



**Addis Ababa University**

**College of Business and Economics**

**Department of Accounting and Finance**

**The Effect of Enterprise Resource Planning System Implementation on  
Internal Audit Effectiveness: The Case of Commercial Bank of Ethiopia**

By

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February 2019

Addis Ababa Ethiopia

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A thesis submitted to the Department of Accounting and Finance of Addis Ababa University in partial fulfillment of the requirements for the Degree of Masters in accounting and finance.

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Addis Ababa, Ethiopia

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**College of Business and Economics**  
**Department Of Accounting and Finance**

This is to certify that the thesis prepared by Ephrem Mengistu entitled “*The Effect of Enterprise Resource Planning System Implementation on Internal Audit Effectiveness: The Case of Commercial Bank of Ethiopia*”, which is submitted in partial fulfillment of the requirements for the Degree of Masters in Accounting and Finance, complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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## **Declaration**

I, the undersigned, declare that this thesis is my original work and has not been presented for a degree in any other university and that all sources of materials used for the thesis have been duly acknowledged.

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## **Acronyms**

CIAS - Competent Internal Auditor's Staff

CBE- Commercial Bank of Ethiopia

CE/OI - Control Environment/ Organizational Independence

CRAM – Cost Of Risk Assessment and Management

EIA - Effective Internal Auditing

ERP - Enterprise Resource Planning

IA - Internal Audit

IAF - Internal Audit Function

MPIA - Management Perception about Internal Auditing

RAM - Risk Assessment and Management

## **Acknowledgements**

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## **Abstract**

*Enterprise Resource Planning (ERP) systems appear to have significant effect on the auditing function, internal control procedures and auditors' role. The traditional Internal Auditing Function which looks only for errors is insufficient and challenged after ERP systems implementation. The main purpose of this study is to investigate the effect of ERP on internal auditing effectiveness in Commercial Bank of Ethiopia (CBE). In addition, the finding of this study is to show the direct effects of management support, organizational independence of internal auditors, adequate and competent internal auditor's staff and the internal auditors' role and responsibilities in assessing and managing risks and with the internal audit effectiveness in ERP environment. Explanatory research design was used for the study, with a quantitative study approach to analyze internal audit effectiveness in an institution that implements ERP. The target population was 112 Human resource Personnel out of which census was used to select as population size is 112. Data was collected by using questionnaire at office levels of the organization. The data collected was analyzed using statistical Package for Social Sciences SPSS 25. According to the regression output the management support, the existence of adequate and competent Internal Audit staff and the cost associated with risk assessment and management significantly and positively contributed for the internal audit effectiveness in CBE. The remaining two variable; risk assessment and manage for the Internal Audit value and the organizational independent of internal auditors were statistically not significance. All of these five independent variables are making 43 % of the contributions for internal audit effectiveness in CBE. The bank and other concerned institutions should understand that the contributions of these variables were collectively significant to identify any Internal Audit activities in their office and to add values for the Effective internal Audit in banking sector specifically in CBE.*

**Key Words:** *Effective Internal Audit; Enterprise Resource Planning; Commercial Bank of Ethiopia*

# **CHAPTER ONE: INTRODUCTION**

## **1.1. Background of the study**

The ERP systems are one of such technologies used by various organizations to achieve a strategic advantage in the competitive market. The ERP systems are computer-based systems designed to process an organization's transactions. It facilitates integrated and real-time planning, production, and customer response (Arens et al., 2006). The implementation of ERP systems requires organizational business process reengineering. This implies new ways for designing tasks, jobs, communications within the organization and leads to new work structures and procedures (Kallinikos, 2004).

ERP systems are cross-functional integrated systems consisting of software modules supporting operational activities such as accounting, control and human resources (Shehab et al., 2004). ERP systems are considered to be the most important and substantial Information Technology (IT) infrastructure that interacts with the accounting functions in the last 15 years (Kanellou and Spathis, 2013). The internal audit function (IAF) is one of the most interested functions in the IT infrastructure and its impact on the internal control system; therefore it has been affected by ERP systems implementation. An audit process refers to a well-defined methodology for organizing an audit to ensure that the evidence gathered is both sufficient and competent and that all appropriate audit objectives are both specified and met (Bae and Ashcroft, 2004).

ERP systems create new opportunities as well as new challenges to the overall focus of the internal audit function (Saharia et al., 2008). Also Madani (2009) stated that ERP systems while providing influential technologies that are capable of integrating, analyzing and reporting information from all of the company's functions (technical, operational, and financial), they expose user organizations to various kinds of risks and possible in also be directed to identify these new risks of pressure and how countering these risks and threats has impacted tactically on the role and functions of internal audits (IAs) in ERP system based organizations.

From an auditing perspective, ERP systems created new opportunities as well as new challenges. On one hand, the use of the system increases transparency in business processes and, it eliminates the need for controls assuring data consistency and accuracy when data move from one system to the next. With a single data entry point, need for entering the data associated with a transaction separately into different applications is eliminated; and therefore the controls to enforce data validity, data accuracy, and data privacy constraints need to be implemented only once. As the system resides in one centrally controlled database, the risk of privacy violation can be identified more easily and the steps necessary to satisfy privacy constraints can be implemented more readily. Integrated systems provide for improved audit planning and execution. If a new government regulation requires the organization to institute a new internal control, it has to be incorporated only once into an integrated system (Musaji, 2002).

On the other hand, the complexity of an ERP system creates additional risks during both the implementation and the operational stages (Bierstaker et al., 2001). During the implementation, the organization faces risks 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 (Saharia et al., 2008). Integrated systems also complicate audit planning as the auditor must gather evidence encompassing the entire system in an integrated manner (Aloini, Dulmin, & Mininno, 2007).

This means that internal audit functions and its processes are affected by diverse aspects of behavior and institutional environments (Flint, 1988). In order to understand the reasons for internal audit functions practiced, it is necessary to adopt a theoretical framework that views institutional phenomena as its domain (Ball, 1989 cited in Seal, 1993). Given the basic belief of institutional theory that the institutional environment is socially constructed, institutional theory is considered as the most appropriate theory to evaluate and to understand the practice of internal audit functions in State Owned Enterprises in Ethiopia.

From the few organizations in Ethiopia that adopted ERP systems, the Commercial Bank of Ethiopia (CBE) and Ethio telecom (ET) have implemented the ORACLE ERP system (Foziya, 2017). Both state owned organizations play significant roles in the development of the country in terms of economically and technologically. The history of the Commercial Bank of Ethiopia (CBE) dates back to the establishment of the State Bank of Ethiopia in 1942. CBE was legally established as a

share company in 1963. In 1974, it was merged with the privately owned Addis Ababa Bank (CBE, 2017). Since then, it has been playing significance roles in the development of the country both economically and technologically. The bank is a pioneer to introduce modern banking to the country like Western Union Money Transfer Services and currently working with other 20 money transfer agents like Money Gram, Atlantic International (Bole), Xpress Money. It has more than 1560 branches stretched across the country and four branches in South Sudan. It is the leading African bank with assets of 384.6 billion Birr as of June 30 2016 and had about 10.6 million account holders (CBE, 2017).

While there have been many studies of the risks in ERP system implementations, there is not much research on the impact ERP systems have on internal auditors' abilities to manage risks. The objective of this paper is study about how ERP systems have affected the effectiveness of audit process in an ERP system organization. The emphasis is to understand how ERP system affects the internal control system of the organization.

## **1.2. Statement of the problem**

ERP systems have significantly changed methods of business data collection, storage, dissemination and use. ERP systems are complex and require significant effort in implementing and specialized skills in customize in maintain the systems. ERP systems adoption thus leads to new risks (Aditya S et al., 2008).

ERP systems appear to have significant effect on the auditing function, internal control procedures and auditors' role (Kanellou et al., 2011).ERP systems could act as a catalyst for internal audit function (IAF) adaptation through affecting the internal control system within organizations. While the internal control objectives remain the same, the mechanisms of control are changed by implementing ERP systems. The traditional IAF, which looks only for errors, is insufficient after ERP systems implementation (Kanellou and Spathis, 2011; Madani, 2009). The traditional boundaries of internal auditing are challenged as ERP systems complicate the IAF (Saharia et al., 2008).

Saharia, Koch, and Tucker (2008) find in their study that the ERP system has created new opportunities and challenges for internal auditors for managing internal & external risks. They concluded that internal auditors did not play a more important role in implementation, particularly in defining internal control. Haider (2009) develops a theoretical framework in his study to examine the role of internal auditors in enterprise resource planning (ERP) based organizations. He concluded that the ERP system present new challenges to the internal audit function. Nwankpaand Datta, (2012) found out in his article that ERP system have affected the audit process in an organization. The result indicated that auditors spent more time on control testing after ERP system implementation. In his opinion, auditors need to be more knowledgeable to achieve more utilization of ERP functions in auditing. Researchers observed notable changes in audit functions and identified that the ERP system implementation showed a resultant increase in audit function usage. As a result, there is need to further study ERP system impact on audit process for proper understanding.

Institutional theory (DiMaggio and Powell, 1991) suggests several routes by which institutional change leads to shifts in organizational structure. Once in place, the new institution, such as ERP systems, can change work roles and activities, which require substantial modifications of the function's existing technological base (Barley, 1990). In addition, institutional theory offers theoretical perspectives to analyze goals, values and prescriptions that legitimate behaviors of groups (Powell and DiMaggio, 1991) such as internal auditors. New technologies first alter tasks and skills then these changes generate opportunities and pressures for changing organizational structure (Barley, 1990). The paper argues that ERP systems have embedded institutional logics which are significant catalysts for the evolution of the internal audit function.

Nevertheless, in Ethiopia the focus of the relevant literature has been on ERP systems implementation in general; there is limited published scientific evidence on the implementation of ERP system and its effects on accounting or auditing in particular .For instance: Following the start of ERP system implementation in Ethiopia few researches have been conducted in the country which mainly focused on its implementation process. Abiot and Jorge (2012) have made an assessment on MS-Dynamics ERP system implementation in Mesfin Industrial Engineering. Derese (2013) has conducted a study on Oracle ERP system implementation at Ethio-Telecom, Sintayehu (2014) reviewed success factors for implementation of Enterprise Resource Planning

system at Ethiopian Airlines and also Kibebework (2015) has conducted research on the challenges and current status of ERP system implementation at Mughher and Derba Cement industries. Foziya (2017) has conducted a study on oracle ERP system at commercial bank of Ethiopia. Most organizations in Ethiopia implemented the SAP ERP system while Ethio-telecom and CBE has implemented the ORACLE ERP system.

Now a days, Financial and operational transactions are increasing in volume and it increases complexity every day. In today's business environment, auditors should have knowledge of both accounting and technology. The technical complexity of ERP system has forced auditors to increase their knowledge of information technology. 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. At the same time, auditors must ensure that the system is automating the process correctly (Brazel et al., 2005).

Therefore, this study examine the effect of this modern computerized system on internal auditing function process in an organization particularly internal auditors 'role and responsibilities in assessing and managing risks the case of CBE which implemented ORACLE ERP module.

### **1.3. Research questions**

By doing so this study guided by the following research questions:

1. Is the internal auditor's effectiveness affected by top management perception after the ERP system implementation?
2. Does ERP environment influence on independency of organization with internal audit?
3. Does ERP system implementation influence on internal auditors' ability to asses internal control risks?
4. Does ERP system implementation affect on costs associated with identification and managing risk?
5. How does a competent internal auditor staff impact on IA effectiveness in an ERP environment?

## **1.4. Objectives of the study**

### **1.4.1. General objective**

The general objective of this study is examining the effect of ERP system on internal auditing effectiveness in commercial bank of Ethiopia.

### **1.4.2. Specific objectives**

1. To examine the internal auditor's effectiveness affected by top management perception after the ERP system implementation.
2. To examine ERP environment influence on independency of organization with internal audit.
3. To examine the effect of ERP system implementation on internal auditors' ability to asses' internal control risk in most risk categories.
4. To determine ERP system implementation effect on costs associated with identification and managing risk.
5. To examine the contributions competent internal auditors staff for IA effectiveness in an ERP environment.

## **1.5. Significance of the study**

Unlike previous studies that have investigated the ERP implementation in different environments, this study investigates the relationship between ERP and Internal Audit effectiveness (IAE) particularly risk assessment in the Ethiopian business environment. Thus, the significance of this study comes out from its attempts to raise the awareness among the management and the internal auditors regarding the effect of the ERP system on the quality of the internal auditing function or role in the Ethiopian context particularly commercial banks of Ethiopia.

Prior studies tend to agree about the need for IAF change after ERP systems implementation; however no sufficient evidence has been revealed about the nature and direction of the required adaptation in the practice and the structure of the IAF. This study is expected to fill a gap that exists in prior research related to institutional theory (governance), ERP systems and the IAF. It makes a significant contribution to the academic accounting literature as it addresses a topic that is timely and of interest not only to academics, but also to the audit practice community. It is a topic that has generated considerable discussion in both environments, as organizations spend major portions of their budgets on ERP systems and want to improve their governance process.

This study contributes to the knowledge of the relationship between ERP system and internal auditing, which will be of value to any organization considering ERP systems implementation and needing to know what are the proper internal audit practice and structure.

Moreover, educational institutions will be interested in the results of this study as it will investigate the qualities which are required in the internal auditors in the ERP-based organizations.

Regulators who issue the standards followed by internal auditors will benefit as well. Practitioners also need to know the kind of training, skills and knowledge they require before working in ERP-based organizations. Furthermore, the results of this study will provide stimulus for consequent research in the field in order to further examine and account for the internal auditing benefits that can occur from ERP systems implementation as well as the effect of these benefits on the governance process.

## **1.6. Scope and limitation of the study**

The scope of this research is restricted to the study of one particular mechanism of corporate governance (the IAF role of risk assessment) and one particular information system (the ERP system) in particularly CBE which implemented ORACLE ERP module.

This study focus on IA Effectiveness on ERP environment and their relationship, which will be of value to any organization considering ERP systems implementation and needing to know what

are the proper internal audit practice and structure. Due to the nature of the research questions the study will employ both descriptive and explanatory research design with the help of quantitative questionnaire survey and descriptive and inferential analysis.

The study has some limitations. The first is the purposively selected sample size considered in this study. The sample size is limited but taking more may give deep understanding of the concepts on the system. Nevertheless, this research is still valid having analyzed the available sample size with the questionnaire. Secondly, the time required to complete the research was very small and this had an influence on the researchers' decision to pick a single organization.

## **1.7. Organization of the Study**

The first chapter discusses the background of the problem, specify the research question, provide the study objective, its significance and scope with the thesis structure.

Chapter 2: provide a critical review of the relevant accounting, auditing and ERP literature and discusses institutional theory. It evaluates previous studies that have focused on the intersection between the fields of accounting and information systems and develops a theoretical framework. It concludes by identifying gaps in the literature that are addressed by the study which lead to presents the conceptual framework and discusses its main concepts, factors and sub-factors. The evolution of the framework is described to show its theoretical roots. The framework was based on the findings from the literature.

The methodology is discussed in Chapter 3: It identified the research paradigm and links it with the research design. It also explains and justifies the research methods used to select the cases and to collect and analyses the data.

Chapter 4: presents the findings from the analysis of the study, and provides a discussion of the findings from the analysis and highlights the lessons that emerged from the main findings of the study.

Chapter 5: draws conclusions and discusses the theoretical, practical and methodological contributions of the study. It ends with a discussion of the limitations of the research and identifies areas for further study.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1. Introduction**

In this chapter, relevant and existing literature has been reviewed to establish whether previous research of this kind has been carried out. Although, a study of the risk in implementing ERP in an organization has been carried out, there is inadequate research information on ERP implementation have on internal auditors' capacity to manage risks (Saharia et al., 2008). Literature review was conducted on internal auditing functions and ERP systems so as to understand the phenomenon under study.

### **2.2. Theoretical and conceptual review**

#### **2.2.1. Internal Audit Function**

Internal auditing is an independent, objective assurance and consulting activity designed to add value and improve an organization's operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control and governance processes (Coetzee et al., 2012). Shamsuddin&Johari (2014) extracting from the study of Ali et al.(2012) and Arel (2006) point out that the internal audit function exists to assist members of an organization to advance the performance of their activities, they further explain that the internal audit function has become more important due to the fact that an effective internal audit function is considered as a method used to solve the problem of system breakdown that is used for business reporting, internal control and ethical behavior.

Shamsuddin&Johari (2014) remarks that the major role and responsibility of an internal audit function is to assess and deliver reasonable assurance that control, risk management and governance systems are operational as planned and will assist the organization in achieving their

set objectives and goals. The internal audit function also involves reporting risk management issues and internal control shortages that have been identified directly to the audit committee as well as provide recommendations which will improve the organization's operations, to achieve both efficient and effective performance, and maintain an open communication line with management and the audit committee.

According to Coetzee, du Bruyn, Fourie & Plant (2012) with the development of computerized systems, there have been swift changes in the method and speed with which transactions are captured and processed. With the use of electronics in processing transactions, it is complicated for the auditors to observe the audit trail as the audit trail no longer exist however; most transactions are executed without any human intervention.

Shamsuddin & Johari (2014) study on internal controls explains that the typical focus of internal auditing is on good internal control and compliance towards policies and rules to certify that the organization is operated in effective manner and therefore able to achieve its objectives. Drawing from the knowledge of Ali et al (2012), Shamsuddin & Johari (2014) additionally explain that the theoretical aspect of the internal audit function exists to assist members of an organization to improve the performance of their activities. Drawing from (committee of sponsoring organizations) COSO's 2013 framework, McNally (2013) argues that major theories concerning internal control are timeless. He further argued that the organization's board of directors, management, and other personnel could also affect the internal control process. The internal control process is developed to assist in ensuring the reassurance regarding achieving set goals, which relates to the organizations operating process, production of reports, and complying with laws and regulations is provided.

Shamsuddin & Johari (2014) emphasize that internal control system consist of policies and procedures, which are developed by management to manage risk and provide reasonable assurance that the organization's objective, would be achieved. Arens et.al (2008) cited in Shamsuddin & Johari (2014) contend that the objectives of the internal control system are to ensure that the financial report produced for the year is reliable, all operations are functioning efficiently and effectively as well as compliance with law and regulations. Internal control system comprises of five important features, which include: control environment, risk assessment, control activities, information and communication and monitoring.

According to Njeri, (2014) control environment is the basis for all the other constituents of internal control. Control environment involves ethical values and integrity of management responsible for creating, administering and monitoring the controls, management and employee commitment and competence in performing duties assigned, audit committees, management philosophy and operational technique as well as organizational structure. Njeri (2014) further explains risk as the process of carefully assessing factors that could possibly affect the achievement of the organization's objectives by systematically analyzing and identifying risks that are applicable to the organization and associated with achieving the objectives of the organization are properly carried out.

Policies and procedural guidelines should be properly and accurately documented to help determine how the control activities are to be executed, while monitoring of controls process is overseeing that internal controls are structured to be effective and efficient. This helps also to determine the functional productivity of the system over time. Millichamp (1999) study on internal control systems, as further explained by Njeri, (2014) for smooth running and controlling of a business, operational and financial reports are essential. Therefore, the adoption of internal control and information system is crucial for firms that produce such reports. The availability of a functional communication system need be present, with open communication channels for easy flow of information throughout the organization.

### **2.2.2. Independence and objectivity in internal audit**

Independence and objectivity is defined by Mutchle (2003),stated that it is objectivity relates to the quality of the assessments, judgments, and decisions that are activities of any assurance or consulting service, and freedom relates to the state of the set in which the assurance or consulting service takes place.

While of Zhang et al (2006) Audit committee quality, auditor independence, and disclosure of internal control weakness after the performance of the sample of firms with internal control, Falsifications and in appropriately preservation of accounting records were among the troubles, also growth in the level of transactions contributes towards the needs of an internal auditing. The managerial setting in which internal audit operates the organizational status of the office, its

internal organization and the policies and procedures applying to each audited facilitate smooth audits that lead to reaching useful audit findings (Dessalegn et al., 2010).

Barry et al(2006) Stated of that Internal auditors are uncertain as to how to balance independence in both roles The increasing use of international accounting firms in consulting and assurance engagements over shadowed the internal audit task.

As the clients' control risk increases, auditors are likely to respond in the order of audit fee adjustments, modified opinions, and auditor resignations. Further create an index based on the severity of auditors' responses, and find that the degree of control risk is positively correlated with this auditor response index. Comprehensive evidence suggests that auditors use an array of ordered strategies to manage client-related control risk (Zhang et al., 2008).

### **2.2.3. Internal audit function and its roles**

Prior research (e.g. Carcello et al., 2005; Castanheira et al., 2010) into the roles of the IAF has been mainly facilitated through surveys of chief audit executives (CAEs). These studies indicate that “the nature of internal audit activity today typically includes risk assessment, control assurance, and compliance work, all of which map directly into corporate governance” (Gramling et al., 2004, p. 196). Other areas include consulting to management, and the performance of quality, health, safety and environmental audits.

#### **2.2.3.1. Risk Assessment**

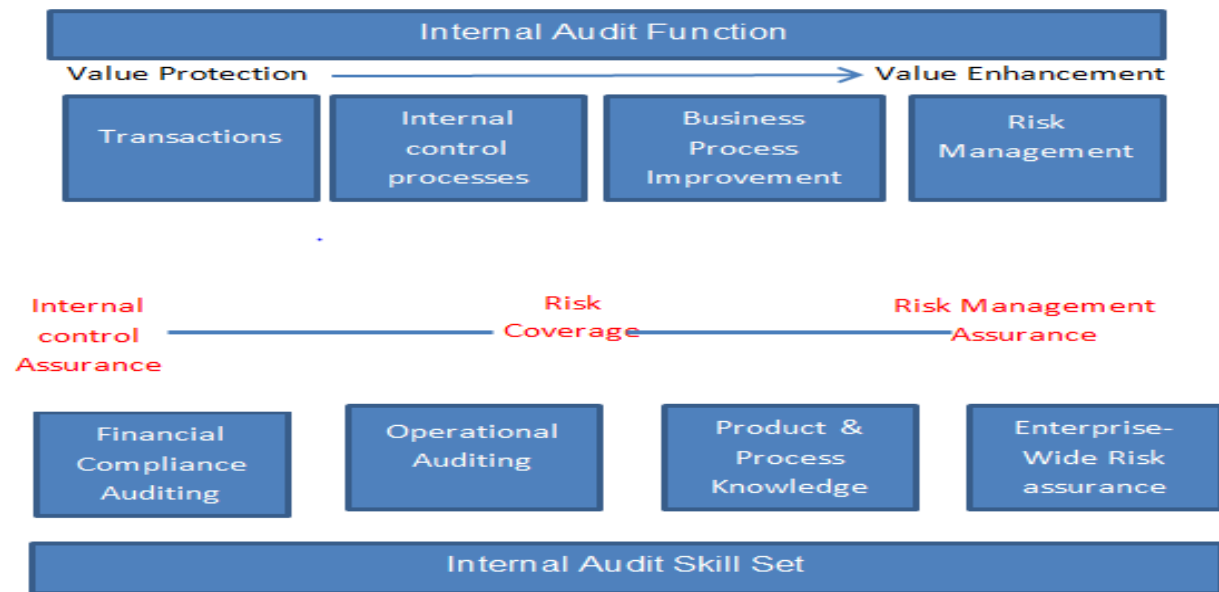
A risk according to Miles &Jazaie (2011) is the likelihood of an event occurring which will affect or could interrupt the organisation from achieving their objectives. Vacca (2017) drawing from The Committee of Sponsoring Organizations of the Treadway Commission (COSO) define “risk” as any event that can keep an organization from achieving its objectives using the COSO model as a guideline, Vacca (2017) notes that there are four major areas in which risk is viewed. These areas include: operational risk which involves processes and procedures; financial risk; data developing into internal/external statements; regulatory risk which is centered on federal, state, local, organizational policy, and reputation (institutional).

Price Water House Coopers (2003) argue that it is important for internal audit to develop a systematic and efficient means to analyse risk. By performing risk assessment, the auditor is granted the opportunity to evaluate the influence of prospective events on achieving business objectives. The process of risk assessment starts with identifying the audit environment. Understanding the organization's business model and key business objectives is essential. In order to understand the organization's business model, the auditor will have to communicate with stakeholders and their understanding of the audit environment, key business objectives and risks inherent in the achievement of those objectives. Nair, Purohit and Choudhary (2014) contend the risk identification has a role to play in the success of risk management.

Management should identify organizations inherent risks, which are risks that exist in an environment without the benefit of internal controls, and residual risks, which are risks that exist after putting into consideration the controls which management has implemented to mitigate or transfer the risk. Asemit (2014) explain that the occurrence and impact of disruptions (internal or external) to business activities due to risk events differ significantly across various firms depending on the nature of activities and the complexity or simplicity of internal risk measurement standards and control mechanisms.

According to Daujotaite (2013) the risk-assessment based approach has increasingly become an important aspect for carrying out the supervision of institutional performance as well as their valuation and audit. Further affirms that the role that audit and auditors play is essential in the life of the society, the process of performing statutory audit is essentially perceived as performing the functions of a supervisory authority (ibid). Drawing from the green paper Audit policy of the European Commission (2010), Daujotaite(2013) emphasizes that a key contributor to financial stability should be performing an audit, alongside supervision and corporate governance, this system helps provide assurance on the accuracy and reliability of the financial health of the organisation. The risk of misstatement should be reduced by this assurance, reducing the costs of failure, which would otherwise affect the organization's stakeholders, as well as by the broader society.

**Figure 2.1: The Internal Audit Function**



Source: Price Water House Coopers (2013)

#### **2.2.4. Independence and objectivity in internal audit**

Independence and objectivity is defined by Mutchle (2003) stated that it is objectivity relates to the quality of the assessments, judgments, and decisions that are activities of any assurance or consulting service, and freedom relates to the state of the set in which the assurance or consulting service takes place.

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As the clients' control risk increases, auditors are likely to respond in the order of audit fee adjustments, modified opinions, and auditor resignations. Further create an index based on the severity of auditors' responses, and find that the degree of control risk is positively correlated with this auditor response index. Comprehensive evidence suggests that auditors use an array of ordered strategies to manage client-related control risk (Zhang et al., 2008).

## **2.3. Enterprise Resources Planning System**

According to Madani (2009) provided that enterprise resource planning ERP system refers to a set of business application software modules that integrates all organizational functions, as well as human resources, finance, manufacturing, sales, and distribution. Examples of major ERP system software vendors are Oracle and SAP.

The performance of an ERP system brings about new changes to the organization and its information systems (ISs) as ERP system makes all business information able to be seen and financial information available not only to accountants, these challenges for decision-making coverage and manage (Kallunki et al., 2011).

Most of the previous research that has been conducted on Organizations have encounter rapid changes in economic complexity, expanded Regulatory, requirements and technological progression in recent years these Changes have given the internal audit function (IAF) a set of comprehensive opportunity to support executive, provide services to other administrative functions, and generate direct exposure links to the audit team. These opportunities have also presented challenge to internal auditors who seek a vision of the future from the association of Internal Auditors (The IIA) (Hass et al., 2006).

### **2.3.1. Benefits of ERP system**

A number of research studies have recognized various important benefits the ERP systems bring to organizations. Derese (2013) stated that an ERP system integrates the greater part of the business processes and allows access to the data in real time. Furthermore, ERP system improves the presentation level of a supply chain by helping to decrease cycle times (Chien et al., 2007). At hand are also some intangible benefits that an organization may enjoy by implementing an

ERP system including, better customer satisfaction, improved vendor performance, increased flexibility, reduced quality costs, improved resource utility, enhanced information accuracy and better decision-making ability (Sutton, 2010).

### **2.3.2. ERP system Security Management**

Appropriate ERP system security management depends on the organizational operating model. Within a centralized command structure ERP system security policies and procedures are easier to apply across the whole organization, while a Decentralized structure will require a different approach. No matter the operating model, ERP system security risk desire and risk acceptance levels also play a role, as well as technical differences between the different ERP system environments and their workings (Sutton, 2010).

### **2.3.3. ERP system Standards, Policies, and Procedures**

From a strategic perception, the internal auditor should consider how tools such as ERP system standards and policies and security baselines are used, which are usually managed and approved by non-ERP system managers equivalent that are responsible for their implementation. Nowadays, organizational ERP system plans, strategies, policies, and architectures should be considered or approved by the Manager or equivalent, which should have final duty for these managerial tools (Elbardan, 2017).

### **2.3.4. ERP system and financial performance**

According to Bruce (2008), Internal Audit is a self-motivated integral process that is continually adapting to the changes a business is facing. Management and personnel at all levels have to be involved in this process to address risks and to provide reasonable assurance of the realization of the entity's mission and general objectives. As Barry (2006) argue Internal audit as the plan of organization and all the methods and procedures adopted by the management of an entity to assist in achieving management objectives of ensuring as far as practicable, the orderly and efficient conduct of its business, including adherence to management policies, the safeguarding of assets, prevention and detection of fraud and error, the accuracy and completeness of accounting records and the timely preparation of reliable financial information. Effectiveness of

internal control on financial performance should be considered most important in every organization, because the task of internal control is to prevent and detect fraud in the organization (Elbardan, 2017).

For this purpose organizations give much important to the internal audit which is generally a feature of large companies. It is a function provided either by employees of the entity or sourced from an external organization to assist management in achieving corporate objectives (Krishna Moorthy, 2008).

## **2.4. Implications of Internal Auditing For ERP System**

The major implications of internal auditing for ERP system as Hall et al (2011) Summarized Accurately measuring and then delivering business value from ERP system investments requires a more expansive effort to quantify the full cost, benefits, and risk of ERP system enabled business change based on

- I. Supervision
- II. Segregation of duties
- III. Transaction authorization
- IV. Independent verification
- V. Accounting records
- VI. Access control

Madani (2009)Explored determinants to enable executives, evaluate and make fact-based decisions about ERP system enable company funds, business case needs to provide accurate and detailed information about the following:

- a) **Appropriateness analysis in ERP system:** when evaluating possible funds on implemented ERP system environments as of Appropriateness ensure that the planned asset of it supports at least one strategic business objective and is also aligned with the enterprise structural design and technology standards, guaranteeing the optimum use of resources. Investments that support more than one business objective are even more valuable (Kanellou e t al., 2011).
- b) **Efficiency analysis in ERP system:** Standard Efficiency analysis tools are used to review the overall benefits and costs of implemented ERP system environments, including discounted cash flows expected required rate of return, net present value

(NPV), and payback period. This analysis should include both best- and worst-case scenarios based on assessed risks. Furthermore, you must calculate the full life cycle costs and benefits, including the development, implementation, ongoing operations, and retirement stages of the investment (Laura, 2011).

- c) **Effectiveness analysis in ERP system:** Many funds not only deliver real benefits of implemented ERP environments but they also often produce in substantial effectiveness as well. This in substantial effectiveness can sometimes be consequential and should not be ignored; they can include improved responsiveness or agility or better relationships with customers. These nonfinancial benefits need to be connected to business outcomes so that their value can be recognized and measured (Zhao et al, 2004).
- d) **Risk assessment in ERP system:** There are multiple dimensions to risk that require careful analysis of implemented ERP system environment. Even though two proposed investments may have the same financial return and the same contribution to alignment, they may have very different risk profiles. Madani 2009 have conducted a study that analyzes determinants Two major categories of risk: delivery risk the risk of not delivering the required ERP system enabled business capability and benefits risk the risk of not obtaining the expected benefits and need to identify risk drivers and assess their potential impact before factoring them into the business case. The greater the supposed risk is, the better the range between best- and worst case outcomes (Hogan et al, 2008).
- e) **Optimization:** once the strategic Appropriateness, Effectiveness analysis, Efficiency analysis, and risks have been quantified, a risk and return profile of implemented ERP system environments for each proposed investment can be developed. Fact-based decisions about which alternatives to approve and fund can now be made by a steering committee. Furthermore, this same information can be used to sequence the investments based on resource availability (Nafeeseh et al., 2011).

While ERP system supports the financial and human capital control areas, it plays a much more significant role with respect to organizational information. The information and technological components of an organization are among its most important assets. A lack of appropriate domination over information stored, processed, or produced by ERP systems can have a significant negative impact on an organization, ranging from fines and penalties to damaged reputation that can take time, energy, and money to rebuild. In many organizations, between

senior management and IT due to the view that IT exists solely to deliver day-to-day IT services (Zhao et al, 2004).

#### **2.4.1. Internal audit function in ERP system**

Internal audit are established to achieve management objectives and to maintain effective control over activities and operations. An ERP system solution drives the business strategically and presents changes to the audit situation Haislip, et. al. (2016).It replaces the huge number of databases in a company with one powerful system capable of integrating, analyzing, and reporting on information from all of the company's business functions.

He'roux et al (2013) An ERP system solution brings about changes in the business processes, changes in hardware engineering, and changes in the ERP system software version, which affect the internal audit function. This paper presents a framework for the new role of internal audit in ERP system solutions the ongoing development and implementation of automation in auditing will likely lead to major transformation of internal audit. This transformation will involve the structure of the departments, the skill sets of internal auditors, and the role that the internal audit division play in the organization, particularly with respect to their contact with the other units involved in the decision-making control over the activity (Sutton, 2010).

The dimension of internal financial reporting assurance expected of internal auditors and audit committees with the evident lack of a prepared approach to the body of knowledge, a clearly defined role, and an obvious lack of status in pinned by a thorough generally accepted professional internal audit has suffered from lack(Barry et al, 2006).

Krishna moorthy, (2008) as a result, the internal audit function has the potential to be one of the most influential and value-adding services available to a company's senior management and board of directors. Furthermore, with the growing focus on corporate control issues, organizations are increasingly exploring the potential benefits to be gained from establishing an effective and efficient internal audit function of ERP system.

Business boards must identify the opportunities, risks, and exposures that can establish success or failure. The business of an internal audit function can become an integral part of overall strategy, and assist in achieving corporate objectives Dominic et al (2011).

Kallunk (2011) stated that of The Internal audit function (IAF) thus, seems to have a fundamental role in supervision ERP system risks and controls and a supporting position with respect to various ERP system structures.

IAF involvements in ERP system control processes is largely thorough on risk assessment and evaluation of IT controls, including information truth and ERP system security. IAF contribution in ERP system relational capabilities is, for the most part, related to mechanisms used to share learning such as relaxed thought, teamwork, consultation, and cross training between business and ERP system.

Although IAF involvement in ERP system processes the level of internal audit is incomplete to normal activities. Extend the scope of services by widen the range of systems and activities audited, with suitable risk analysis, would improve audit efficiency (Dessalegn et al, 2007).

Barry et al (2006) argue that internal audit has been strongly supported by organization, conclusive agreement as to the role of internal audit has not yet emerged. The lack of apparent status and lack of harmony of the role has been further complex by the perceived lack of strong skilled leadership.

Alles et al have concerned of that (2009) Audit computerization will allow internal auditors to get high quality audit evidence about the business of the enterprise on a continuous basis; it should make it possible for external auditors to rely more on their work.

Such dependence, of course, will have to be accompanied by the appropriate arrangements to assure the external auditors about the quality of work the programmed auditing systems are providing. It is likely that it will also result in important changes in the nature of audit procedures performed by the external auditor, and these changes in turn may lead to structural changes in audit schedule, and may, with time, reshape the external audit as we know it today.

#### **2.4.2. Internal audit Functions effectiveness using ERP system**

As of Dessalegn et al, (2011), internal audit effectiveness, the extent to which an internal audit office meets its raise on, is possibly a result of the put in the ground play among four factors: internal audit quality; management support; organizational setting; and attributes of the audited.

An internal audit function's ability to provide useful audit findings and recommendations would help raise management's interest support with resources and commitment to implement the internal audit recommendation. Additionally according to Mutchle (2003) Independence is a desired characteristic of the environment in which the assurance services are performed by the individual or team; i.e., it is desirable for the individual or team to be without charge from material conflict of interest that pressure objectivity. Conflicts of interest can arise from the individual's personal environment or from the general environment in which the activity takes place.

Organization nowadays is always in search for ways to achieve better business act and sustain competitive advantages through effective employment of resources and business processes Sintayehu (2014). To improve business performance, organizations require an efficient planning and control system that synchronizes planning of all processes across the organization internal auditors are doubtful as to how to balance independence in both roles. The increasing use of international accounting firms in consulting and assurance engagements over-shadowed the internal audit function (Barry et al, 2006).

Several studies have examined IAF characteristics (Paape et al., 2003; Leung et al., 2004; Arena and Azzone, 2007). A number of these studies have related IAF characteristics to the effectiveness of its function. For example, in assessing the IAF's contributions to financial reporting quality, chief audit executives (CAEs') evaluations are found to be positively related to the resources available to the IAF, including its size, and the level of expertise within the function (Mat Zain et al., 2006). The status and position of the function and of the CAE have also been found to be positively related to CAEs' self-evaluations of their performance (Leung et al., 2004).

In investigating the effectiveness of in-house vs. outsourced functions, Coram et al. (2008) found that having a full or partial in-house IAF increases the likelihood of detecting and self-reporting fraud.

## **2.5. Empirical Review of related works**

The study made by Jain and Soral, (2011) attempted to examine the extent of impact of this modern computerized ERP system on Auditing in an organization. It also tries to understand how ERP system affects the internal control system of the organization. The result has revealed that auditors can do effective, efficient & fast auditing by using new auditing tools & procedures instead of the traditional procedures. The overall objective and scope of an audit doesn't change in ERP environment. Thus, result of the research suggests that the use of the new technologies will raise the quality of auditing and internal control system in the organizations. There is vast scope in research conducted about the ERP impact in auditing process and internal control in future. Overall findings of the research have suggested that the nature and the complexity of the ERP system increase the system risks. Auditors should give more attention to the risks involved with an ERP system. This paper also suggests that Auditors must also understand the ERP system extremely well to perform a proper audit of a client that uses this system.

According to Wines, (2012) independence has no single meaning and interpretation across the people; hence the concept is subject to ambiguity and uncertainty. However, for the purpose of the case study independent refers to the concept of being free from any management influence while internal auditors perform audit activities and issue audit report (Ahmad & Taylor, 2009; Belay, 2007; MoFED, 2004). Independence is fundamental to the reliability of auditor's reports. Those reports would not be credible, and investors and creditors would have little confidence in them, if auditors were not independent both in fact and appearance. The assurance services provided by auditors derive their value and credibility from the fundamental assumptions of independence of mind and independence in appearance (Wines, 2012; Stewart and Subramanian, 2010).

Bosire et al (2017) argue that the internal audit activity assess whether the authority of the organization supports the organization' strategies and objectives. One of the necessary fundamentals in determining the effectiveness of internal audit claimed of that, the major factors that led the appearance of internal auditing was the extended cross of control faced by organization in business activities. Auditors respond to the higher levels of control risk skilled by firms then disclosing internal control deficit. To the extent that audit results suggest that auditors

are increasing their audit effort where appropriate to maintain an acceptable overall level of audit risk, consistent with the audit risk model (Wilkins et al, 2008). With several measures of clients' control risk based on their current community internal control the study show auditors manage their client related risk find that there exists a pecking order among auditors' strategies to manage control risk resulting from internal control weaknesses (Zhang et al, 2008).

According to Madani, (2009) Internal controls are established to help achieve management objectives and to maintain effective control over organizational behavior and operation. This new expertise can be obtained through courses, on-the-job training, and attachment in the data-processing department. New technical knowledge and practical experience are essential, since the audit activities for ERP will no longer be at the end of each financial cycle, but in "real" instance Vice versa, technical staff also should be encouraged to acquire knowledge of auditing on accounting.

The study of Dessalegn et al (2011) has shown that internal audit of the organization on purpose needs add to in the areas of audit planning, records of audit work, audit connections and go behind-up of recommendation. Audit efficiency could be improved by ensuring stability in document audit work to enable improved review of audit work proper way of the position of audit findings and recommendation.

Haislip et al (2016) have concerned with the analysis of the main determinants of the goal of good ERP system control is to ensure that organizations maximize the business value of their ERP system investments; however, this is getting more and more difficult. Much of the easy, low-hanging-fruit ERP system funds have been implemented. Maximize business value from ERP system investments today often requires changes to existing business processes or the development of entirely new business processes that are harmonized with information technology.

Several research studies have identified various important benefits the ERP systems bring to organizations Madani indicate that (2009), Even though many empirical studies were conducted globally to identify the factors that determine Enhancing the Relationship between the Organization and ERP system control structures and processes provide mechanisms to link the use of ERP system to the overall strategies and goals of the organization. The relationship between the organization and ERP system helps ensure limited resources are focused on doing the right things at the right time. Communication between ERP and the organization should be

free flowing and informative, providing insight into what ERP system is delivering to assist in the achievement of organization goals, and the status of those efforts internal audit should review.

Bosire et al., (2017), For the internal auditor to assist an organization with the arrangement between the organization and ERP system and strengthen ERP system control, begin the process by evaluating the organization's current state as compared to organizational alignment is an important ERP system control factor driving efficiency gains, which includes the following general factors for effective ERP system control:

- i. Effective ERP system financial management.
- ii. Improvements that can be achieved through ERP system.
- iii. Return on ERP system investments.
- iv. Organizational value delivered by ERP system initiatives.
- v. Senior management compensation linked to the Outcome.

Internal audit conduct both performance audits and compliance audits of ERP system while compliance audits are generally focused on adherence to external regulatory requirements and related internal policies and procedures, performance audits require more analysis and evaluation as to what drives performance in the organization to develop an effective audit program Subramania (2010).

With the study of He'roux et al (2013) Assessing the effectiveness and efficiency of an organization is in a way more demanding, but is required to be able to determine whether ERP system governance of the organization sustains and supports the organization's strategies and objectives. In scoping and executing an ERP system governance audit, the internal audit engagement team should:

- i. Determine whether the ERP system function aligns with and understands the organization's objectives and strategies.
- ii. Determine the effectiveness of ERP system resource and performance management.
- iii. Assess risks that may adversely affect the ERP system environment.

Gonzalez et al., (2012) while the internal audit activity cannot establish organizational structures, approve methodologies, or write policies, it should review them for completeness, accuracy, and relevancy while supporting the ERP system control activity to the extent allowed by the internal audit charter and this participation will likely include activities such as:

- 1) Reviewing the organizational structure to identify whether there is in place, and whether this person is a member of the senior management team,
- 2) Assessing the degree to which governance activities and standards are consistent with the internal audit activity's understanding of the organization's risk appetite,
- 3) Consulting engagements as allowed by the internal audit charter and approved by the board,
- 4) Ongoing dialogues with the ERP system control activity to ensure that substantial organizational and risk changes are being addressed in a timely manner and,
- 5) Formal audits of the ERP system control activity consistent With IIA Standard.

When focusing on the information and technology components of IT power Chien et al (2007) the audit behavior performed would likely first focus on a more general review of the IT control structures and assertion appointment provides the internal audit activity with an understanding of the IT control program related Policies and procedures, in adding together, the engagement could also involve a comparison of the program against independent standards.

Dessalegn et al, (2011), stated that in Ethiopia the organizational status and internal organization of the internal audit office are fairly rated, but internal audit's lack of power on budgets reduces its control of resource acquisition and utilization the extent of internal audit services is limited to regular activities. Derese, (2013) Argue that Internal audit and Implementing a value control framework for ERP system requires a level of commitment and long-term engagement that will change the culture of the organization in its approach to IT. New skills will be required, tools will have to be acquired, processes will need to be put in place, and dedicated resources will need to be assigned and trained.

In general, the above part of review of literature, researchers observed notable changes in audit functions and identified that the ERP implementation showed a resultant increase in audit function usage. Shamsuddin&Johari (2014) remarks that the major role and responsibility of an internal audit function is to assess and deliver reasonable assurance that control, risk management and governance systems are operational as planned and will assist the organisation in achieving their set objectives and goals. Additionally explain that the theoretical aspect of the internal audit function exists to assist members of an organization to improve the performance of their activities.

McNally (2013) argues that major theories concerning internal control are timeless. He further argued that the organization's board of directors, management, and other personnel could also affect the internal control process. Arens et al (2008) contend that the objectives of the internal control system are to ensure that the financial report produced for the year is reliable, all operations are functioning efficiently and effectively as well as compliance with law and regulations. Internal control system comprises of five important features, which include: control environment, risk assessment, control activities, information and communication and monitoring. According to Njeri (2014) control environment is the basis for all the other constituents of internal control. Control environment involves ethical values and integrity of management responsible for creating, administering and monitoring the controls, management and employee commitment and competence in performing duties assigned, audit committees, management philosophy and operational technique as well as organizational structure.

Madani (2009) Summarized as an important component of effective ERP system control should be reflected in the form of a strategic plan. This strategic plan should define organizational dependencies of ERP system and the internal audit function role and responsibilities in achieving the objectives set in the plan. Next, it is important for the internal audit to develop a systematic process to analyze risk, and ensure that the audit plan is sufficiently broad in scope and executed in a timely manner. Internal auditors should segment the corporation into well-defined, reasonably sized, auditable units and then identify, determine, and prioritize/rank the inherent risks in each unit. Nafeeseh et al (2011) stated of that Even a small business unit is likely to have a range of risks, some of which are higher priority than others.

Inherent risks are those present in the normal course of conducting business activities. These include ERP system such as changes to global, national, and economic climates, as well as technological, legal, social, and political changes. Inherent risks of ERP system also include internal factors that deserve special attention, including changes in operating systems, new product launches, entry to new markets, management and organizational changes, and the expansion of foreign operations. As a result, there is need to further study of ERP system effect on audit process for proper understanding.

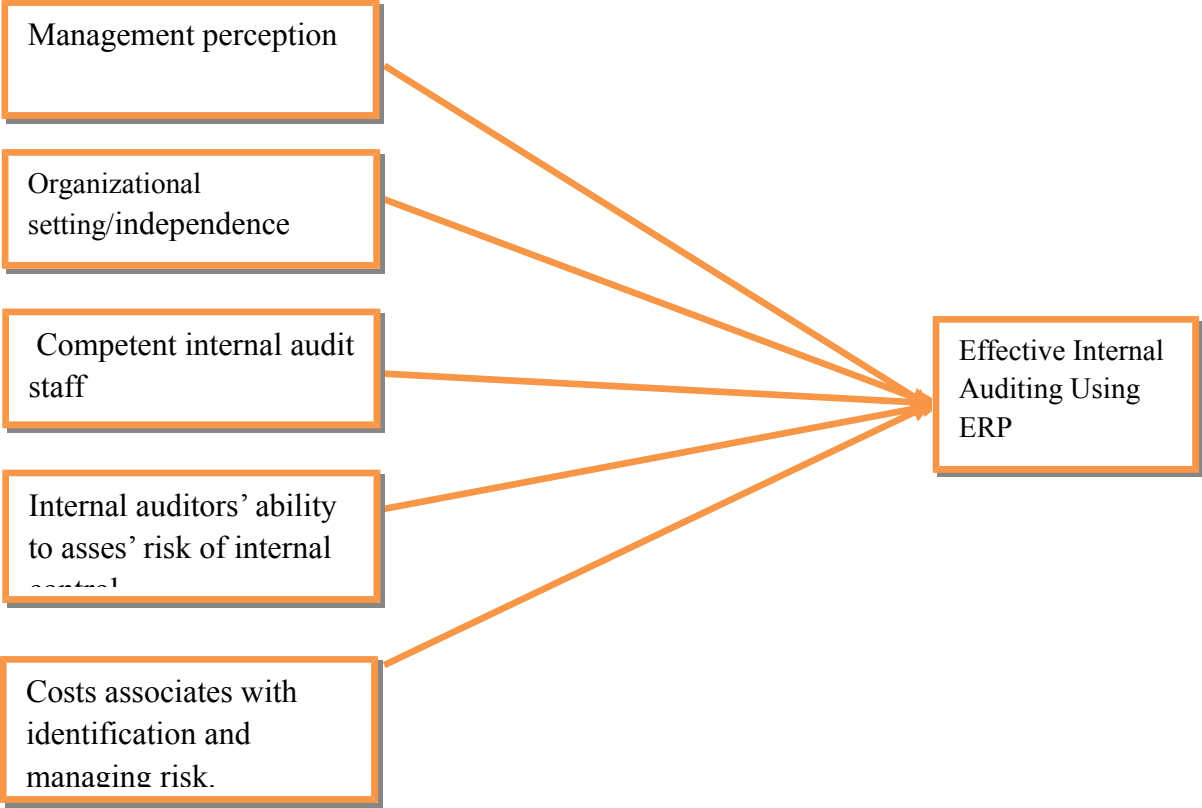
## **2.7. Conceptual framework**

Below the conceptual framework attempts to explain factors that affect effectiveness of IA in ERP environment and how they are inter linked with each other, some of them include Management perception and support, Adequate and competent internal audit staff, Internal auditors' ability to asses and manage risk, Costs associates with identification and managing risk and Organizational setting/independence.

According to Miles and Huberman (1994) conceptual framework contains key variables and presumed relationships amongst them. The main objective here is thus to learn the inter play between IA effectiveness and ERP at some selected Ethiopian commercial banks particularly CBE.



**Figure 1 Conceptual framework of the study**



Source: developed by the researcher from the literature and empirical review

## **2.8. Research Hypotheses**

Depending on the review of theoretical and empirical studies made, the researcher has developed the following hypothesis. This study will empirically explore the impact of emerging ERP systems for the auditors' activities in commercial bank of Ethiopian.

H1: Management perception under ERP environment positively influence on internal auditing functions effectiveness

H2: Internal auditors independence under ERP environment of the organization positively influence on internal auditing effectiveness

H3: ERP system implementation positively influence on internal auditors' ability to asses internal control risk.

H4: ERP system implementation positively influences on costs associates with identification and managing risk.

H5: Competent internal auditor staffs under ERP environment positively influence on internal auditing effectiveness.

## **CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY**

### **3.1. Introduction**

Research Methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically (Kothari, 2004). In this section the research design, sampling type, research instrument, the dependent and independent variables applied throughout the research, and finally the model specifications used for data analysis which are applicable and use in the study are included.

### **3.2. Research Design and approach**

This study investigated the effect of ERP system implementation on internal audit effectiveness in the case of Commercial Bank of Ethiopia. Therefore, in order to answer the general research question and the objective, the researcher used explanatory research design. The researcher also adopted the descriptive research design for answering the specific research questions. As the name suggests, this design refers to a set of methods and procedures that describe variables. Descriptive studies portray the variables by answering who, what, and how questions (Babbie, 2002).

Since the aim of the study is to examine the effects of ERP implementation on internal audit effectiveness and test hypothesis, quantitative research method was used. Inferential study design was also used to determine how the independent variables explain the dependent variables of the study.

### **3.3. Sampling Techniques**

The population for this research is organizations which implemented ERP system and have internal audit staffs that are found in Ethiopia. Due to the difficulty of covering all the total

existing organizations, the researcher was obliged to minimize its study area/ target population by focusing only on 1 purposively selected organizations in Addis Ababa capital city of Ethiopia that are expected to be used as a case for the study. Commercial Bank of Ethiopia selected purposively because it's popularity in implementing such modern technologies and has greater impact to influence the country's overall social, political and economic issues. The use of purposive sampling enables the researcher to generate meaningful insights that help to gain a deeper understanding of the research phenomena by selecting the most informative participants that is satisfactory to its specific needs. Therefore, the researcher focused on this organization which has enough internal audit staffs.

### **3.4. Sample size**

Taking size of population (from which sample was to be taken) in to consideration and to obtain the adequate responses through questionnaire census sampling method employed to select representative sample from the population. Generally the total populations were included in the research study. The researcher believes that distributing the questionnaire for all respondents from CBE in total 112 respondents who use the audit result and who execute the internal audit are appropriate.

Even if the use of proportional sampling is appropriate in order to obtain a representative sample from each whom use the audit result and who execute the internal audit are appropriate because of the samples selected from the population have not equally selected /not equally important/ the use of purposive sampling is more essential to obtain a typical and representative of the whole universe (Kothari, 2004).

### **3.5. Data Collection Instrument**

The primary data was used to accomplish the study, and to collect the data from the respondents included in the sample questionnaires were distributed. The questionnaires was adopted and modified from the prior authors and literature review an approach which is recommended in methodological literature for studies of this nature (Bryman and Bell, 2007) and those questionnaires are prepared in the form of Likert-Scale type (showing respondents agreement or disagreement) by constructing into five point scale where the lowest scale represent strongly

disagree and the highest scale represent strongly agree (Likert, 1932). The questionnaires are organized in to two parts; the first part comprises the demographic question regarding the respondents, and the second part contains items relating to the effectiveness of IA under ERP environment.

### **3.6. Validity and Reliability of research Instrument**

In order to establish the validity of the study instrument the researcher consulted with the university supervisor on whether there was a causal relationship between the independent and dependent variables of the study. The researcher also self administered the questionnaire and explained the instrument concepts to the respondents which enhanced its face validity as recommended by Greener (2008) to encourage and motivate respondents to participate in the study.

The questionnaires were taken from various journal articles and for its reliability the researcher conduct a pilot test by distributing 10 questionnaires in order to identify inconsistencies with the research instruments in regard to the research questions and research techniques which were then adjusted and modified. Based on the pilot test, improvements made and then after all it was found to be valid and reliable. The data were tested for its reliability using Cronbach's alpha.

### **3.7. Data Analysis Method**

Data analyses were conducted through a descriptive statistics to provide details regarding the demographic question. To evaluate the effects of various factors on the effectiveness of internal auditing the correlation analysis were used. And also, the Statistical Package for Social Sciences (SPSS) version 25 and Excel were used for the data analysis. In order to assess the reliability and consistency of the instrument, the Cronbach's Alpha ( $\alpha$ ) analysis was conducted. Whereas, to determine the relationship among the variables and test the hypothesis correlation and regression

analysis methods were used by meeting the multiple regression assumptions of the linear regression.

### 3.8. Operationalization of Variables

The operational definitions of variables describe the independent and dependent variables as well as their sub-variables as measurable indicators of the study as shown in the table below:

**Table 3.1 Operationalization of Variables**

Independent variables	Indicators
Management perception	<ul style="list-style-type: none"> <li>• Awareness and good perception about internal auditing roles.</li> </ul>
Organizational setting/independence	<ul style="list-style-type: none"> <li>• Auditing activities without any interference from Anybody and without any influence</li> </ul>
competent internal audit staff	<ul style="list-style-type: none"> <li>• Sufficient skilled internal auditors</li> <li>• Review each activity on time, and cover the planned scope of auditing activities after ERP implemented</li> <li>• Internal audit staff number &amp; their skill matches the scope of office's/sector's internal operations.</li> </ul>
Internal auditors' ability to asses internal control risk	<ul style="list-style-type: none"> <li>• Fast auditing in the ERP system</li> <li>• The ERP system reduce time of auditors, spent in data retrieving</li> <li>• The ERP systems help auditors to eliminate redundant data files</li> <li>• The Auditors feel increase control risk, so they spend more time in assessing control risk</li> </ul>
Costs associates with identification and managing risk.	<ul style="list-style-type: none"> <li>• Effective &amp; efficient audit with little start-up costs after the ERP</li> <li>• The auditors spend more time understanding the system &amp; business process in an ERP implementing company</li> </ul>
<b>Dependent variable</b> <ul style="list-style-type: none"> <li>• Effective internal auditing using ERP</li> </ul>	<ul style="list-style-type: none"> <li>• Compliance with established policies, procedures, laws and regulations under current corporate governance rules.</li> <li>• Improvements that can be achieved through ERP system.</li> <li>• provide practical, Cost-benefit solutions</li> </ul>

	<ul style="list-style-type: none"><li>• Address the very purpose for which it is established</li><li>• Address corporate risk</li></ul>
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**3.9. Ethical Considerations**

The principle of voluntary participation was adhered to respondents into participating in the research. The research ensured confidentiality. Individual permission was sought from CBE, and Individuals expected to participate in the study. The respondents were informed of the consent and the purpose of this research study. To ensure confidentiality names of the respondents was not used in the study.

## **CHAPTER FOUR: ANALYSIS AND DISCUSSION**

### **4.1. Introduction**

This chapter presents the analysis and discussions for research findings obtained from the questionnaires. It reports the investigation results obtained from internal auditors of CBE covered in the questionnaire. The discussion begins with the questionnaires' response rate followed by the descriptive statistics of the respondents related questions; like the gender, age, profession, and level of education. The results of the reliability analysis and the regression assumption test also reported and finally the results of hypothesis testing are presented.

### **4.2. Descriptive Statistics**

#### **4.2.1 Response Rate**

The questionnaires were distributed to managers and the internal auditors of CBE. For these, 112 questionnaires are distributed both to the senior managers and internal auditors and from which 102 questionnaires were collected (responses from managers and internal auditors) giving the response rate of 91.07%. This shows good response rate for the study.

#### **4.2.2. Respondents Profile**

The table 4.1 given below describes the general findings regarding the respondents age, sex, field of study and level of education. From the respondents 64 (62.7%) were males and 38 (37.3%) were females. Here the shares of males are higher than females. The majority of the ages of respondents are fall in the age of 34-41 (40, 39.2%) and 42-50 (28, 27.5%) and the rest falls in the age of 26-33 (26, 25.5%) and 18-25 (8, 7.8 %) respondents. Here, the majority of the respondents are in the age of 26-50 (94, 92.2 %) years, but unfortunately there were no respondents who are aged above 50 years.

**Table 4.1 Respondents Profile**

Respondents Profile					
		Frequency	Percent	Valid Percent	Cumulative Percent
AGE GENDER	Male	64	62.7	62.7	62.7
	Female	38	37.3	37.3	100.0
	<b>Total</b>	<b>102</b>	<b>100.0</b>	<b>100.0</b>	
	18-25	8	7.8	7.8	7.8
	26-33 years	26	25.5	25.5	33.3
	34-41 years	40	39.2	39.2	72.5
	42-49 years	28	27.5	27.5	100.0
	<b>Total</b>	<b>102</b>	<b>100.0</b>	<b>100.0</b>	
EDUCATION LEVEL	Undergraduate	72	70.6	70.6	70.6
	Post-Graduate	30	29.4	29.4	100.0
	<b>Total</b>	<b>102</b>	<b>100.0</b>	<b>100.0</b>	
EXPERIENCE	Less than 3 year	7	6.9	6.9	6.9
	4-6 years	21	20.6	20.6	27.5
	7-9 years	42	41.2	41.2	68.6
	10 years & more	32	31.4	31.4	100.0
	<b>Total</b>	<b>102</b>	<b>100.0</b>	<b>100.0</b>	

Sources: survey data, 2018 SPSS output

In terms of the level of educational background, most internal auditors have bachelor’s degree (72, 70.6%) and (30, 29.4%) respectively followed by master’s degree. There were no respondents who had other level of educations. In the case of level of experience the majority of respondents are fall in the 4 – 10 years and above (95, 93.2 %) and the rest falls in the less than 3 years (7, 6.9 %). These shows the majorities of the respondents were educated/or professional and experienced that can contribute more for the effectiveness of their intended work.

### 4.3. Reliability Analysis

To measure the consistency of the questionnaire particularly the Likert-type scale the reliability analysis is essential in reflecting the overall reliability of constructs that it is measuring. To carry out the reliability analysis, Cronbach's Alpha ( $\alpha$ ) is the most common measure of scale reliability and a value greater than 0.700 is very acceptable (Field, 2009; Cohen and Sayag, 2010) and according to Cronbach's (1951), a reliability value ( $\alpha$ ) greater than 0.600 is also acceptable.

## Table 4.2 Reliability analysis

Item	No. Of Items	Alpha
Management Perception	5	0.7965
Organizational Independence	8	0.7685
Competent Internal Staff	4	0.7676
Risk Assessment of internal control	5	0.7793
Cost Associated With Risk and Manage	2	0.7699
Internal auditors Effectiveness	7	0.8766
<b>Total Scale</b>		<b>0.8310</b>

Sources: survey data, 2018 SPSS output

From table 4.2 above, the value for Cronbach's Alpha ( $\alpha$ ) was 0.830 for all variables. When these calculated reliability values are close to 0.8000, and compared with the minimum value of alpha 0.600 advocated by Cronbach's (1951), then the responses generated for all of the variables' used in this research were reliable enough for data analysis.

## 4.4. Multiple Regression Assumption Analysis

Multiple regression techniques give researchers flexibility to address a wide variety of research questions (Hoyt et al., 2006). Since the analyses are based upon certain definite conditions or assumptions, it is imperative that the assumptions be analyzed (Sevier, 1957). The assumptions

of Multiple Regression that are identified as primary concern in the research include linearity, independence of errors, homoscedasticity, normality, and collinearity.

a) Linearity

Linearity defines the dependent variable as a linear function of the predictor (independent) variables (Darlington, 1968). Multiple regressions can accurately estimate the relationship between dependent and independent variables when the relationship is linear in nature (Osborne & Waters, 2002). More in-depth examination of the residual plots and scatter plots available in most statistical software packages will also indicate linear vs. curvilinear relationships (Keith, 2006; Osborne & Waters, 2002). Residual plots showing the standardized residuals vs. the predicted values and are very useful in detecting violations in linearity (Stevens, 2009). In this case the relationship between the Independent Variables and the Dependent Variables is linear; Scatter plots show that this assumption had been met (see figure 4.1).

b) Collinearity

Collinearity (also called multicollinearity) refers to the assumption that the independent variables are uncorrelated (Keith, 2006). The researcher is able to interpret regression coefficients as the effects of the independent variables on the dependent variables when collinearity is low this means that we can make inferences about the causes and effects of variables reliably. Multicollinearity occurs when several independent variables correlate at high levels with one another, or when one independent variable is a near linear combination of other independent variables (Keith, 2006).

We can do this in two ways. First, we need to look at the Correlations table. Correlations of more than 0.8 may be problematic. This is not an issue in this example, as the highest correlation is  $r=.566$ .

**Table 4.3 multicollinearity test**

		<b>Correlations</b>					
		<b>EIA</b>	<b>MPIA</b>	<b>OI</b>	<b>ACIAS</b>	<b>RAM</b>	<b>CRAM</b>
<b>Pearson Correlation</b>	<b>EIA</b>	1.000					

	<b>MPIA</b>	.436	1.000				
	<b>OI</b>	.330	.680	1.000			
	<b>CIAS</b>	.500	.379	.561	1.000		
	<b>RAM</b>	.566	.470	.466	.650	1.000	
	<b>CRA</b>	.465	.155	.119	.382	.585	1.000
	<b>M</b>						

Sources: survey data, 2018 SPSS output

Another widely used procedure to examine the correlation matrix of the predictor variables, computing the coefficients of determination, R<sup>2</sup>, and measures values of the data matrix including variance inflation factors (VIF) (Mason & Perreault Jr., 1991). Tolerance measures the influence of one independent variable on all other independent variables. Tolerance levels for correlations range from zero (no independence) to one (completely independent) (Keith, 2006). We can demonstrate this assumption by looking at the Coefficients table (table 4. 3). This allows us to more formally check that our predictors are not too highly correlated. We can use VIF and Tolerance statistics to assess this assumption. For the assumption to be met we want VIF scores to be well below 10, and tolerance scores to be above 0.2; Analysis of collinearity statistics show this assumption has been met, as VIF scores were well below 10, and tolerance scores above 0.2 (see table 4.6).

### c) Independence of Errors

Independence of errors refers to the assumption that errors are independent of one another, implying that subjects are responding independently (Stevens, 2009). The goal of research is often to accurately model the ‘real’ relationships in the population (Osborne & Waters, 2002). To check this assumption we need to look at is the Model Summary box. Here, we can use the Durbin-Watson statistic (in this case: Durbin-Watson = 1.250) to test the assumption that our residuals are independent (or uncorrelated). This statistic can vary from 0 to 4. For this

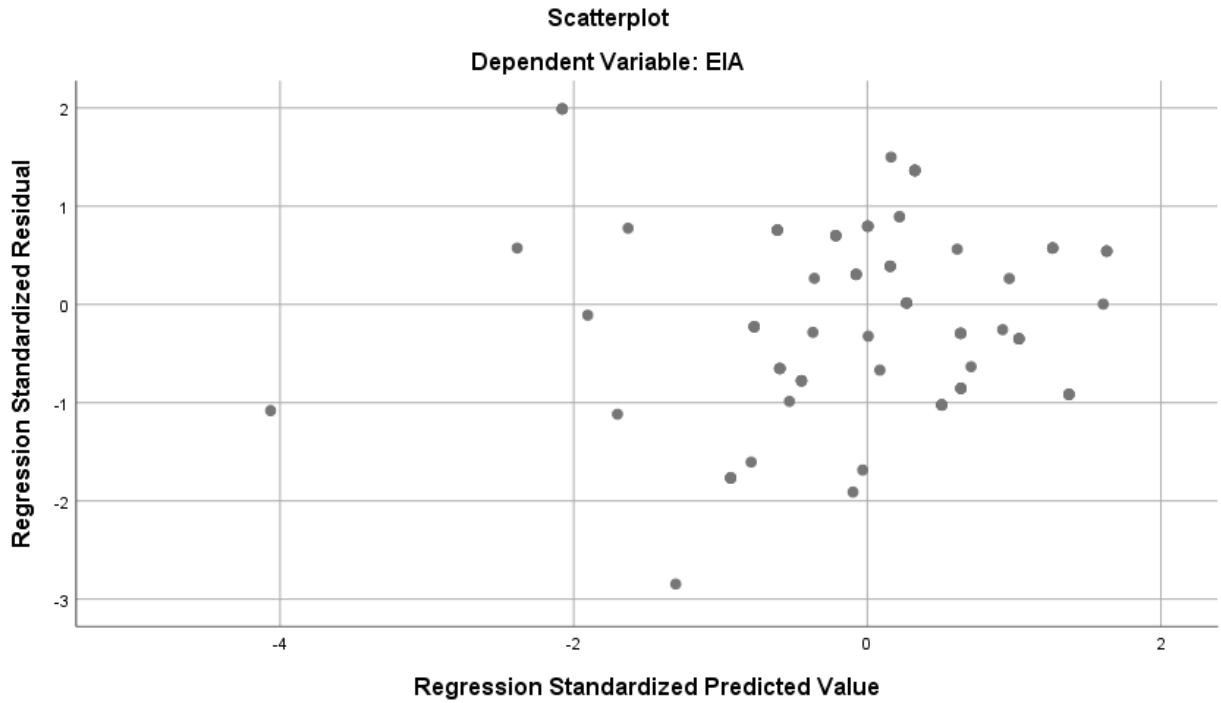
assumption to be met, we want this value to be close to 2. Values below 1 and above 3 are cause for concern and may render our analysis invalid.

#### d) Homoscedasticity

The assumption of homoscedasticity refers to equal variance of errors across all levels of the independent variables (Osborne & Waters, 2002). This means that researchers assume that errors are spread out consistently between the variables (Keith, 2006). This is evident when the variance around the regression line is the same for all values of the predictor variable. Homoscedasticity can be checked by visual examination of a plot of the standardized residuals by the regression standardized predicted value (Osborne & Waters, 2002). Specifically, statistical software scatter plots of residuals with independent variables are the method for examining this assumption (Keith, 2006). Ideally, residuals are randomly scattered around zero (the horizontal line) providing even distribution (Osborne & Waters, 2002). Our plot of standardized residuals vs standardized predicted values showed no obvious signs of funneling; suggesting the assumption of homoscedasticity has been met.

### **Figure 4.1 homoscedasticity test**

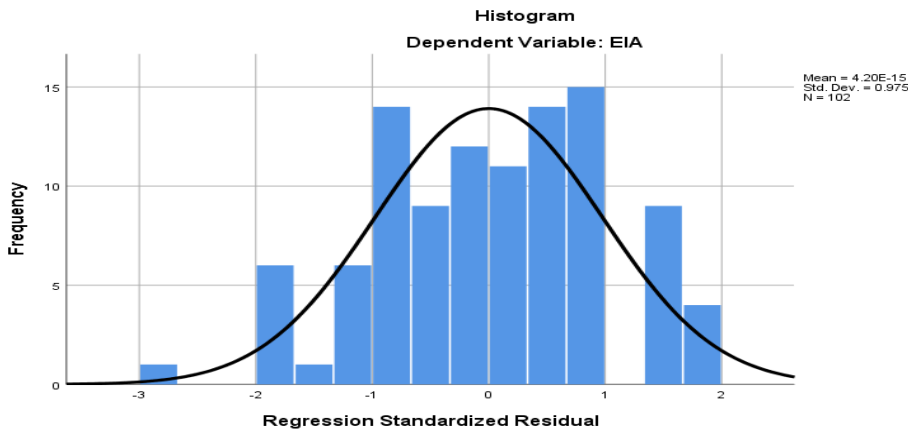
Sources: survey data, 2018 SPSS output



e) Normality

This assumption shows that errors are normally distributed, and that a plot of the values of the residuals will approximate a normal curve (Keith, 2006). The assumption is based on the shape of normal distribution and gives the researcher knowledge about what values to expect (Keith, 2006). Normality can further be checked through histograms of the standardized residuals (Stevens, 2009).

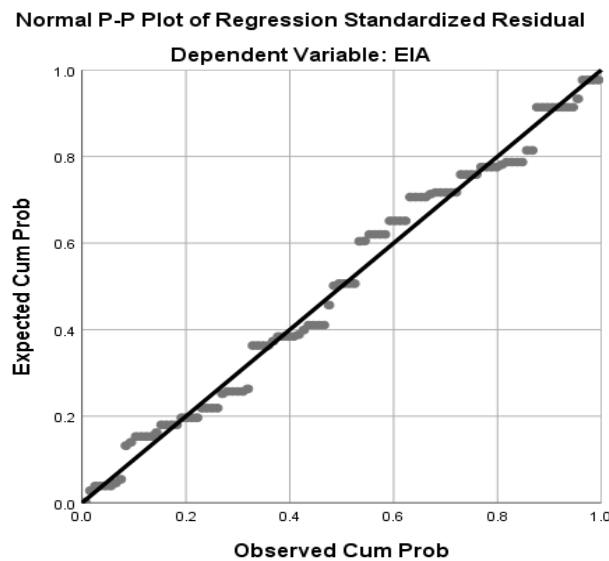
**Figure 4.2 Histogram with normal distribution**



Sources: survey data, 2018 SPSS output

Normality also tested using Q-plots and P-plots are more exacting methods to spot deviations from normality, and are relatively easy to interpret as departures from a straight line (Keith, 2006). The P-P plot for the model suggested that the assumption of normality of the residuals may have been met.

**Figure 4.3 Normal P-Plot**



Sources: survey data, 2018 SPSS output

f) influential cases

Our final assumption can be tested by going back to our Data File and looking at the Cook's Distance values (see appendix II). This contains the Cook's Distance statistic for each participant. Any values over 1 are likely to be significant outliers, which may place undue influence on the model, and should therefore be removed and your analysis rerun. In this case, no such instances have occurred.

## 4.5. The Regression Results and Hypothesis Testing

### 4.5.1. The Regression Results

The regression result explores the necessary indicators of the internal audit effectiveness by using the variables identified in the model. As indicated in the model summary (table 4.4) the appropriate indicators of the variable used to identify the IAE were explored. That is, the value of R square used to identify how much of the variance in the dependent variable effective internal auditing using ERP (EIA) identified by the model. The overall contribution of managements perception, organizational independence/control environment, adequate and competent internal audit staff, Risk assessment and management and Cost associated with risk assessment and management to the EIA accounted for 43 % ( $R^2 = 0.427$ ) of the variation in the IAE, the rest 57% are other variables not included in this study.

**Table 4.4 Model Summary<sup>b</sup> and ANOVA<sup>a</sup>**

Model Summary <sup>b</sup>					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.654 <sup>a</sup>	.427	.397	.59719	1.250

ANOVA <sup>a</sup>						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	25.543	5	5.109	14.325	.000 <sup>b</sup>
	Residual	34.237	96	.357		
	Total	59.780	101			
a. Dependent Variable: EIA						
b. Predictors: (Constant), CRAM, OI, CIAS, MPIA, RAM						

Sources: survey data, 2018 SPSS output

Moreover, the model summary also shows the significance of the model by the value of F-statistics ( $P = .000$ ) and  $F = 14.325$  which implies that there were strong relationship between the predictors and the outcomes of the regression variables and are at best fit the model to predict the effectiveness of internal audits in the study context. The beta ( $\beta$ ) sign also shows the +ve or -ve effect of the independent variables coefficient over the independent variable. And as shown in table 4.6 below, beta sign of all the independent variables shows the positive effect of the predicting dependent variable. That means, any increase in the independent variables lead to increase in the dependent variable internal audit effectiveness. This finding is consistent with most of the previous studies that are identified in this paper (Bosire et al (2017); Haislip et al (2016); Sintayehu (2014); Wines, (2012) Dessalegn et al, (2011); Jain and Soral, (2011).

Therefore, based on the coefficients of the dependent variable ( $\beta$  sign) all the hypotheses proposed by the researcher are acceptable because of all the five hypotheses stated the positively relationship with the dependent variable are meet. But based on the statistical significances of the independent variable over the dependent variable at 5% level of significance, only three independent variables (MPIA, CIAS and CRAM) are significantly contributed for the IAE at ( $P < 0.01$ ) level of confidence.

**Table 4.6 regression Coefficients<sup>a</sup>**

Coefficients <sup>a</sup>					
Model	Unstandardized	Standardize	t	Sig.	Collinearity Statistics

		Coefficients		d				
		B	Std. Error	Beta				
1	(Constant)	.403	.430		.938	.351		
	MPIA	.308	.109	.310	2.822	.006	.494	2.024
	CI/OI	.159	.140	.136	1.133	.260	.417	2.398
	CIAS	.273	.123	.248	2.220	.029	.476	2.099
	RAM	.210	.138	.189	1.526	.130	.387	2.581
	CRAM	.268	.116	.227	2.314	.023	.621	1.611

a. Dependent Variable: EIA

Sources: survey data, 2018 SPSS output

#### 4.5.2. Hypothesis Test

The researcher projected certain factors that could influence the effectiveness of internal auditing in an ERP system implemented organization. This discussion in this section is centered around the findings from the data and literature analysis that answers the research question to the effects of ERP on internal audit effectiveness.

Implementation of an ERP system has become an inevitable trend in modern enterprises. Consequently, improving the extent of internal auditing and enhancing the corporate constitution of enterprises through an ERP system with internal control designs has become a crucial issue. ERP can prevent fraudulent behavior and reduce risks through mutual inspection and ERP implementation, improving the internal control/audit quality of enterprises (Hsiung& Wang, 2014). The following hypotheses test were conducted based on the regression results of the internal audit effectiveness obtained from the regression output table 4.6.

H1: Management perception under ERP environment positively influence on internal auditing effectiveness.

From table 4.6, the positive beta sign and a statistically significant result of management perception related with the internal audit effectiveness ( $\beta = .308$ ,  $P < 0.01$ ) support the proposed

hypothesis acceptable. The management support in terms of providing resources, giving trainings, introducing with new technologies, providing enough facilities and encourages the internal audit process with commitments to promote and communicate their added value for the effectiveness of internal audit work in their office contributes for the EIA. The result was consistent with the previous auditing research works of (Bosire et al (2017) Haislip et al (2016) Sintayehu (2014). Wines, (2012) Dessalegn et al, (2011), Jain and Soral, (2011) they find that the top management support was the critical determinants of internal audit effectiveness in audit finding and the commitment to strength internal audit through hiring proficient internal audit staff, developing career channels for internal audit staff, and providing internal audit work independence.

H2: Internal auditing independency under ERP environment of the organization positively influences to internal auditing effectiveness.

The second hypothesis of this research which is assumed to be the determinants of EIA is the independence of the organization in which internal audit work were conducted. As shown in table 4.6 above the coefficient of OI ( $\beta = .159$ ) were positively related with the effectiveness of EIA. But, because of its statistical result ( $P > 0.05$ ) the regression output result haven't statistically significant relationship between the Control environment and the EIA reveals not to support the second hypothesis. The result was inconsistency with (Ogechi 2018 and Njeri, 2014), control environment involves working procedures, ethical values and integrity of management responsible for creating, administering and monitoring the controls, management and employee commitment and competence in performing duties assigned, audit committees, management philosophy and operational technique as well as organizational structure.

H3: Competent internal audit staffs under ERP environment positively influence on internal auditing effectiveness.

The existence competent internal audit staff also supposed to be the determinants of internal audit effectiveness and is the third hypothesis of this research. The regression result highly supports this hypothesis at ( $P < 0.01$ ) level of significant and with the positive signs of beta ( $\beta = 0.273$ ). The result is the same as (Saharia et.al. 2008: Honselaar, 2012) Adoption of ERP system also creates a need for additional skills in the internal audit groups. In the new environment,

internal auditors have to have enough knowledge and skills to understand of the internal workings of the ERP system adopted by the organization. Also (Moorthy et al., 2011) said that, it is good to have qualified personnel, but it is better to have both qualified personnel and good implemented internal control.

H4: ERP environment positively influences on internal auditors' ability to asses' internal control risk.

The existence of ERP supposed to be increase internal auditors' ability to asses' internal control risk and is the fourth hypothesis of this research. But, because of its statistical result ( $P > 0.05$ ) the regression output result haven't statistically significant relationship between the internal control Accessing and Manage and the EIA reveals not to support this hypothesis. Even though the literatures argued that ERP systems led to improvement in internal auditors' ability manage these internal control risk this result is inconsistence with (Saharia et al., 2008: Soral and Jain 2011).

H5: ERP environment positively influences on costs associated with identification and managing risk.

The existence of ERP system also supposed to be increase costs associates with identification and managing risk and is the fifth hypothesis of this research. The regression result highly supports this hypothesis at ( $P < 0.01$ ) level of significant and with the positive signs of beta ( $\beta = .268$ ). Haider (2009) and Nwankpa (2007) found that ERP systems have affected the audit process in an organization, in terms of auditors spent more time on control testing after ERP implementation. According to (Saharia et al., 2008) the cost associated with managing operations and financial risks goes down while the cost associated with managing technology risks goes up.

## **CHAPTER FIVE: CONCLUSION AND RECOMMENDATION**

### **5.1. Summary of Major Findings**

According to the regression output all these predictors were positively contributed for the effectiveness of internal audit in CBE. Therefore, the organization should give emphasis to use

these determinant variables to make its service delivery effective, efficient and economical throughout its departments. Moreover the management support, the existence of adequate and competence internal auditor's staff and the cost of risk assessment and management were the major determinants of EIA in the CBE. However, the control environment and the ability to risk Assess and manage of IA were not significantly important for the EIA of CBE as of the above three variables.

This study finds that the composite measure of management support, organizational independence/ control environment of internal auditors, the existence of adequate and competent IA staff, IA ability to Assess and manage risk and costs associated with risk assessment and manage accounts for 43 % ( $R^2 = 0.427$ ) variance for the IA effectiveness in ERP environment. That means, the impact of these five independent variables contributed for the dependent variable EIA were 43 %, and the remaining 57 % were other variables that are not included in this study.

The final portion of this research aims to conclude the finding of the study focusing on the core determinants that have significant impacts to the internal audit effectiveness and to provide recommendations based on the research findings of the study. These conclusions and recommendations are drawn from the findings of the study specifically related to the managements support given to the IA activities, the organizational independence of the IA, the existence of adequate and competence IA staff, IA ability to Assess and manage risk and costs associated with risk assessment and manage in the study context.

## **5.2. Conclusion**

Due to its important role it plays for the overall management system internal audit is the major mechanism to ensure sound corporate governance. The existences of effective internal audit in the office links with internal control risk management system, improves organizational efficiency and effectiveness, reduce information asymmetry during decision making, and ensures internal reliability of financial reporting process. By taking this aspect into consideration, this study was identified factors that determine the Effectiveness of Internal Auditing in CBE. And also by

testing of the proposed hypotheses showed relations of these independent variables with the EIA the following conclusions were drawn.

- a. The EIA in CBE increases, when there were more supports from the management combined with have adequate and competent internal auditors staff in the office. The regression analysis (shown on table 4.6) shows contributions of these variables for the EIA. Therefore, the overall effect of the management support, the existence of adequate and approved IA staff, and the cost related to risk assessment and management very important for the EIA in CBE without neglecting the other two statistically insignificant variables (RAM and OI), because they have a positive sign of beta and contribute for the 43 % of the variances for the EIA. Thus, neglecting these two variables may cause to decrease the value of EIA variance that was obtained from collective contribution of the five independent variables.
- b. In addition, the correlation analysis (shown on table 4.3) shows all the independent variables have the direct effect of the internal audit effectiveness (EIA) and the regression result also depicts all the independent variables have a positive sign of coefficients (shown on table 4.6) with EIA in CBE. However, the effect of ERP in risk assessment and management to the EIA value and the organizational independence of EIA were statistically not significant enough at 5% sig. level to contribute for the EIA in CBE, therefore this conclusion requires future research should consider for obtaining the impact of these variables on the EIA.
- c. Furthermore, the correlation analysis (see table 4.3) showed the contributions of the independent variables to the internal audit effectiveness. For instance, the organizational independence of internal auditors was not significantly correlated with internal audit effectiveness to the banking sector (CBE). This conclusion requires future research should consider the impact of these determinants on internal audit effectiveness.

### **5.3. Recommendations**

Based on the findings, the study makes the following recommendations;

- I. CBE support more for the internal audit functions by facilitating the IA works, should recruited more adequate and competent IA staff and give sufficient training and professional certification for the existing IA staffs.
- II. The internal auditors of in CBE recommended to maintain and improve their effective contribution for the EIA in their office, by using the supports from their offices management team appropriately, by improving their professional certification in line with the institute of internal audit standards and organizational guidelines and by introducing themselves with modern technologies that improve their IA function for their respective office.
- III. As the research proved that the existence adequate and competent IA staffs were the major determinants of EIA in the study context, the top management and NBE were recommended to design, provide and continually evaluated the internal audit charters for the bank sector.
- IV. Finally; the NBE and other concerned institutions should contribute for the EIA by working in collaboration to accomplish effective internal audit work by supplying the adequate and competent internal audit staffs and also to give short term trainings to upgrade the existing IA staffs proficiency in line with the institute of IA standards.

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## **Appendix I**

**ADDIS ABABA UNIVERSITY**

**COLLEGE OF BUSINESS AND ECONOMICS**

**DEPARTMENT OF ACCOUNTING AND FINANCE**

The purpose of this questionnaire is to collect primary data for conducting a study on the topic, “**The Effect of Enterprise Resource Planning System Implementation on Internal Audit Effectiveness:**

**The case of commercial bank of Ethiopia** “as partial fulfillment to the completion of the Master of Science Degree in Accounting and Finance.

This study is purely for academic purpose and in no ways that affects the respondent’s personality. It will be kept confidential. So that, you’re genuine view, frank opinion & timely responses are very valuable in determining the success of the study. Therefore you are kindly requested to extend your cooperation honestly by providing relevant information and filling out of this questionnaire that is prepared for this intention.

**General Instruction**

- ERP- Enterprise resource planning
- No need to write your name.
- In all case where answer options available please tick (☑) or circle the appropriate box.
- I thank you for your volentery and timely response.

**Name: - EPHREM MENGISTU Tel.**

Email: - ephremmengistu@gmail.com

**Section 1: Demographic Data**

1. Gender?

Male  Female

2. Age?

18-25 years  26-33 years  34-41 years  42-49 years  50 years and above

3. What is your highest level of education?

Undergraduate  Post-Graduate  other

4. How long have you worked in your current position?

Less than 3 year  4-6 years  7-9 years  10 years & more than

Please circle or tick the number to the statement with a rating on the scale of 1 to 5. (1= strongly disagree, 2 = disagree, 3 = Neutral, 4 = agree, 5 = strongly agree)

**Section 2** The following statements relate to the factors that affect internal audit function effectiveness in the organization under ERP environment.

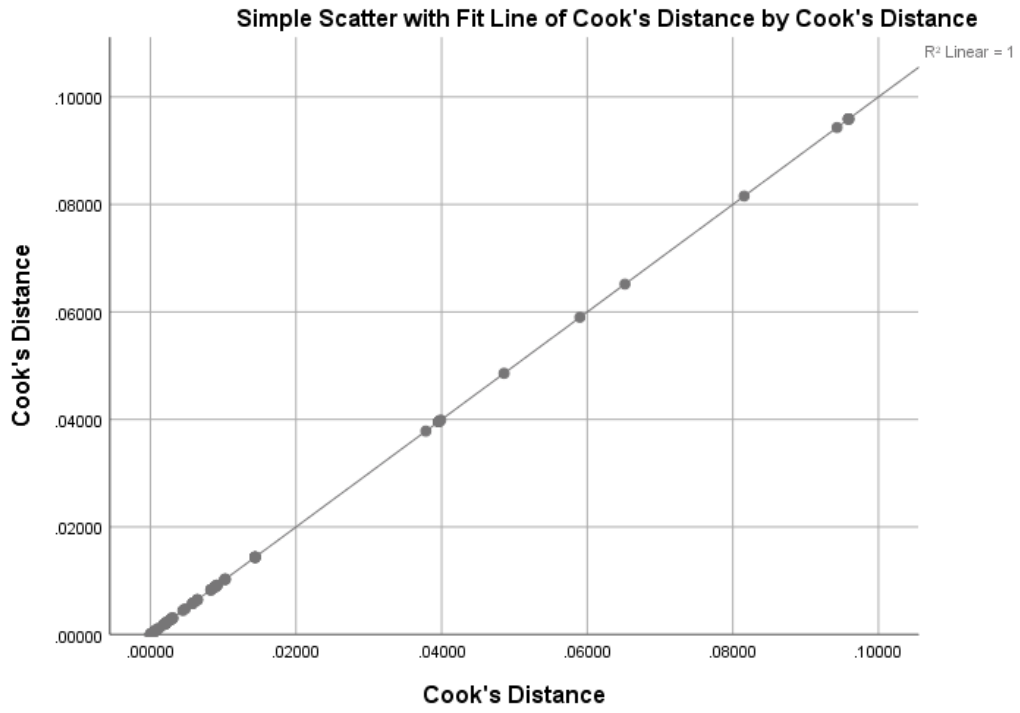
Q.	Management’s perception of internal audit function					
N						
1	The office/sector has enough awareness and good perception about internal	1	2	3	4	5

	auditing roles.					
2	The office/sector considers internal auditing practices as a value adding activity and I work smoothly & regularly with the management.	1	2	3	4	5
3	The office/sector encourages me to implement my recommendations, to promote value-added activities and to strength internal audit function.	1	2	3	4	5
4	The position/status of internal audit is clearly recognized by the management in my office/sector.	1	2	3	4	5
5	The office/sector see internal auditing as providing internal assurance through investigations, check & assessment, and consultants & adviser particularity into risk assessment and management of internal and external operations.	1	2	3	4	5
<b>Organizational independence/ control environment</b>						
6	I perform the auditing activities without any interference from Anybody and without any influence from the office/sector.	1	2	3	4	5
7	I freely decide the scope, time and extent of auditing procedures based on auditing standards and the office's/sector's policy.	1	2	3	4	5
8	I objectively examine auditing issues only meeting on reliable audit evidence and no management interest is involved for adjustment beyond auditing standards & values.	1	2	3	4	5
9	I feel free to include any audit finding in my audit work and report directly to responsible body.	1	2	3	4	5
10	I can freely access necessary documents, information and data about the organization/sector for my audit work.	1	2	3	4	5
12	I can provide a larger range of services to my clients after the ERP implementation	1	2	3	4	5
13	The auditing tools, methods & procedures used to audit in my company are suitable for ERP implementing company.	1	2	3	4	5
14	Do the Auditors need appropriate internal control & security authorization in the ERP environment?	1	2	3	4	5
<b>Competent internal audit staff</b>						
15	My office/sector has sufficient skilled internal auditors. Most of them have certification in auditing.	1	2	3	4	5
16	It is possible to audit and review each activity on time, and cover the planned scope of auditing activities after ERP implemented.	1	2	3	4	5
17	The audit procedures and evidence collections are completed on time, since enough and skilled internal auditors are available or employed.	1	2	3	4	5
18	The internal audit staff number & their skill matches the scope of office's/sector's internal operations.	1	2	3	4	5
<b>Internal control risk assessment</b>						

19	I can do fast auditing in the ERP system.	1	2	3	4	5
20	I can do all checking's very fast in case of wrong entry.	1	2	3	4	5
21	Does the ERP system reduce time of auditors, spent in data retrieving?	1	2	3	4	5
22	Do the ERP systems help auditors to eliminate redundant data files?	1	2	3	4	5
23	Do the Auditors feel increase control risk, so they spend more time in assessing control risk?	1	2	3	4	5
<b>Cost associated with risk assessment and management</b>						
24	Can the auditors do effective & efficient audit with little start-up costs after the ERP?	1	2	3	4	5
25	Do the auditors spend more time understanding the system & business process in an ERP implementing company compared to a non-ERP implementing company?	1	2	3	4	5
<b>Effective internal auditing function using ERP</b>						
26	Internal auditors can effectively identify and report any compliance and non-compliance activities with my office's/sector's policies and procedures.	1	2	3	4	5
27	Internal Auditors provide useful recommendations and constructive criticisms and their reports are highly considered for decision making and internal controls by the management.	1	2	3	4	5
28	Internal audit ensures the economical, effective and efficient use of resources in my office/sector.	1	2	3	4	5
29	In my office/sector internal audit ensures activity performed is compliance with established policies, procedures, laws and regulations under current corporate governance rules.	1	2	3	4	5
30	The recommendations of internal audit department provide practical, Cost-benefit solutions for correcting the problems that were found.	1	2	3	4	5
31	Internal auditors have the experience and expertise to address corporate risk management problems within the organization	1	2	3	4	5
32	The existing role that the internal audit is playing sufficient enough to address the very purpose for which it is established	1	2	3	4	5

**Thank you for participating in the survey.**

## **Appendix II**



Sources: survey data, 2018 SPSS output