



ST. MERY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

ASSESSMENT OF INFORMATION SYSTEM AUDIT EFFECTIVENESS:

A CASE STUDY OF COMMERCIAL BANK OF ETHIOPIA

BY TARIKU DEMISSIE

**A THESIS TO ST.MARY UNIVERSTY, SCHOOL OF GRADUATE STUDIES IN
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ACRONYM

ACCA - The association of chartered certified accountants

CAAT - Computer assisted audit techniques

CBE- Commercial bank of Ethiopia

CIA- Certified internal audit

CIA- Chief internal audit

CIPFA- Chartered institute of public finance and accountancy

CISA- Certified information system auditor

CDSO- The committee of sponsoring of the tread way commission

GAAP- Generally accepted accounting principles

IAP- Internal audit process

ISSPIA- International standard for the professional practice of internal auditing

IS- Information system

COSO- Committee of Sponsoring Organizations

ABSTRACT

The general objective of the study is to assess the effectiveness of information system audit in case of commercial bank of Ethiopia. Factors such as career and advancement, professional competence, quality of audit work, professional competency relationship between internal and external auditor and top management support. Both primary and secondary data are used the research used SPSS software and descriptive statistical tool such as tables, frequency, percentages, mean and standard deviation is used in analyzing the data collected. It is confirmed that career and advancement, professional competence, quality of audit work, professional competency, and top management support has negative influence, but relationship between internal and external auditor positive influence on information system audit processes. This is customized to the current system audit providing appropriate programs for training and developing the system auditors by allotting some percentage of the total time of the work for continuing education and certification. Providing the information system audit process all the necessary support required from the top management give them independence; providing training and development programs to keep up to date in the field, and providing all the required physical resources.

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CHAPTER ONE

1. Introduction

In recent time information technology, emerge at high level in business environment know a day. Because of this audit, work is change. In order to be effective audit work the auditors must use the computer as an auditing tool, audit automated systems and data, understand the business purposes for the systems, and understand the environment in which the systems operate. The other important uses for computers and networks by auditors are in audit administration. By seeking new uses for computers and communications, auditors improve their ability to review systems, information and manage their activities more effectively. Automated tools allow auditors to increase individual productivity and that of the audit function. By recognizing the importance of emerging environment and requirement to perform audit task effectively, auditors must recognize the key reasons to use audit tools and software. Information Systems Audit is an evaluation to determine how the level of compatibility between information systems applications with established procedures and determine whether an information system designed and implemented in effectively and efficiently manner has asset security mechanisms are adequate, and ensure adequate data integrity Gondodiyoto (2003). This chapter includes background of the study, statement of the study, research questions, objectives, scope of the study, limitation of the study, organizational paper.

1.1. Background of the study

Many organizations, no matter their size or scope have come to realization the importance of using information technology to stay ahead in the current global scenario. Companies have invested in information system technology because they recognized the numerous benefits to their operation. The impact of information technology in business has grown exponentially in recent years and it has changed the audit process and has resulted in opportunities and challenges for auditors: Solomon and Trotman (2003). The audit profession is rapidly advancing in response to changes in its environment. It also argued that auditors are struggling to maintain their identity and purpose as the organizations they audit undergo radical changes (Solomon et al 2003). As usage of information system in the organizations increasingly becoming more complex, auditors must embrace technology, understand it, and

be able to audit effectively the processes and use it as an audit tool. While the complexity of information system makes auditing more challenging, it also provides an opportunity to streamline internal audit activities by designing and utilizing continuous information system controls.

Although overall objective and scope of an audit do not change in a computerized environment, but the use of information technology has tremendously changed the mode and speed of processing, and storage media of financial data and records: Yang, David C. & Guan, Liming (2004).

Information system Audit assesses the adequacy of environmental, physical security, logical Security, and operational controls designed to protect Information system hardware, software, and data against unauthorized access and accidental or intentional destruction or alteration, and to ensure that information systems are functioning in an efficient and effective manner to help the organization achieve its strategic objectives: Champlain (2003).

The study focus on information system audit effectiveness in case of commercial bank of Ethiopia by assessing the influence of professional competency, quality of work, career and advancement, management support, auditor independency, relationship between internal and external auditors.

1.2 Statement of the Problem

An effective information system leads the organization to achieve its objectives and an efficient information system uses minimum resources in achieving the required objectives. Information system Auditor must know the characteristics of users of the information system and the decision-making environment in the auditee organization while evaluating the effectiveness of any system: Sarens, G. & Abdolmohammadi M. J. (2011)

Other study also constitutes on how information technology affects internal control (control environment, risk assessment, control activities, information and communication and monitoring) and provides guidelines and best practices in evaluating techniques available effectively perform auditing tasks internally. It also addresses how technology, Information

system and electronic data processing have changed the way organizations conduct its business, promoting operational efficiency and aid decision-making: Moorthy (2011). Controls can be preventive, detective, or reactive, and they can have administrative, technical, and physical implementations. Examples of administrative implementations include items such as policies and processes. Technical implementations are the tools and software that logically enforce controls (such as passwords). Physical implementations include controls such as security personnel and locked door (Davis et al, 2011).

In order to achieve this purpose, Information system-auditing activities need to be improvise, well defined process and consistent. The development of the sustainable information system auditing process will be taking in to consideration Information technology Audit Management framework: Rosario et al (2012).

Internal audit effectiveness the extent to which a internal audit office meets its raison is arguably a result of the interplay among four factors: system audit quality; management support; organizational setting; and attributes of the audited. The management support with resources and commitment to implement the internal audit recommendations is essential in attaining audit effectiveness. In addition, the organizational setting in which internal audit operates, i.e. the organizational status of the office, its internal organization and the policies and procedures applying to each auditee, should enable smooth audits that lead to reaching useful audit findings. Further the capability, attitudes and level of cooperation of the auditee impact on the effectiveness of audits: mihret &yismaw (2007).

The research that was conduct before has extensively examined the determinant factors that influence internal audit effectiveness such us top management support, organizational setting, quality of audit work, organizational independence: Ahmad, H. N., Othman, R. & Jusoff, K. (2009). There is no research conducted single title as information system audit effectiveness in our country and assessing effectiveness of information system audit is mandatory because the auditee(bank) must sure the resources are protected from any problems questions must answered correctly. The information system audit is an integral part of the internal audit process since it complements the auditor's role and supports his

judgment on the quality of the information processed by computer systems: Majdalawieh et al (2009). So as said before information system audit is subset of internal audit. Taking in to consideration the influence factor that are used in internal audit effectiveness used as it is and by adding like relationship between internal and external auditor and management training ground (career and advancement) went to assess information system audit effectiveness in commercial bank of Ethiopia.

1.3 Research Question

The study undertaken to address the following question:

1. To assess the influence of quality of audit work on effectiveness of information system audit process?
2. To assess the influence of organizational independence on the effectiveness information system audit process?
3. To assess the influence of management support on the effectiveness information system audit process ?
4. To assess the influence of relationship between internal and external audit on the effectiveness information system audit process?
5. To assess the influence of management training ground on the effectiveness information system audit process?
6. To assess the influence of auditor competency on the effectiveness information system audit process?

1.4 Objective of the study

1.4.1 General objective

The general objective of the study to assess effectiveness of information system audit on commercial bank of Ethiopia.

1.4.2, Specific Objective of the Study

The study has the following specific objectives.

1. To assess the influence of quality of audit work on effectiveness of information system audit process.
2. To assess the influence of organizational independence on the effectiveness information system audit process.
3. To assess the influence of management support on the effectiveness information system audit process.
4. To assess the influence of relationship between internal and external audit on the effectiveness information system audit process.
5. To assess the influence of management training ground on the effectiveness information system audit process.
6. To assess the influence of auditor competency on the effectiveness information system audit process.

1.5 Significance of the study

The study is likely to provide valuable information to the organization (commercial bank of Ethiopia) used in decision making to improve the information system audit department, to take corrective measurement for the recommended idea, and the extent identified features that highly influence the effectiveness of information system audit in the study. Further, this study initiated to generate and add some information to the existing knowledge of the relevance of information system audit that have contributions for clear understanding of the influences system audit. The findings of this research would be provide multipurpose

information to different users, including public sectors, government, policy planners, academicians and the public at large and it could use top management and development policy makers.

1.6 Scope of the Study

This study limited in system audit effectiveness in case of Commercial Bank of Ethiopia found in Addis Ababa, head office, Ethiopia. In addition to this, the study takes in to considerations only six factors (such as professional competence of staff, quality of audit work, organizational independence, career and advancement, relationship between internal and external auditor and top management support) from the various factors that are expected to influence the effectiveness of information system audit activity.

1.7. Limitation of the study

In spite of the researchers efforts to gather the necessary information as objective as possible, the analysis of this study was based on the opinion of respondents, so the respondent may not gave all the necessary data. Due to time and money constraints limited to commercial bank of Ethiopia.

1.8 Organization of the study

This paper organized into four chapters: The first chapter provides an overview of the study. It contains background of the issues, which the study is concerned, introduction, problem statement, objectives, scope and limitations and organization of the study. The second chapter assesses previous literature and studies significant to the field and related topics. The third chapter describes research methodology of the study. It deals with research design, population, source date, date analysis method. The forth presentation analysis and interpretation of data, discussion of the research result. Finally, the fifth chapter presents summary, conclusions, and recommendations of the study.

CHAPTER TWO

Literature Reviews

2. Theoretical Framework information system Auditing

In this section, the research aimed mainly to highlight the main concept of information system and its components then move to the Information system definition and its type. In additional, the definition of the internal control, type of internal control and definition of information system Audit, system audit objectives, the type of information system audit.

2.1 Information systems:

Information systems are the means by which people and organizations, utilizing technologies, gather, process, store, and use disseminate information. It is the processes for which information presenting to the director to assist him in making decisions and achieving organization goal. Al Qudah (2012) information system consists of a number of “interrelated components working together to collect, process, store and disseminate information” Maruster et al (2008)

2.1.1 The role of information systems

Information systems can be consider as an arrangement of a number of elements that provides effective information for decision-making and control of some functionalities of an organization. Information is an entity that reduces uncertainty about an event or situation. Enterprises use information system to reduce costs, control wastes or generate revenue. Hence, onwards we will focus our discussions only to computer-based information system. In modern business perspective, the information system has far-reaching effects for smooth and efficient operations. Some of important implications of information system in business are as follows: ICAI, Board of Studies (2010).

- ❖ Information system will help managers in effective decision-making to achieve the organizational goal.
- ❖ Based on well-designed information system, an organization will gain edge in the competitive environment
- ❖ Information systems help take right decision at the right time.

- ❖ Innovative ideas for solving critical problems may come out from good information system.
- ❖ Knowledge gathered through managers in unusual situations may utilize information system.
- ❖ If information system viewed as a process, it can integrate to formulate a strategy of action or operation.

2.1.3 Kinds of information systems:

For Type of information system, serve different organizational levels: operational level systems, knowledge level systems, management level systems, and strategic level systems terms: (Laudon, Kenneth C. & Laudon, Jane P (2003).

- ❖ **Operational level systems** support operational managers by keeping track of the elementary activities and transactions of the organization. Examples of operational level systems include a system to record bank deposits from automatic teller machine or one that tracks the number of hours worked each day by employees on a factory floor.
- ❖ **Knowledge level systems** support the organization's knowledge and data workers. The purpose of knowledge level systems is to help the business firm integrate new knowledge into the business and to help the organization control the flow of paperwork. Knowledge level systems, especially in the form of workstations and office systems are among the fastest growing application in the business today.
- ❖ **Management level systems** serve the monitoring, controlling, decision-making, and administrative activities of middle manager. An example is a relocation control systems term that reports on the total moving, house-hunting, and home financing costs for employees in all company divisions, noting wherever actual costs exceed budgets.
- ❖ **Strategic level systems** help senior management tackle and address strategic issues and long-term trends, both in the firm and in the external environment. Their principal concern is matching changes in the external environment with existing organizational capability.

2.2 Internal control system

Internal control system is a process which the management, and not the auditor only, is responsible for designing, implementing and maintaining the entity's internal control, which helps in meeting their objectives beside preparing and providing fairly information to the users. Internal control may define simply as a system's capability to prevent or detect material accounting errors and provide for their correction on a timely basis: Robertson (1996).

In 1977, the French Institute of Chartered Accountants defined internal control is the set of security measures, which contribute to the control of a company. Its aim is to ensure, on the one hand, the security and safeguard of assets and the quality of information, on the other hand, the application of instructions given by Senior Management, and to encourage improvements in performance. It is evidenced through the organization, methods and procedures for each of the company's activities, so as to ensure the continuity of that company." AMF report (1977). The Committee of Sponsoring Organizations of the Tread way Commission (COSO), internal control: Integrated Framework (1985) defines Internal Control as a process, affected by an entity's board of directors, management and other personnel, designed to provide reasonable assurance regarding the achievement of objectives in the following categories: COSO report (1992).

1. Effectiveness and efficiency of operations
2. Reliability of financial reporting
3. Compliance with applicable laws and regulations

The New York state office of the State Comptroller (2004) defined internal control as the integration of the activities, plans, attitudes, policies, and efforts of the people of an organization working together to provide reasonable assurance that the organization will achieve its objectives and mission."

Lander defined internal control as a process designed by, or under the supervision of, the company's principal executive and principal financial officers and implemented by the company's board of directors, management and other personnel to provide reasonable for the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. Hurt (2007). Internal

control is a ways, techniques and procedures used by the firm management to protect their assets and properties from tampering, theft, embezzlement, and the firms can get of the accurate accounting data's, which can relied upon in planning and decision-making processes. Jarbou (2002) From the definitions we noticed that internal control is a process, which all the personnel of the entity is involved especially the management and the accountant, to provide a reasonable assurance regarding the achievement of the entity's objective by doing the operation efficiently and effectively, and preparing a reliability financial reports for the users.

2.2.1 The importance of the Internal Control system

A company's internal control system has a key role in the management of risks that are significant to the fulfillment of its business objectives. A sound system of internal control contributes to safeguarding the shareholders' investment and the company's assets. Internal controls facilitate the effectiveness and efficiency of operations, helps ensure the reliability of internal and external reporting and assists compliance with laws and regulations. Effective Financial controls, including the maintenance of proper accounting records, are important elements of internal control. They help ensure that the company unnecessarily exposed to avoidable financial information used within the business and for publication is reliable. They also contribute to the safeguarding of assets, including the prevention and detection of fraud. A company's objectives, its internal organization and the environment in which it operates are continually evolving and, as a result, the risks it faces are continually changing.

A sound system of internal control therefore depends on a through and regular evaluation of the nature and extent of the risks to which the company is exposed. Since profits are, in part, the reward for successful risk-taking in business, the purpose of internal control is to help manage and control risk appropriately rather than to eliminate it. (The Institute of Chartered Accountants in England & Wales)

2.2.2 Internal Control Objectives:

Different stakeholders (stockholders, managers, customers, and employees) may be concerned with different objectives. Stockholders may be primarily concerned with objectives related to share value. The marketing manager may be most interested in objectives related to market share, sales, and customer satisfaction. The COSO report indicates the internal control objectives:

- ✓ Effectiveness and efficiency of operations
- ✓ Reliability of financial reporting
- ✓ Compliance with applicable laws and regulations
- ✓ Safeguarding assets

We can classify the internal control system objectives in four categories; Jones, et al (2006).

- ❖ **Execution Objectives:** It refers to the delivery of goods or services and the collecting and handling of cash. Accordingly, execution would include activities in which the company is releasing inventory and using other resources (e.g. labor and equipments) for providing services and handling the resulting cash.
- ❖ **Information System Objectives:** It focuses on recording, updating, and reporting accounting information. Information system objectives are also important for ensuring effective execution of transactions.
- ❖ **Assets Protection Objectives:** Refers to safeguarding assets from theft or loss of assets
- ❖ **Performance Objectives:** Focus on achieving favorable performance of an organization, person, department, product or services.

2.2.3 Internal Control Components:

The COSO Report identifies five components of internal control that have an impact on an organization's ability to achieve the internal control objectives.

2.2.3.1. Control environment:

Refers to the tone of the organization, it begins at the top of the organization and permeates throughout every level of the entity. (Hurt, 2007, p57) The control environment means the overall attitude, awareness, and actions of directors and management regarding the internal control system and its importance in the entity. The control environment has a pervasive

influence on the way business activities structured the way objectives are established, and the way risks assessed. It influences the control consciousness of its people Hayes et al, (2005). It is the foundation for all other component of internal control. It provides discipline and structure. Control environment factors include the integrity, ethical values, and competence of the company's people. Robertson (1996) to develop and sustain a strong control environment, managers and other influential people in the organization should

- Be committed to integrity and ethical behavior.
- Demonstrate a commitment to competence in carrying out their duties and responsibilities.
- Actively seek the participation of the board of directors and its audit committee in decision related to internal control.
- Maintain a consistent, appropriate management philosophy and operating style.
- Assign authority and responsibility with integrity and the best interests of the organization in mind.
- Develop and enforce human resource policies and practices that encourage all employees to maintain a sound internal control system. Internal environment is the foundation for all other components of internal control, providing discipline and structure. Hurt (2007)

2.2.3.2. Risk Assessment:

Is the identification and analysis of risks that interfere with the accomplishment of internal control? Management must identify the risks by using a business experience, research, and dialogue, and then assess some risks to design appropriate, cost-effective internal control to minimize the possibility that significant losses may arise from various events and circumstance that create risks change.

2.2.3.3. Control Activities:

Refers to the actual internal controls implemented based on the risk assessment. Control Activities are the policies and procedures developed by the organization to address the risks. Control activities include; Jarbou 2008).

- ❖ **Performance reviews** are activities involving analysis of performance, for example, by comparing actual results with budgets, standards forecasts, and prior-period data.
- ❖ **Information processing** A variety controls, applied to AIS applications, performed to check accuracy, completeness, and authorization of transactions
- ❖ **Physical Controls Activities** encompass the physical security of assets, Authorization for access to computer programs and data files, and Periodic counting and comparison with amounts shown on control records.
- ❖ **Segregation of duties** seeks to prevent persons with access to readily realizable assets from being able to adjust the records that record and thereby control those assets. Duties are divided or segregated among different people to reduce the risks of error or inappropriate actions. For instance, responsibilities for authorizing transactions, recording them, and handling the related assets (called custody of assets) are dividing. Segregation of duties entails three fundamental functions that must be separated and adequately supervised:

Authorization is the delegation of initiation of transactions and obligations on the company's behalf. Custody is physical control over assets or records. Recording is the creation of documentary evidence of a transaction and its entry into the accounting records. Control activities can be *Preventive controls* help to prevent errors and irregularities from happening. *Detective Controls* help to stakeholders determine when an error or irregularity has occurred. Finally, *Corrective Controls* focus in fixing a problem, error, or irregularity after it has occurred; Jarbou (2008)
- ❖ **Information and communication:** The company's information system is a collection of procedures (automated and manual) and records established to initiate, record, process, and report the events in an entity's process. Communication involves providing an understanding of individual roles and responsibilities.
- ❖ **Monitoring:** Management should monitor internal control in a systematic manner to make sure that the organization's control is functioning as intended. (Jones et al, 2006, p105) Management should assess the quality of its control performance on a timely basis. Monitoring includes regular management and supervisory

activities and other actions personnel takes in performing their duties. Errors, irregularities, and internal control deficiencies should report to top management and to the audit committee of the board of directors. Monitoring helps ensure that internal control continues to operate effectively. (Robertson, 1996, p193)

2.2.3.4 Reasons for internal control Evaluation:

A useful, though unofficial, definition of internal control related to a company's financial reporting objectives is "All the policies and procedures a company uses to prevent, detect, and correct errors, irregularities, and frauds that might get into financial statements." You can properly infer that such control enable a company to safeguard its assets from unauthorized disposition and prepare financial statements in conformity with generally accepted accounting principles.

The auditor's task is to assess the control risk association with the control management design and implemented for the period under audit. Control risk is the probability that a company's control will fail to detect errors, irregularities, and frauds, provided any enter the accounting systems in the first place. Control risk is a characteristic of the client's controls. The auditor's assessment is to assign an evaluation to the control risk. Many auditors conclude the internal control decision with a descriptive assessment and some auditors put probability numbers on it. (Robertson, 1996, p191)

2.2.4 Types of internal control

Controls can be preventive, detective, or reactive, and they can have administrative, technical, and physical implementations. Examples of administrative implementations include items such as policies and processes. Technical implementations are the tools and software that logically enforce controls (such as passwords). Physical implementations include controls such as security personnel and locked door Davis et al, (2011). Controls can be classified in to (Cascarino, 2007, p61-62)

- ❖ ***Preventative controls***, which occur before the fact but can never be 100% effective and therefore cannot be wholly relied upon these, could include controls such as restrictions on users, requirements for passwords, and separate authorization of transactions.

- ❖ ***Detective controls***, which detect irregularities after occurrence and may be cheaper than checking every transaction with a preventative control. Such controls could include effective use of audit trails and the use of exception reports.
- ❖ ***Corrective controls*** ensure the correction of problems identified by detective controls and normally require human intervention within the information system. Controls in this area may include such processes as Disaster Recovery Plans and transaction reversal capabilities. Corrective controls are themselves highly error-prone because they occur in unusual circumstances and typically require a human decision to be made, and an action decided upon and implemented. At each stage in the process a subsequent error will have a multiplier effect and may compound the original mistake.
- ❖ ***Directive controls*** designed to produce positive results and encourage acceptable behavior. They do not themselves prevent undesirable behavior and normally used where there is human discretion in a situation. Thus, informing all users of personal computers that it is their responsibilities to ensure adequate backups taken and stored appropriately does not of itself, enforce compliance. Nevertheless, such a directive control can be monitored and action taken where the control is breached
- ❖ ***Compensating controls*** can be seen to exist where a weakness in one control may be compensated by a control elsewhere. They are used to limit risks exposure and may trap the unwary evaluator. This is particularly true where the auditor is faced with complex integrated systems and the control structures involve a mixture of system-driven and human controls scattered over a variety of operational areas. In general, then, management and the auditor must always bear in mind that under control is cheap to implement but may cost the organization, while over-control is expensive and ultimately paralyzing.

2.3 Using Computer-Assisted Audit Tools in the Audit Process

When assessing the effectiveness and integrity of the design and operation of controls, it is necessary for the auditor to test and evaluate these controls. The decision to test and evaluate is not related to the size of the firm but the complexity of the IT environment. Therefore, CAATs play a very important role in the performance of audit work. CAATs are used in a variety of ways to evaluate the integrity of an application, determine compliance with

procedures, and continuously monitor processing results. Information systems auditors review application systems to gain an understanding of the controls in place to ensure the accuracy and completeness of the data. When adequate application controls identified, the auditor performs tests to verify their effectiveness.

When controls are not adequate, auditors must perform more extensive testing to verify the integrity of the data. To perform tests of applications and data, the auditor may use CAATs. Many tools and techniques have developed that offer significantly improved management control and reduced costs if properly applied. Automated techniques have proven to be better than manual techniques when confronted with large volumes of information. The auditor, by using automated techniques, can evaluate greater volumes of data and quickly perform analysis on data to gather a broader view of a process. There may be situations where the auditor may be required to conduct tests, evaluate IT controls, and perform substantive tests to obtain sufficient information and evidence regarding financial statement assertions. Examples of some of these situations can be

- Applications or systems involving (EDI)
- Electronic payment systems that transmit electronic transactions from one company network to another
- Decision support systems that involve automatic reasoning or artificial intelligence or heuristic scenarios where they support decision making within the organization processes
- Applications that use technology such as neural network to assess financial conditions using ratio application in calculation of credit worthiness
- In systems where enterprise resource architecture is used to integrate the enterprise resource planning systems, blending legacy data with newer support systems
- In systems that provide electronic services of all types to customers, especially where the IT system initiates bills for services rendered and processes the billing transaction
- Computer programs that perform complex calculations involving money or resulting in a financial decision, present or future, such as reorder points, commissions, retirement or pension funds, and collection of accounts (Lin et al , 2011, p. 777).

2.4 Information Systems Audit and Control Association standard

- ❖ **Standards:** The framework for the information system Auditing Standards provides multiple levels of guidance (Cascarino, 2007, p47-48). Define mandatory requirements for information system Auditing and reporting. They inform:
 - ✓ IS Auditors of the minimum level of acceptable performance required to meet the professional responsibilities set out in the ISACA Code of Professional Ethics for IS Auditors
 - ✓ Management and other interested parties of the profession's expectations concerning the work of practitioners

 - ✓ Holders of the Certified Information Systems Auditor (CISA) designation of requirements Failure to comply with these standards may result in an investigation into the CISA holder's conduct by the ISACA Board of Directors or appropriate ISACA committee and, ultimately, in disciplinary action.
- ❖ **Guidelines** provide guidance in applying IS Auditing Standards. The information system Auditor should consider them in determining how to achieve implementation of the standards, use professional judgment in their application, and be prepared to justify any departure. The objective of the IS Auditing Guidelines is to provide further information on how to comply with the information system Auditing Standards.
- ❖ **Procedures** provide examples of procedures and information system Auditor might follow in an audit engagement. The procedure documents provide information on how to meet the standards when performing IS Auditing work, but do not set requirements. The objective of the IS Auditing Procedures is to provide further information on how to comply with the IS Auditing Standards. Control Objectives for Information and related Technology (COBIT) resources should used as a source of best practice guidance. Each of the following organized by IT management process, as defined in the COBIT *Framework*. COBIT is intend for use by business and IT management as well as IS Auditors; therefore, its usage enables the understanding of business objectives and

communication of best practices and recommendations, made around a commonly understood and well-respected standard reference.

COBIT includes:

- ❖ **Control objectives** high-level and detailed generic statements of minimum good control
- ❖ **Control practices** Practical rationales and how-to-implement guidance for the control objectives
- ❖ **Audit guidelines** Guidance for each control area on how to obtain an understanding, evaluate each control, assess compliance, and substantiate the risk of controls not being meet.
- ❖ **Management guidelines guidance** on how to assess and improve IT process performance, using maturity models, metrics, and critical success factors

2.5 Information systems auditing

Information system audit is it gives assurance that the IT system are adequately protected ,provide reliable information to user ,and are properly managed to achieve their intended benefit .it also reduces the risk data tempering ,data loss or leakage ,service disruption and poor management of IT system. Application of information system audit may divide into two areas: Gondodiyoto (2007)

1. Evaluation of internal control,
2. Evaluation of information system in terms of economy, efficiency, and effectiveness

In order to avoid problems of information system management and security protection general information system control method were develop. Generally, information system audit is mean to evaluate such control. Evaluation of the audited entity's internal control is an area of financial and performance audits; therefore, information system audit is a constituent part of financial and performance audits. Evaluation of information system in terms of economy, efficiency, and effectiveness is a separate information system, performance audit conducted following Performance.

2.5.1 Types of Information system audit

2.5.1.1 General Control

Apply to all aspects of the IT function, including IT Administration; separation of duties; systems development; physical and online security over access to hardware, software, and related data; backup and contingency planning in the event of unexpected emergencies; and hardware controls. Because general control for the company as a whole. The six categories of general control have an entity wide effect on all IT functions. Auditors typically evaluate general control early in the audit because of their impact on Application controls (Arens et al, 2010, 372-376).

- ❖ **Administration of the IT Function** The board of directors and senior management's attitude about IT affect the perceived importance of IT within an organization. Their oversight, resource allocation, and involvement in key IT decision each signal the importance of IT. In complex environments, management may establish IT steering committee to help monitor the organization's technology needs. In less complex organizations, the board may rely on regular reporting by a Chief information officer (CIO) or other senior IT manager to keep management informed. In contrast, when management assigns technology issues exclusively to lower-level employees or outside consultants, an implied message sent that IT is not high priority. The result is often an understaffed, underfunded, and poorly controlled IT function.
- ❖ **Separation of IT Duties** to respond to the risk of combining traditional custody, authorization, and record-keeping responsibilities by having the computer perform those tasks, well-controlled organization respond by separating key duties within IT. Ideally, responsibilities for IT management, systems development, operations, and data control should separate as follows:
- ❖ **IT management** The CIO or IT manager should be responsible for oversight of the IT function to ensure that activities are carryout consistent with the IT strategic plan. A security administrator should monitor both physical and online access to hard ware, software, and data files and investigate all security breaches.
- ❖ **Systems development** Systems analysts, who are responsible for the overall design of each application systems, coordinate the development and change of IT systems by IT

personal responsible for programming the application and personnel outside IT who will be the primary system user. Programmers develop flowchart for each new application, prepare computer instructions, test the programs, and document the results. Programmer should not have access to input data or computer operations to avoid using their knowledge of the system for personal benefit. They should allowed to work only with test copies of programs and data so they can only make software changes after proper authorization

- ❖ **Operations** computer operators are responsible for the day-to-day operations of the computer following the schedule establish by the CIO. They also monitor computer consoles for messages about computer efficiency and malfunctions. Network administrators also affect IT operations, as they are responsible for planning, implementing, and maintaining operations of the network of servers that link user to various applications and data files
- ❖ **Data control** Data input/ output control personnel independently verify the quality of input and reasonableness of output. For organization the use of database to store information shared by accounting and other functions, database administrators are responsible for the operation and access security of shared databases.
- ❖ **Systems development** There are various approaches to software development: traditional information systems development, purchasing and modifying a packaged system prototyping and rapid application development, and less formal end-user development. Although each approach is unique, they all have similar steps that must completed, For example, each approach will have to define user requirements, design programs to fulfill those requirements, verify that programs work as intended, and implement the system. Auditors need to understand the different approaches; the risks associated with a particular approach, and help ensure that all the necessary components are included in the development process.

A formal systems development process provides an environment that is conducive to successful systems development. This includes:

- (1) An information systems strategy that guides developers in building systems those are consistent with the organization's technical and operational goals,

(2) Standards that guide in the selection of hardware, software, and developing new systems,

(3) Policies and procedures that support the organization's goals and objectives, and

(4) Project management that ensures projects completed on time and within budget.

Auditors can assist organizations by reviewing the systems development process to ensure that developed systems comply with the organization's strategy and standards (Gallegos et al, 2004, pp 190).

- ❖ **Physical and online security** Physical control over computers restrictions to online software and related data files decrease the risk of unauthorized change to programs and improper use of programs and data files, Security plan should be in writing and monitored. Security controls include both physical controls and online access controls.

2.5.1.2 Physical controls

Proper physical control over computer equipment restrict access to hardware, software, and backup data file on magnetic tapes or disks, hard drivers, CDs, and external disks. Online access controls. Proper user IDs and passwords control access to software and related data files, reducing the likelihood that unauthorized changes made to software applications and data files. Separate add on security software packages, such as firewall and encryption programs, can be install to improve a system's security.

- ❖ **Backup and contingency planning** Power failures, fire, excessive heat or humidity, water damage, or even sabotage can have serious consequences to businesses using IT. To prevent data loss during power outages, many companies rely on battery backups or on site generators. For serious disasters, organizations need detailed backup and contingency plans such as off-site storage of critical software and data files or out sourcing to firms that specialize in secure data storage.
- ❖ **Hardware controls** Hardware controls built into computer equipment by manufactures to detect and report equipment failures. Auditors are more concerned with how the client handles errors identified by the hard ware controls than with their adequacy. Regardless of the quality of hardware controls, output will corrected only if the client has provided for handling machine errors (Arens et al, 2010, pp376).

2.5.1.3 Application controls

The following are two of the most common responses:

- Application controls are the automated controls, built into an application system, that help ensure the completeness, accuracy, timeliness and authorization of transaction processing for that application.
- Application controls are the activities (manual, automated or a combination thereof) that ensure the completeness, accuracy, timeliness and authorization of transaction processing for an application. Baker, (2009). Application controls can be broken down into three main categories: input, processing, and output control: Senft & Gallegos (2009).

- ❖ **Input Controls** An input control meant to minimize risks associated with data input into the system. Defining input requirements ensures that the method of capturing the data is appropriate for the type of data being input and how subsequently use. Performance problems and accuracy issues can introduced with non-appropriate methods for capturing data. Input controls ensure the authenticity, accuracy, completeness, and timeliness of data entered into an application. Authenticity ensured by limiting access at the screen and field level and requiring secondary approvals of transactions above a defined threshold. Accuracy ensured by edit checks that validate data entered before accepting the transaction for processing. Completeness ensured through error-handling procedures that provide logging, reporting, and correction of errors. Timeliness ensured through monitoring transaction flow, logging, and reporting exceptions.
- ❖ **Processing Controls** Processing controls ensure the accuracy, completeness, and timeliness of data during either batch or online processing. These controls help ensure that the data is accurately processed through the application and that no data is added, lost, or altered during processing.
- ❖ **Output Controls** Output controls ensure the integrity of output and the correct and timely distribution of the output produced. To be useful, information must be accurate and received in time to benefit decision-making. Output controls include procedures to verify if the data is complete, accurate, and properly recorded; procedures for report distribution and retention; and procedures for correct output errors. If outputs produced

centrally, then conventional controls such as a security officer and distribution logs may be appropriate. If output distributed over a data communication network, control emphasis shifts to access controls for individual workstations. Access to reports should base on confidentiality

- ❖ **Reconciliation** Output should verify against an independent source to verify accuracy. For example, transaction totals posted to the general ledger should be reconciled against the detailed balance due in the accounts receivable system. Data that is common to two or more applications should be reconciled to verify consistency. Often, applications developed over time using the same information for different purposes.
- ❖ **Distribution** of output is clearly defined and physical and logical access is limited to authorized personnel. The need for output should regularly review as reports may request at the time an application is developed but may no longer be useful. In addition, the same information may used for more than one system with different views, organization, and use.
- ❖ **Retention** Because storage space (computer and physical) is expensive, retention periods and storage requirements should defined for programs, data, and reports. Critical information should be stored securely (e.g., encrypted) and its destruction should be permanent and conducted in such a way as to prevent unauthorized viewing

2.6 Audit Documentation

Audit documentation is an essential element of audit quality. Although documentation alone does not guarantee audit quality, the process of preparing sufficient and appropriate documentation contributes to the quality of an audit. The auditor must prepare audit documentation in connection with each engagement in sufficient detail to provide a clear understanding of the work performed, including the nature, timing, extent, and results of audit procedures performed. The evidence obtained and its source and the conclusions reached Bragg (2010).

2.6.1 Objectives of Audit Documentation

In Standard No. 3, the following are the objectives the PCAOB believes should accomplish by audit documentation (work papers or working papers): Latshaw (2004).

- Work papers are the written record of the basis for the auditor's conclusions that provide the support for the auditor's representations, whether those representations are contained in the auditor's report or otherwise.
- Audit documentation facilitates the planning, performance and supervision of the engagement.
- Audit documentation is the basis for the review of the quality of the work, because it provides the reviewer with written documentation of the evidence supporting the auditor's significant conclusions.

2.6.2 Evaluating the Quality of System Documentation

Based on user and IT staff inputs, as well as on the degree of difficulty experienced in constructing an audit data flow diagram, the auditor should be able to comment on the quality of system documentation. There are two basic questions to answer: Is the documentation accurate? Is the documentation complete?

To illustrate, if a federal auditor were examining IT internal control issues at a U.S. Navy computer facility, he or she might use the Standards for Internal Control in the Federal Government recently updated by the (U.S.) (GAO). This publication would provide a basis for assessing internal controls compliance to federal guidelines.

2.6.3 Assessing Controls over Documents

Control points identified during the preparation of the audit data flow diagram, along with information on controls developed in the background segment, should enable the auditor to identify system controls. With a diagram of this type, the auditor can determine whether the following controls are used:

- Turnaround documents (These documents [manual or automated] should return to the originator to make sure that all document received and none added during transmittal.)
- Record counts. (They [manual or system generated] should maintain for all documents to make sure that none is added or lost.)

- Predetermined control totals. (For pay roll, predetermined control totals should develop for important data items, such as hours worked, leave taken, hourly rates, gross pay, and deductions. The purpose is to make sure that records not altered).
- Run-to-run totals (These totals should maintain to assure that no records added or lost during steps in the computer processing sequence (Senft & Gallegos (2009)).

2.6.4 Assessing Audit risk and designing tests of controls

Audit risk is the probability that auditor will render an unqualified opinion on the financial statements that are, in fact, materially misstated. Errors, irregularities, or both may cause material misstatement. Errors are unintentional mistakes. Irregularities are intentional misrepresentations to mislead the users of financial statements. The auditor's objective is to minimize audit risk by performing of controls and substantive tests (Hall, 2007, p745).

2.6.5 Audit Risk Components

Audit risk: The risk that the auditor may unknowingly fail appropriately modify his or her opinion on financial statements that are materially misstated. At the account balance or class of transactions level, it consists of the risk of material misstatement, and detection risk; Bragg, (2010)

The following are the components of risks:

- ❖ **Planned detection risk** Is the risk that audit evidence for a segment will fail to detect misstatements exceeding tolerable misstatement. Planned detection risk is dependent on the other three factors in the model. It will change only if the auditor changes one of the other risk model factors. Planned detection risk determines the amount of substantive evidence that the auditor plan to accumulate, inversely with the size of planned detection risk. If planned risk detection risk reduced, the auditor needs to accumulate more evidence to achieve reduced planned risk.
- ❖ **Inherent risk** Inherent risk is the likelihood of a significant loss occurring before taking into account any risk-reducing factors. In evaluating inherent risk, the auditor must consider what are the types of and nature of risks as well as what factors indicate a risk exists. To achieve this, the auditor must be familiar with the environment in which the entity operates (Cascarino, (2007)).

- ❖ **Control Risk** Control risk measures the auditor's assessment of whether misstatement exceeding a tolerable amount in a segment will prevent or detected on a timely basis by the client's internal control. Assume that the auditor conclude that internal control are completely ineffectively to prevent or detect misstatements.
- ❖ **Acceptable audit risk** Is a measure of how willing the auditors is to accept that the financial statement may be materially misstated after the audit is completed and an unqualified opinion has been issued. When auditors decide on a lower acceptable audit risk, they want to be more certain that the financial statements not material misstated; Arens et al, 2010, p261-262).

2.7. Roles and Responsibilities

Everyone in the organization has some role to play in the organization's internal control system. (AICPA, 2000)

1. Chief executive officer (CEO)

The CEO has ultimate responsibility and ownership of the internal control system. The individual in this role sets the tone at the top that affects the integrity and ethics and other factors that create the positive control environment needed the internal control system to thrive. Aside from setting the tone at the top, much of the day-to-day operation of the control system delegated to other senior managers in the company, under the leadership of the CEO.

2. Chief financial officer (CFO)

Much of the internal control structure flows through the accounting and finance area of the organization under the leadership of the CFO. In particular, controls over financial reporting fall within the domain of the chief financial officer. The audit committee should use interactions with the CFO, and others, as a basis for their comfort level on the internal control over financial reporting.

This is not intending to suggest that the CFO must provide the audit committee with a level of assurance regarding the system of internal control over financial reporting. Rather, through interactions with the CFO and others, the audit committee should get a gut feeling about the completeness, accuracy, validity, and maintenance of the system of internal control over financial reporting.

3. Controller (director of finance)

Much of the basics of the control system come under the domain of this position. It is key that the controller understands the need for the internal control system, is committed to the system, and communicates the importance of the system to all people in the accounting organization. Further, the controller must demonstrate respect for the system through his or her actions.

4. Internal audit

A main role for the internal audit team is to evaluate the effectiveness of the internal control system and contribute to its ongoing effectiveness. With the internal audit team reporting directly to the audit committee of the board of directors and/or the most senior levels of management, it is often this function that plays a significant role in monitoring the internal control system. It is important to note that many not-for profits are not large enough to employ an internal audit team. Each organization should assess the need for this team, and employ one as necessary.

5. Board of director/audit committee

A strong, active board is necessary. This is particularly important when an executive or management team controls the organization with tight reins over the organization and the people within the organization. The board should recognize that its scope of oversight of the internal control system applies to all the three major areas of control: over operations, over compliance with laws and regulations, and over financial reporting. The audit committee is the board's first line of defense with respect to the system of internal control over financial reporting.

6. All other personnel

The internal control system is only as effective as employee throughout the organization that must comply with it. Employees throughout the organization should understand their role in internal control and the importance of supporting the system through their own actions and encouraging respect for the system by their colleagues throughout the organization.

2.8. Effectiveness of Information system Audit

Information system audit is integral part (subpart) of internal audit process, so the measurement of internal audit effectiveness also used to measurement in information system audit effectiveness.

2.8.1. Professional Proficiency of information system Auditors

Appropriate staffing of an internal audit department and good management of the staff are keys to the effective operation of an internal audit. An audit requires a professional staff that collectively has the necessary education, training, experience and professional qualifications to conduct the full range of audits required by its mandate (A1-Twajjry, et al, 2003). Auditors must comply with minimum continuing education requirements and professional standards published by their relevant professional organizations and the IIA (2008) and must have a high level of education in order to be considered a human resource (Bou-Raad, 2000).

According to (Albrecht et al. 1999; Ratlitt 1996) the greater the professional qualifications of the internal auditors in a given department, defined by the length of their professional training, experience and educational level, the greater the effectiveness of this department. Professional competence can be obtained through a Variety of ways such as on job training, formal internal and external training, staff rotation, encouragement of become a certified auditor in area such as (certification like CIA, CISA, CFE and ACCA), and experience sharing session among the auditors.

The internal audit guideline also states that the professional competence of each internal auditor as well as his/her motivation and continuing training are the prerequisite for the effectiveness of the internal audit. This means each internal auditor must maintain the required knowledge, skills and abilities to conduct the audit activity.

2.8.2. Quality of Audit Work

Glazer and Jaenike (1998) argued that performing auditing work according to internal auditing standards contributes significantly to the effectiveness of auditing. Ridley and D'silva (1997) found in the UK that complying with professional standards is the most

important contributor to internal audit's benefit. Internal audit quality, which is demonstrated by the offices' capability to provide useful and its findings and recommendations, is one of the most prominent factors on which audit effectiveness is anchored. The performance standards of the IIA (1996) require the auditor to plan and perform the work such that he or she would be able to arrive at useful audit findings and forward recommendations of improvement. The office's ability to properly plan, perform and communicate the results of audits is proxy for audit quality. Therefore, audit quality is debatably a function of extensive staff expertise.

In general, formal auditing standards recognize that internal auditors also provide services regarding information other than the financial reports. They require auditors to carry out their role objectively and in compliance with accepted criteria for professional practice, such that internal audit activity will evaluate and contribute to the improvement of risk management, control and governance using a systematic and disciplined approach.

This is important not only for compliance with legal requirements, but because the scope of an auditor's duties could involve the evaluation of areas in which a high level of judgment is involved, and audit reports may have a direct impact on the decisions or the course of action adopted by management ; Bou-roud (2000). It can thus be argued that greater quality of internal audit work understood in terms of compliance with formal standards, as well as a high level of efficiency in the audit planning and execution will improve the audit's effectiveness.

The internal audit guideline also states that internal auditors are expected to comply with standards for the professional practices of internal auditing published by the institutes of internal auditors (IIA) to conduct quality audit work. It also states that the quality assurance and improvement program should cover all aspects of the internal audit activity and continuous monitoring of its effectiveness. Which includes ongoing internal monitoring and periodic internal and external quality assessments?

2.8.3. Organizational Independence

The organizational independence of internal audit department can be gained by means of reporting to levels within the organization that allow the internal audit department to perform its responsibilities free from interference, avoiding conflict of interest, having direct

contact with the board and senior management, having unrestricted access to records and employees and departments. Appointment and removal of the head of internal audit not being under the direct control of executive management and not performing non-audit work.

The internal audit guideline also states that internal auditors shall be independent of the activities they audit and maintain an independent attitude to conduct the audit activity effectively and efficiently. Chartered institute of public finance and Accountancy (CIPFA); Worldwide professional standards and guidance ;International standards for the professional practice of internal Auditing (ISPPA) and the institute of internal Audit (IIA); practice advisory suggestion.

2.8.4. Career and Advancement

Goodwin (2001) argued that, internationally, the practice of staffing the internal audit department with career auditors is becoming less common, with more organizations using the function as a training ground for future management personnel. This practice is design to help the organization train will rounded senior managers. Internal auditors perform a wide Varsity of activities across different departments within the organization that gives them the opportunities to learn how these departments function and how they managed.

Furthermore, managers that have had experience in internal auditing should have a better understanding of the importance of internal control. The ability to use internal audit-roles as a stepping-stone to managerial positions is seeing as one of the advantages of having an in house internal audit function rather than outsourcing internal audit activities. Albercht et al (1999) found that most participants perceived internal audit as a gateway to either a managerial position, or a career in internal auditing. According to Goodwin (2001), internal auditors who operate in settings with more organizational career opportunities will invest more effort in their work in order to increase their promotion opportunities than those with fewer opportunities for organizational advancement who will invest less effort in their work, reacting in a lower performance level. The degree to which internal auditing;

2.8.5. Top Management Support

Fernandez and Rainey (2006) argued, based on a thorough literature review, that top management support and commitment to change play a crucial role in organizational renewal, as senior managers' can mobilize the critical mass needed to follow through on efforts launched by one or more visionary thinkers. A number of empirical studies have found top management: support for quality works to be a key factor in its improvement (for example, Dale and Duncaff (1985); Elorahimpour et al (1988). Given this, it is not surprising that management acceptance of and support for the internal audit function has long been seen as a critical issue to the success of internal audits function Sawyer (1973)

Several recent studies have demonstrated that support for internal auditing by top management is an important determinant of its effectiveness; Schwartz et al (2005). Funding, of course, is an important measure of such support. Internal audit departments must have the right and the resources needed to hire the right number of high quality staff, to maintain modern in training and development, to acquire and maintain physical resources.

2.8.6 Relationship between internal Auditor and External Auditor

It is very important for both Internal and External auditors to have a good professional relationship. Coordination and cooperation between internal and external auditors has major influence in producing a quality audit report. Examples of such coordination and cooperation include joint planning and exchange of information, opinions, and reports to facilitate higher-quality audits and prevent unnecessary duplication of work. In fact, it is stated in the International Standards for the Professional Practice of Internal Auditing (ISPPPIA), both these audit parties should establish a professional working relationship, share information and coordinate audit activities. It is necessary that the head of internal audit department provide required information to internal and external auditors who render assurance and consulting services; the chief internal auditor also needs to coordinate their activities to assure that all affairs are covered sufficiently, and any possible rework is at the lowest level. The significance of coordination and participation between internal examiners and external inspectors has for some time been considered as advantages of inside audit for the association, and external partners. Examples include joint planning and correspondence

of data, sentiments, and reports with a specific end goal to encourage astounding audits, including aversion of pointless revamps. Proficient guidelines have considered the connections between inward auditors and external auditors. ISPPIA, for instance, in cooperation standard demonstrates that collaboration in the middle of inner and external auditors ought to incorporate sharing data and coordination of activities. Applying these standards requires proficient interchanges in the middle of inside and external auditors. Which thusly help internal auditors in achieving their goals and giving better administrations? From external auditors' perspective, data acquired by inside auditors will probably help creating a superior audit sentiment, and likely in situations where outer auditors can depend on the work done by inner auditors, efficiency can likewise be made strides. Investigative studies demonstrate that proper participation can enhance productivity and adequacy of audits, and helps administration give higher quality administrations. Trouble in the middle of inner and external auditors regularly perceived as a component harming the nature of both sorts of audit. Brierley et al. (2001) and Almohaimeed (2000) demonstrated that trouble in the middle of inner and outer auditors could influence the nature of internal audit.

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CHAPTER THREE

Research Methodology

3.1 Description of the Study Area

The study conducted in commercial bank of Ethiopia. The Commercial Bank of Ethiopia is the largest commercial bank in Ethiopia. As of June 2016; it had about 367 billion Birr in assets and held approximately 67% of deposits and about 53% of all bank loans in the country. The bank has around 43,254 employees, who staff its headquarters and its over 1000+ branches positioned in the main cities and regional towns.

3.2. Research Design

The research design is Case study research, case study research is that through reports of past studies, allows the exploration and understanding of complex issues. It can consider a robust research method particularly when a holistic, in-depth investigation is required. One of the reasons for the recognition of case study as a research method is that researchers were becoming more concerned about the limitations of quantitative methods in providing holistic and in-depth explanations of the social and behavioral problems in question. Through case study methods, a researcher is able to go beyond the quantitative statistical results and understand the behavioral conditions through the actor's perspective. By including both quantitative and qualitative data, case study helps explain both the process and outcome of a phenomenon through complete observation, reconstruction and analysis of the cases under investigation (Tellis, 1997).

3.3 Sample Design and Sample Size

The target population for the study consists of the information system audit department in commercial bank of Ethiopia. The latest information regarding the number of employees was received from the human resource management of commercial Bank of Ethiopia (2017) which is information system audit department member is 13. A census data collection used for this study the procedure of systematically acquiring and recording information about the

number of a given population. It is a regularly occurring and count of a particularly population. The term used mostly in connection with national population and housing censuses. The reason for choose the census is that get every individual in the department and total population is small in the department. www.researchmethology.com

3.4. Research Approach

There are two types of research approaches such as deduction and the induction approach. A deduction approach adopts current theories and concepts to justify research relationships. Deductive approach is also helpful for identifying the causal relationships among factors by collecting data in most cases. Inductive approach also known inductive reasoning starts with the observation and theories proposed towards the end of research process as a result of observations. No theories or hypothesis would apply in inductive study at the beginning of the research and the researchers free in terms altering the direction for the study after the research process had commenced. The study is used inductive approach.

There are three common methods to conduct a research project in the area of business and social sciences namely quantitative, qualitative and mixed research approaches. Quantitative method is an objective and systematic process in which piece of numerical data used to obtain information about the world and which analyzed by using mathematical methods. It also used to test a theory by examining the factors based on the previous studies, identifying them research relationships and obtaining the findings. It can generalize research findings when the study collects data from a random sample .which represents its population and it has sufficient sample size. Quantitative method can also achieve greater objectivity and more accurate results if we comparing with the other methods. It depends on a few variables and it follows many tools in order to test the validity and reliability of the data. Qualitative research approach also used to identify results to be best understanding the research problem. According to Creswell (2009), it also involves the use of both approaches in tandem so that the overall strength of the study is greater than either qualitative or quantitative research. Therefore, in order to achieve the objectives of this study and thereby to give answer for its problems, mixed research the researcher used approach.

3.5. Data Sources and Collection Method

3.5.1. Sources of Data

Primarily and secondary source data is use in this research. The questionnaires and interview helped us to collect a primary source of data. That helps the researcher to have more insights about factors that lead effectiveness of system audit at the study area.

3.5.2. Data Collection Technique

The data collection instrument used in this study is questionnaire and interview .which is design to identify and meeting the research objectives. This instrument chosen for data collection because of its suitability in having an ample time for the respondents concerned adequately fill the form. The questionnaire designed to include structured questions. Structured questionnaires are preferred for the ease of creating, coding and interpreting the addressed questions. The research questionnaires are taken from previous study like mihret & yismaw (2007), hawi aliyi(2016) and modified according to the study needed. As Kothari (2004) said, structured questionnaires are simple to administer and relatively inexpensive to analyze. The structured questionnaires are reliable in that everyone in the sample will asked the same question and answers exactly the same way. It had its limitations in that it is hard to address complex issues and is difficult to know whether the respondent has understood the questions. The questionnaire contains closed ended questions. Interview contains open-end question. Choices questions are measure in Likert-Scales containing five choices, which ranges from strongly disagree up to strongly agree: strongly disagree (1), disagree (2), neutral (3), agree (4) and strongly agree (5). Likert scale can be created as the sample sum of questionnaire response over the full range of the scale in so doing likert scale assume distance between each item are equal .(sorrel@iastate.edu).

3.6. Methods of Data analysis

The collected data from questionnaires change into suitable form for analysis and interpretation. This achieved through sequences of activities including editing, coding, entry, and tabulation. The Finally, an analysis progress is developing using Statistical Package for Social Science (SPSS).frequency, percentage, Mean, standard deviation was used to analysis

and find out the results. Moreover, the descriptive method of data analysis is important to analysis the demography of the sample in population at the study area. In terms of age, educational background, work experience etc. of the respondents and overall population as well as the descriptive methods of statistical analysis.

3.7. Ethical Consideration

Ethics in research is very important because the research frame and circumstances need participations from all parties. research conducted for academics purpose only the respondents answer is protected, are data protection, reciprocity and trust, affiliation and conflicts of interest no one can't be harm due their participation in research because of information system document is closed; Bryman and Bell (2007) are informed consent, avoiding harm to participants, invasion of privacy, and deception.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

This chapter contains a summarized description of the personal characteristics of the respondents followed by the, Analysis of Factors such as Professional competency of system auditors', Quality of audit work, Organizational independence of auditors', and Top Management support, career and advancement, relationship between internal and external auditor are examined ,also data gather by interview is presented under of the chapter.

4.1 Demographic information of the Study Population

Table 1 Gender respondents

Gender	Frequency	Percentage
Male	11	84.61%
Female	2	15.39%
Total	13	100%

Source questionnaires data

The study sought to determine the gender of the respondent, therefore requested the respondent to indicate their gender. The study found that majority of the respondent as shown by 84.61 % were males whereas 15.39% of the respondent were females, this is an indication that both genders were involved in this study and thus the finding of the study did not suffer from gender bias.

Table 2 Age Distribution

Age Bracket	Frequency	Percentage
18 up to 25 years	2	15.38%
26 up to 35 years	7	53.84%
36 up to 45 years	3	23.09%
Above 45	1	7.69%
Total	13	100%

Source questionnaires data

The study requested the respondent to indicate their age category. from the findings 15.38% of the respondents were aged between 18 to 25 years, 53.84 % of the of the respondent indicated they were aged between 26 to years, 23.09% of the respondents indicated were aged between 36 to 45years, 7.69% of the respondents above. This is an indication that respondents well distributed in terms of their age.

Table 3 Level of Education

Level of Education	Frequency	Percentage
Degree	11	84.61%
Master and above	2	15.39%
Total	13	100%

Source questionnaires data

The study requested the respondents to indicate their level of education. From the findings, it established that 84.61% of the respondent is degree holder, 15.39% of the respondents are master degree holder. According to internal audit, charter no 9(VI) of commercial bank of Ethiopia said that certification like certified information system audit (CISA) in information system audit is encouraged, but from the study concluded that most of the information system auditor not certified this lead ineffectiveness of audit work.

Table 4 Periods of Serves

Years of serves	Frequency	Percentage
0 up to 5	5	38.46%
5 up to 10	4	30.77%
10 up to 20	4	30.77%
Total	13	100%

Source questionnaires data

The study requested respondent to indicate the number of years they had served. From the findings the study established that, 38.46% of the respondents had worked for a period of ranging 0 to 5 years, 30.77% of the respondents indicated that they had worked for a period ranging between 5 to 10 years, 30.77% of the respondents had served for 10 to 20 years. This implies that majority of the respondents had served for a considerable period which indicates that most of the respondents had vast knowledge which could be relied upon by this study.

4.2 System audit proficiency competency

Table 5 responses of audits to proficiency competency.

Statement	Strongly disagree	disagree	neutral	agree	Strongly agree		Standard deviation
System auditors possess sufficient experience to understand the organizations systems.		7	6			2.4615	.51887
The system audit staffs possess knowledge and skills in a variety of areas (beyond information system), as necessary.		9		4		2.6154	.96077
System audit has policies for training of system audit staff.				8	5	4.3846	.50637
System auditors undertake continuous professional development activities (such as professional association sponsored programs and correspondence courses).		11	2			2.1538	.37553
Adequate short-term training is arranged for system auditors each year	6	4	3			1.9231	.75955
The professional qualifications and training of system Audit employees are high.	5	6	2			1.7692	.72501
System audit is a source of valuable data		4	3	3		3.1538	.89872

Source questionnaires data

The study sought to establish the level at which respondents strongly disagreed up to strongly agreed with the above statements relating to professional competence of information system auditor of commercial banks of Ethiopia. The findings the study established that majority of the respondents disagree that Adequate short-term training is not arranged for system auditors each year by mean of 1.9231. In addition to majority of respondents disagreed with system auditors do not have possess sufficient experience to understand the organizations systems with mean of 2.4615. According to internal audit charter no 5.1(V) collectively maintain audit staff with sufficient knowledge, skills, experience and professional qualification. System auditors not undertake continuous professional development activities (such as professional association sponsored programs and correspondence courses) with mean of 2.1538. The professional qualifications and training of system Audit employees are not high with mean of 1.7692. According to internal audit, charter no 9(IV) of commercial bank of Ethiopia all internal audit staff must be enrolled-in continuous professional education/training of acceptable standard each year. The respondents are neutral with that System audit is a source of valuable data and information for the decision-making by mean of 3.1538. Moreover, respondents that agree with System audit has policies for training of system audit staff by mean of 4.3846. Other also neutral with the system audit staffs possess knowledge and skills in a variety of areas (beyond information system) as necessary shown by mean of 2.6154.

The result shown above paragraph, the system audit process has a training policy to the system audit in every year, but this policy not implemented in the ground filed. system auditors do not have sufficient knowledge, skill, and professional qualification. System audit staff confuses with the valuable source for decision making to policy maker. Further elaborated their comment that there is no adequate training and development program, which could help the auditors to maintain necessary skill and expertise in the area of their field, which in turn may have its own effect on the quality of audit work been processed by the system audit process. According (Albrecht et al. 1999, Ratliff 1996) the greater the professional Qualification of the internal auditors in a given department, defined by the length of their professional training, experience and educational level, the greater the effectiveness on the department.

4.3 Quality of Audit Work

Table 6 responses on Quality of Audit work related question

Statement	Strongly disagree	Disagree	neutral	agree	disagree	Mean	Standard deviation
The system audit staff has formal follow-up procedures to ensure whether the auditee as per the agreed plan takes corrective actions or not.				13		4.0000	.00000
The results should not conflict with the procedures of the bank in a way that goes in accordance with regulations processes of the bank.			6	7		3.5385	.51887
System audit staff prepares an effective plan and programs to conduct audit activity for individuals audit assignment.		13				2.0000	.00000
System audit staff conducts audit activities in accordance with the recognized standards.			5	8		3.6154	.50637

Source: questionnaires data

The study sought to determine the level at which respondents strongly disagree to strongly agree with the statements that relating to quality of audit work of system audit on commercial bank of Ethiopia. From the findings, the study established that disagree with System audit staff not prepares an effective plan and programs to conduct audit activity for individuals audit assignment as shown by mean 2.0000. On other hand, majority of the respondents agreed that system audit staff has formal follow-up procedures to ensure whether the auditee as per the agreed plan takes corrective actions as shown by mean of 4.0000. the results should not conflict

with the procedures of the bank in a way that goes in accordance with regulations processes of the bank as shown by mean of 3.5385. System audit staff conducts audit activities in accordance with the recognized standards as shown by mean of 3.6154.

From above paragraph, the system auditor conducted their work on the base of the standard rules, procedure, and guideline of the bank. According to internal audit charter no 10(I) has to develop quality assurance improvement program in order to ensure that the quality of internal audit work in consistently at high level. They work not comply with standard but the audit staff lack of preparing an effective plan and programs to conduct audit activity for individuals audit assignment. This can create question to audit staff in capability. Glazer and Jaenike (1998) argued that performing auditing work according to internal auditing standards contributes significantly to the effectiveness of auditing. Ridley and D'silva (1997) found in the UK that complying with professional standards is the most important contributor to internal audit's benefit. `

4.4 Organizational Independence of Auditors

Table 7 Responses on Organizational independence related Questions.

Statement	Strongly disagree	disagree	neutral	agree	Strongly agree	Mean	Standard deviation
System audit staff is not sufficiently independent to perform their professional obligations and duties				13		4.0000	.00000
The board of directors (the top management) approves the appointment and replacement of the head of system auditing.				13		4.0000	.0000
The head of system audit reports to a level within the organization that allows		7	4	2		2.6154	.76795
System audit staffs have not free access			4	9		3.6923	.48038

System auditors rarely face interference by management while they conduct their work.			13			3.0000	.00000
Conflict of interest is rarely present in the work of system auditors.		8		5		2.7692	1.01274

Source: primary D

The study sought to determine the level at which respondents strongly disagreed or strongly agreed with the above statements relating to Independence of system audit of commercial banks Ethiopia. from the findings of the study established that majority of the respondents' neutral with that the head of system audit reports to a level within the organization that allows the system audit fulfill its responsibilities as shown by a mean of 2.6154 in each case. Others neutral that Conflict of interest is rarely present in the work of system auditors as shown by a mean of 2.7692 in each case. Moreover, the respondents that said agree the board of directors (the top management) approves the appointment and replacement of the head of system auditing as shown by mean 4.0000. In addition to above System audit staff is not sufficient independent to perform their professional obligations and duties as shown by mean 4.0000. Moreover System audit staffs have not free access to all departments and employees in the organization as shown by mean 3.6923.the internal audit charter said that the existence of any unrestricting restriction staffing and authority of the internal audit or on access by the internal audit activity, recording, property and personnel. Auditor shall be independent activity they audit and maintain independent attitude.

The table above the system auditors does not have sufficient free access and free audit, as they like to do audit. There is no conflict of interest in department. The reports to a level within the organization that do not allow the system audit fulfill its responsibilities. The organizational independence of internal audit department can be gained by means of reporting to levels within the organization that allow the internal audit department to perform its responsibilities free from interference, avoiding conflict of interest, having direct contact with the board and senior management, having unrestricted access to records and employees and departments. The internal audit guideline, also states that internal auditors shall be independent of the activities they audit and maintain an independent attitude to conduct the audit activity effectively and efficiently.

4.5 Top Management Support

Table 8 Responses on Top Management Support related Questions

Statement	Strongly disagree	disagree	Neutral	Agree	Strongly agree	Mean	Standard deviation
Senior management supports information system audit to perform its duties and responsibilities.		8	5			2.3846	.48038
Senior management is involved in the information system audit plan	3	7	3			2.0000	0.70711
Information system audit provides senior management with sufficient, reliable and relevant reports about the work they perform and recommendations made.		13				2.0000	.0000
The response to system audit reports by the senior management is reasonable.		8	5			2.3846	.50637
The system audit department valued by management of the bank and make valuable contributions.		9	4			2.3077	.48038

Source: primary Data

The study sought to determine the level at which respondents strongly disagreed or strongly agreed with the above statements relating to management support in system audit of commercial banks Ethiopia. From the findings the study established that majority of the respondents ‘disagreed that not sufficient senior management supports to information system audit to perform its duties and responsibilities as shown by a mean of 2.3846 in each case. Senior management is not involved in the information system audit plan as shown by a mean of 2.0000 in each case. Moreover, Information system audit not provides to senior management with sufficient, reliable and relevant reports about the work they perform and recommendations made as shown by mean 2.0000. The response to system audit reports by the senior management is reasonable as shown

by mean 2.38460. The system audit department valued by management of the bank and make valuable contributions as shown by mean of 2.3077.

From the above table is that senior management is not give necessary attention to system audit. not support information system audit to perform its duties and responsibilities, not involved in the system audit plan, not provides with sufficient, reliable and relevant reports about the work they perform and recommendations, not reasonable and not valuable contributions. This indicates that the support given by the management towards the system audit process is not enough, which may create dissatisfaction on the system auditors; which in turn may have its own adverse effect on audit performance of the process in particular and the bank at large.

4.6 INTERVIEW DATA ANALYSIS

1. What influence does have on Career and Advancement on effectiveness of information system audit?

Majority of the respondents said that career and advancement has not considered as a stage in the career development of system audit staff in the bank. Because of information system audit do not have sufficient vertical position. They believed that such things leading them in to routine work situation, work dissatisfaction and leave the bank for better chance. Such kind of things affect effectiveness system audit'. According to commercial bank of Ethiopia HRM, procedure said that the role based career path for all eligible bank roles based on the job family. The Career and Succession Planning Management team in liaise with the HRBP team shall facilitate and support the individual employee career path plan development. Good win (2001) states that internal auditors who operate in settings with more organizational career opportunities will invest more effort in their work in order to increase their promotion opportunities than those with fewer opportunities for organizational advancement who will invest less effort in their work, resulting in a lower performance level.

2. What influence does have relationship between internal and external system auditor in system audit effectiveness?

The majority of the system auditors said that is necessary that system audit department provide required information from external auditors who render assurance and consulting services. The system auditor also said that a need to have coordinated their activities to assure that all affairs are cover sufficiently and any possible rework is at the lowest level. According to internal audit charter scope coordinating the audit work with the bank external auditors and supervisory authority ,and follow up on the implementation of the external auditor recommendation to ensure the corrective and effective action have been taken. They said the relationship between them and external (consulting) auditor benefit them in quality of audit work without duplication of work and have positive influence in system audit work.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1. Summary of the study

The main purpose of information system auditor is to provide assurance that the information systems are functioning in an efficient and effective manner to achieve organization's objective. As information system are interrelate Sayana (2002, p. 2) suggested that information systems effectiveness should be carried out implementing an integrated evaluation of all information system components. In general, the major elements consist of physical and environmental, systems and administration, application software, network security, business continuity and data integrity. Each element may have different priority; therefore, the most significant elements may select for auditing. Information system audit is subset internal audit processes. Information system Audit assesses the adequacy of environmental, physical security, logical Security, and operational controls designed to protect Information system hardware, software, and data against unauthorized access and accidental or intentional destruction or alteration, and to ensure that information systems are functioning in an efficient and effective manner to help the organization achieve its strategic objectives (Champlain, 2003, pp 28). The information system audit must be effective and efficiency. the effectiveness of information system audit measure by such attribute of system audits like professional competency, quality of audit work, career and advancement, organizational independency, top-level management support and relationship between internal and external auditor. system auditors independence can be obtained by reporting to level within the organization that allow the system audit to perform its responsibilities of free from interference; avoiding conflict of interest ; having direct contact with the senior management; having unrestricted access to records, employees and department in their day-to-day activities of audit work. The support given by the top-level management towards the audit process is must be enough to for the system auditors. The system auditor process is giving necessary training and development program that could enhance the auditors' skills and experience to audit all the banks systems by preparing proper plan for risk identification. Career and advancement opportunity of the system auditors must be create in the system audit processes. The relationship between internal and external auditor well and goes in smooth way.

5.2. Conclusion

From the study concluded that the system audit department should be independent to perform the work in a good manner; but the finding did not show this fact. In addition, the staff has not free access. There is also a no conflict of interest within their work. However, the system audit not provides to senior management with sufficient, reliable, and relevant reports about the work they perform and recommendation made.

The study has also shown that system audit of the studied organizations need improvement in the areas of competence. Audit effectiveness could be enhancing by ensuring skilled and trained workers. However, as the result elaborated, the system auditors do not possess sufficient experience to understand the organization system; in addition to this, they do not possess enough knowledge and skills for competency. Because, the staff does not have capacity building and supportive trainings; in this regard, the employees could not develop professional skills.

The study also examined that career and advancement opportunity of the system auditors in the system audit processes is not consider as a stage in the career development (promotion) of system audit staff in the bank. This can concluded that the auditor's interest goes down, less effort, careless....etc with the work.

From this study, Support given by the top-level management towards the information system audit processes must be sufficient and strong, but the result of the study did not show such kinds of support in the department. This kind of low level of support leads the auditors to unwanted work inefficiency.

Finally, this study has revealed the relationship between internal and external auditor in information system audit department is goes well and supportive way. In cooperation and coordination with consultant, lead them to good work efficiency.

5.3. Recommendations

From the data analysis and findings, the researcher arrived at the following recommendation.

- The commercial bank of Ethiopia top-level management gives more emphases towards the system audit process. In order to achieves their job work in effective and efficient manner they support them, give attention, consistently reply the request as soon as possible ...etc.
- The bank should have an appropriate program for training, developing system audit staff , giving an opportunity for continuing education and certification in CISA so as to system audit staff produce effective audit work.
- Effective audit work can be produced if information system auditors have more organizational career opportunity for promotion and training in the information system audit processes so the commercial bank of Ethiopia needs to make available the career and advancement opportunity for the information system auditors.
- The commercial bank of Ethiopia should give to information system auditors do have sufficient independence to perform them responsibilities of free from interference; having unrestricted access to records, employees and department in their day-to-day activities of audit work.

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Appendix I

ST. MARY'S UNIVERISTY

SCHOOL OF GRADUATE STUDIES

DEPARTEENT OF ACCOUNTING AND FINANCE

QUESTIONNAIRES

This Questionnaire and interview is design and prepared by the student at St. Mary University. Conduct research paper in partial fulfillment of requirements of a Master degree in Accounting and finance. With this questionnaire, the student researcher intends to assess information system Audit Effectiveness in Commercial Bank of Ethiopia.

You are kindly request to complete this questionnaire. In each question, you requested to give genuine response and to thick mark and fill in the blank space or to put thick mark your possible answer to the corresponding question and interview on open-ended questions.

Thanking you for the corporation. Your response will treat confidentially and only used for academic purpose.

General Information

Section I demographic characteristics of the Respondent.

1. Gender:

- A. Male B. Female

2. Age:

- A. 18 - 25 B. 26 - 35
C. 36 - 45 D. Above 45

3. Your educational qualification

- A. 12th Complete C. Degree holds
B. Diploma holder D. Master & above

4. Years of Experience in system audit Process

- A. Less than 2 years B. 5-10 years C. 10 - 20 years D. Above 20 years

Section II Question related to influence factor effectiveness system audit.

Level	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Scale	SA	A	N	D	SD

5. Question related to professional competency

No	Statement	SD	D	N	A	SA
1	System auditors possess sufficient experience to understand the organizations systems.					
2	The system audit staffs possess knowledge and skills in a variety of areas (beyond accounting and finance), as necessary.					
3	System audit has policies for training of system audit staff.					
4	System auditors undertake continuous professional development activities (such as professional association sponsored programs and correspondence courses).					
5	Adequate short-term training is arranged for system auditors each year.					
6	The professional qualifications and training of system Audit employees are high.					
7	System audit is a source of valuable data and information for the decision-making					

6. Question related to quality of audit work

NO	Statement	SA	A	N	D	SD
1	The system audit staff has formal follow-up procedures to ensure whether the auditee as per the agreed plan takes corrective actions or not.					
2	The results should not conflict with the procedures of the bank in a way that goes in accordance with regulations processes of the bank.					
3	System audit staff prepares an effective plan and programs to conduct audit activity for individuals audit assignment.					
4	System audit staff conducts audit activities in accordance with the recognized standards.					

7. Questions related to organizational independence

NO	STATEMENT	SA	A	N	D	SD
1	System audit staff is not sufficiently independent to perform their professional obligations and duties.					
2	The board of directors (the top management) approves the appointment and replacement of the head of system auditing.					
3	The head of system audit reports to a level within the organization that allows the system audit full file its responsibilities.					
4	System audit staffs have not free access to all departments and employees in the organization.					
5	System auditors rarely face interference by management while they conduct their work.					
6	Conflict of interest is rarely present in the work of system auditors.					

8. Question related to top level management support.

NO	STATEMENT	SA	A	N	D	SD
1	Senior management supports information system audit to perform its duties and responsibilities.					
2	Senior management is involved in the information system audit plan					
3	Information system audit provides senior management with sufficient, reliable and relevant reports about the work they perform and recommendations made.					
4	The response to system audit reports by the senior management is reasonable.					
5	The system Audit department valued by management and makes valuable contributions.					

Appendix II

Interview

This interview is developed to get additional information regarding to information system effectiveness case of commercial bank of Ethiopia.

1. What influence does have career and advancement in system audit effectiveness?
2. What influence does have relationship between internal and external system auditor on system audit effectiveness?