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THE EFFECT OF ENTERPRISE RESOURCE PLANNING (ERP) IMPLEMENTATION ON THE EFFECTIVENESS OF INTERNAL CONTROL OF SELECTED PRIVATE COMMERCIAL BANKS IN ETHIOPIA

BY

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APPROVAL SHEET

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The undersigned certify that they have read and hereby recommend to Addis Ababa University to accept the thesis submitted by **Melese kassa** entitled **"The Effect of Enterprise Resource Planning (ERP) Implementation on the Effectiveness of Internal Control of Selected Private Commercial Banks in Ethiopia"** submitted in partial fulfillment of the requirement for the award of MSc. Degree in **accounting and finance**

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We, the undersigned, members of the Board of Examiners of the final open defense by have read and evaluated his/her thesis entitled "**The Effect of Enterprise Resource Planning (ERP) Implementation on the Effectiveness of Internal Control of Selected Private Commercial Banks in Ethiopia**", and examined the candidate. This is, therefore, to certify that the thesis has been accepted in partial fulfillment of the requirements for the master's degree of accounting and finance.

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Declaration

I declare that this thesis entitled: ***"The Effect of Enterprise Resource Planning (ERP) Implementation on the Effectiveness of Internal Control of Selected Private Commercial Banks in Ethiopia"*** is outcome of my own effort and study and that all sources of materials used for the study have been duly acknowledged. To the best of my knowledge, this study has not been submitted for any degree in this University or any other University. It is offered for the partial fulfillment of the degree of Masters of accounting and finance.

By: Melese Kassa

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Date: _____

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Table of content

Page

List of table

Page

Acronym

ERP	Enterprise resource planning
CBE	Commercial Bank of Ethiopia
IC	Internal Control
ICT	Information Communication Technology
IIA	International Internal Audit
NBE	National Bank of Ethiopia

Abstract

This study assesses the effect of ERP systems on internal control effectiveness in private commercial banks in Ethiopia. The specifically intended to evaluate effect of the information system qualities of an ERP on effective internal control in Ethiopian privet commercial banks, to evaluate effect of the service qualities of an ERP on effective internal control in Ethiopian privet commercial banks, to examine effect of the internal control qualities of an ERP on effective internal control in Ethiopian privet commercial banks, to investigate the effect of quality of communication using an ERP on effective internal control in Ethiopian privet commercial banks and to evaluate the effect of internal control implementation under an ERP structure on effective internal control in Ethiopian privet commercial banks. To address such objective study employed explanatory research design. The researcher also adopted the descriptive research design for answering the specific research questions, using simple random sampling 66 respondents were selected from two purposively selected private commercial banks and the results of the study interpreted through inferential statistics these includes correlation and regression, and ordered logit model was used. The result of ordered logistic regression estimation shows that the information system qualities, service qualities of an ERP, internal control qualities of an ERP and implementation of internal control were found positive and significant effect on internal control effectiveness. Based on the finding the researcher recommended that *information system qualities of an ERP, service qualities of an ERP, internal control qualities of an ERP and implementation of internal control under ERP are important variables the financing institutions should have work on specific activities of information system qualities, service qualities of an ERP, internal control qualities of an ERP and implementation of internal control under ERP*

Keyword: *Enterprise resource planning, information system quality, service qualities of an ERP, internal control qualities of an ERP and implementation of internal control*

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

Several enterprises agonized excessive damages and distorted in latest time since a disappointment to device internal controls or badly planned internal control system. Accordingly, matters concerning internal control and corporate governance have fascinated considerable devotion and replies from industries, government, and academia. An internal control system is a vital instrument that empowers a corporation to attain its operational goals, advances operational competence, reinforces its organizational constitution, and boosts its competitiveness. Even application of regular procedures and effective lessening of operating hazards in a corporate depend on the enactment of a wide-ranging internal control device (Inacio, 2018).

Internal control processes are exist and practiced almost in every company, but they are disseminated in a day today activities without denoted as internal control activities. Yet there is no distinctive internal control system rather a suitable internal control system that can be amended to different level of activities and practice with the capacity of its regulatory values, activity, human resources and technologies (Inacio, 2018).

Owing to modest forces, corporations gradually ant current business resolutions for instance Enterprise Resource Planning (ERP) systems (Inacio,2018). The enterprise resource planning (ERP) system is a broad term for an extensive set of undertakings braced by multi-module application software that services organizations to control their resources, E.W.T. Ngai, C.C.H. Law and F.K.T. Wat (2008, cited in A. Teltumbde 2000).

ERP Systems can be well-defined as software systems, which deliver incorporation of all corporate practice, and data flow from all fragments of enterprise. The structures are built to sustenance practical areas such as sales & marketing, stock management, finance, HR management, production & planning (Rashid, Hossain, & Patrick, 2002).ERP as a corporate controlling philosophy, it is a novel administration model; and as a controlling instrument, it is also asset of innovative computer management system (Jiang, 2011).These systems are delight in their present acceptance on expenses of their facility to advance working

competence and to alleviate corporate ineffectiveness. The ERP systems have come to be indispensable for the corporate achievement since they are appropriate for virtually all types of company (Inacio, 2018).

ERP systems are critical to manufacturers for improving process efficiency. The operational mode of ERP systems differs from that of traditional manual operation systems; enterprises must re-evaluate risks associated with ERP implementation and establish response measures. Therefore, enabling enterprises to implement internal controls and strengthen their corporate constitution through an ERP equipped with an internal control mechanism has become a crucial issue (Inacio, 2018).

ERP as an innovative administration notion and a computer management system is extensively permitted and acknowledged by publics and has a plentiful advantage for numerous corporate. Whereas the internal control, because of device the ERP, company organization procedures amendment mainly which creates its setting vary critically with previously. Internal control's fundamental of human conquered altered to people, computer and Internet's combined mechanism under the ERP environment. ERP's implementation not only gets chances to the company internal control but also bring about the risk (wang, 2011).

Ndiwa (2014) studied the assessment of Internal Control System on Financial Performance in tertiary training institutions in Kenya. Many public institutions in Kenya are faced with poor financial performance which in extreme cases has led to the closure of some of them, despite having the necessary resources to run them. The study, therefore, endeavored to investigate the persistent poor financial performance from the perspective of internal controls which had hitherto been ignored. The general objective of the study was to establish the relationship between internal control and financial performance in tertiary institutions in Kenya. The study was limited to the African Institute of Research and Development Studies. The findings indicated that most respondents were of the view that indeed there was a relationship between internal control and financial management. In this light, therefore, the institutions that had entrenched prudent internal control strategies were most likely to manage their finances better hence meeting their financial and other pertinent obligations almost seamlessly. The study concludes that most training institutions had an internal audit department which was largely understaffed. The researcher concluded that staffing of the internal audit department determined financial performance of the institution in question. Ndifon (2014) sought to establish the relationship between internal control activities and

financial performance in Tertiary Institutions in Nigeria. The study area is Cross River State College of Education, Akamkpa. The study revealed that all activities of the College are initiated by the top management. Regarding control activities, the study found that there is clear separation of role in 20 the institution's finance and accounts department and that superior officer in the College supervised regularly work done by their subordinate.

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).

1.2. Statement of the Problem

ERP systems implementation has been widely used in developed countries and is rapidly expanding in developing countries. But, in Ethiopia the introduction and adoption of ERP systems implementation is the resent phenomena (Fozia, 2017). Commercial bank of Ethiopia is the leading bank in Ethiopia to buying and implements the firsthand enterprise resource planning called Oracle ERP systems (Fozia, 2017).

Studying the effect of ERP systems implementation in relation to effective internal control is inevitable because of the introduction of new risks accompanied by implementing ERP systems.

Researches on ERP systems implementation and internal control have been done in different parts of the world. Regardless of the great size of study on ERP systems, the effect of ERP systems on the internal control system left over sun well assumed (Elbardan&Ghoneim, 2016)."The level of research maturity is still very low because the number of publications regarding this subject is extremely small when compared to the number of publications in each of the core topics (internal control and ERP) individually" (Inacio, 2018).

Even though the existence of those researches in developed nations, very small amount of study has been done on 'the effect of ERP systems implementation on the effectiveness of internal control' in developing countries like Ethiopia. The James Abiola's study explores the Impact of Information and Communication Technology (ICT) on internal control effectiveness in preventing and detecting fraud with in the financial sector of a developing economy – Nigeria, revealed that 'the use of ICT-based tools and techniques in internal

control positively impacts on Internal Auditors' independence and objectivity' (Abiola, 2013)

Domestic studies about the ERP system focused on ERP system implementation. Abiot& 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 Mugher&Derba Cement industries. Foziya (2017) has conducted a study on oracle ERP system at commercial bank of Ethiopia. However, Ephream (2019) has conducted a research to investigate the effect of ERP on internal auditing effectiveness in Commercial Bank of Ethiopia (CBE)."There is limited published scientific evidence on the implementation of ERP system and its effects on accounting or auditing in particular" Ephream (2019).At the best knowledge of the researcher there is no research study on the effect of ERP on internal control in Ethiopia economy.

Academia has diverse opinions on whether ERP implementation can advance internal control use (Hunton et al., 2006; Lambert, 2001).These opposite effects or inconsistency show the results vague."It will be difficult to combine the findings with different definition of the variable in order to make a consistent body of knowledge' (Fisher, 1998).'According to Chenhall (2007) such consistency can be derived from study replication, which can promote the reliability and validity of the findings as well as providing a strong base in order to 'move forward by way of model development' (p.166)" (Shaiti, 2014). In the previous study there was methodological and analytical weakness of parameter estimation. Several pervious was employed linear regression model; it enables to estimate always continues variable, to estimate the effect of ERP systems on internal control effectiveness; which is not continues variable, this was the inappropriate method of parameter estimation. Therefore in this study ordered logistic regression will be employed to fill the gap based on existing evidence and to update the investigation. Therefore, it is appropriate to researching the effects of enterprise resource planning (ERP) systems implementation on the effectiveness of internal control of Selected Privet Commercial Banks in Ethiopia and thereby fills the gap in the existing literature.

1.3. Research Question

1. What is effect of the information system qualities of an ERP on effective internal control in Ethiopian private commercial banks?
2. What is effect of the service qualities of an ERP on effective internal control in Ethiopian private commercial banks?
3. What is effect of the internal control qualities of an ERP on effective internal control in Ethiopian private commercial banks?
4. What is the effect of the quality of communication using an ERP on effective internal control in Ethiopian private commercial banks?
5. What is the effect of internal control implementation under an ERP structure on effective internal control in Ethiopian private commercial banks?

1.4. Objectives

1.4.1. General Objective

The general objective of this study is to assess the effect of ERP systems on internal control effectiveness in private commercial banks in Ethiopia.

1.4.2. Specific objectives

The specific objectives of this study will be

1. To evaluate effect of the information system qualities of an ERP on effective internal control in Ethiopian private commercial banks.
2. To evaluate effect of the service qualities of an ERP on effective internal control in Ethiopian private commercial banks.
3. To examine effect of the internal control qualities of an ERP on effective internal control in Ethiopian private commercial banks.
4. To investigate the effect of the quality of communication using an ERP on effective internal control in Ethiopian private commercial banks.
5. To evaluate the effect of internal control implementation under an ERP structure on effective internal control in Ethiopian private commercial banks.

1.5. Significance of the Study

The research will have lots of benefits for practitioners and academicians by giving necessary information concerning internal control with respect to enterprise resource planning (ERP). Policy makers or regulatory bodies and organizational managers can perceive the gap which emanates from the technological improvement in ERP systems and can develop policies to fill those loopholes.

The academicians those who have interest to conduct the research on a detailed and comprehensive way focused on enterprise resource planning and internal control in the context of Ethiopia can serve as a base.

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 IC role of risk assessment) and one particular information system (the ERP system) in particular Awash Bank and Dashen at head office which implement internal control directly centralized system for Branches and also restricted to one dependent variable, effectiveness of internal control and five independent variables; information system quality, service quality, internal control quality, communication quality, internal control implementation under an ERP structure.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

Under 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 review

2.2.1. Internal control 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 control

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 control 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.

A risk according to Miles &Jazaie (2011) is the likelihood of an event occurring which will affect or could interrupt the organization from achieving their objectives. Vacca (2017) drawing from The Committee of Sponsoring Organizations of the Tread way 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 analyses 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 organizations 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. Asemeit (2014) explain that the occurrence and impact of disruptions (internal or external) to business activates 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 organization. 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.

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 safe guarding 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 of sourced from an external organization to assist management in achieving corporate objectives (KrishnaMoorthy, 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 Supervision, Segregation of duties, Transaction authorization, Independent verification, Accounting records, 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 out comes 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 suppose disk 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 control 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

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 clamed 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: Effective ERP system financial management, Improvements that can be achieved through ERP system, Return on ERP system investments, Organizational value delivered by ERP system initiatives and 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: Determine whether the ERP system function aligns with and understands the organization's objectives and strategies, Determine the effectiveness of ERP system resource and performance management, 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: Reviewing the organizational structure to identify whether there is in place, and whether this person is a member of the senior management team, Assessing the degree to which governance activities and standards are consistent with the internal audit activity's understanding of the organization's risk appetite, Consulting engagements as allowed by the internal audit charter and approved by the board,

Ongoing dialogues with the ERP system control activity to ensure that substantial organizational and risk changes are being addressed in a timely manner and 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 reduce sits 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 organization 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.

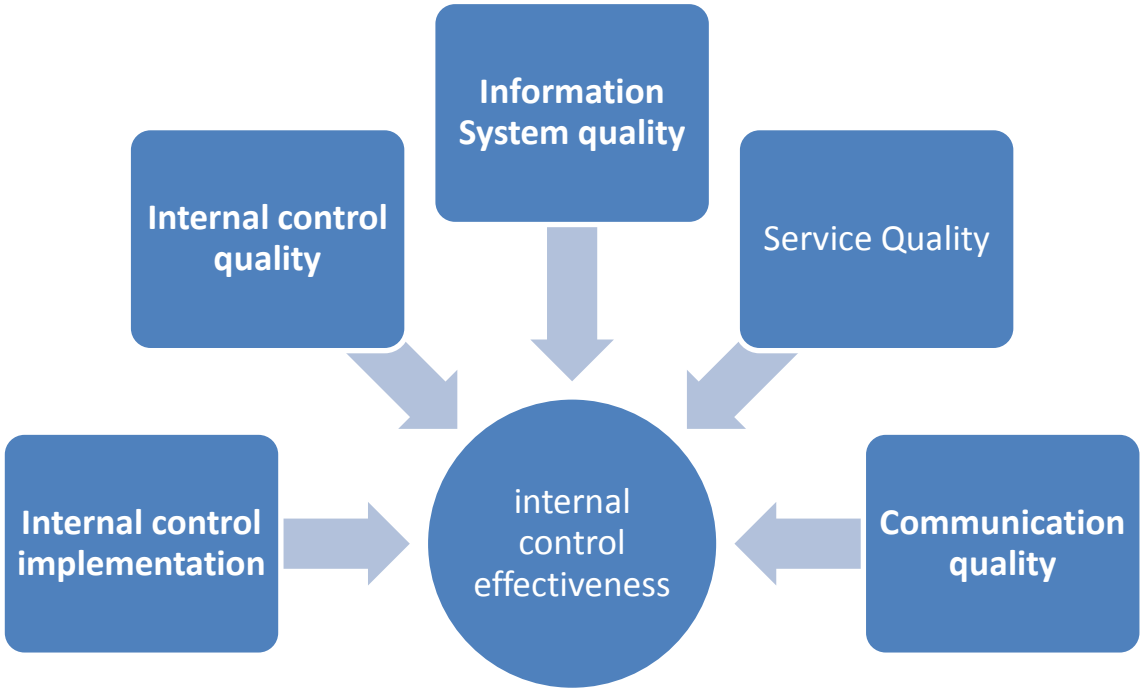
Inherent risks are those present in the normal course of conducting business activities. These include ERP system such as changes to global, national, and economic climates, as well as technological, legal, social, and political changes. Inherent risks of ERP system also include internal factors that 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.

2.6. Conceptual framework

Below the conceptual framework attempts to explain factors that affect effectiveness of Internal control 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 internal control effectiveness (the dependent variable) and impact of ERP (the five independent variables) at DB and AWB.



Source: own based on literature review, 2020.

CHAPTER THREE

RESEARCH METHODOLOGY AND DESIGN

3.1. Introduction

Research methodology is the path through which researchers wants to conduct their research. It implies the path through which these researchers formulate their problem and objective and present their result from the data obtained during the study period. The research design is intended to provide a necessary framework for a study. A very significant decision in research design way is the choice to be made regarding research approach since it determines how relevant information for a study was obtained; however, the research design process involves many interrelated decisions (Aaker, 2000)

3.2. Study Area

According to Fraenkel and Warren (2004) studies, population refers to the complete set of individuals (subjects or events) having common characteristics in which the researcher is interested. The population of the study was determined based on random sampling system.

3.3. Research Methodology

In order to achieve the objectives of the study, a qualitative research method is apprehended in general. The study was using this strategy because the data was obtained from qualitative aspects of the data source during the study time. Therefore, the purpose of this methodology is to implement the research plan and target devised by the researcher.

Since the aim of the study is to examine the effect of ERP implementation on internal control effectiveness, qualitative research method was used.

3.4. Research Design

The research design is intended to provide an appropriate framework for a study. A very significant decision in research design process is the choice to be made regarding research approach since it determines how relevant information for a study was obtained; however, the research design process involves many interrelated decisions (Aaker, 2000). This study employed an explanatory research design.

This study would have investigated the effect of ERP system implementation on internal control effectiveness in the case of private Commercial Banks of Ethiopia. Therefore, in order to address the general objective, the researcher would have employed explanatory research design. The researcher would have also adopted the descriptive research design for answering the specific research questions.

3.5. Study Population and Sample

The population for this research is organizations which implemented ERP system and have internal control 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 2 purposively selected organizations in Addis Ababa capital city of Ethiopia that are expected to be used as a case for the study. Dashen Bank and Awash Bank were selected purposively because their popularity in implementing such modern technologies and has greater impact to influence the country's overall social, political and economic issues through having large number of branches, better performance for successive years, have large number of customer. 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 would have focused on these organizations which have enough internal control staffs.

3.5.1. Sample Size Determination

Taking size of population (from which sample has been taken) in to consideration and to obtain the adequate responses through questionnaire census sampling method will be employed to select representative sample from the population. Generally the total population is included in the research study. The researcher believes that distributing the questionnaire for all respondents' from DB and AWB in total 66 respondents who use the internal control result and who execute the internal control at different level; as directorate, ,manager, supervisor, internal auditors, are appropriate.

Even if the use of proportional sampling is appropriate in order to obtain a representative samples 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).

3.6. Study Variables

3.6.1. Dependent Variable

Effectiveness of internal control:- performance of internal control indicates that effectiveness on Ethics and values, management philosophy, and operating style and ability, Division of responsibilities in organizational structure and human resource policies, Controlling specific financial statements, coding, processing, and summarizing relevant financial data, and reporting risks associated with activities, Risk assessment of internal environment, Risk assessment of external environment changes, Error prevention, Completeness of audit trail, General controls, Application control and Internal management performance. In this study the effectiveness of the factor has been measured through likert scale using strongly disagree to strongly agree.

3.6.2. Independent Variable

Information system quality: the information system success models of DeLone and McLean (1992,2003) identifies that information system has the features of accuracy, completeness, clarity, usefulness, understandability, timeliness, conciseness, reliability, up datedness, objectivity, ease of operation, ease of use, ease of learning, functional usefulness, flexibility, and efficiency of information. As ERP enables fast and online transactions, internal control has not been limited by regional arias and time. The Information system quality factor measured through likert scale using strongly disagrees to strongly agree.

Service quality: The DeLone and McLean (2003) updated D&M information system success model has the effect of service quality on information benefits. Service quality refers to the degree of support and service capabilities for system corrections of information system suppliers. Every enterprise will have different internal control requirement and unadoptable ERP system will not fulfill internal control demand. Because of these, ERP systems providers have to deliver suitable customized support services to satisfy the needs of enterprise users. The Service quality factor measured through likert scale using strongly disagree to strongly agree.

Internal control quality: An ERP system as an information management system that provides optimal management resources. The implementation of ERP system can prevent fraudulent activities, reduce enterprise risks through mutual inspections, and provide additional auto-test functions to strengthen internal control quality (Debreceny et

al,2005)..The Internal control quality factor measured through likert scale using strongly disagree to strongly agree.

Communication quality: refers to the communication between internal control personnel and ERP system suppliers or project groups. According to Wright and Wright (2002), even though an ERP system has an internal auditing design, the internal control advantages could not be actualized if internal control personnel misunderstand the functions. The Communication quality factor measured through likert scale using strongly disagrees to strongly agree.

Internal control implementation under an ERP structure: facilitates the effective operation and function performance at all enterprise levels during the automated working process, and employs online real-time monitoring to understand the effectiveness of internal controls. Little and Best (2003) cited in Hsing&Juo(2014) stated that "although control functions are installed at the control points of a transaction cycle for an individual ERP system, the benefits of ERP-related internal control functions may not be fully conveyed if an internal auditor does not agree with or is unaware of these functions. "The Internal control implementation factor measured through likert scale using strongly disagree to strongly agree.

3.7. Model Specification

Accordingly, the results of the study was interpreted through inferential statistics these includes correlation and regression, and ordered logistic regression model was used to examine the predictive power of each of the independent variables (5 factors of ERP) for effectiveness of internal control (dependent variable). It is important to present the detailed model specification for the ordered outcome variable. The ordinal outcomes represent categorical outcomes where there is clear natural ranking or order from low to high among the outcomes but the distance between adjacent categories is unknown. When modeling these types of outcomes, numerical values are assigned to the outcomes, but the numerical values are ordinal and reflect only the ranking of the outcomes. As an example, we might assign a dependent variable y the values 1 for "strongly disagree", 2 for "disagree", 3 for "neutral", 4 for "agree" and 5 for "strongly agree".

Consider the generic population regression function given by:

$$y_i^* = \mathbf{x}_i\beta + \varepsilon_i$$

If the latent variable y^* denotes a natural ordering among the possible outcomes, then the observed the dependent variable can assume a data generating process of the following type.

$$y = \begin{cases} 1 = \text{strongly disagree} \ \text{ if } \ y_i^* \le \mu_1 \\ 2 = \text{disagree} \ \text{ if } \ \mu_1 < y_i^* \le \mu_2 \\ 3 = \text{neutral if if } \ \mu_2 < y_i^* \le \mu_3 \\ 4 = \text{agree} \ \text{ if } \ \mu_3 < y_i^* \le \mu_4 \\ 5 = \text{strongly agree} \ \text{ if } \ y_i^* > \mu_4 \end{cases}$$

where y_i is the observed scores for the dependent variable that are given numerical values as follows: 1 for "strongly disagree", 2 for "disagree", 3 for "neutral", 4 for "agree" and 5 for "strongly agree"; y_i^* is the unobservable value of the dependent variable, $\mathbf{x}_i$ is a vector of variables that explains the variation in the observed dependent variable; β is a vector of coefficients; μ_i are the threshold parameters to be estimated along with β; and ε_i is a disturbance term that is assumed normally distributed. These threshold parameters, which usually must be estimated, determine how the values of y_i^* to get translated into the five possible values of y_i.

The probability that $y_i = 1$ is presented as

$$\begin{aligned} \Pr(y_i = 1) &= \Pr(y_i^* \le \mu_1) = \Pr(\mathbf{x}_i\beta + \varepsilon_i \le \mu_1) \\ &= \Pr(\varepsilon_i \le \mu_1 - \mathbf{x}_i\beta) = \Phi(\mu_1 - \mathbf{x}_i\beta) \end{aligned}$$

The probability that $y_i = 2$ is presented as

$$\begin{aligned} \Pr(y_i = 2) &= \Pr(\mu_1 < y_i^* \le \mu_2) = \Pr(\mu_1 < \mathbf{x}_i\beta + \varepsilon_i) \times \Pr(\mathbf{x}_i\beta + \varepsilon_i \le \mu_2) \\ &= \Pr(\varepsilon_i < \mathbf{x}_i\beta - \mu_1) \times \Pr(\varepsilon_i \le \mu_2 - \mathbf{x}_i\beta) \\ &= \Phi(\mu_2 - \mathbf{x}_i\beta) - \Phi(\mu_1 - \mathbf{x}_i\beta) \end{aligned}$$

The probability that $y_i = 3$ is presented as

$$\begin{aligned} \Pr(y_i = 3) &= \Pr(\mu_2 < y_i^* \le \mu_3) = \Pr(\mu_2 < \mathbf{x}_i\beta + \varepsilon_i) \times \Pr(\mathbf{x}_i\beta + \varepsilon_i \le \mu_3) \\ &= \Pr(\varepsilon_i < \mathbf{x}_i\beta - \mu_2) \times \Pr(\varepsilon_i \le \mu_3 - \mathbf{x}_i\beta) \\ &= \Phi(\mu_3 - \mathbf{x}_i\beta) - \Phi(\mu_2 - \mathbf{x}_i\beta) \end{aligned}$$

The probability that $y_i = 4$ is presented as

$$\begin{aligned}\Pr(y_i = 4) &= \Pr(\mu_3 < y_i^* \le \mu_4) = \Pr(\mu_3 < \mathbf{x}_i\beta + \varepsilon_i) \times \Pr(\mathbf{x}_i\beta + \varepsilon_i \le \mu_4) \\ &= \Pr(\varepsilon_i < \mathbf{x}_i\beta - \mu_3) \times \Pr(\varepsilon_i \le \mu_4 - \mathbf{x}_i\beta) \\ &= \Phi(\mu_4 - \mathbf{x}_i\beta) - \Phi(\mu_3 - \mathbf{x}_i\beta)\end{aligned}$$

The probability that $y_i = 5$ is presented as

$$\begin{aligned}\Pr(y_i = 5) &= \Pr(y_i^* > \mu_4) = \Pr(\mathbf{x}_i\beta + \varepsilon_i > \mu_4) \\ &= \Pr(\varepsilon_i > \mu_4 - \mathbf{x}_i\beta) = 1 - \Phi(\mu_4 - \mathbf{x}_i\beta)\end{aligned}$$

Using these probability outcomes, we can add up all of them to obtain the likelihood function for maximum likelihood estimation. From there, the log-likelihood function for final estimation can be composed as

$$L = \Pr(y_i = 1) \times \Pr(y_i = 2) \times \Pr(y_i = 3) \times \Pr(y_i = 4) \times \Pr(y_i = 5)$$

$$\ln L = \ln[\Pr(y_i = 1)] + \ln[\Pr(y_i = 2)] + \ln[\Pr(y_i = 3)] + \ln[\Pr(y_i = 4)] + \ln[\Pr(y_i = 5)]$$

This gives rise to

$$\begin{aligned}\ln L = &\sum_{y_i=1} \ln[\Phi(\mu_1 - \mathbf{x}_i\beta)] + \sum_{y_i=2} \ln[\Phi(\mu_2 - \mathbf{x}_i\beta) - \Phi(\mu_1 - \mathbf{x}_i\beta)] + \sum_{y_i=3} \ln[\Phi(\mu_3 - \mathbf{x}_i\beta) - \Phi(\mu_2 - \mathbf{x}_i\beta)] \\ &+ \sum_{y_i=4} \ln[\Phi(\mu_4 - \mathbf{x}_i\beta) - \Phi(\mu_3 - \mathbf{x}_i\beta)] + \sum_{y_i=5} \ln[1 - \Phi(\mu_4 - \mathbf{x}_i\beta)]\end{aligned}$$

Thus it will enable the researcher to determine the priority of each ERP Component for performance of internal control. Therefore, the econometric model employed for this study was ordered logit model which is presented below in a generic form:

$$Y_i = \alpha + \beta i X_i + \varepsilon_i \qquad (1)$$

Where Y_i represents performance of internal control in sector i of the component of ERP; X_i is the ERP determining the Performance of internal control; ε_i is the model error term that could capture all unobserved factors; βi is the model parameters for each dimensions and α is the constant term. The details of how the loglikelihood will be maximized and coefficients will be computed similar to the ones discussed above.

3.8. Method of Data Collection

The primary data for this study was obtained from questionnaires on employee selected and from interviews on informants. The data was collected from sample respondents through conducting interviews for qualitative part and questionnaires. In this study data collecting instruments are questionnaires and interviews.

3.8.1. Data Source and Data Type

In this study, the researcher would have qualitative data primary sources. Primary data was obtained from internal control experts of head office of both Dashen bank and Awash bank.

3.8.2. Data Collection Instrument

Researcher follows the qualitative research approach based on primary source and the type of data to get relevant information's. Both questionnaire and interview data collection instruments are going to be employed in order to collect the relevant data for the purpose of this study. The questionnaire was prepared for internal control experts of head office of both Dashen bank and Awash bank as the major tool and as key informant to triangulate the data found via questionnaire.

3.9. Method of Data Analysis

In analyzing the data the researcher would have used statistical software program STATA14. Accordingly, the result of the study was interpreted through descriptive and inferential statistics these include demographic characteristics, represent with frequent percentage and ordered logistic regression. In general, the researcher after gathering the relevant information via different tools and then, was presented by using tables, text and figures for this study.

3.10. Reliability and Validity

Field (2009) explained reliability as a means that measure (in this case questionnaire) should constantly reflect the construct that it is measuring. "Reliability refers to the consistency and stability of findings that enables findings to be replicated" (Burns, 2008). Cronbach's Alpha is very useful in developing attitude scales and questionnaires as the alpha level (or reliability) indicates if the items are measuring the same construct. Items that are not measuring what the rest are can be identified and deleted" (Burns, 2008). Cronbach's Alpha

Should over 0.70 to produce a reliable scale and any scale less than this alpha coefficient should be eliminated according to Burns (2008).

3.11. Ethical consideration

In the process of conducting any research, the researchers have the responsibility to be ethical to their profession as well as to the participants of their study. In order to ensure smooth accomplishment of the research objectives, researchers have to adhere to the various ethical principles. Therefore, to ensure the safe conduct of the study as indicated above, letters of support and cooperation would be secured from the university and submitted the study district administration. The researcher would assure the participants that the information to be gathered was never be used for other purposes rather than for the particular study. The researcher was secure permission from all participants and maintain consensus with them. Addressing all the above mentioned ethical concerns was helping the researcher to establish friendly relationships with all participants which in turn would contribute to eliciting credible, necessary and adequate data from the participants.

CHAPTER FOUR

RESULT AND CONCLUSION

4.1. Background of Respondent

Observing the demographic trend or characteristics of sample population before starting the data analysis is useful to make the analysis more meaning full for the reader. This part of the questionnaire requested limited amount of information related to personal and demographic status of the respondent.

The purpose of demographic analysis in this research is to describe the characteristics of the sample such as the number of respondents, range of age, proportion of males and females in the sample and educational status experience. Accordingly, these variables were summarized and described in table 4.1 below.

As the survey result regarding to respondents educational status 3.03% of respondent were PHD Degree holders, 37.88% of respondent were have Masters Degree, and 59.09% of respondents were Bachelor Degree holder. Regarding to gender 71.21% of respondents were males and 28.79% of respondent were Female. As the Age of respondent implies that only 3.03% of respondent 18-25 years, 30.30% of respondent were 26-33 years, 50.00% of respondent were have in age group of 34-41 years, 13.64% of respondent were have age group of 42-49 years and 3.03% of respondent were above 49 years. Regarding to experience in the banking industry 1.52% of respondent were in category of 0-2 years, 4.55% of respondent were in category of 3-5 years, 27.27% of respondent were in the category of 6-8 years and 66.67% of respondent were have experience more than 8 years. The educational

Table 4.1 Summary of respondent profile

		Freq.	Percent
Education	PHD Degree	2	3.03
	Master's Degree	25	37.88
	Bachelor Degree	39	59.09
Gender	Male	47	71.21
	Female	19	28.79
Age of respondent	18-25 years	2	3.03
	26-33 years	20	30.30
	34-41 years	33	50.00
	42-49 years	9	13.64
	Above 49 years	2	3.03
Experience	0-2 years	1	1.52
	3-5 years	3	4.55
	6-8 years	18	27.27
	More than 8 years	44	66.67

Source: own survey result, 2021

4.2. Assessment of Enterprise Resource Planning (ERP) Implementation on the Effectiveness of Internal Control

In this subsection of the study the descriptive result of all factors of ERP were assessed.

4.2.1. Information System Qualities of an ERP for Effective Internal Control

In this subsection of the study system qualities of an ERP for Effective Internal Control was assessed. As a result Information system qualities of an ERP regarding to Internal control follows timely system 9.09% of respondent were strongly disagree, 3.03% of respondent were disagree, 6.06% of respondent were nether agree nor disagree, 68.18% of respondent were agree and 13.64% of respondent were strongly agree. Regarding to System Reliability 6.06% of respondent were disagree, 10.61% of respondent were neither agree nor disagree, 74.24% of respondent were agree and 9.09% of respondent were strongly agree on the statement. Regarding to Internal control system is Accurate 9.09% of respondent were disagree, 25.76% of respondent were neither agree nor disagree, 48.48% of respondent were agree and 16.67% f respondent were strongly agree on the statement. Regarding to System response time is logical and enough 12.12% of respondent were disagree, 21.21% of respondent were neither agree nor disagree, 59.09% of respondent were agree and 7.58% of respondent were strongly agree on the statement. Internal control is System stabile 3.03% of respondent were disagree, 9.09% of respondent were neither agree nor disagree, 30.3% of

respondent were agree and 7.58% of respondent were strongly agree. Regarding to system quality is Complete 18.18% of respondent were strongly disagree, 31.82% of respondent were disagree, 43.94% of respondent were neither agree nor disagree, 4.55% of respondent were agree and 1.52% of respondent were strongly agree on the statement. There is System integration of internal control 12.12% of respondent were disagree, 24.24% of respondent were neither agree nor disagree, 54.55% of respondent were agree and 9.09% of respondent were strongly agree on the statement. In generally regarding to system quality of internal control follows timely and Reliable.

Table 4.2 Assessment of Information System Qualities of an ERP

Statement		**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
Internal control follows Timely System	Freq	6	2	4	45	9
	Perc.	9.09	3.03	6.06	68.18	13.64
System Reliability	Freq	0	4	7	49	6
	Perc.	0.00	6.06	10.61	74.24	9.09
Internal control system is Accurate	Freq	0	6	17	32	11
	Perc.	0.00	9.09	25.76	48.48	16.67
System response time is logical and enough	Freq	0	8	14	39	5
	Perc.	0.00	12.12	21.21	59.09	7.58
Internal control is System stabile	Freq	2	6	20	33	5
	Perc.	3.03	9.09	30.3	50	7.58
System quality is Complete	Freq	12	21	29	3	1
	Perc.	18.18	31.82	43.94	4.55	1.52
There is System integration of internal control	Freq	0	8	16	36	6
	Perc.	0.00	12.12	24.24	54.55	9.09

Source: own survey result, 2021

4.2.2. Service Qualities of an ERP for Effective Internal Control

In this subsection of the study Service Qualities of an ERP for Effective Internal Control were assessed. As a result Service Qualities of an ERP regarding to Quality of internal control Capabilities for customized modifications 1.52% of respondent were strongly disagree, 7.58% of respondent were disagree, 21.21% of respondent were neither agree nor disagree, 54.55% of respondent were agree and 15.15% of respondent were strongly agree on the statement. Regarding to Institution apply Cost-effective computer systems 12.12% of respondent were disagree, 34.85% of respondent were neither agree nor disagree, 39.39% of respondent were agree and13.64% of respondent were strongly agree on the statement.

Regarding to technical capacity of computer centers supports internal control 1.52% of respondent were strongly disagree, 6.06% of respondent were disagree on the statement, 27.27% of respondent were neither agree nor disagree, 51.52% of respondent were agree and 13.64% of respondent were strongly disagree. Regarding to the degree of participation at management levels applicable 6.06% of respondent were disagree, 21.21% of respondent were neither agree nor disagree, 62.12% of respondent were agree and 10.61% of respondent were strongly agree on the statement. In generally ERP regarding tor service quality degree of participation at management levels highly applicable.

Table 4.3 Assessment of Service Qualities of an ERP

Statement		**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
Quality of internal control Capabilities for customized modifications	freq	1	5	14	36	10
	Perc.	1.52	7.58	21.21	54.55	15.15
Institution apply Cost-effective computer systems	freq	0	8	23	26	9
	Perc.	0.00	12.12	34.85	39.39	13.64
Technical capacity of computer centers supports internal control	freq	1	4	18	34	9
	Perc.	1.52	6.06	27.27	51.52	13.64
Degree of participation at management levels applicable	freq	0	4	14	41	7
	Perc.	0.00	6.06	21.21	62.12	10.61

Source: own survey result, 2021

4.2.3. Internal Control Qualities of an ERP for Effective Internal Control

In this subsection of the study internal control qualities of an ERP for effective internal control were assessed. As a result internal control qualities of an ERP regarding to Internal control Output requests is adequately applied 3.03% of respondent were strongly disagree, 13.64% of respondent were disagree, 18.18% of respondent were neither disagree nor agree, 51.52% of respondent were agree and 13.64% of respondent were strongly agree on the statement. In the case of Implementing ERP can prevent fraud 9.09% of respondent were disagree, 22.73% of respondent neither agree nor disagree, 54.55% of respondent were

agree and 13.64% of respondent were strongly agree on the statement. Regarding to internal control is always Complete in your institution 1.52% of respondent were strongly disagree, 21.21% of respondent were disagree, 19.7% of respondent were neither agree nor disagree, 53.03% of respondent agree and 4.55% of respondent were strongly agree on the statement. Regarding to internal control were capable 4.55% of respondent were disagree, 13.64% of respondent were neither agree nor disagree, 68.18% of respondent were agree and 13.64% of respondent were strongly agree on the statement. In generally regarding to internal Control Qualities of an ERP capability of internal control in the institutions were effective.

Table 4.4 Assessment of Internal Control Qualities of an ERP

Statement		**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
Internal control Output requests is adequately applied	Freq	2	9	12	34	9
	Perc.	3.03	13.64	18.18	51.52	13.64
Implementing ERP can prevent fraud	Freq	0	6	15	36	9
	Perc.	0.00	9.09	22.73	54.55	13.64
Internal control is always Complete in your institution	Freq	1	14	13	35	3
	Perc.	1.52	21.21	19.7	53.03	4.55
Internal control were capable	Freq	0	3	9	45	9
	Perc.	0.00	4.55	13.64	68.18	13.64

Source: own survey result, 2021

4.2.4. Quality of Communication using an ERP for Effective Internal Control

In this subsection of the study quality of communication using an ERP for effective internal control were assessed institution has smooth Relationship with ERP project groups 1.52% of respondent of strongly disagree, 15.15% of respondent were disagree, 45.45% of respondent were neither agree nor disagree, 33.33% of respondent were agree and 4.55% of respondent were strongly agree on the statement. Regarding to The knowledge and training related to ERP systems acceptable 4.55% of respondent were disagree, 45.45% of respondent were neither agree nor disagree, 42.42% of respondent agree and7.58% of respondent were strongly agree on the statement. Regarding to the function introduction, system files, and user manual of ERP system is satisfactory 13.64% of respondent were disagree, 48.48% of

respondent were neither agree nor disagree, 34.85% of respondent were agree and 3.03% of respondent were strongly agree. Regarding to the industry knowledge of ERP project groups supports the control activity 10.61% of respondent were disagree, 40.91% of respondent were neither agree nor disagree, 40.91% of respondent were agree and7.58% of respondent were strongly agree. Regarding the attitude of ERP project groups is always positive 12.12% of respondent were disagree, 48.48% of respondent were neither agree nor disagree, 36.36% of respondent were agree and 3.03% of respondent were strongly agree on the statement. Regarding to there is good Understanding of the system 1.52% of respondent were strongly disagree, 6.06% of respondent were disagree, 33.33% of respondent were neither agree nor disagree, 53.03% of respondent were agree and 6.06% of respondent were strongly agree on the statement. Generally ERP regarding to the quality of communication in the institution level has good understanding system relatively compared to the other Quality of Communication.

Table 4.5 Quality of Communication using an ERP

Statement		**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
Institution has smooth Relationship with ERP project groups	Freq.	1	10	30	22	3
	Perc.	1.52	15.15	45.45	33.33	4.55
The knowledge and training related to ERP systems acceptable	Freq.	0	3	30	28	5
	Perc.	0.00	4.55	45.45	42.42	7.58
the function introduction, system files, and user manual of ERP system is satisfactory	Freq.	0	9	32	23	2
	Perc.	0.00	13.64	48.48	34.85	3.03
The industry knowledge of ERP project groups supports the control activity	Freq.	0	7	27	27	5
	Perc.	0.00	10.61	40.91	40.91	7.58
The attitude of ERP project groups is always Positive	Freq.	0	8	32	24	2
	Perc.	0.00	12.12	48.48	36.36	3.03
There is good Understanding of the system	Freq.	1	4	22	35	4
	Perc.	1.52	6.06	33.33	53.03	6.06

Source: own survey result, 2021

4.2.5. Internal Control Implementation under an ERP Structure for Effective Internal control

In this subsection of the study Internal Control Implementation under an ERP Structure for Effective Internal control were assessed. As a result Internal Control Implementation under

an ERP Structure regarding Functions and division of responsibilities of the information-processing department 1.52% of respondent were strongly disagree, 6.06% of respondent were disagree, 24.24% of respondent were neither agree nor disagree, 56.06% of respondent were agree and 12.12% of respondent were strongly agree.

Regarding to the existence of Control of system development and program modification 3.03% of respondent were strongly disagree, 15.15% of respondent were disagree, 16.67% of respondent were neither agree nor disagree, 62.12% of respondent were agree and 3.03% of respondent were strongly agree on the statement.

Regarding to the existence of Control of the preparation of system documents 3.03% of respondent were strongly disagree, 13.64% of respondent were disagree, 22.73% of respondent were neither agree nor disagree, 54.55% of respondent were agree and 6.06% of respondent were strongly agree on the statement.

Regarding to the existence of Control of program and information access 18.18% of respondent were disagree on the statement, 28.79% of respondent were neither agree nor disagree, 46.97% of respondent were agree and 6.06% of respondent were strongly agree on the statement. In the case of existence of control of data input and output 6.06% of respondent were disagree on the statement, 27.27% of respondent were neither agree nor disagree, 48.48% of respondent were agree and 18.18% of respondent were strongly agree on the statement.

Regarding to the existence of control of information processing 6.06% of respondent were disagree, 28.79% of respondent were neither agree nor disagree, 43.94% of respondent were agree and 21.21% of respondent were strongly agree.

Regarding to control of file and equipment safety 9.09% of respondent were disagree on the statement, 33.33% of respondent were neither agree nor disagree, 46.97% of respondent were agree on the statement and 10.61% of respondent were strongly agree on the statement.

Regarding to the control of the purchasing, use, and maintenance of system hardware and software 9.09% of respondent were disagree, 27.27% of respondent were neither agree nor disagree on the statement, 46.97% of respondent were agree on the statement and16.67% of respondent were strongly agree on the statement.

In case of existence of Control of the system recovery plan and testing procedure 9.09% of respondent were disagree on the statement, 30.3% of respondent were neither agree nor disagree, 45.45% of respondent were agree and15.15% of respondent were strongly agree on the statement.

Regarding to the control over information and communication security always checks 9.09% of respondent were disagree, 19.7% of respondent were neither agree nor disagree, 53.03% of respondent were agree and 18.18% of respondent were strongly agree on the statement.

Regarding to the Control of the procedure for reporting public information to specified Web sites 1.52% of respondent were strongly disagree, 37.88% of respondent were disagree, 53.03% of respondent were neither agree nor disagree and 7.58% of respondent were strongly agree on the statement. In generally the Control of system development and program modification system were effective with respect to Internal Control Implementation under an ERP Structure.

Table 4.6 Assessment of Internal Control Implementation under an ERP Structure

Statement		**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
Functions and division of responsibilities of the information-processing department	Freq.	1	4	16	37	8
	Perc.	1.52	6.06	24.24	56.06	12.12
There is Control of system development and program modification	Freq.	2	10	11	41	2
	Perc.	3.03	15.15	16.67	62.12	3.03
There is Control of the preparation of system documents	Freq.	2	9	15	36	4
	Perc.	3.03	13.64	22.73	54.55	6.06
There is Control of program and information access	Freq.	0	12	19	31	4
	Perc.	0.00	18.18	28.79	46.97	6.06
There is Control of data input and output	Freq.	0	4	18	32	12
	Perc.	0.00	6.06	27.27	48.48	18.18
There is Control of information processing	Freq.	0	4	19	29	14
	Perc.	0.00	6.06	28.79	43.94	21.21
There is Control of file and equipment safety	Freq.	0	6	22	31	7
	Perc.	0.00	9.09	33.33	46.97	10.61
There is Control of the purchasing, use,	Freq.	0	6	18	31	11

and maintenance of system hardware and software	Perc.	0.00	9.09	27.27	46.97	16.67
There is Control of the system recovery plan and testing procedure	Freq.	0	6	20	30	10
	Perc.	0.00	9.09	30.3	45.45	15.15
Control over information and communication security always checks	Freq.	0	6	13	35	12
	Perc.	0.00	9.09	19.7	53.03	18.18
Control of the procedure for reporting public information to specified Web sites	Freq.	1	25	35	0	5
	Perc.	1.52	37.88	53.03	0.00	7.58

Source: own survey result, 2021

4.3. Assessment of Effectiveness of Internal control

In this subsection of the Effectiveness of Internal control in the selected banking institution were assessed. As a result Effectiveness of Internal control regarding to selected institution has effective Ethics and values, management philosophy, and operating style and ability 3.03% of respondent were strongly disagree, 10.61% of respondent were disagree, 30.3% of respondent were neither agree nor disagree, 46.97% of respondent were agree and 9.09% of respondent were strongly agree on the statement.

Regarding to the division of responsibilities in organizational structure and human resource policies is effective 3.03% of respondent were strongly disagree, 7.58% of respondent were disagree, 24.24% of respondent neither agree nor disagree, 63.64% of respondent were agree and 1.52% of respondent were strongly agree.

Regarding Controlling specific financial statements, coding, processing, and summarizing relevant financial data, and reporting risks associated with activities always implemented efficiently 3.03% of respondent were strongly disagree, 3.03% of respondent were disagree, 31.82% of respondent were neither agree nor disagree, 46.97% of respondent were agree and 15.15% of respondent were strongly agree. Regarding risk assessment of internal environment is effective 13.64% of respondent were disagree, 16.67% of respondent were neither agree nor disagree, 59.09% of respondent were agree and 10.61% of respondent were strongly agree. Regarding to risk assessment of external environment changes is effective 22.73% of respondent were disagree, 27.27% of respondent were neither agree nor disagree, 42.42% of respondent were agree and 7.58% of respondent were strongly agree.

Regarding to error prevention method internal control is effective 15.15% of respondent were disagree, 24.24% of respondent were neither agree nor disagree, 59.09% of respondent were agree and 1.52% of respondent were strongly agree.

Regarding to Completeness of audit trail is effective 7.58% of respondent were disagree, 21.21% of respondent were neither agree nor disagree, 56.06% of respondent were agree and 15.15% of respondent were strongly agree on the statement.

Regarding to the general controls of internal control is effective 12.12% of respondent were disagree, 15.15% of respondent were neither agree nor disagree, 56.06% of respondent were agree and 16.67% of respondent were strongly agree on the statement.

Regarding to the internal control regarding to Application of internal control is effective 9.09% of respondent were disagree, 22.73% of respondent were neither agree nor disagree, 56.06% of respondent were agree and 12.12% of respondent were strongly agree.

Regarding to existence effective Internal management performance 3.03% of respondent were strongly disagree, 15.15% of respondent were disagree, 19.7% of respondent were neither agree nor disagree, 56.06% of respondent were agree and 6.06% of respondent were strongly agree. In generally performance of internal control relative compared to other division of responsibilities in organizational structure and human resource policies is effective.

Table 4.7 Assessment of Effectiveness of Internal control

Statement	**Strongly disagree**		**Disagree**	**Neutral**	**Agree**	**Strongly agree**
Your institution has effective Ethics and values, management philosophy, and operating style and ability	Freq.	2	7	20	31	6
	Perc.	3.03	10.61	30.3	46.97	9.09
Division of responsibilities in organizational structure and human resource policies is effective	Freq.	2	5	16	42	1
	Perc.	3.03	7.58	24.24	63.64	1.52
Controlling specific financial statements, coding, processing, and summarizing relevant financial data, and reporting risks	Freq.	2	2	21	31	10

associated with activities always implemented efficiently	Perc.	3.03	3.03	31.82	46.97	15.15
Risk assessment of internal environment is effective	Freq.	0	9	11	39	7
	Perc.	0.00	13.64	16.67	59.09	10.61
Risk assessment of external environment changes is effective	Freq.	0	15	18	28	5
	Perc.	0.00	22.73	27.27	42.42	7.58
Error prevention method internal control is effective	Freq.	0	10	16	39	1
	Perc.	0.00	15.15	24.24	59.09	1.52
Completeness of audit trail is effective	Freq.	0	5	14	37	10
	Perc.	0.00	7.58	21.21	56.06	15.15
General controls of internal control is effective	Freq.	0	8	10	37	11
	Perc.	0.00	12.12	15.15	56.06	16.67
Internal control regarding to Application of internal control is effective	Freq.	0	6	15	37	8
	Perc.	0.00	9.09	22.73	56.06	12.12
There is effective Internal management performance	Freq.	2	10	13	37	4
	Perc.	3.03	15.15	19.7	56.06	6.06

Source: Own survey result, 2021

4.4. Effect of Enterprise Resource Planning (ERP) Implementation on the Effectiveness of Internal Control

Based on the purpose of the study as preplan of the study in this subsection study attempted to infer and identify the effect of enterprise resource planning (ERP) implementation on the effectiveness of internal control. But before going to see the regression result study first needs to the model is appropriate for the study or not based on the assumption of the ordered logistic regression model.

4.4.1. Assumption of Ordered Logistic Regression

When choosing to analyze data using ordinal regression, part of the process involves checking to make sure that the data want to analyze can actually be analyzed using ordinal

regression. Therefore needs to do this because it is only appropriate to use ordinal regression if data passes three assumptions that are required for ordinal regression to give valid result. In practice, checking for these three assumptions just adds a little bit more time to analysis.

Assumption #1: dependent variable should be measured at the ordinal level. Therefore this study meets fits this assumption of the model since Likert scale was employed (i.e. 5-point scale from "strongly disagree" through to "strongly agree"),

Assumption #2: One or more independent variables that is continuous, ordinal or categorical (including dichotomous variables). However, ordinal independent variables must be treated as being either continuous or categorical. Therefore the models fit these assumptions since the study employed 5 categorical independent variables.

Assumption #3: There is no multicollinearity. Multicollinearity occurs when you have two or more independent variables that are highly correlated with each other. This leads to problems with understanding which variable contributes to the explanation of the dependent variable and technical issues in calculating an ordinal regression. Determining whether there is multicollinearity is an important step in ordinal regression. Unfortunately, testing for this assumption based on the result of VIF (variance inflation factors) and tolerance (O'Connell, 2006). Multicollinearity exists when Tolerance is below 0.1 and VIF (variance inflation factors) is greater than 10 or an average much greater than 1. No serial correlation among the explanatory variables and this means the association within the independent variables should be small enough so that it was easy to see the effect on the dependent variables. As the survey result shows, in table 4.4 below the highest VIF result was 3.126 and lowest tolerance level was 0.320 which implies that VIF below 10 and tolerance level greater than 0.1. The result indicates that there was no multicollinearity problem.

Table4.8. Multicollinerity test statistics

Collinearity Statistics	
Tolerance	VIF
0.347	2.878
0.320	3.126
0.344	2.906
0.835	1.197
0.485	2.061

Source own survey result 2021

Before attempt to run regression to analyze effect of explanatory variable on the dependent variable, it's necessary to check assumption using diagnostic tests, as a result tests in the above subsection indicates that the model fits the assumption and doesn't violet the assumption. In this subsection of the study to see the significant factors and the effect of each ERP system on internal control the study was used the ordered logistic regression. As a result more specifically the significant factors were identified in table 4.9 below. The output below, the first has shown the iteration log. At iteration 0, Software fits a null model, i.e. the intercept-only model. It then moves on to fit the full model and stops the iteration process once the difference in log likelihood between successive iterations become sufficiently small. The final log likelihood -52.108437 is displayed again. It can be used in comparisons of nested models. Also at the top of the output that all 66 observations in the data set were used in the analysis. The likelihood ratio chi-square of 28.53 with a p-value of 0.0000 tells that model as a whole is statistically significant, as compared to the null model with no predictors. The pseudo-R-squared of 0.2149 is also given. In the table we see the coefficients, their standard errors, z-tests and their associated p-values, and the 95% confidence interval of the coefficients. Four of the information system qualities of an ERP, service qualities of an ERP, internal control qualities of an ERP, Internal control implementation under an ERP structure are statistically significant; quality of communication using an ERP is not statistically significant at 5% significance level. So for information system quality of ERP, it indicates that for a one unit increase in information system quality of ERP, results a 1.495 increase in the log-odds of being in effectiveness of internal control, given all of the other variables in the model are held constant. For a one unit increase in service qualities of an ERP, results a 0.416 increase in the log-odds of being in effectiveness of internal control, given that all of the other variables in the model are held constant. And a one unit increase in internal control qualities of an ERP, leads to a 0.374 increase in the log-odds of being in effectiveness of internal control, given that all of the other variables in the model are held constant whereas, Internal control implementation under an ERP structure leads to a 1.074 increase in the log-odds of being in effectiveness of internal control.

Table4.9.ordered logistic regression

Iteration 0: log likelihood = -66.373255			Number of obs = 66			
Iteration 1: log likelihood = -52.850973			LR chi2(5) = 28.53			
Iteration 2: log likelihood = -52.118029			Prob > chi2 = 0.0000			
Iteration 3: log likelihood = -52.108442			Log likelihood = -52.108437			
Iteration 4: log likelihood = -52.108437			Pseudo R2 =0.2149			
Internal control effectiveness	Coef.	Std. Err.	Z	P>z	[95% Conf. Interval]	
Information system qualities of an ERP	1.495821	.5755543	2.60	0.009	.367755	2.623886
Service qualities of an ERP	.4160386	.4559003	3.91	0.031	-.4775095	1.309587
Internal control qualities of an ERP	.3741532	.4376031	2.86	0.043	-.4835332	1.23184
Quality of communication using an ERP	-.6142379	.5474207	-1.12	0.262	-1.687163	.4586869
Internal control implementation under an ERP	1.073661	.5914634	2.82	0.019	-.0855857	2.232908
/cut1	5.623631	2.421974			.8766488	10.37061
/cut2	9.794272	2.569567			4.758013	14.83053
/cut3	13.57949	2.854006			7.98574	19.17324

Source: own survey result 2021

4.4.2. Proportional Odds Ration

The output below is the coefficient parameters converted to proportional odds ratios and their 95% confidence intervals. The four statistically significant variables have proportional odds ratios as Information system qualities of an ERP (1.496), Service qualities of an ERP (0.041), Internal control qualities of an ERP (0.374) and Internal control implementation under an ERP(1.073661). The finding indicates that for a one unit increase in Information system qualities of an ERP, the odds of moving from smallest likert scale to the next scale are 1.496 times greater, given that the other variables in the model are held constant, for a one unit increase in Service qualities of an ERP, the odds of moving forward with in (1-5) one step from the disagree to agree are (0.0416) times greater, given that the other variables in the model are held constant and for a one unit increase in Internal control qualities of an ERP, the odds of moving from disagree to agree are 0.374 times greater, given that the other variables in the model are held constant.

Table4.10. Proportional odds ratios

Internal control effectiveness	Odds Ratio	Std. Err.	Z	P>z	[95% Conf. Interval]	
Information system qualities of an ERP	1.495821	.5755543	2.60	0.009	.367755	2.623886
Service qualities of an ERP	.4160386	.4559003	3.91	0.031	-.4775095	1.309587
Internal control qualities of an ERP	.3741532	.4376031	2.86	0.043	-.4835332	1.23184
Quality of communication using an ERP	-.6142379	.5474207	-1.12	0.262	-1.687163	.4586869
Internal control implementation under an ERP	1.073661	.5914634	2.82	0.019	-.0855857	2.232908
/cut1	5.623631	2.421974			.8766488	10.37061
/cut2	9.794272	2.569567			4.758013	14.83053
/cut3	13.57949	2.854006			7.98574	19.17324

Source own survey result 2021

4.5. Discussion

In order to show more briefly the effect as the indicated in the result subsection the effect of ERP on internal control effectiveness based on the study result was identified. Here in this sub-section, detailed discussions of findings implying to each ERP measures (indicators) presented.

4.5.1 Effect of ERP

Information system qualities of an ERP:-According to ordered logit regression result shown above in table 4.9, the coefficient of Information system qualities of an ERP variable was positive and significant at 5% significance level, as opposite of expected. This implying that, Information system qualities of an ERP has significant effect on effectiveness of internal control at 5% significance level.

Service qualities of an ERP:-The results of ordered logistic regression estimation in table 4.9 showed that the **Service qualities of an ERP** found to have a positive and significant relationship with the dependent variable of internal control effectiveness. Moreover, **Service qualities of an ERP** variable had found significant influence on effectiveness of internal control, implying that the expectation was true.

Internal control qualities of an ERP:-as stated in the empirical and theoretical review, internal control qualities of an ERP represented with implementation of internal control. Moreover, the ordered logistic regression result as presented in table 4.9 showed in constitute with expectation that internal control qualities of an ERP found to have a significant positive effect on the effectiveness of internal control. The positive coefficient of internal control qualities of an ERP with p-value of 0.043 was significant to influence effectiveness of internal control at 5% level of significance.

Quality of communication using an ERP:-Based on previous theoretical and empirical works, as Quality of communication using an ERP improves the internal control effectiveness but the finding contradicts the previous theoretical and empirical works, quality of communication using an ERP was became one of the insignificant factors to internal control effectiveness.

Internal control implementation under an ERP structure:-According to ordered logit regression result shown above in table 4.9, the coefficient of internal control implementation under an ERP structure was positive and significant at 5% significance level, as expected. This implying that there is significant relationship internal control implementation under an ERP structure and internal control effectiveness at 5% significance level. This means to mean that internal control implementation under an ERP structure one of important variable for effectiveness of internal control.

4.6. Interview analysis

During the study interviews, the researcher tried to obtain as much information as possible related to the research objectives. The interviewees were asked questions related to their background, experience and position. As a result from the main interview finding indicates that most of the interviewees stated that the internal control department or the group is normally the body responsible for IC works. However, there are questions that should be asked: Does the bank have an internal control job? Does it one of the bank units or part of other unit(s)? What are the main challenges to implement Enterprise Resource Planning (ERP) systems without compromising internal control effectiveness? What are the main Opportunities of implementing Enterprise Resource Planning (ERP) systems to adhere effective internal control? To what extent do the ERP systems support the IC? The participants of Bank of Awash and Dashen declared that, they have internal control activity

which is independent of other unites of the banks. Getting the management support, choosing appropriate brand (ERP vender), customizing ERP systems are the challenges to implement ERP systems without compromising the internal control effectiveness. The opportunity of implementing ERP systems which are in favor of having effective internal control are: ERP systems have an inbuilt internal control system, providing complete control to the bank, an ERP system is an instrument for effective internal control system. The findings of the study revel that the main purpose of adopting the ERP systems is to help the management control the processes.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1. Conclusion and Summary

The main of this study is to assess the effect of ERP systems on internal control effectiveness in privet commercial banks in Ethiopia. The specifically this study intended to evaluate effect of the Information system qualities of an ERP on effective internal control in Ethiopian privet commercial banks, to evaluate effect of the service qualities of an ERP on effective internal control in Ethiopian privet commercial banks, to examine effect of the internal control qualities of an ERP on effective internal control in Ethiopian privet commercial banks, to investigate the effect of the quality of communication using an ERP on effective internal control in Ethiopian privet commercial banks and to evaluate the effect of internal control implementation under an ERP structure on effective internal control in Ethiopian privet commercial banks. To address such objective study employed explanatory research design. The researcher also adopted the descriptive research design for answering the specific research questions, using simple random sampling 66 respondents were selected from two purposively selected private commercial banks and the results of the study interpreted through inferential statistics these includes and correlation and regression, and ordered logit model was used to examine the predictive power of each of the independent variables (5 factors of ERP) for effectiveness of internal control (dependent variable).

It is important to present the detailed model specification for the ordered outcome variable. The ordinal outcomes represent categorical outcomes where there is clear natural ranking or order from low to high among the outcomes but the distance between adjacent categories is unknown. When modeling these kinds of outcomes, numerical values are assigned to the outcomes, but the numerical values are ordinal and reflect only the ranking of the outcomes. As an example, we might assign a dependent variable y the values 1 for "strongly disagree", 2 for "disagree", 3 for "neutral", 4 for "agree" and 5 for "strongly agree".

As a result indicates that ordered logit regression result shows the coefficient of Information system qualities of an ERP variable was positive and significant at 5% significance level, as opposite of expected. This implying that Information system qualities of an ERP has significant effect on effectiveness of internal control at 5% significance level. The result of

ordered logistic regression estimation shows that the Service qualities of an ERP found to have a positive and significant relationship with the dependent variable of internal control effectiveness. Moreover, Service qualities of an ERP variable had found significant influence on effectiveness of internal control, implying that the expectation was true and as stated in the empirical and theoretical review, internal control qualities of an ERP represented with implementation of internal control. Moreover, the ordered logistic regression result shows in constitute with expectation that internal control qualities of an ERP found to have a significant positive effect on the effectiveness of internal control. The positive coefficient of internal control qualities of an ERP with p-value of 0.043 was significant to influence effectiveness of internal control at 5% level of significance. Based on previous theoretical and empirical works, as Quality of communication using an ERP improves the internal control effectiveness but the finding contradicts the previous theoretical and empirical works, quality of communication using an ERP was became one of the insignificant factors to internal control effectiveness. According to ordered logistic regression result shows, the coefficient of internal control implementation under an ERP structure was positive and significant at 5% significance level, as expected. This implying that there is significant relationship between internal control implementation under an ERP structure and internal control effectiveness at 5% significance level. This means to mean that internal control implementation under an ERP structure is one of important variable for effectiveness of internal control.

5.2. Recommendation

Based on the finding of the study researcher recommends the following points banking industries:

- Private bank institution to become more effective in their internal control regarding to Information system quality should have to work more for the internal control timely Information system, Information system Reliability, internal control Information system Accuracy, System response time on logical and enough manner, by building stabile Information system and Information system integration of internal control.
- For the institutions managers, this finding has implication with respect to the service quality very important for effective internal control. So should have to apply Cost-effective computer systems for quality of internal control capabilities for customized modifications, institution technical capacity of computer centers should have to supports

internal control and the Degree of participation at management levels should be always applicable

- Regarding to internal control quality internal control output requests should be adequately applied, implementation of ERP should prevent fraud, internal control should always complete and capable in the institution.
- Institution to become effective in internal control regarding to internal control implementation under ERP structure control of program and information access, Control of the preparation of system documents, Control of system development and program modification and Control of data input and output Control over information and communication security always checks should be applied in the institution.

References

Aaker A, Kumar VD, George S. Marketing Research. New York: John Wiley & Sons Inc; 2000

Abiot, S. and Gomez, J (2012), "A Successful ERP Implementation in an Ethiopian Company"

Bailey, J. E., & Pearson, S. W. (1983). Development of a Tool for Measuring and Analyzing Case study of ERP Implementation in Mesfin Industrial Engineering Pvt Ltd.

Barry J Cooper,Leung Philomena and Wong, Grace (2006)"The Asia Pacific literature review on internal auditing "Managerial auditing journal, vol. 21, no. 8, pp. 822-834.

Bosire Joseph Haidu and Dr. NyabogaIfijehFaidin(2017)" Adding Value to Organizations:

Improving the Existing Functions of Internal Audit at Organizational Level" University Utara Malaysi.

Bruce Adityasahara and Tucker Koch Robert (2008)"EPR systems and internal audit"information system vol IX No 2.

Chenhall, R. & Chapman, C. (2006).Theorising and Testing Fit in Contingency Research on

Chenhall, R. H. (2007). Theorizing Contingencies in Management Control Systems

Chenhall, R. H., Kallunki, J.-P. & Silvola, H. (2011). "Exploring the Relationships between Strategy, Innovation, and Management Control Systems: The Roles of Social Networking, Organic Innovative Culture, and Formal Controls". *Journal of Management Accounting Research,* vol.23**,** pp.99-128.

Computer User Satisfaction. *Management Science,29,* 530–545.

Dessalegn GetieMihret, and Yismaw, AderajewWondim(2010) Antecedents and organizational performance implications of internal audit effectiveness: some propositions and research agenda. Pacific Accounting Review, 22(3), 224 – 252.

Dominic, S.B.S, &Nonna, M. (2011)" The internal audit function: Perceptions of internal audit roles, effectiveness and evaluation" Managerial Auditing Journal, 26(7), 605 – 622.

DeLone, W. H., & McLean, E. R. (2003). The DeLone& McLean Model of Information

Derese, A (2013): "Ensuring Successful Implementation of Enterprise Resource Planning Earnings Management. *The Accounting Review, 81*(1), 135–157. *Economics,* 32, 3–87.

Elbardan H. and AorKholeif (2017)"Enterprise resource planning, corporate governance and internal auditing" do 10.1007/978-3-319.

Elbardan, M. Ali, and A. Ghoneim, "Enterprise Resource Planning Systems Introduction and Enterprises". Information Technology for Development, vol.13,no.3**,** pp.293-309.

Fornell, C. & Larcker, D. F. (1981). "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error". *Journal of Marketing Research,* vol.18,no.1**,** pp.39-50.

Foziya Ahmed. 2017. Factors affecting the implementation of enterprise resource planning at commercial bank of Ethiopia. Addis Ababa University Addis Ababa, Ethiopia

FRC (2013). "Risk Management, Internal Control and the Going Concern Basis of Accounting", London, Financial Reporting Council.

Frigotto, M., Coller, G. & Collini, P. (2013). "The Strategy and Management Control Systems Relationship as Emerging Dynamic Process". *Journal of Management & Governance,* vol.17,no.3**,** pp.631-656.

Fui-Hoon Nah, F., Zuckweiler, K. M. & Lee-Shang Lau, J. (2003). "Erp Implementation: Chief Information Officers' Perceptions of Critical Success Factors". *International Journal of Human-Computer Interaction,* vol.16,no.1**,** pp.5-22.

Gable, G. G., Sedera, D. & Chan, T. (2003). "Enterprise System Success: A Measurement Model ". *Twenty-Fourth International Conference on Information Systems,* Seattle, USA.

Gable, G. G., Sedera, D. & Chan, T. (2008). "Re-Conceptualizing Information System Success : The Is-Impact Measurement Model". *Journal of the Association for Information Systems,* vol.9 no.7**,** pp.377-408.

Mihret, D. G. and Yismaw, A.W. (2007), "Internal audit effectiveness: an Ethiopian public sector case study": *Managerial Auditing Journal*, 22(5), 470-84.

Mutchle F Jane (2003)," independence and objectivity: a framework for research opportunities in internal auditing" The Institute of Internal Auditors Research Foundation.

Nafeeseh Rana Abu and Abdullah S. Al-Mudimigh (2011)"Justifying ERP Investment: The Role and Impacts of Business Case a Literature Survey" IJCSNS International Journal of Computer Science and Network Security, VOL.11 No.1.

Pickett K. and H. Spencer (2003)" the internal auditing handbook" British Library Cataloguing in Publication Data.

Robert K. (1994)“In Case Study Research. Design and Methods” Second edition Thousand Oaks Sag.

Sintayehu, D. (2014): Success Factors for Implementation of Enterprise Resource Planning System at Ethiopian Airlines. Master’s Thesis, AAU.

García-Sánchez, N. & Pérez-Bernal, L. E. (2007). "Determination of Critical Success Factors in Implementing an Erp System: A Field Study in Mexican References

Ge, W. & McVay, S. (2005). "The Disclosure of Material Weaknesses in Internal Control after the Sarbanes-Oxley Act". *Accounting Horizons,* vol.19,no.3**,** pp.137-158.

Gelderman, M. (1998). "The Relation between User Satisfaction, Usage of Information Systems and Performance". *Information and Management,* vol.34,no.1**,** pp.11-18.

Gelinas, U. J., Dull, J. R. B. & Wheeler, P. (2011). *Accounting Information Systems,* Ohio, South-Western, Thomson.

Gerdin, J. & Greve, J. (2008). "The Appropriateness of Statistical Methods for Testing Contingency Hypotheses in Management Accounting Research". *Accounting, Organizations and Society,* vol.33, no.7–8**,** pp.995-1009.

Gibson, N., Holland, C. P. & Light, B. "Enterprise Resource Planning: A Business Approach to Systems Development". *Systems Sciences, 1999. HICSS-32. Proceedings of the 32nd Annual Hawaii International Conference on,* 5-8 Jan. 1999 1999. 9 pp.

Going Concern Opinions". *Research in Accounting Regulation,* vol.20**,** pp.40-46.

Gordon, L. A., Loeb, M. P. & Tseng, C.-Y. (2009). "Enterprise Risk Management and Firm Performance: A Contingency Perspective". *Journal of Accounting and Public Policy,* vol.28,no.4**,** pp.301-327.

Gotz, O., Liehr-Gobbers, K. & Kraff, M. (2010). Evaluation of Structural Equation Models Using the Partial Least Squares (Pls) Approach. *In:* Vinzi, V. E., Chin, W. W., Henseler, J. & Wang, H. (eds.) *Handbook of Partial Least Squares.* Berlin,: Springer.

Grabski, S. V. & Leech, S. A. (2007). "Complementary Controls and Erp Implementation Success". *International Journal of Accounting Information Systems,* vol.8,no.1**,** pp.17-39.

Grabski, S. V., Leech, S. A. & Schmidt, P. J. (2011). "A Review of Erp Research:A Futureagenda for Accounting Information Systems". *Journal of Information Systems,* vol. 25, no.1**,** pp.37–78.

Gremillion, L. L. (1984). "Organization Size and Information System Use: An Empirical Study". *Journal of Management Information Systems,* vol.1,no.2**,** pp.4-17.

Grover, V., Seung Ryul, J. & Segars, A. H. (1996). "Information Systems Effectiveness: The Construct Space and Patters of Application". *Information and Management*, vol.31,no.4**,** pp.177-191.

Gonzalez C George,Pratyush N and Sharma Dennis F. (2012) "The antecedents of the use of continuous auditing in the internal auditing context" International Journal of Accounting Information Systems 13 pp248–262.

Gupta, A. K. & Govindarajan, V. (1984). "Business Unit Strategy, Managerial Characteristics,and Business Unit Effectiveness at Strategy Implementation". *Academy of Management Journal,* vol. 27,no.1**,** pp.25-41.

Haislip Z Jacob, Gary F. Peters and Vernon J. Richardson (2016) " The effect of auditor IT expertise on internal controls" International Journal of Accounting Information Systems 20 pp 1–15.

Hall A James (2011) "Accounting Information Systems" Peter E. Bennett Chair in Business and Economics Lehigh University.

Hass Susan, Mohammad J. Abdolmohammadi and Priscilla Burnaby(2006)" The Americas literature review on internal auditing "Managerial Auditing Journal Vol. 21 No. 8, 2006 pp. 835-844.

He´roux Sylvie and Anne Fortin (2013)" The Internal Audit Function Information Technology Governance: A Holistic Perspective" journal of information system Vol. 27, No. 1 Spring 2013 pp. 189–217.

Hogan, C & Wilkins, M.S. (2008) "Evidence on the Audit Risk Model" Do Auditors Increase Audit Fees in the Presence of Internal Control Deficiencies Contemporary Accounting Research, 25(1), 219-242. doi: 10.1506/car.25.1.9.

Hsing, H. H., &Juo, L.W. (2014). Factors of Affecting Internal Control Benefits under ERP http://dx.doi.org/10.1287/mnsc.29.5.530

Hunton, J. E., Libby, R., &Mazza, C. L. (2006). Financial Reporting Transparency and Perspective. Enterprise Resource Planning-Global Opportunities & Challenges (p.1-16).

Inacio, H.(2018).Analysis of the Research on Internal Control in Enterprise Resource Planning Internal Auditing Legitimacy: An InstitutionalAnalysis," *Inf. Syst. Manag.*, vol. 33, no. 3, pp.

KallunkJuha-Pekka, Erkki,K and Laitinen Hanna Silvola (2011)" Impact of enterprise resource planning systems on management control systems and firm performance" International Journal of Accounting Information Systems 12,pp 20–39.

Kanellou Alexandra and CharalamboSpathiss(2011)" Auditing in enterprise system environment: a synthesis" Journal of Enterprise Information Management Vol. 24 No. 6, 2011pp. 494519.

Khotari, R.C. (2004), Research methodology: methods and techniques, 2nd Ed. New Delhi: New Age International (P) Ltd., Publishers.

Krishnamoorthy, G. (2008). "The role of internal audit in the financial statement audit" The contingent effects of Board independence and audit committee effectiveness. 1 - 29.

Lambert, R. A.(2001). Contracting Theory and Accounting. *Journal of Accounting &* Management Control Systems.*In:*Hoque, Z. (ed.) *Methodological Issues in Accounting*

Laura De Zwaan,Stewart Jenny &Subramaniam Nava (2011)"Internal audit involvement in enterprise risk management." Managerial Auditing Journal, 26(7), pp. 586-604.

Madani H Haider (2009) " The role of internal auditors in ERP-based organizations" Journal of Accounting & Organizational Change Vol. 5 No. 4, pp 514-526.

Ngai, E. W. T., Law, C. C. H. & Wat, F. K. T. (2008). "Examining the Critical Success Factors in the Adoption of Enterprise Resource Planning". *Computers in Industry*, vol.59,no.6**,** pp.548-564.

Rashid,M., Hossain L., & Patrick J. (2002). *The Evolution of ERP Systems: A Historical* Research Journal of Finance and Economics, 89146-157.

Christopher S. Chapman, A. G. H. a. M. D. S. (ed.) *Management Accounting principles*

Sintayehu,D. (2014): Success Factors for Implementation of Enterprise Resource Planning System at Ethiopian Airlines. Master's Thesis, AAU

SystemAn Empirical Study in Taiwan. International Business Research; Vol. 7, No. 4; 2014 Systems.

Subramania Stewart Nava (2010)" Internal Audit Independence and Objectivity: Emerging Research Opportunities".

Sutton j Kuhn S (2010)"Continuous auditing in ERP system environments" the current state and future directions. Info System; Vol24 (1):PP91-112.www.ethionet.et

Wang, Y. (2012). *Restatement severity, credit risk, and internal control*. International Hershey: Idea Group Publishing.

Zhang Yan, Jian Zhou, and Nan Zhou (2006) "Audit Committee Quality, Auditor Independence, and Internal Control Weaknesses" SUNY – Binghamton American Accounting Association Auditing Midyear Meeting.

Zhang Yan, Jian Zhou, and Nan Zhou, (2008) "Internal Control Weaknesses and Client Risk Management" Randal Elder.

Zhao Ning and David C. Yen(2004)" Auditing in the e-commerce era" Information Management & Computer Security Vol. 12 No. 5, pp. 389-400.

APPENDIXI: QUESTIONNAIRE
Department of Accounting and Finance

Assessment questionnaire to examine and determine "**The Effect of Enterprise Resource Planning (ERP) Implementation on the Effectiveness of Internal Control of Selected Private Commercial Banks in Ethiopia**"

Dear Respondents;

This questionnaire is designed to gather information for a research study titled "**The Effect of Enterprise Resource Planning (ERP) Implementation on the Effectiveness of Internal Control of Selected Private Commercial Banks in Ethiopia**". All responses will be used to conduct the research study for the partial fulfillment of MSc Degree in Accounting and Finance. Your secrecy will be strictly maintained as I don't ask for your name here and will not be used for another purpose. This questionnaire is therefore for the purpose of the academic research only and the information gathered will be treated confidentially. Please answer all the questions provided as honestly as possible, to the best of your knowledge.

Your participation in this study is valuable and vital to reach on important findings with the issue and forward possible solution. You are kindly requested to answer the questions fully and honestly and send with my email stated below. Besides, this survey should only take about 15 minutes of your time. I am great full for your cooperation in advance.

Do I have your consent to proceed? Yes [ ] No [ ]

Finally if you have any further questions with this questionnaire, please contact me at any time. If you are interested about the result of the study please contact me at any time and I will confirm status of the study on your email since these survey is filled and send with email we will have opportunity to share it.

Sincerely,

MeleseKassa

Mob +251911993538
E-mail: melesekassa99@gmail.com
Thank you for your valuable time and careful consideration

I. Background Information

Instructions: Tick by putting "√" mark /Write in the space provided

1. What is your highest level of education?

   PhD degree [ ] Master's degree [ ] Degree [ ] Diploma[] TVET [ ] Certificate [ ]
   (Specify)_____

2. Gender A. Male [ ] B. Female[ ]

3. Age

A. 18-25years [ ] B.26-33years [ ] C. 34-41years [ ] D.42-49years [ ] E. Above 49 years[ ]

4. How many years have you worked in the financial industry?

   !years [ ] 3 -5years [ ] [
   6-8years [ ] More than 10years [ ] [

Please rate your implementation of ERP using the following Likert scale of (1) strongly disagree; (2) Disagree; (3) Neutral; (4) Agree; (5) Strongly agree.

Instructions: Tick by putting "√" mark /Write in the space provided

Statement	**Strongly disagree**	**disagree**	**Neutral**	**Agree**	**Strongly agree**
Information system Quality					
Internal control follows Timely Information system					
Information system Reliability					
Internal control Information system is Accurate					
System response time is logical and enough					
Internal control is System stabile					
Information system quality is Complete					
There is System integration of internal control					
Service Quality					
Quality of internal control Capabilities for customized modifications					
Institution apply Cost-effective computer systems					
Technical capacity of computer centers supports internal control					

Degree of participation at management levels applicable					
Internal Control Quality					
Internal control Output requests is adequately applied					
Implementing ERP can prevent fraud					
internal control is always Complete in your institution					
Internal control were capable					
Communication Quality					
Institution has smooth Relationship with ERP project groups					
The knowledge and training related to ERP systems acceptable					
the function introduction, system files, and user manual of ERP system is satisfactory					
The industry knowledge of ERP project groups supports the control activity					
The attitude of ERP project groups is always positive					
There is good Understanding of the system					
ERP internal control implementation					
Functions and division of responsibilities of the information-processing department					
There is Control of system development and program modification					
There is Control of the preparation of					

system documents					
There is Control of program and information access					
There is Control of data input and output					
There is Control of information processing					
There is Control of file and equipment safety					
There is Control of the purchasing, use, and maintenance of system hardware and software					
There is Control of the system recovery plan and testing procedure					
Control over information and communication security always checks					
Control of the procedure for reporting public information to specified Web sites					

Please rate your implementation of ERP using the following Likert scale of (1) strongly disagree; (2) Disagree; (3) Neutral; (4) Agree; (5) Strongly agree.

Instructions: Tick by putting "√" mark /Write in the space provided

Statement	**Strongly disagree**	**disagree**	**Neutral**	**Agree**	**Strongly agree**
The internal control benefits of an ERP system					
Your institution has effective Ethics and values, management philosophy, and operating style and ability					
Division of responsibilities in organizational structure and human resource policies is effective					
Controlling specific financial statements, coding, processing, and summarizing relevant financial data, and reporting risks associated with activities always implemented efficiently					
Risk assessment of internal environment is effective					
Risk assessment of external environment changes is effective					
Error prevention method internal control is effective					
Completeness of audit trail is effective					
General controls of internal control is effective					
Internal control regarding to Application of internal control is effective					
There is effective Internal management performance					

APPENDIXII: Interview
Addis Ababa University

College of Business and Economics

Department of Accounting and Finance

Dear Sir/Madam

I am Melese Kassa, M.Sc. student at Addis Ababa University in the Department of Accounting and Finance. I am undertaking a research on the topic "**The Effect of Enterprise Resource Planning (ERP) Implementation on the Effectiveness of Internal Control of Selected Private Commercial Banks in Ethiopia**". All responses will be used to conduct the research study for the partial fulfillment of MSc Degree in Accounting and Finance. Your secrecy will be strictly maintained as I don't ask for your name here and will not be used for another purpose. This interview is therefore for the purpose of the academic research only and the information gathered will be treated confidentially. Please answer all the questions provided as honestly as possible, to the best of your knowledge.

Sincerely,
MeleseKassa

Mob +251911993538
E-mail: melesekassa99@gmail.com
Thank you for your valuable time and careful consideration

1. Does the bank have an internal control job? Does it one of the bank units or part of other unit(s)?
2. What are the main challenges to implement Enterprise Resource Planning (ERP) systems without compromising internal control effectiveness?
3. What are the main Opportunities of implementing Enterprise Resource Planning (ERP) systems to adhere effective internal control?
4. To what extent do the ERP systems support the IC?