of the internal audit activity, consistent with the organization's goals. In the preparation of risk based audit plans, it is expected to take into account the organization's risk management framework including using the risk appetite levels set for the different activities of the organization.

Under a risk based internal audit methodology, audit planning is required to be risk focused, promote sound internal controls, ensure timely resolution of audit deficiencies, and inform the effectiveness of risk management practices. Proper audit planning enables the accomplishment of a number of audits in a given period by improving efficiency. It allows to allocate audit resources according to the business priorities by means of focusing on the areas with high effect. In other words, it is focusing of the audit resources on the areas where the combination of the impact and the likelihood of the risk is the highest (Vahit and Duygu, 2014).

Risk based internal audit approach underscores the importance of identifying risks inherent in strategic plans, and of testing and reporting the adequacy and effectiveness of risk mitigation procedures. The approach require the adoption of risk management practices in all phases of individual audit engagements, i.e. in audit planning, audit execution, and audit reporting. The audit planning includes preparing a strategic plan, annual audit plans, and programs for individual risk based audit assignments. Ultimately, this would ensure the provision of holistic reporting on the impact mitigation of risks that may prevent the attainment of organizational objectives (Selim and McNamee, 1999).

A number of prior researches indicated that risk based audit planning is essential for effectiveness of internal auditing (Al-Twajjry, et al. 2003, Albercht, et al. 1988, Mihret, et al. 2010). The results of the studies showed that if risk based planning is properly prepared, fewer audit procedures would be performed and more audit findings would be uncovered so that the planning ensures that audits are performed more effectively and efficiently. Koutopis and Tsamis (2009) discovered that there needs to be an adequate audit coverage through the audit planning process for the effective

implementation of risk-based auditing. Kasava (2012) concluded that risk based auditing through risk assessment, risk management, and risk based planning would enable a firm to be able to detect risks on time and concentrate on high risk areas leading to increased audit effectiveness.

The results of a study made by Anucha (2015) on best internal audit practices in Thailand considered audit planning as less valuable factor for the success of risk based internal audits. The findings of the study concluded that the relationship of internal audit effectiveness is not significant with the internal audit plan and internal audit review of a company.

2.3.2.5. Implementation of Enterprise Resources Planning (ERP)

Enterprise resources planning (ERP) is a computer-based system designed to process an organization's transactions. It implies a set of business application software modules that integrates all organizational functions, as well as human resources, finance, manufacturing, sales, and distribution. The complexity of ERP causes the system to require significant effort to implement and specialized skills to customize and maintain it. Thus, its implementation poses risks. The risks may arise due to possible poor project planning and control, dependence on external consultants and integrators, resistance to organizational change, and lack of specialized skills needed to customize the system and populate it with organizational data (Jain and Soral, 2011).

ERP has brought significant effects on the auditing function (Kanellou et al., 2011). When a company uses an ERP system the audit focus shifts from substantive testing of the books of account to understanding the business processes, testing the systems and applications controls etc. Moreover, internal audit functions' involvement in ERP system control processes is largely thorough risk assessment and evaluation of information technology controls, including information truth and ERP system security (Ephrem, 2019).

Various scholars studied the effects of ERP on internal auditing. Ziad et al. (2018) in their studies found out that there is a statistically significant impact for the application of the ERP system on the quality of the internal auditing in the Jordanian commercial banks. The study made by Jain and Soral (2011) showed that the use of ERP raised the quality of auditing. Findings of Saharia et al. (2008) displayed in their study that ERP adoption positively influences internal auditors' ability to assess internal control risks. The study of Dessalegn et al (2011) has shown that the efficiency of internal

audit is improved since ERP supports positively in the areas of audit planning, records of audit work, and implementation of recommendations.

Regarding ERP's impact on audit costs, Madani (2009) disclosed that ERP affects the audit process in an organization by requiring auditors to spend more time on control testing. Contrary to the results of prior studies, findings discovered by Ephrem (2019) revealed that ERP implementation has low impact on internal auditors' ability to assess' internal control risk.

2.4. Summary and Research Gap

This research identified gaps in the literature. Being risk-based internal auditing is a fairly new methodology for the internal audit profession, not much literature is available on the topic. Further work is recommended by previous authors (Koutoupis and Tsamis 2009, Lutta 2012, Kasava 2012). There are almost no studies in Ethiopia that have been conducted on the effectiveness of internal audit with emphasis on the risk based nature of audit services. Many of these studies were done in countries other than Ethiopia, with obvious cultural and environmental differences. Thus, there is a need in Ethiopia for a comprehensive study on the issue.

Additionally, the local study conducted by Meseret (2016) on the effectiveness of the internal audit of Ethio telecom took non-risk variables as determinants for the research. She used questionnaire responses only to conclude on the study. She suggested further research to be conducted on the area.

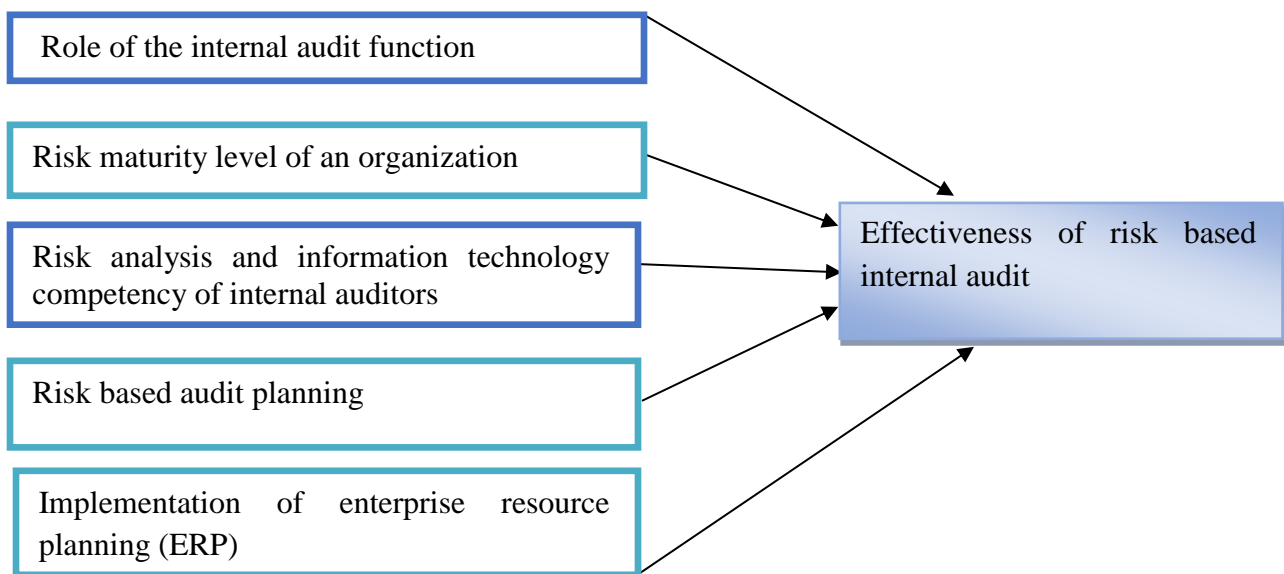
Lastly, it was noted that previous studies were not conducted with a combination of agency, institutional, and risk-based audit theories, and also there exists inconsistency in reported results concerning the relationships of some of the determinants for the effectiveness of internal audit such as competency of auditors and impact of ERP.

Hence, the above-mentioned reasons necessitated the current study which sought to bridge the existing research gap. In view of the realization of the full value of adopting risk-based audit approach, the proposed study will attempt to examine those factors that determine the risk-based audit applied in Ethio telecom.

2.5. Conceptual Framework

From the literature review, it can be noted that the effectiveness of risk based internal audit is affected by different variables. Below a conceptual framework is depicted to explain factors that affect the effectiveness of risk based internal audit and how they are inter linked with each other.

Figure 2.1: Conceptual Framework



Source: developed by the researcher from existing literatures

CHAPTER THREE

RESEARCH DESIGN AND RESEARCH METHODOLOGY

3.1. Introduction

This chapter describes the approach selected for the research to answer the research questions and meet the objectives of the study. It outlines and explains the methodology which addresses the research objectives and test the research hypotheses formulated in Chapter one. All in all, it deals about the overall planed journey of the research process to achieve its objectives. It will discuss how the research is designed, where the data is originated, and the mechanisms for data collection and analysis.

3.2. Research Design

The research design of this study employed an explanatory research approach. The explanatory nature of the design allows to conduct analysis on the relations of the different variables. Hence, it helps to investigate the determinants affecting the effectiveness of the risk based internal audit in Ethio telecom.

3.3. Research Method

The study applied a mixed strategy that use both quantitative and qualitative research methods. This combination creates a better understanding on the research problem and also neutralizes the limitations of applying a single approach (Creswell, 2009).

3.4. Target Population and Sampling Technique

The target population of the current study comprises of internal auditors, risk analysts, and members of the top management of Ethio telecom. There are 61 internal auditors and 14 risk analysts who work in the internal audit division and risk management department of Ethio telecom respectively. In addition to the chief executive officer, the senior management team of Ethio telecom consists of 18 chief officers who run their respective divisions of the company.

Since the subjects of the study in the target population are limited in size, the researcher used a census inquiry sampling technique. All internal auditors, risk analysts, and top managers of the company were invited to participate in the study. Owing to the total coverage of the population in the inquiry, there would be no element of chance which is left so that highest accuracy is obtained.

3.5 Sources of Data

The data for the research was gathered from two main sources: primary data and secondary data. The primary source allows to examine the evidence firsthand without the opinions, analysis, and interpretations of others. The secondary sources help to draw conclusions about the events described in primary sources. They make the information more accessible by assembling and interpreting information from a variety of primary sources.

For this research, the primary data was the replies obtained from questionnaires of respondents and the secondary data was the documentary review made on audit manuals and charters, audit reports, enterprise risk management reports, and annual audit plans.

3.6 Data Collection Methods

The primary data of the research was gathered through self-administered questionnaires. This data collection technique permits respondents to complete the questions on the spot while other respondents filled and returned the answers on the agreed time. The questionnaire is directly related with the research hypotheses and objectives of the study. In designing the self-administered questionnaire, questions used in previous studies were modified and included as they were found important to address certain issues (Lutta 2012, Anucha 2015, Ephrem 2019, and Wen-Hsien Tsai et al 2017).

The questionnaires were prepared in the form of Likert-Scale by constructing five point scales where the lowest scale represent strongly disagree and the highest scale represent strongly agree (Likert, 1932). They are organized in to two parts; the first part comprises demographic questions regarding the respondents, and the second part contains items relating to the effectiveness of risk based internal audit and its determinants.

The secondary data is obtained from reviews of audit manuals and charters, audit reports, enterprise risk management reports, and annual audit plans.

3.6. Reliability and Validity of data

Reliability implies the ability of an instrument to measure what is supposed to be measured. A measuring instrument is reliable if it produces consistent results. In order to enhance the reliability in this study, clear research design and research method are used. Moreover, documentary evidence is utilized to enhance the reliability of the data from the questionnaire. Reliability assessment using Cronbach's alpha test also performed to further strengthens data reliability for the quantitative component of the study.

Validity refers to the quality of a procedure or an instrument used in the research to get what the study wants to get. In this study, validity was tried to be achieved through linkage between theories and empirical research works. The research attempted to make sure that the method of data collection; sampling and methodology of the study were proper and related to the objectives of the study.

3.7 Model Specification and Measurement of Variables

The research used econometrics model as it provides numerical measure of the relationship between the dependent and independent variables. The model in this study treats effectiveness of risk based internal audit as the dependent variable while the role of the internal audit function, the risk maturity level of a company, risk analysis and information technology competence of internal auditors, risk based audit planning of the internal audit division, and implementation of Enterprise resource planning in a company as independent variables.

Thus, the model took the general form:

$$ERBA = b_0 + b_1 RIA + b_2 RM + b_3 RTC + b_4 RBP + b_5 ERP + e_i \text{ Where:}$$

ERBA = effectiveness of risk based internal audit of a company

RIA = the role of the internal audit function

RM = the risk maturity level of a company

RTC = risk analysis and information technology competency of internal auditors

RBP = risk based audit planning of an internal audit function

ERP = implementation of Enterprise resource planning in a company

ei = the error term

Using prior literatures, the researcher selected seven measurement criteria on five-point Likert scale to assess the dependent variable, i.e., the effectiveness of risk based internal audit. These criteria are: the existing role that the internal audit division plays adds value to Ethio telecom, audit reports issued by the internal audit division address adequately significant risk problems of Ethio telecom, audit reports provided by the internal audit division meet the expectations of the management, the work of internal audit division is timely and proactive in the conduct and reporting of issues to management, audit reports of the internal audit division are highly considered by the management for decision makings and internal controls, the recommendations of the internal audit division provide practical, cost-benefit solutions for correcting problems, and the top management uses the results of internal audit engagements to update its enterprise wide risk register.

The independent variables which include the role of the internal audit function, the risk maturity level of Ethio telecom, risk analysis and information technology competence of internal auditors, the audit planning of the internal audit division, and the implementation of Enterprise resource planning(ERP) in Ethio telecom are similarly measured using a five-point Likert scale.

The role of the internal audit function was measured by nine indicators, these being: the top management understands fully the mission of internal audit division so that it perceives internal auditors as active actors in the risk management of the company, internal audit division has not been involved in the setting of risk appetite for the company, internal audit division has not participated in the risk management processes of the company, internal audit division provides consulting services to Board and the senior management to assist them in identifying, evaluating, and implementing risk management methodologies that address significant risks, internal audit division reviews the management of key risks, internal audit division evaluates the reporting of key risks, internal audit division examines the risk management processes of the company, internal

audit division gives assurance that risks are correctly evaluated by the management, and internal audit division gives assurance that Ethio telecom's systems of control are designed properly and operate effectively.

The risk maturity level of the organization was measured by nine items, these being: there is an integrated company-wide risk management processes (enterprise risk management) that evaluate risks holistically, there are formal strategies and policies developed by Ethio telecom on risk management, there is a risk appetite approved by Board or top management which is uniformly applied in the company, there is an enterprise wide risk register which is periodically approved by Board or top management, the enterprise wide risk register holds all major risks of the company, the enterprise wide risk register is structured in such a manner that strategic and operational risks are separated, the risk identification and risk treatment processes of the management are adequate and subject to regular review, the risk assessment methodology includes quantitative analysis by using at minimum more than 'low', 'medium' and 'high' measures, and the internal audit division can rely on the outcome of the enterprise wide risk register.

The risk analysis and information technology competency of internal auditors was measured by six proxies, these being: there are sufficient skilled internal auditors who have the experience and expertise to address risk management by evaluating the likelihood and the impacts of risks rigorously, internal auditors are proficient in techniques of risk analysis, internal auditors possess the ability to relate the organization's risk appetite to the application of controls in operational areas, internal auditors have adequate knowledge and technical ability of data access and data security, internal auditors are capable to use audit software and computer aided tools, internal auditors have sufficient skills to manipulate data base software.

The risk based audit planning was measured by seven parameters, these being: the audit universe (a list of all possible auditable areas) of internal audit division focus on identified crucial aspects and high-risk areas incorporated in the companywide risk register, there is a strategic audit plan prepared by internal audit division which driven from the company's risk assessment performed on key risk areas, internal audit division uses the company's approved enterprise risk register to prepare its annual audit plans, internal audit division performs risk assessment to determine audit engagement's planning, the audit plans of internal audit division prepared at different levels align

with the results of the risk management processes of the company, the audit planning of internal audit division takes into account the risk management strategy of the company, and senior management input is considered in setting internal audit priorities.

The Enterprise resource planning(ERP) implementation was measured by six indicators, these being: internal auditors understand sufficiently the internal workings of the ERP system adopted by Ethio telecom, internal auditors can perform auditing in the ERP system, the ERP system reduces time of auditors spent in data retrieving, the ERP system helps auditors to eliminate redundant data files, internal auditors assess risks that may adversely affect the ERP system environment, and internal auditors spend more time in assessing control risk.

3.8. Data Analysis

The data obtained was analyzed by ways of quantitative and qualitative methods. The quantitative data were analyzed using multiple regression model. This model is applied to identify and evaluate the impacts of the factors which determine the risk based internal audit effectiveness in Ethio telecom. The responses obtained in the returned questionnaires were verified and coded so as to analyze the data using STATA software. The qualitative data gathered through documentary review were analyzed through drawing of conclusions. Inferences were drawn by closely identifying the similarities, differences, and relationships among the variables in the study.

CHAPTER FOUR

DATA ANALYSIS, RESULTS, AND DISCUSSIONS

4.1. Introduction

This chapter presents the results of the quantitative and qualitative data analysis of the study. The data collected from questionnaire and document review was analyzed through the techniques mentioned in chapter three earlier. The results of the study would be presented through triangulating the different source data. The chapter consists of two sections. The first section deals with the analysis of econometric results. It tests and determines the significant influence of the independent variables on the dependent variable. The second section deals with the results and interpretation of quantitative and qualitative results by examining the data collected through questionnaire and document review. Therefore, this chapter presents the analysis and discussion of the research findings from primary and secondary sources.

4.2 Econometric Data Analysis

This section begins with questionnaires' response rate and demographic characteristics. It would be followed by presentation of the outcomes of reliability analysis for the data collected through questionnaires. It would next show the results of tests for the violation of ordinary least of square assumptions. Lastly, it reports the findings of the multiple regression analysis together with interpretation of the results of the data analysis.

4.2.1. Response rate

A total of 93 questionnaires were distributed to the internal auditors, risk analysts, and senior managers of Ethio telecom. For these questionnaires, 79 responses were received (54 from internal auditors, 11 from risk analysts, and 14 from senior managers) giving for the research response rate of 84.9%. From the collected questionnaires, two responses were found incomplete and unusable to conduct investigation over them. Therefore, the final analyzed data covered 77 completed questionnaires.

4.2.2. Profile of respondents

From the respondents included in the study, 13 % of them were females and the remaining 87% were males. 50.6 % of the respondents attained an age that falls in the category between 30 and 40 years. There were two participants (3%) whose age was below 30. The number of respondents whose age exceeded 50 were two. This constituted 3 % from the total participants. The rest of the respondents, who covered 44.2 % from the total participants, reached an age that lies between 40 and 50 years.

Concerning educational status, 45.4 % of the respondents completed only their first degree in Bachelor of Arts, Bachelor of Science, and Bachelor of laws. 54.6% of the participants earned master's degree. Nine respondents obtained certification in their respective field of study. Three of them have ACCA. Out of the remaining 6 respondents, two got CIA, two earned CISA, and the rest two got IFRS and ISO22301. When we see their academic qualifications against their field of study, 68.8 % of the respondents' stream falls under social science category, specifically, accounting, management, law, and business administration. The remaining 31.2 % have natural science background that included computer engineering, computer science, electrical engineering, telecom engineering and information science.

The work experience of the respondents was scrutinized by separating their services into audit activities and risk analysis. In terms of years of service, 26 % of the respondents have no experience in auditing. 19 % of them have audit experience between 1 year and 5 years. 48 % of the participants have audit experience that lie between five and fifteen years, and the rest 6 % have more than 15 years' experience. When we single out internal auditors from the rest of the participants, we realize that all the internal auditors have sufficient audit experience in the telecom sector. Again, all internal auditors have a good experience on risk analysis. Out of all participants, 11% of them have no experience on risk analysis. 31% of the respondents have risk analysis experience ranging between one and five years. The rest 57% have risk analysis experience falling between five years and fifteen years.

Table 4.1. Respondents' profile

Variables	Category	Frequency	Percentage
Gender	Male	67	87
	Female	10	13
Age (in years)	20 to 30	2	2.6
	31 to 40	39	50.6
	41 to 50	34	44.2
	Above 50	2	2.6
Education level	Master degree	42	54.5
	First degree	35	45.5
	Certified (ACCA, CIA,CISA,ISO22301)	9	11.7
Field of study	Accounting	21	27.3
	Management	19	24.7
	Business administration	11	14.3
	Law	2	2.6
	Information science, Computer science, Computer engineering	7	18.2
	Electrical engineering & Telecom engineering	10	13
Job category	Internal auditors	52	67.5
	Risk experts	11	14.3
	Senior managers	14	18.2
Work experience in audit(in years)	Above 15	5	6.5
	6 to 15	37	48
	1 to 5	15	19.5
	None	20	26
Work experience in risk analysis(in years)	Above 20	Zero	Zero
	5 to 15	44	57.1
	1 to 5	24	31.2
	None	9	11.7

Source: Survey data, STATA output

4.2.3. Reliability test

The quality of a questionnaire is generally measured by conducting reliability analysis. Reliability analysis indicates the extent to which repeating the same survey procedure yields the same results (Carmines and Zeller, 1979). Regarding the reliability of the survey instrument, the researcher used the internal consistency method. Internal consistency of a structure is measured with the Cronbach alpha coefficient (Cronbach, 1951). According to Nunnally (1978), the construct's Cronbach alpha coefficient should be over 0.800 in order for the construct to yield reliable results. Also, the item-related Cronbach alpha coefficients should be lower than the construct's total Cronbach alpha. A higher item-related Cronbach alpha coefficient means that if the specific item is removed from the construct, then the reliability of the construct will increase.

The reliability analysis result of the study is depicted in Table 4.2. Based on the result, the value of Cronbach's Alpha (α) for all the variables is 0.8459. As we can observe, the item-related Cronbach alpha coefficients of each variable construct except risk maturity level are lower than the construct's total Cronbach alpha. Therefore, the responses generated from all variables in this study were reliable for data analysis.

Table 4.2. Reliability analysis

Category	Questions	Alpha
Risk based internal audit effectiveness	7	0.8056
Role of the internal audit division	9	0.8272
Risk maturity level	9	0.8632
Risk analysis and IT competence of internal auditors	6	0.8098
Risk based audit planning	7	0.8075
Implementation of ERP	6	0.8040
Total scale		0.8459

Source: Survey data, STATA output

4.2.4 Assessment of Ordinary Least Square (OLS) assumptions

Since regression analysis is based upon assumptions, evaluation of the assumptions is so indispensable to ascertain their validity. Accordingly, this study has examined the presence of the main assumptions before applying the analysis. The assumptions that were subject to examination were normality, multicollinearity, homoscedasticity, autocorrelation, and omitted variable bias.

4.2.4.1. Normality

Skewness and Kurtosis test is widely used to assess the normality distribution of the error term. Values of skewness and kurtosis which exceed specific critical values indicate non-normal distribution. The most commonly used critical values are ± 2.58 at 1% significance level and ± 1.96 at 5% significance level. The result of the normality distribution test of the research at 5% significance level (skewness=0.38 and kurtosis=0.53) showed that the error terms were normal and reliable for analysis. The skewness and kurtosis values do not exceed the critical values.

Table 4.3 Stata output for skewness and kurtosis

Variables	Observations	Pr (skewness)	Pr (kurtosis)
yhat (residuals)	77	0.3783	0.5289

Source: Survey data, STATA output

4.2.4.2. Multicollinearity

Multicollinearity occurs when there is a strong correlation among predictors. A correlation value greater than 0.80, a tolerance value less than 0.10, and a Variance Inflation Factor (VIF) greater than 10 in a correlation matrix show a presence of multicollinearity problem (Field, 2009). Based on the results of the study, the tolerance levels for all variables are greater than 0.10 and the Variance Inflation Factor (VIF) value for all variables is less than 10. The finding also showed that the correlation between dependent and independent variables is less than 0.80. Therefore, correlation value, tolerance level, and VIF value indicate that there were no multicollinearity problem in this study.

Table 4.4. Stata output for collinearity statistics

Variables	VIF	Tolerance
RIA	1.57	0.6380
RM	1.30	0.7699
RTC	1.96	0.5090
RBP	1.90	0.5264
ERP	2.19	0.4568
Mean VIF	1.78	

Source: Survey data, STATA output

Table 4.5. Stata output for correlation matrix

	ERBA	RIA	RM	RTC	RBAP	ERP
ERBA	1.0000					
RIA	0.6144	1.0000				
RM	0.3584	0.1520	1.0000			
RTC	0.4909	0.4676	0.4643	1.0000		
RBP	0.6285	0.4890	0.2921	0.5501	1.0000	
ERP	0.5438	0.5526	0.3231	0.5967	0.6451	1.0000

Source: Survey data, STATA output

4.2.4.3. *Homoscedasticity*

It is assumed that the variance of an error term is constant and this is known as the assumption of homoscedasticity. If the errors do not have a constant variance, the condition is considered as a problem of heteroscedasticity. Stata software uses Breusch Pagan test to assess homoscedasticity and P – value > 0.05 is acceptable. The result of the research showed a critical value of 0.3312 which indicated the absence of heteroscedasticity.

Table 4.6 Stata output for heteroscedasticity

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity
Ho: Constant variance
Variables: fitted values of ERBA
chi2(1) = 0.94
Prob> chi2 = 0.3312

Source: Survey data, STATA output

4.2.4.4. *Autocorrelation*

The Durbin-Watson (DW) is a test for first order auto correlation (Field, 2009). The Durbin-Watson statistic ranges in value from 0 to 4. A value near 2 indicates non-autocorrelation; a value toward 0 indicates positive autocorrelation; a value toward 4 indicates negative autocorrelation. In this type of test, the null hypothesis can't be rejected when DW result is near 2 (Hair et al. 1998), because, it shows there is little or no evidence of autocorrelation.

Based on the result of the study, the Durbin-Watson (DW) statistics value is 2. 073. The result is very close to 2. Therefore, there is no evidence of autocorrelation among error terms in this study.

Table 4.7. Stata output for Durbin-Watson test

Durbin-Watson d-statistic (6,77) = 2.072834

Source: Survey data, STATA output

4.2.4.5. Omitted variable bias

Testing for omitted variable bias is important since it is related to the assumption that the error term and the independent variables are not correlated. If a missing variable in a model which is a determinant of a dependent variable is correlated with an included predictor, the regression coefficients will become inconsistent. Ovttest is used in Stata to check the problem of omitted variables. The null hypothesis, which assumes a model does not have omitted variables bias, requires a p-value higher than the threshold of 0.05 at 95% confidence level.

Based on the result of the study, the p- value of the test is 0.4467. Since the computed value (0.4467) is higher than 0.05, the research model does not need more variables than included within it.

Table 4.8 Stata output for omitted variable bias

Ramsey RESET test using powers of the fitted values of ERBA
Ho: model has no omitted variables
F(3,68) = 0.90
Prob> F = 0.4467

Source: Survey data, STATA output

4.3. The Regression Result

The regression result will explore the necessary indicators for the risk based internal audit effectiveness using those determinant variables identified in the model. Coefficient of determination (R²) is used to evaluate how well a statistical model is likely to predict future outcomes. It serves as a measure for the goodness of fit of the estimated model. The value of R

square indicates how much of the variance of the dependent variable is brought as a consequence of the factors included in the model (Reisinger, 1997). For our study, it reveals the extent of change on the effectiveness of risk based internal audit in Ethio telecom which is brought as a result of a change on the role of an internal audit function, risk maturity level of an organization, risk analysis and IT competency of internal auditors, risk based audit planning of an internal audit function, and implementation of ERP in a company.

4.3.1. ANOVA analysis

The study conducted analysis of variances test to determine the effect of relationship between the dependent variable and independent variables in the model. Based on the results of the study, 55.17% of variation in the effectiveness of risk based internal audit in Ethio telecom is accounted due to changes on the role of the internal audit function, the risk maturity level of the company, risk analysis and IT competency of internal auditors, the risk based audit planning of the internal audit function, and the implementation of ERP in the company. These means the combined effect of the predictor variables contribute to 55.17% changes in the effectiveness of risk based internal audit in Ethio telecom.

The findings of the study showed that the value of the F statistics is 17.47. The p-value of the F statistics tests whether coefficient of determination is different from zero. If the p-value of the F statistics is lower than 0.05, then the model shows a statistically significant relationship between the dependent variable and the predictors. In our case, the result of the study displayed a p-value of 0.0000 for the F statistics. Thus, it was concluded boldly that the model of this study is statistically significant in predicting the impact of the role of internal audit function, risk maturity level of the organization, risk analysis and IT competency of internal auditors, the risk based audit planning, and implementation of ERP in the company on the effectiveness of risk based internal audit.

Table 4.9 ANOVA results for the model

Source	Sum of squares(SS)	Degree of freedom(DF)	Means of square(MS)	F	Significance
Model	12.8860	5	2.5772	17.47	0.0000
Residual	10.4714	71	0.1475		
Total	23.3574	76	0.3073		

Source: Survey data, STATA output

Dependent variable: effectiveness of risk based internal audit

Independent variables: the role of an internal audit function, the risk maturity of a company, risk analysis and IT competence of internal auditors, the risk based audit planning of an internal audit function, and the implementation of ERP in a company

4.3.2. Beta coefficients

Beta coefficients tell us about the relationship between the dependent variable and each predictor. The beta (β) sign includes a sign of positive (+) and negative (-). They show the effect of independent variables over the dependent variable (Field, 2009). If the value is positive we can tell that there is positive relationship between the predictor and the outcome, whereas a negative coefficient represents a negative relationship between predictors and outcome.

Table 4.10 Regression coefficients' results

	coefficients	Standard error	t-stat	P-value	Lower 95%	Higher 95%
constant	.4192042	.3191348	1.31	0.193	-.2171326	1.055541
RIA	.3856301	.0986823	3.91	0.000	.1888632	.5823971
RM	.1402075	.070662	1.98	0.051	-.0006886	.2811036
RTC	.006241	.0934734	0.07	0.947	-.1801398	.1926217
RBP	.3227039	.0983004	3.28	0.002	.1266984	.5187094
ERP	.0331393	.1127271	0.29	0.770	-.1916322	.2579108

Source: Survey data, STATA output

Regarding values, the P-value shows whether each coefficient is different from 0. To be statically significant, the p-value of a given coefficient needs to be lower than 0.05 at 95% level of significance. Based on the results of the study, the role of internal audit function and risk based audit planning are statistically significant in explaining the effectiveness of risk based internal audit in Ethio telecom. Risk maturity level is very close for significance at 0.05. Similarly, t-value tests whether each coefficient is different from 0. To be important enough to affect the model, coefficients must have a t-value greater than 1.96 at 0.05 confidence. The results of the study showed that the role of internal audit function, risk maturity level, and risk based audit planning are important variables for the model. Even from amongst themselves, the role of internal audit function is the most important one for the model.

All the independent variables are positively associated with effectiveness of risk based internal audit. Taking all the factors (risk management, annual risk based planning, internal auditing standards and internal auditing capacity) constant at zero, effectiveness of risk based internal audit would be 0.419. The findings show that the highest and least contribution for the effectiveness of risk based internal audit come from the role of internal audit function and the risk and IT competence of internal auditors respectively. According to the result, a unit increase of the role played by the internal audit function would lead to a 0.386 increase in the positive performance of risk based internal audit in Ethio telecom. Regarding risk and IT competence of internal auditors, a unit increase of the variable would lead to only a 0.006 increment on the effectiveness of risk based internal audit.

4.4. Discussions and interpretations

The discussion in this section is centered on the findings from the data and literature analysis that answers the research hypotheses raised in connection with the determinants on risk based internal audit effectiveness in Ethio telecom. In order to ensure the data, give full information and to corroborate the research findings, the study used data triangulation. The following results and interpretations are made on the determinants of the effectiveness of risk based internal audit formulated in the model of this research paper.

4.4.1. The role of internal audit function

The hypothesis of this variable is expressed in this paper as follows:

H1: The role of the internal audit division has a positive and strong association with the effectiveness of the risk based internal audit

The positive beta sign and a statistically significant regression result ($P=0.000$) of the variable supported the proposed hypothesis and therefore the hypothesis is acceptable. The result is consistent with the past research works of Lutta (2012) who concluded that the role of the internal audit function is a critical determinant for a risk based internal audit effectiveness. It is also in agreement with the findings of D 'Onza et al (2015) that indicated a positive and significant correlation between the role of internal audit unit and implementation of enterprise risk management. However, the result contradicts the findings of Alzeban and Sawan (2013) and Ramachandran et al. (2012) who found out no significant relationships between the role of internal audit function and the effectiveness of risk based internal audit.

From the documentary review of the audit charter of Ethio telecom, it was understood that internal audit division of the company has been entrusted with a responsibility to provide for the board of directors and top management of the company a reliable and accurate overview on the company's efficiency and effectiveness on managing its risks. Moreover, the procedure manual of Ethio telecom also indicated that risk based auditing techniques is the approach of the division. The approach requires risks to be assessed by the division, taking into account the objectives of internal control system.

The average mean score of the variable ($M=3.092$) is closer to neutral response of the questions in the questionnaire. But, the standard deviation ($SD=0.559$) shows that not all respondents were in agreement with that since there was a wider variance between answers. Generally, from the mean response of respondents we can understand that the participants were uncertain whether the internal audit function of Ethio telecom carries out properly its modern auditing roles as envisaged by IIA.

Only 23.37% of the respondents agree that the internal audit division of Ethio telecom didn't participate in the determination of the risk appetite of the company. From the statements used for

the measurement of the role of internal audit function, “Internal audit division has not been involved in the setting of risk appetite for the company” has the smallest mean ($M=2.883$) and above the average standard deviation ($SD=1.026$). This means the results of the study showed that there is a belief or doubt by more than half of the respondents that the internal audit function of Ethio telecom engages itself, at least by setting risk appetite, in the risk management activities of the company directly. This is actually confirmed by the researcher as it examined the working documents of the internal audit division. The division has fixed its own risk appetite to evaluate the company’s risks. This risk appetite is not validated by the board and top management of the company.

Internal audit functions are lately required to focus on providing assurance on the risk management process and how key risks are managed. The former is addressed by carrying out a review of entity wide review of risk management process. The latter is addressed by aligning internal audit activities to the organization’s risks assessment. The responses of the participants in the study for the statement “Internal audit division examines the risk management processes of the company” indicated that the score for the statement has a mean of 3.416 and a standard deviation of 0.951. The mean result showed that even the internal auditors in the division are doubtful about the verification of the company’s risk management processes by IAD. This is further corroborated by the high result of the standard deviation which confirms the presence of a great variation in the response of respondents. The review of audit reports conducted by the researcher revealed that the internal audit function of Ethio telecom focused exclusively on providing assurance on the management of key risks.

The efforts of the internal audit division of Ethio telecom for the establishment of strong risks management in the company is not acknowledged by the majority of the respondents. Only 36.4% of the participants agreed that the division provides consulting services to board and the senior management in identifying, evaluating, and implementing risk management methodologies that address significant risks. Thus, the involvement of the internal audit division in the risk management of the company is far less in spite of the requirements of the IIA Standards to contribute to the improvement of risk management efforts.

Neither the audit charter nor the audit procedure manual put a reporting mechanism that facilitates the communication of IAD works to the risk management department of Ethio telecom. Risks evaluated by internal auditors and included in audit reports of the division are not notified to the risk management department for the latter to adjust its records. This is supported by the replies of the respondents in the study. 80.5% of the respondents don't agree with the proposition that asserts the top management uses the results of internal audit engagements to update its enterprise wide risk register. This shows that the two business units don't work in coordination and the works of IAD are not properly used to improve the risk management of the company.

4.4.2. The risk maturity level of a company

The hypothesis of this variable is expressed in this research as follows:

H2: The risk maturity level of a company is positively and significantly associated with the effectiveness of the risk based internal audit

The result of the study displayed that the risk maturity level of Ethio telecom is positively related with the effectiveness of risk based internal audit effectiveness. Based on the finding, the effectiveness of risk based internal audit in Ethio telecom is changed by 0.14 for a unit change in the risk maturity level of Ethio telecom. The t test result (1.98) of the regression output showed a statistically significant relationship with the two variables. Nevertheless, as per the P-value of the result (0.051), the magnitude of the impact of the risk maturity level is moderate.

Therefore, the researcher accepted the hypothesis of the study that the risk maturity level of Ethio telecom has a positive and strong association with the effectiveness of risk based internal audit. In other words, the result indicated that the risk management level plays a critical role on the effectiveness of risk based internal audit. The findings of the study agrees with the prior research works of Badara and Saidin (2012) and Beasley et al (2006) that concluded the indispensability of the risk maturity of an organization for the effectiveness its risk based internal audit.

In the examination of the organizational structure of Ethio telecom, it is recognized that there exists an independent risk management department in the company that centrally integrates and administer the risk management processes of the company. Ethio telecom has a companywide risk register which

is prepared by the risk management department and subsequently validated by the chief executive officer of the company. From the enterprise risks register of the company, it is known that the company wide risk map is revised and updated annually. The register holds business risks of Ethio telecom identified by unit divisions and evaluated jointly with the risk management department. The risks of the company are measured against the risk appetite of the company which is set and approved by the top management. The risk appetite is not validated by the board of the company. It is used as a reference to measure and rank the risks as low, medium, high, and extreme risks. There is a draft risk policy document which is not yet approved and put into implementation.

The relatively moderate effect of the variable can be explained with somewhat the medium maturity hierarchy level of the risk management in the company. 61.8% of the participants didn't accept that the enterprise wide risk register of the company contains major risks of the company. This goes in line with the perception of the respondents on the reliability of the register. 68.4% of the respondents didn't agree that the outcomes of the company wide risk register of Ethio telecom is a dependable risk source for the internal audit division. During the examination of files, the researcher came across certain tip documents which the division received from internal auditors and managers to fill in the gap created owing to the inadequacy of the company risk register. Review of the enterprise risks register of Ethio telecom showed that the register does not report strategic and emerging risks separately. This is substantiated by the opinions of the majority of the respondents (61%) who admitted that the enterprise risk register is not structured in such a manner that strategic and operational risks are separated.

4.4.3. Risk analysis and IT competency of internal auditors

The hypothesis of this variable is expressed in this research as follows:

H3: The risk analysis and information technology competency of internal auditors has a positive significant impact on the effectiveness of the risk based internal audit

The finding of this study concluded that the knowledge of internal auditors on risk analysis and IT affects risk based internal audit effectiveness positively at a low level of statistical significance. The positive effect of the variable is 0.006. P-value of 0.947 and t- value of 0.07 the study indicated the non-significance impact of the competency of internal auditors on the success of

risk based internal audit in Ethio telecom.

Therefore, the researcher rejected the hypothesis of the study since the result showed that risk analysis and IT competency of internal auditors has a positive effect on the effectiveness of risk based internal audit but statistically has insignificant impact. It means proficiency and experience of internal auditors on risk analysis and IT has weak influence on the effectiveness of risk based internal audit in Ethio telecom. The result of this study is consistent with past studies which disclosed about the minimal effect of internal auditors' competence on the performance of internal audit activities (Alamzewed 2019, Arafayene 2019, Smet and Mention 2012, Whalen and Holt 2012). However, the finding contradicts the works of other studies (Miheret and Yesmaw 2007, Meseret 2016, Tadios 2016, Arena, M. and Azzone, G. 2009) who showed a positive and statistically significant relationships between the two variables.

The positive correlation result of the study could be associated with the internal governance of Ethio telecom and the audit and risk experience of the internal auditors. From review of the audit charter of internal audit division of Ethio telecom, it is clear that internal audit staffs are required to demonstrate proficiency in terms of key knowledge, skills and abilities on internal audit assurance engagements. They need to have sufficient knowledge on information technology risks and controls as well as on available technologies so as to perform their assigned work effectively. It requires them to demonstrate their proficiency through appropriate professional certifications and qualifications, such as the Certified Internal Auditor designation.

In the demographic profile of the respondents, it was shown that the internal auditors in Ethio telecom possess adequate knowledge in their areas of expertise that enable them to accomplish their auditing tasks appropriately. The minimum academic qualification of the internal auditors in the company is first degree. Half of the respondents (22 auditors) have master's degree in their field of study. 33.77% of the auditors have sufficient theoretical base of auditing since they have accounting background. 36.5% of the auditors have first degree in information technology. All auditors have auditing experience in the telecom sector. 78.9% of the auditors have more than 5 years of experience. Concerning risk analysis, all of them have used the skill at least for one year as they performed auditing. 73% of the respondents have more than five years audit experience.

The low importance of the internal auditors' risk analysis and IT competence was explained by the respondents in their answers for the questionnaires' statements. 62.3% of the respondents indicated that the auditors don't have the right skills and competency to identify, analyze, and prioritize business risks. They believe that the auditors lack the ability to relate the company's risk appetite to the application of internal controls in operational areas. Furthermore, 84.4% of respondents indicate that they are not well qualified to use automated systems, computer programs, and other software packages in the execution of their audit assignments. They are still in the infant stage with regard to using computer aided tools. Lastly, the professional development with certification in the field of auditing in Ethio telecom is negligible. Only 13.75% (seven) of the auditors are certified. From which only two auditors are certified in internal auditing and other two auditors are certified in information system auditing.

4.4.4. Risk based audit planning

The hypothesis of this variable is expressed in this research as follows:

H4: The risk based audit planning of an internal audit function has a positive significant relationship with the effectiveness of risk based internal audit

The research result supported the hypothesis just like some past studies which argued that preparation of risk based audit planning by internal audit functions positively and significantly influences the effectiveness of the risk based internal audit. Because of the variable's low P-value (0.002), the regression output showed a statistically significant relationship with the successful performance of risk based internal audit. Its positive correlation with the regressed causes a variation of 0.32 on the success of the risk based internal audit in Ethio telecom for a unit change in the audit planning.

This finding is consistent with the position of prior studies (Al-Twajry, et al., 2003; Albercht, et al., 1988; Mihret, et al., 2010; Koutopis and Tsamis, 2009; Kasava 2012) which argued risk based audit planning enables a company to concentrate on high risk areas and thereby lead to increased audit effectiveness.

From document review, it is realized that the audit charter of Ethio telecom prescribes risk based internal audit approach to be applied in the execution of audit activities. The charter also requires the division to prepare risk based strategic, annual, and operational audit plans based on the outputs of risk assessments. Reviewed documents revealed that, IAD has not yet developed strategic audit plan even if the audit charter requires so. The investigation of the past annual audit plans of Ethio telecom's audit division showed that the plans were prepared based on risk inputs obtained from the company wide risk register and self-assessment of the division. The examination of audit reports of the division similarly revealed that the foundation of the division's individual audit engagements and field works has been anchored on pre risk assessments results of auditors.

In addition to the above, the documents studied showed that IAD has its own audit risk universe which it updates every year. This risk register of the division contains risk records defined by domains. Each domain record contains auditable objects which represent potential audit areas in the domain. The size and nature of the auditable objects are determined based on the major functional activities in the domain. Although the business risks in each auditable object are largely updated from the approved enterprise map of the company, IAD uses other sources and its judgment to make the register usable owing to the insufficiency of the enterprise map. The information obtained from the questionnaires agrees with this fact. Some respondents (20.78%) disagree that the audit register of IAD focus on identified crucial aspects and high-risk areas of the company.

The regression result of the study was overtly reflected in the stands of the survey participants. 79% of the respondents didn't reject the proposition that the division uses the risk information of the company wide risk register to prepare its annual audit plan. Similarly, only 10% of the participants disagreed that the internal audit division uses inputs gathered from members of the senior management of the company to set its audit priorities so as to include in its audit planning.

4.4.5. Enterprise resource planning (ERP) implementation in a company

The hypothesis of this variable is expressed in this research as follows:

H5: The implementation of enterprise resource planning (ERP) affects positively and strongly associated with the effectiveness of risk based internal audit

The regression result of the study didn't support this hypothesis. ERP has a positive relationship with the regressed variable with a coefficient of 0.03. Nevertheless, its statistical significance on the quality of risk based internal audit is so low since both the P-value test ($p= 0.77$) and the t-test ($t= 0.29$) were above and below their corresponding critical values (0.05 and 1.96) respectively. This result is inconsistent with past studies which showed a high importance of ERP on the effectiveness of the internal audit (Jain and Soral, 2011; Dessalegn et al, 2011).

The positive correlation output of the regression analysis is tremendously accounted for the attributes of an ERP system. This is evidenced by the survey responses of the respondents. Findings of the study have indicated that about 54.5 percent of respondents accepted that ERP system helps auditors by eliminating redundant data files. The performance of the internal audit is enhanced since auditors obtain the opportunity to retrieve all type of data at different place on a one single screen in ERP system. This in turn allows auditors to have timely access to data owing to the fact that the data are updated, maintained and stored electronically. Moreover, it promotes the efficiency of the internal audit division as it supports internal auditors to do their tasks at fast speed. The system automatically updates the data throughout the system and transactions can be checked by proper control, cross field checking and transaction. Consequently, this increases the speed of auditing. This idea is reflected by 54.6 % of the participants who agreed that the system largely reduces their audit execution time.

Unlike previous studies, the less impact of ERP on the effectiveness of the risk based internal audit shown in the study relates with the unfamiliarity of the internal auditors with the ERP environment. The effect of the ERP becomes insignificant since the internal auditors get the system difficult and complicated to use owing to lack of knowledge about the system and its inflexibility nature as per users' requests. 80.5% of the respondents disagree that internal auditors understand sufficiently the internal workings of the ERP system adopted by Ethio telecom. Moreover, 77.9% of them believe that internal auditors don't have the ability to perform auditing in the ERP system. The complexity of the ERP system which increases the criticality of control risks creates these challenges on the performance of internal auditors.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this chapter is to give conclusions and some recommendations on the study. It depicts the preceding chapters collectively to synthesize the contribution of this study. In the first section, the researcher tried to show the implications and the findings of the study. In the second section, the researcher provides recommendations according to the study results.

5.1. Summary of findings

The regression output of the study revealed a 55.17% variation in the effectiveness of risk based internal audit due to changes on the role of the internal audit function, the risk maturity level of a company, risk analysis and IT competency of internal auditors, the risk based audit planning of an internal audit function, and the implementation of ERP in a company. It was also shown in the study that the model has a p-value of 0.0000 for the F statistics.

The finding the study showed a positive and statistically significant regression result for the role of internal audit division. According to the result, a unit increase of the role played by the internal audit function leads to a 0.386 increase in the positive performance of risk based internal audit in Ethio telecom. Its t- value (3.91) and P-value (0.000) makes it the most significant factor from the variables considered.

The result of the study disclosed that the risk maturity level of a company is positively related with the effectiveness of risk based internal audit effectiveness. Based on the finding, the effectiveness of risk based internal audit in Ethio telecom is changed by 0.14 for a unit change in the risk maturity level of a company. The t test result (1.98) of the regression output showed a statistically significant relationship with the two variables. Nevertheless, as per the P-value of the result (0.051), the magnitude of the impact of the risk maturity level is moderate.

It was found out in the study that the knowledge of internal auditors on risk analysis and IT affects risk based internal audit effectiveness positively at a low level of statistical significance. The positive effect of the variable is 0.006. P-value (0.947) and t- value (0.07) of the study indicated

the non-significance impact of the competency of internal auditors on the success of risk based internal audits.

The research result showed that preparation of risk-based audit planning by internal audit functions positively and significantly influences the effectiveness of risk based internal audit. Because of the variable's low P-value (0.002), the regression output showed a statistically significant relationship with the successful performance of risk based internal audit. Its positive correlation with the regressed causes a variation of 0.32 on the success of the risk based internal audits for a unit change in the audit planning.

The regression result of the study indicated that ERP has a positive relationship with the regressed variable with a coefficient of 0.03. Nevertheless, its statistical significance on the quality of risk based internal audit is so low since both the P-value (0.77) and the t-test value (0.29) were above and below their corresponding critical values (0.05 and 1.96) respectively.

5.2. Conclusions

Risk based internal audit is the latest evolution of internal audit discipline that aimed at maximizing the impact of audit by focusing on major strategic and operational risks of an organization. It targets high risk areas and helps to achieve a maximum value for the organization. Its main purpose is to provide assurance through internal audit function that risks are being managed to within an organization's risk appetite. In short, risk based internal audit introduces a new methodology that makes internal audit service more focused, effective and efficient in operations and resource usage, thereby creating value for their organizations.

Beginning from its establishment in 2010, Ethio telecom has immersed aggressively in the execution of big infrastructure projects, automation of internal processes, marketing and technical jobs, massive sale of products and services, purchase of huge foreign and local materials, and deployment of the state of the art new technologies. Recognizing its high vulnerability to numerous business risks that come along with its new complex activities, Ethio telecom adopted for its internal audit division a risk based internal audit approach so as to provide for the Board of Directors of the company an independent and objective assurance on the effectiveness of the risk management of the top management.

The appropriate conditions for effective risk based internal auditing is established in the study through a combination of agency, institutional, and risk based internal audit theories. These conditions include the role of an internal audit function, the risk maturity level of an organization, the competency of internal auditors on risk analysis and information technology, risk based audit planning of an internal audit function, and implementation of enterprise resource planning (ERP) in an organization.

The data for the research was gathered from primary and secondary data sources. The primary data was the replies obtained from questionnaires submitted to respondents and the secondary data was the documentary reviews made on audit manuals and charters, enterprise risk management reports, and annual audit plans. A total of 93 questionnaires were distributed to internal auditors, risk analysts, and senior managers of Ethio telecom. For these questionnaires, 79 responses were received (54 from internal auditors, 11 from risk analysts, and 14 from senior managers) giving for the study a response rate of 84.9%. From the collected questionnaires, two responses were found incomplete and unusable to conduct investigation over them. Therefore, the final analyzed data covered 77 completed questionnaires.

From the results of the study, it was discovered that 55.17% of the variation in the effectiveness of risk based internal audit in Ethio telecom is accounted due to changes on the role of the internal audit function, the risk maturity of a company, risk analysis and IT competence of internal auditors, the risk based audit planning of an internal audit function, and the implementation of ERP in a company. It was also shown in the study that the model has a p-value of 0.0000 for the F statistics. This evidenced that the model is statistically significant in predicting the effectiveness of risk based internal audit through the impacts of the role of internal audit function, risk maturity of an organization, risk analysis and IT competence of internal auditors, risk based audit planning, and implementation of ERP.

Additionally, the findings of the study confirmed most of the research hypotheses (H1, H2, and H4). The result demonstrated that all the independent variables are positively associated with effectiveness of risk based internal audit. Based on the magnitudes of the coefficients, the highest and least contribution for the effectiveness of risk based internal audit come from the role of internal audit function and the risk and IT competence of internal auditors respectively. Regarding

t- value, the role of internal audit function, risk maturity level, and risk based audit planning showed values greater than 1.96 at 0.05 confidence that made them statistically significant in explaining the effectiveness of risk based internal audit. In comparison with themselves, the role of internal audit function is the most important one for the model.

5.3. Recommendations

Taking into account the immense impact of the role of internal audit function, it is suggested that the internal audit division of Ethio telecom should consult the Board of Directors and the top management as to how they will put into implementation a uniformly applicable risk appetite by refraining from using a risk tolerance set by its own. For avoiding the recent lack of focus on the evaluation of the company wide risk management processes, the division should immediately embark in the auditing of the overall risk management processes of the company. It is also advised that the division should start to revisit its governing manuals in order to work in coordination with the risk management department of the company and let the latter use the information included in released audit reports.

Considering the strong effects of risk based audit planning, it is advised that internal audit division of Ethio telecom should design and build a reliable audit risk universe by forging strong functional relationship with the risk management body of the company so as to make its annual audit plans fully compliant with the principles of risk based audit theories. The division should stop using self-assessment and pieces of scattered risk information as a basis to develop its annual audit plans. It is also highly recommended that the division should commence to formulate immediately its long-term strategic audit plan as per the requirement of the audit charter.

By realizing the positive and modest influence of the risk maturity level of the company, it is suggested that the top management of Ethio telecom to approve and put into implementation the draft risk policy of the company. For bringing Ethio telecom at the right level of risk maturity, internal audit division should consult and support the senior management in the establishment and recording of a holistic list of inherent risks with the corresponding threatened objectives and controls of the company.

Although the study result indicated the insignificant effects of the risk analysis and IT competency of internal auditors and the adoption of ERP in the company, their positive association and their overall impact with other variables on the model still indicate a possible contribution on the quality of the risk based internal audit in the company. Accordingly, it is suggested that internal audit division should strengthen its audit team proficiency capacity by using the intervention of the Board in order to get for the internal auditors appropriate trainings and professional developments that improves the risk analysis and information system knowledge of the auditors. The division should also create for the internal auditors opportunities that enable them to be trained properly and adequately about the ERP system and the ERP environment of the company.

5.4. Suggestions for further research

The study encourages further researches to extend the results of this study and improve the results by minimizing the limitation of this study. Therefore, the researcher suggests future works to broaden the study on the telecom sector through the inclusion of more telecom operators that will join the industry soon in our country. It is also advised forthcoming researches to extend the focus of the study to include internal risk variables such as corporate governance, complexity, formalization, and interaction with external auditors. Furthermore, the author recommends upcoming studies to enlarge the survey participants by considering other staffs and managers of Ethio telecom (Staffs of network and IT, finance, sales and market, Board directors as well as and members of the audit committee).

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Appendix 1: Questionnaire for participants

Dear Sir/Madam:

The enclosed questionnaire is designed to gather information from internal auditors, risk experts, and senior managers of Ethio telecom. The information respondents provide to the items in the questionnaire will be used to generate part of the data needed for a study of Determinants **for the effectiveness of risk based Internal Audit in Ethio telecom**. The study is being conducted as part of the postgraduate researcher 's study for Master's degree in Accounting and Finance at Addis Ababa University, Ethiopia.

The questionnaire is anonymous so that there will be no mentioning of name on it. The conclusions of the study will be drawn in aggregate terms, without any reference to individual respondents. The information obtained from the questionnaires will be strictly kept confidential.

I would like to say that participation in this survey is completely voluntary and in filling the questionnaire:

1. You don't need to write your name.
2. The questionnaire is prepared in Likert-scale form with five (5) point scales. Tick (✓) the appropriate scale (point) that indicates your opinion.

Thank for the participation.

Best regards

Tilahun G/Meskel

Part II: Questions

The values of scales are 5= strongly agree, 4= Agree, 3= Neutral, 2= Disagree, 1= strongly disagree

S.No.	Effectiveness of the risk based internal audit of Ethio telecom	Scales				
		5	4	3	2	1
1	The existing role that the internal audit division plays adds value to Ethio telecom	5	4	3	2	1
2	Audit reports issued by the internal audit division address adequately significant risk problems of Ethio telecom	5	4	3	2	1
3	Audit reports provided by the internal audit division meet the expectations of the management	5	4	3	2	1
4	The work of internal audit division is timely and proactive in the conduct and reporting of issues to management	5	4	3	2	1
5	Audit reports of the internal audit division are highly considered by the management for decision makings and internal controls	5	4	3	2	1
6	The recommendations of the internal audit division provide practical, cost-benefit solutions for correcting problems	5	4	3	2	1
7	The top management uses the results of internal audit engagements to update its enterprise wide risk register	5	4	3	2	1
	Role of the internal audit division of Ethio telecom					
8	The top management understands fully the mission of internal audit division so that it perceives internal auditors as active actors in the risk management of the company	5	4	3	2	1
9	Internal audit division has not been involved in the setting of risk appetite for the company	5	4	3	2	1
10	Internal audit division has not participated in the risk management processes of the company	5	4	3	2	1

11	Internal audit division provides consulting services to Board and the senior management to assist them in identifying, evaluating, and implementing risk management methodologies that address significant risks	5	4	3	2	1
12	Internal audit division reviews the management of key risks	5	4	3	2	1
13	Internal audit division evaluates the reporting of key risks	5	4	3	2	1
14	Internal audit division examines the risk management processes of the company	5	4	3	2	1
15	Internal audit division gives assurance that risks are correctly evaluated by the management	5	4	3	2	1
16	Internal audit division gives assurance that Ethio telecom's systems of control are designed properly and operate effectively	5	4	3	2	1
	Risk maturity level of Ethio telecom					
17	There is an integrated company-wide risk management processes(enterprise risk management) that evaluate risks holistically	5	4	3	2	1
18	There are formal strategies and policies developed by Ethio telecom on risk management	5	4	3	2	1
19	There is a risk appetite approved by Board or top management which is uniformly applied in the company	5	4	3	2	1
20	There is an enterprise wide risk register which is periodically approved by Board or top management	5	4	3	2	1
21	The enterprise wide risk register holds all major risks of the company	5	4	3	2	1
22	The enterprise wide risk register is structured in such a manner that strategic and operational risks are separated	5	4	3	2	1
23	The risk identification and risk treatment processes of the management are adequate and subject to regular review	5	4	3	2	1
24	The risk assessment methodology includes quantitative analysis by using at minimum more than 'low', 'medium' and 'high' measures	5	4	3	2	1
25	The internal audit division can rely on the outcome of the enterprise wide risk register	5	4	3	2	1

	Risk analysis and Information technology competency of internal auditors of Ethio telecom					
26	Internal auditors have adequate experience and expertise to address risk management by evaluating the likelihood and the impacts of risks rigorously	5	4	3	2	1
27	Internal auditors are proficient in techniques of risk analysis	5	4	3	2	1
28	Internal auditors possess the ability to relate the organization's risk appetite to the application of controls in operational areas	5	4	3	2	1
29	Internal auditors have adequate knowledge and technical ability of data access and data security	5	4	3	2	1
30	Internal auditors are capable to use audit software and computer aided tools	5	4	3	2	1
31	Internal auditors have sufficient skills to manipulate data base software	5	4	3	2	1
	Risk based audit planning of IAD	5	4	3	2	1
32	The audit universe (a list of all possible auditable areas) of internal audit division focus on identified crucial aspects and high-risk areas	5	4	3	2	1
33	There is a strategic audit plan prepared by internal audit division which driven from the company's risk assessment performed on key	5	4	3	2	1
34	Internal audit division uses the company's approved enterprise risk register to prepare its annual audit plans	5	4	3	2	1
35	Internal audit division performs risk assessment to determine audit engagement's planning	5	4	3	2	1
36	The audit plans of internal audit division prepared at different levels align with the results of the risk management processes of the	5	4	3	2	1
37	The audit planning of internal audit division takes into account the risk management strategy of the company	5	4	3	2	1
38	Senior management input is considered in setting internal audit priorities	5	4	3	2	1

	Implementation of ERP in Ethio telecom	5	4	3	2	1
39	Internal auditors understand sufficiently the internal workings of the ERP system adopted by Ethio telecom	5	4	3	2	1
40	Internal auditors can perform auditing in the ERP system	5	4	3	2	1
41	The ERP system reduces time of auditors spent in data retrieving	5	4	3	2	1
42	The ERP system helps auditors to eliminate redundant data files	5	4	3	2	1
43	Internal auditors assess risks that may adversely affect the ERP system environment	5	4	3	2	1
44	Internal auditors spend more time in assessing control risk	5	4	3	2	1

Appendix 2: Document review guide

Activity	Objective
1. Review the audit charter and audit procedure manual of Ethio telecom	To collect information relevant to the audit methodology, role of IAD, and rules of auditors 'competency
2. Investigate the risk management map as well as other documents related to risk policy and risk appetite of Ethio telecom	To determine the risk maturity level of Ethio telecom
3. Examine the risk register(audit universe) of IAD	To determine the alignment of the risk register(audit universe) of IAD with the company's enterprise risk map (ERM)
4. Review strategic, annual. and engagement planning of IAD from approved plans, audit reports, and working papers	To collect information about the risk based nature of the audit plans of IAD

Appendix 3: Descriptive Statistics for Questionnaire Survey of Respondents

I) Responses of participants for the questions

A. Effectiveness of the risk based internal audit in Ethio telecom

Variable	Obs	Mean	SD	Min	Max
RIA	77	3.293135	.5543778	2.142857	4.857143

1. The existing role that the internal audit division plays adds value to Ethio telecom

Rank	Frequency	Percent
Strongly disagree	0	0
Disagree	3	3.90
Neutral	16	20.78
Agree	35	45.45
Strongly agree	23	29.87
Total	77	100

2. Audit reports issued by the internal audit division address adequately significant risk problems of Ethio telecom

Rank	Frequency	Percent
Strongly disagree	3	3.90
Disagree	13	16.88
Neutral	20	25.97
Agree	29	37.66
Strongly agree	12	15.58
Total	77	100

3. Audit reports provided by the internal audit division meet the expectations of the management

Rank	Frequency	Percent
Strongly disagree	2	2.60
Disagree	16	20.78
Neutral	31	40.26
Agree	25	32.47
Strongly agree	3	3.90

Total	77	100
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4. The work of internal audit division is timely and proactive in the conduct and reporting of issues to management

Rank	Frequency	Percent
Strongly disagree	1	1.33
Disagree	15	20.00
Neutral	32	42.67
Agree	19	25.33
Strongly agree	8	10.67
Total	77	100

5. Audit reports of the internal audit division are highly considered by the management for decision makings and internal controls

Rank	Frequency	Percent
Strongly disagree	7	9.09
Disagree	16	20.78
Neutral	31	40.26
Agree	21	27.27
Strongly agree	2	2.67
Total	77	100

6. The recommendations of the internal audit division provide practical, cost-benefit solutions for correcting problems

Rank	Frequency	Percent
Strongly disagree	0	0
Disagree	16	20.78
Neutral	26	33.77
Agree	22	28.57
Strongly agree	13	16.88
Total	77	100

7. The top management uses the results of internal audit engagements to update its enterprise wide risk registe

Rank	Frequency	Percent
Strongly disagree	5	6.49
Disagree	17	22.08
Neutral	40	51.95
Agree	13	16.88
Strongly agree	2	2.60
Total	77	100

B) Role of the internal audit division

Variable	Obs	Mean	SD	Min	Max
RIA	77	3.092352	.5588797	2	4.777778

8. The top management understands fully the mission of internal audit division so that it perceives internal auditors as active actors in the risk management of the company

Rank	Frequency	Percent
Strongly disagree	1	1.30
Disagree	19	24.68
Neutral	19	24.68
Agree	30	38.96
Strongly agree	8	10.39
Total	77	100

9. Internal audit division has not been involved in the setting of risk appetite for the company

Rank	Frequency	Percent
Strongly disagree	6	7.79
Disagree	21	27.27
Neutral	32	41.56
Agree	12	15.58
Strongly agree	6	7.79

Total	77	100
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10. Internal audit division has not participated in the risk management processes of the company

Rank	Frequency	Percent
Strongly disagree	5	6.49
Disagree	25	32.47
Neutral	28	36.36
Agree	10	12.99
Strongly agree	9	11.69
Total	77	100

11. Internal audit division provides consulting services to Board and the senior management to assist them in identifying, evaluating, and implementing risk management methodologies that address significant risks

Rank	Frequency	Percent
Strongly disagree	6	7.79
Disagree	14	18.18
Neutral	29	37.66
Agree	25	32.47
Strongly agree	3	3.90
Total	77	100

12. Internal audit division reviews the management of key risks

Rank	Frequency	Percent
Strongly disagree	6	7.79
Disagree	15	19.48
Neutral	24	31.17
Agree	27	35.06
Strongly agree	5	6.49
Total	77	100

13. Internal audit division evaluates the reporting of key risks

Rank	Frequency	Percent
Strongly disagree	1	1.30
Disagree	14	8.18
Neutral	32	41.56
Agree	25	32.47
Strongly agree	5	6.49
Total	77	100

14. Internal audit division examines the risk management processes of the company

Rank	Frequency	Percent
Strongly disagree	1	1.30
Disagree	12	15.58
Neutral	28	36.36
Agree	26	33.77
Strongly agree	10	12.99
Total	77	100

15. Internal audit division gives assurance that risks are correctly evaluated by the management

Rank	Frequency	Percent
Strongly disagree	6	7.79
Disagree	16	20.78
Neutral	32	41.56
Agree	18	23.38
Strongly agree	5	6.49
Total	77	100

16. Internal audit division gives assurance that Ethio telecom's systems of control are designed properly and operate effectively

Rank	Frequency	Percent
Strongly disagree	9	11.69
Disagree	21	27.27
Neutral	23	29.87
Agree	20	25.97
Strongly agree	4	5.19
Total	77	100

C) Risk maturity level of Ethio telecom

Variable	Obs	Mean	SD	Min	Max
RM	77	3.238817	.7104909	1.555556	5

17. There is an integrated company-wide risk management processes (enterprise risk management) that evaluate risks holistically

Rank	Frequency	Percent
Strongly disagree	2	2.60
Disagree	10	12.99
Neutral	30	38.96
Agree	24	31.17
Strongly agree	11	14.29
Total	77	100

18. There are formal strategies and policies developed by Ethio telecom on risk management.

Rank	Frequency	Percent
Strongly disagree	5	6.49
Disagree	18	23.38
Neutral	19	24.68
Agree	25	32.47
Strongly agree	10	12.99
Total	77	100

19. There is a risk appetite approved by Board or top management which is uniformly applied in the company

Rank	Frequency	Percent
Strongly disagree	6	7.79
Disagree	24	31.17
Neutral	28	36.36
Agree	15	19.48
Strongly agree	4	5.49
Total	77	100

20. There is an enterprise wide risk register which is periodically approved by Board or top management

Rank	Frequency	Percent
Strongly disagree	3	3.90
Disagree	17	22.08
Neutral	22	28.57
Agree	19	24.68
Strongly agree	16	20.78
Total	77	100

21. The enterprise wide risk register holds all major risks of the company

Rank	Frequency	Percent
Strongly disagree	6	7.89
Disagree	14	18.42
Neutral	27	35.53
Agree	20	26.32
Strongly agree	9	11.84
Total	77	100

22. The enterprise wide risk register is structured in such a manner that strategic and operational risks are separated

Rank	Frequency	Percent
Strongly disagree	2	2.60
Disagree	15	19.48
Neutral	30	38.96
Agree	20	25.97
Strongly agree	10	12.99
Total	77	100

23. The risk identification and risk treatment processes of the management are adequate and subject to regular review

Rank	Frequency	Percent
Strongly disagree	2	2.60
Disagree	17	22.08
Neutral	26	33.77
Agree	19	24.68
Strongly agree	13	16.88
Total	77	100

24. The risk assessment methodology includes quantitative analysis by using at minimum more than 'low', 'medium' and 'high' measures

Rank	Frequency	Percent
Strongly disagree	5	6.49
Disagree	10	12.99
Neutral	19	24.68
Agree	26	33.77
Strongly agree	17	22.08
Total	77	100

25. The internal audit division can rely on the outcome of the enterprise wide risk register

Rank	Frequency	Percent
Strongly disagree	5	6.58
Disagree	20	26.32
Neutral	27	35.53
Agree	16	21.05
Strongly agree	8	10.53
Total	77	100

D) RA and IT competency of internal auditors of Ethio telecom

Variable	Obs	Mean	SD	Min	Max
RTC	77	2.980519	.6605941	1.666667	4.5

26. Internal auditors have adequate experience and expertise to address risk management by evaluating the likelihood and the impacts of risks rigorously

Rank	Frequency	Percent
Strongly disagree	2	2.60
Disagree	17	22.08
Neutral	29	37.66
Agree	21	27.27
Strongly agree	8	10.39
Total	77	100

27. Internal auditors are proficient in techniques of risk analysis

Rank	Frequency	Percent
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Strongly disagree	9	11.69
Disagree	20	25.97
Neutral	25	32.47
Agree	20	25.97
Strongly agree	3	3.90
Total	77	100

28. Internal auditors possess the ability to relate the organization's risk appetite to the application of controls in operational areas

Rank	Frequency	Percent
Strongly disagree	1	1.30
Disagree	14	18.18
Neutral	33	42.86
Agree	24	31.17
Strongly agree	5	6.49
Total	77	100

29. Internal auditors have adequate knowledge and technical ability of data access and data security

Rank	Frequency	Percent
Strongly disagree	3	3.90
Disagree	13	16.88
Neutral	31	40.26
Agree	25	32.47
Strongly agree	5	6.49
Total	77	100

30. Internal auditors are capable to use audit software and computer aided tools

Rank	Frequency	Percent
Strongly disagree	14	18.18
Disagree	20	25.97
Neutral	31	40.26
Agree	8	10.39
Strongly agree	4	5.19
Total	77	100

31. Internal auditors have sufficient skills to manipulate data base software

Rank	Frequency	Percent
Strongly disagree	8	10.39
Disagree	19	24.68
Neutral	34	44.16
Agree	12	15.58
Strongly agree	4	5.19
Total	77	100

E) Risk based audit planning of IAD

Variable	Obs	Mean	SD	Min	Max
RBP	77	3.419295	.6176502	2.285714	4.857143

32. The audit universe (a list of all possible auditable areas) of internal audit division focus on identified crucial aspects and high-risk areas

Rank	Frequency	Percent
Strongly disagree	3	3.90
Disagree	13	16.88
Neutral	29	37.66
Agree	24	31.17
Strongly agree	8	10.39
Total	77	100

33. There is a strategic audit plan prepared by internal audit division which driven from the company's risk assessment performed on key.

Rank	Frequency	Percent
Strongly disagree	4	5.19
Disagree	9	16.88
Neutral	33	42.86
Agree	20	25.97
Strongly agree	11	14.29
Total	77	100

34. Internal audit division uses the company's approved enterprise risk register to prepare its annual audit plans

Rank	Frequency	Percent
Strongly disagree	0	0
Disagree	16	20.78
Neutral	25	32.47
Agree	22	28.57
Strongly agree	14	18.18
Total	77	100

35. Internal audit division performs risk assessment to determine audit engagement's planning

Rank	Frequency	Percent
Strongly disagree	6	7.79
Disagree	4	5.19
Neutral	19	24.68
Agree	36	46.75
Strongly agree	12	15.58
Total	77	100

36. The audit plans of internal audit division prepared at different levels align with the results of the risk management processes of the company

Rank	Frequency	Percent
Strongly disagree	2	2.60
Disagree	7	9.09
Neutral	32	41.56
Agree	24	31.17
Strongly agree	12	15.58
Total	77	100

of

37. The audit planning internal audit division takes into

account the risk management strategy of the company

Rank	Frequency	Percent
Strongly disagree	4	5.19
Disagree	15	19.48
Neutral	28	36.36
Agree	24	31.17
Strongly agree	6	7.79
Total	77	100

38. Senior

management input is considered in setting internal audit priorities

Rank	Frequency	Percent
Strongly disagree	0	0
Disagree	8	10.39
Neutral	27	35.06
Agree	24	31.17
Strongly agree	18	23.38
Total	77	100

F) Implementation of ERP in Ethio telecom

Variable	Obs	Mean	SD	Min	Max
ERP	77	3.177489	.5781965	2	5

39. Internal auditors understand sufficiently the internal workings of the ERP system adopted by Ethio telecom

Rank	Frequency	Percent
Strongly disagree	2	2.60
Disagree	24	31.17
Neutral	36	46.75
Agree	13	16.88
Strongly agree	2	2.60
Total	77	100

40. Internal auditors can perform auditing in the ERP system

Rank	Frequency	Percent
Strongly disagree	11	14.29
Disagree	19	24.68
Neutral	30	38.96
Agree	16	20.78
Strongly agree	1	1.30
Total	77	100

41. The ERP system reduces time of auditors spent in data retrieving

Rank	Frequency	Percent
Strongly disagree	2	2.60
Disagree	7	9.09
Neutral	26	33.77
Agree	31	40.26
Strongly agree	11	14.29
Total	77	100

42. The ERP system helps auditors to eliminate redundant data files

Rank	Frequency	Percent
Strongly disagree	0	0
Disagree	10	12.99
Neutral	25	32.47
Agree	27	35.06
Strongly agree	15	19.48
Total	77	100

43. Internal auditors assess risks that may adversely affect the ERP system environment

Rank	Frequency	Percent
Strongly disagree	0	0
Disagree	13	16.88
Neutral	44	57.14
Agree	16	20.78
Strongly agree	4	5.19
Total	77	100

44. Internal auditors spend more time in assessing control risk

Rank	Frequency	Percent
Strongly disagree	5	6.49
Disagree	10	12.99
Neutral	34	44.16
Agree	20	25.97
Strongly agree	8	10.39
Total	77	100