Addis Ababa University
School of Business and Public Administration
Department of Accounting and Finance

The Impact of computerized Accounting Information System on Audit Risk: the case of external auditors engaged in Addis Ababa

A Thesis Submitted to the Department of Accounting and Finance, School of Business and Public Administration, Addis Ababa University in partial fulfillment of the Requirement of Degree of Masters of Science Accounting and Finance

By: Keno Telila

Advisor: Degefe Duressa (PhD)

June, 2011

75

Addis Ababa University
School of Graduate Studies
Post Graduate Program in Accounting and Finance

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Approved by Board of Examiners:

Chairman of Department Graduate Committee (DGC)	Signature	Date
Degefe Duressa (ph.D) Advisor	Signature	22/06/2011 Date
Dr. S. Vlayanadan Examiner	Signature	22-06-2011 Date

Declaration

I hereby declare that the work which is being presented in this thesis entitled "The impact of computerized Accounting Information System on Audit Risk: the case of external auditors engaged in Addis Ababa" is original work of my own, has not been presented for a degree of any other university and all the resources of materials used for the thesis have been duly acknowledged.

Keno Telila
(Candidate)

22-06-2011
Date

This is to certify that the above declaration made by the candidate is correct to the best of my knowledge.

Dr. Degefe Duressa
(Thesis Advisor)

22/06/2011
Date

Abstract

The study has been carried out in Addis Ababa, Ethiopia. The influence of computerized accounting information system on audit functions and the major risk that are associated with auditing in such environment have been approved by the literature relating to both developed and other developing countries. However, the impact of IT-based accounting system on audit risk has not been assessed in Ethiopia, particularly, in Addis Ababa. So, this research fills the existing gap by evaluating empirically the influence of the utilization of Computerized Accounting Information System on the level of audit risk in the study site. The overall objective of the study is to evaluate the impact of Computerized Accounting Information Systems on the level of audit risk the case of external auditors engaged in Addis Ababa. It seeks to identify whether the level audit risk considerably changed due to implementing this system by the audit firm clients in the targeted area. The study used both quantitative and qualitative (mixed) approach. The research finding tries to answer questions like whether audit risk was affected due to implementation of IT-based accounting system. Self-administered questionnaire has been carried out to meet the desired objective and to address the study problem. The major findings of this study are several variables altered audit risk related to implementing the system. These are: lack of segregation of duties; lack of awareness of the issue, problems and risk associated to the system; disappearance of audit trial; unsuitable audit approach; lack of IT training for both client staffs and auditors in such environment; lack of back up data; complexity of the system; absence of adopting advanced audit software; weakness of client internal control system and audit firm financial cost concern.

Key words: *Accounting, Addis Ababa, Audit, Auditor, Information,*

ACKNOWLEDGEMENT

There are many people who deserve to be acknowledged in this study and it is difficult to tell all of them by their name. However, I would like to thank particularly, those who have made significant contributions toward the completion of this paper after almighty God.

At the very beginning, my sincere thanks go to my advisor Dr Degefa Duressa Faculty dean of School of Business and Public Administration of Addis Ababa University for his advice, support, guidance, generosity, tolerance and kindness. Furthermore, I would like to say thanks to Megistu Bogale PhD candidate of college of commerce for his valuable support.

Secondly, I wish to express my gratitude and appreciation to all of my friends who have always supported and encouraged me for the completion of this paper.

Thirdly, my greatest appreciation is given to my lovely friend Shume Regassa, my parents, my brothers and sisters. All word is seem inadequate when I consider what be indebted to my sister Aare. She has helped me throughout this voyage and dedicated her time, as well as effort to me. Furthermore, I would like to say thanks to my brothers Hafte and Engineer Magarsa Telila those provided me with financial, material support as well as shares me their ideas for this study.

Lastly, I would like to acknowledge the assistance that I have obtained from audit firms and their staffs. However, special thanks go to all those persons who have supported me throughout the period of this research but who I may have unfortunately not disclosed.

Table of Contents

Chapter Two

Chapter Four

Chapter Five

List of table

List of Figure

Acronyms

AAS	Auditing and Assurance Standard
ACCA	Association of Chartered Certified Accountants
AIS	Accounting Information Systems
AR	Audit Risk
CAIS	Computerized Accounting Information System
CAAT	Computer Assisted Audit Techniques
CPA	Certified Public Accountants
CIS	Client's Computerized Information Systems
CR	Control Risk
DR	Detection Risk
ERP	Enterprise Resources Planning
GAAS	Generally Accepted Auditing Standards
GAS	General Audit Software
GAO	General Accounting Office
IR	Inherent Risk
IS	Information Systems
IT	Information Technology
SIA	Standard on internal audit
ISA	International Standard on Auditing
SAS	Statement of Auditing Standards
SLAuS	Sri Lanka Auditing Standard
NCC	National Computing Centre

Chapter one

1. Introduction

1.1. Background of the study

Recently, Information technology becomes an integral part of businesses. The business environment change due to deregulations, privatization, and globalization. Consequently increased competition, have increased the need for companies to search for new ways to survive and succeeded (Keechi, 2007).Innovative information technology offers the required tools for companies to respond effectively and efficiently to these (Yanga and Guan, 2004).

Information technology (IT) function is responsible for designing, implementing and maintaining many of controls over and organization's business processes. IT has a critical role in collecting, processing, and storing data that is summarized and reported in financial statements (Abu-Musa, 2008). As computer technology has advanced organizations have become increasingly dependent on IT to carry out their operation and to process, maintain and report essential information (Hall, 2001).Consequently, the reliability of computerized data and the systems that process maintain and report these data are a major concern to audit (Hall, 2001). IT is used for designing, implementing and maintaining many of controls over an organization's business processes. IT has a critical role in collecting, processing and storing data that is summarized and reported in financial statements (Dalci and Tanis, 2003).

Many organizations are becoming increasingly dependent on IT with such elements as fully integrated information systems (IS) and electronic document management becoming more prevalent (Abu-Musa, 2004). IT increases the accuracy and speed of transaction processing, and can lead to competitive advantages for many organizations

in terms of operational efficiency, cost savings and reduction of human errors. On the other hand, there are many types of risk associated with IT, this includes loss of computer assets, erroneous record keeping, increased risk of fraud, competitive disadvantages if the wrong IT is selected, loss or theft of data, privacy violations and business disruption (Abu-Musa, 2006). The explosive growth of IT capabilities and the desire of businesses of all sizes to obtain a competitive advantage have led to a dramatic increase in the use of IT systems to originate process, store and communicate information (Coe, 2006).

Use of computer facilities has brought about radically different ways of processing, recording and controlling information and has combined many previously separated functions. The potential for material systems error has thereby been greatly increased causing great costs to the Organization, e.g., the highly repetitive nature of many computer applications means that small errors may lead to large losses (Meng, 2009).

Accounting Information System indicate an integrated framework within an entity (such as a business firm) that employs physical resources (i.e., materials, supplies, personnel, equipment, funds) to transform economic data into financial information for; (1) conducting the firm's operations and activities, and (2) providing information concerning the entity to a variety of interested users. Indeed, the combination or interaction between human, technology and techniques would permit an organization to administer its knowledge effectively (Muhammad Sori, 2009). Conditio ns in the computerized accounting, auditing and oversight functions of the economy have not changed, but because of the characteristics of computerized accounting Information system and its inherent risk, therefore, the audit of computerized accounting information Systems are faced with challenges and opportunities (Chen Xiao,2006).

Information technology Audit is the process of collecting and evaluating evidence to determine whether a computer system has been designed to maintain data integrity, safeguard assets, allows organizational goals to be achieved effectively, and uses resources efficiently (Abu-Musa, 2001).

Computerized Accounting Information System (CAIS) has a wide range of applications, such as reduction of accounting error, auditor review of workload, the audit staff to quickly gather information and to obtain evidence, audit work has brought great convenience to improve the efficiency and quality of the audit; but on the other hand has also increased the risk of computer audit (Timothy et al, 2006).

While this was previously paper-based process, most modern businesses now use computerized accounting software such as Peachtree etc. Computerized accounting information system is also called IT- based accounting systems (Ariwa and Eseimokumoh, 2008).Both of these will be used interchangeably in this study.

1.2. Statement of the problem

The ongoing revolution in IT has had a significant influence on business process all over the world (Chan, 2000). In a business environment increasingly driven by IT, mechanisms to monitor IT and business operations controlled by IT are needed as well as information systems that are properly planned and work effectively (Pathak et al, 2001). This advancement in technology has fostered the creation of CAIS which enab les accounting tasks to be accomplished with increased speed and accuracy (Dalci and Tanis, 2003). AIS are an information system that is designed to make the accomplishment of accounting function possible. It processes data and transactions to provide users with the information they need to plan, control, and operate their businesses (Romney, 1997).

Accounting activities that were previously performed manually can now be performed with the use of computers, but with the increase in the usage of IT-based accounting systems in developed and developing countries there are several risk posed by the systems such as accidental and intentional entry of bad data; organized fraud; lack of awareness of the issues, problems and risks associated with CAIS; the application of an unsuitable audit approach (i.e. auditing around the computer); the incompetence of client staffs' in dealing with issues relating to CAIS etc (Al-Fehaid, 2003).

Abu-Musa(2005) states in designing audit procedures that, the auditor should consider the potential of the risk; the materiality of misstatement; the characteristics of the class of transactions, account balance or disclosure involved; the nature of the specific controls used by the organization including the organization's use of IT; and whether the auditor expects to obtain audit evidence to determine if the organization's controls are effective in preventing, or detecting and correcting, material misstatements.

According to Barclay Simpson,(2007) computer fraud and abuse can have a detrimental effect on an organization. Periodic surveys undertaken by organization such as the NCC and the audit commission indicate the following common instances of computer fraud and abuse: unauthorized disclosure of confidential information; unavailability of key sy stems; unauthorized modification or destruction of software and use of IT faculties for personal business.

Furthermore Abu-Musa(2005) identify that Information technology introduces specific risks to an organization's internal control, including: programs that are inaccurately processing data, processing inaccurate data, or both; unauthorized access to data that may result in destruction of data or improper changes to data, including the recording of unauthorized or nonexistent transactions or inaccurate recording of transactions; unauthorized changes to data in master files; failure to make necessary changes to systems or programs; inappropriate manual intervention; and potential loss of data or inability to access data as required (IFAC, 2002).

The International Standard on Auditing 401- Auditing in Computer Information Systems Environment- indicated that auditing processes for all auditors have been rapidly changed. The causes of these changes are: the globalization of business; advances in technology; demands for value-added audits; the organizational structure of the client's computerized information systems (CIS) activities; the extent of concentration or distribution of computer processing throughout the organization; particularly as they may affect segregation of duties; and the availability of data source documents.

The developments in IT have greatly enhanced routine accounting tasks and the process of closing accounting. For instance, financial statements can be generated on daily basis with small error. These enhancements have evolved from the digitalization of documents mass and its consequent faster, easier, more reliable processing, and more efficiency information distribution (Grandlund, 2009).

IT increases the accuracy and speed of transaction processing, and can even lead to competitive advantages for many organizations in terms of operational efficiency, cost savings, and reduction of human errors. On the other hand, there are many types of risk associated with IT; this includes loss of computer assets, erroneous record keeping, increased risk of fraud, competitive disadvantages if the wrong IT is selected, loss or theft of data, privacy violations, and business disruption (Abu-Musa 2006).

Computerized accounting systems have improved the functionality of accounting departments by increasing the timeliness of accounting information; by improving the timeliness of financial information, accountants can prepare reports and operations analyses that give management an accurate picture of current operations(Fricke,2010). The potential sources of a new IT application are many and varied. A number of factors, such as cost, time constraints and availability of a skilled resource, will determine which source is the most appropriate for a particular organization (Barclay Simpson, 2007).

Computerized accounting information system improved accuracy. Most computerized accounting systems have internal check and balance measures to ensure that all transactions and accounts are properly balanced before financial statements are prepared. This system will also not allow journal entries to be out of balance when posting, ensuring that individual transactions are properly recorded. Accuracy is also improved by limiting the number of accountants that have access to financial information (Fricke, 2010).

The impact of utilizing IT-accounting systems on audit services and potential risks that are associated with auditing in such an environment have been recognized by the literature relating to both developed and other developing countries such as United kingdom, America(USA), Saud Arabia, Nigeria and South Africa respectively. However, the impact of these risks on the level of audit risk in an IT-based accounting environment has not been assessed in Ethiopia. Accordingly, this study was attempts to fill this gap by evaluating empirically the impact of implementing IT-based accounting systems on the level of audit risk in Ethiopia, particularly, Addis Ababa.

1.3. Research question

In order to explore the research problem, the focus of the thesis is on the following research questions:

- Has the use of IT-based Accounting System in businesses in Addis Ababa influenced the level of audit risk?
- What are the impacts of computerized accounting information on the level of audit risk?
- What are the proportions of business enterprise implementing computerized accounting information system in Addis Ababa?
- Has audit risk considerably changed after implementing IT-based accounting information system?

- Which control environment was affected due to implementing IT-based accounting system?
- Has the use of IT-based accounting systems by clients influenced firm's audit approach?

1.4. Objective of the study

1.4.1. General objective

The overall objective of the study is to evaluate the impact of utilizing computerized accounting information system on audit risk in Addis Ababa.

1.4.2. Specific objectives

- To assess the extent to which the accounting information system in business enterprise are computerized in Addis Ababa.
- Study potential problems associated with auditing company that use computerized accounting information system in Addis Ababa.
- To assess the impact of IT-based accounting information system on the level of audit risk,
- To evaluate whether the audit risk has considerable change (increase or decrease) after implementing the computerized accounting information system by client in Addis Ababa.
- To indentify the control environment altered as result of implementing computerized accounting information system
- To identify whether use of IT-based accounting systems by clients influenced firm's audit approach

1.5. The scope and limitation of the study

The scope of the study is to highlight the impact of computerized accounting information system on the level of audit risks business in Addis Ababa the case of private audit firms. The limitation of the study was enumerating the set of factors that were hindering the researcher to address the desire objective. These factor included time constraint, cost, reference, and lack of experience to apply certain research model and tools etc.

1.6. Significance of study

The significance of the paper is arise from need to look at the real practice of audit firms in this new environments and how they respond to both its requirements and its difficulty in order to eradicate, or reduce ,the audit risk and get better quality of audit services in Ethiopia ,specifically, Addis Ababa. There is the need to assess the level of audit risk after implementing computerized accounting information systems by businesses in study area. Moreover, this study fills the exiting gap regarding the problem associated with adopting computerized accounting information system in Addis Ababa.

1.7. Organization of Study

The study is organized into five chapters; the first chapter is introduction; chapter two Is review of related literature; third chapter methodology; fourth chapter details the data analysis and finding; lastly, summary, conclusions and recommendation for further researcher as given in chapter five.

Chapter two

2. Review of related literature

2.1. Overview of Information technology

2.1.1. Information Systems in General

Developments in information technology have been paramount in recent decades supporting far reaching consequences within and between market and societies (Kallinikos, 2006). Integrated IT such as internet, groupware, Enterprise Resources Planning (ERP) fosters the fact that information technology know-how goes increasingly hand in hand with business knowledge. Advances in computers and other business technologies are making accounting faster, cleaner and easier. However, the rate at which technology has been introduced makes it difficult for accountants to keep up (Fricke, 2010).

Modern IT offers possibilities to effectively coordinate business processes. Electronic Commerce can be considered a process, where electronic connections facilitate economic transactions between various parties in the value chain. These movements of information electronically can be utilized in accounting (Gullkvist, 2007). Information systems is the combination of hardware and software (operating system),application software, data ,network and the procedures and peoples involved in programming, processing, maintenance, and utilization. The concept includes the term information technology (Carroll, 2006).

This definition of information system shows that an information system has different components such as goal and objectives, input, output, data storage, processors, instruction and procedures, user and control and measure. Elliot (1992) noted. Information technology (IT) is changing everything. It represents a new, post-industrial paradigm of wealth creation that is replacing the industrial paradigm and is profoundly changing the way business is done.... If the purpose of accounting information is to support the business decision-making, and management's decision types are changing, then it is natural to expect accounting to change - both internal and external accounting." The use of information technology is expected to be dependent on attitudes and perceptions about systems in general (Lucas, 1975).

2.1.2. Accounting Information System

The accounting information system (AIS) is defined as the infrastructure that supports the production and delivery of accounting's delivery product. The objective of the accounting information systems is to collect and store data about business processes that can be used to generate a meaningful output for decision makers (Grandlund, 2009).

Accounting is the service function that seeks to provide the users with quantitative information. On the other hand, AIS is an information system that is designed to make the accomplishment accounting function possible. It process data and transactions to provide users with the information they need to plan, control, and operate their businesses (Romney et al, 2007). Accounting Information system indicates an integrated frame work within an entity (such as business firm) that employs physical resources (i.e. materials, supplies, personnel, equipment, funds) to transform economic data in to financial information for; conducting the firm's operations and activities, and providing information concerning the entity to a variety of interested users. Indeed, the combination or interaction between human, technology and

techniques would permit an organization to administer its knowledge effectively (Muhammad Sori, 2009).

An accounting information system can be a manual or computerized system using computers. A accordingly, regardless of the type, A IS designed to collect, enter, process, store, and report data and information (Muhammad Sori, 2009).

2.2. Computerized Accounting Information System

A set of organized procedures used to collect record and process accounting data with the use of a computer (Ariwa and Eseimokumoh, 2008).The largest impact IT has made on accounting is the ability of companies to develop and use computerized systems to track and record financial transactions. Computerized accounting systems have improved the functionality of accounting departments by increasing the timeliness of accounting information (PricewaterhouseCoopers, 2010).

2.2.1. Types of Computerized Accounting Information System

There are two types of accounting system. These are: Integrated and stand alone system (Dodd, 1992; Lanier, 1992). Integrated accounting systems are systems in which two or more accounting modules are used together and share information between each other whereas, stand-alone accounting system is a system in which only one module is used (Lanier, 1992). The usage of the integrated or stand-alone accounting system in a business depends on a load of factors such as the frequency of transactions, staff knowledge and skill, and the size of the business (Arena, Elder and Beasley, 2006).

2.2.2.1. Accounting Software

The two classifications of accounting software are low-end and high-end. Low-end is all-in-one software, which means all of the functions of accounting system are performed within one software. Therefore, low-end software is used for small companies (Ariwa and Esuihumon, 2008).

On the other hand, in high-end software each accounting function comes in a separate module .Each module checks data for correctness, processes it, and updates all relevant accounts, and finally, produces outputs such as documents and reports (Dalci and Tanis, 2003).

2.3. The differences between Computerized and Manual Accounting Systems

It is crucial to consider the distinction between computerized and manual accounting systems for auditors. There are essential differences between the two systems which accountant as well as auditors should take into account, especially when they perform their tasks in an IT based accounting environment (Romney, 2007; Rezaee, Z., Elam, R. and Sharbatoghlie, Ahmad.2001). The following consists of some of the important differences that have been recognized: Companies can now capture, process, store,and transmit data with the help of systems .Whereas data collections and processing were performed manually in historical systems, on-line collection and processing of data are performed by computerized systems (Review of Social, Economic & Business Studies, Vol.2, 45-64).

According to Carrallo (2006) the use of Information systems has introduced the following Characteristics, which distinguishing manual processing;

- Many controls once performed by separate individuals may be concentrated in computer system; this increases the segregation of the duties risk.
- The potential for individuals to gain unauthorized access to data, to alter data or to gain access to assets may be greater in computerized systems.
- Computer processing uniform subjects like transactions to the same processing instruction and therefore, virtually eliminated clerical error, but programming errors may occurs.
- Complete trial useful for auditing and other purpose might only in computer readable format and these trials are dependent on the transaction processing mode.
- A computerized system increases the potential for increased management supervision since analytical tools for review and supervision of operational exist within these systems.
- Computer processing may produce reports and other output that are used in performing manual control procedures. These reports are however, dependant on the completeness and accuracy of the computer processing.
- Certain transactions may automatically in initiated or perfumed by the computerized system

In manual accounting information systems, processing of data is slow and subject to error. Fortunately, improvements in the technology have enabled companies to collect, process, and retrieve data quickly. In addition, there is less likelihood for error when data are processed with computers (Romney et al., 1997). Moreover, the data are captured with the source documents and directly processed in journals and transferred to ledger accounts. On the other hand, in computerized AIS, after data are captured, they should be converted into machine-readable form. In most computerized AIS, source data automation devices that capture data at the time and place of their origins are used (Review of Social, Economic & Business Studies, Vol.2, 45-64).

In addition to the data scanned into the computer, there are existing data bases that contain stored data for future processing. A database includes information about entities. In manual AIS, transactions are first recorded in journals and then they are posted to ledger accounts. At the end of each accounting period, financial statements are prepared by using the ending balances of ledger accounts. On the other hand in computerized AIS, all the information is gathered in relational tables. In this case, financial statements can be prepared at any time by entering necessary commands into the computer (Romney, 2007).

Random errors associated with manual processing are much more numerous than those which are associated with IT-based accounting systems since systems always process items in the same way (Gray and Manson, 2005). Lack of documentation is a significant problem in many computer installations. Without adequate documentation, the audit trail may disappear and the auditor may find it difficult, if not impossible, to follow the processing in a particular application area (Joseph, 2004). The potential for observing errors or fraud in IT-based accounting systems is less than in manual accounting systems (Cosserat, 2000).

This is because, in the IT-based accounting systems, data is stored in a machine-readable form rather than a visible form which could be deliberately accessed and altered through computer facilities on different sites (Ariwa and Eseimokumoh, 2008). Also, the reduced number of staffs involved in handling computer transactions can lead to the obscuring of errors, which would be more easily discovered where information and documents are dealt with manually.

2.4. Benefit and Impact of Computerized Accounting Information System

Computerized accounting information system offers numerous benefits to stakeholders . This includes improved audit efficiency through reduced time, cost, and improve audit effectiveness through continuous monitoring and increased internal control focus (Rezee et al, 1998). The potential sources of a new IT application are many and varied. A number of factors, such as cost, time constraints and availability of a skilled resource, will determine which source is the most appropriate for a particular organization (Barclay Simpson, 2007).

IT increases the accuracy and speed of transaction processing, and can even lead to competitive advantages for many organizations in terms of operational efficiency, cost savings, and reduction of human errors. On the other hand, there are many types of risk associated with IT; this includes loss of computer assets, erroneous record keeping, increased risk of fraud, competitive disadvantages if the wrong IT is selected, loss or theft of data, privacy violations, and business disruption (Abu Musa, 2008).

Technology has impacted the business environment in three major ways according to Carroll (2006): It has increased our ability to capture, store, analyze, and process tremendous amount of data and information as well as changing production and services process; it has significant impact on the control process; and while control objectives has remained fairly constant, expect for some that are technology specific. Technology has influence the way in which the system should control. An effective computer-based system will ensure that there are adequate controls existing at the point of input, processing and output stages of the computer processing cycle and over standing data contained in master files (ACCA, 2011).

Information has become one of the most valuable assets for most organizations. Business survival and success are heavily dependent upon the accuracy, integrity and continued availability of critical information and reliance on information as well as continuous changes in technology force organizations to implement security controls to protect their computerized accounting information systems (CAIS) against potential against various threats (Abu-Musa,2006)

2.5. Audit Process in an Organization

The objective of this part is to introduce auditing and audit process in an organization. Firstly, a definition of auditing and auditors has been given. Thereafter, the role of auditors in audit process and the requirement for an effective audit have been presented.

An audit is an investigation or a search for evidence to enable an opinion to be formed on the truth and fairness of financial and other information by a person or independent of the preparer and persons likely to gain directly from the use of the information, and the issue of a report on that information with the intention of increasing its credibility and therefore its usefulness (Ariwa and Eseimokumoh, 2008).

Auditing helped minimize bias by acting as a monitor of financial information reported by management. Auditing does not alter the primary communication process between subject matter and users of financial statements; it added a secondary communication process between auditors and users (Keechi, 2007).

2.5.1. Audit Process

According to Keechi, (2007) 'an audit process refers to a well defined methodology for organizing an audit to ensure that the evidence gathered is both sufficient and competent and that all appropriate audit objectives are both specified and met. Although every audit project is unique, the audit process is similar for most engagements. Accordingly, the four phases of a financial statement audit are: Phase I Plan and Design an audit approach; Phase II Perform test of controls and substantive test of transactions; Phase III Perform analytical Procedures and tests of details of balances; Phase IV Complete the audit and Issue an audit report.

According to Nelson(2010),the audit process for a computerized accounting system involves five main steps: conducting the initial review (planning the audit); reviewing and assessing internal controls; compliance testing (testing the internal controls); substantive testing (testing the detailed data); and reporting (conclusions and findings). The usual audit approaches classified in to two these are: Tests of Controls and substantive test. There are as many control objectives as many textbooks about system security nowadays. However, generally, control objectives can be categorized into four broad categories -- validity, completeness, accuracy and restricted access. With these objectives in mind, auditors can distinguish control activities from the normal operating ones.

When assessing controls during planning phase, auditors are able to identify the level of control reliance on the level of controls that help reducing risks. The effectiveness of such controls during the period can be assessed by performing testing of controls. However, only key controls will be tested and the level of tests depends solely on the control reliance level. The higher control reliance is, the more tests are performed (Sirikulvadhana, 2002).

Furthermore, substantive test is an approach designed to test for monetary misstatements or irregularities directly affecting the correctness of the financial statement balances. Normally, the level of tests depends on the level of assurance from the tests of controls. When the tests of controls could not be performed either because there is no or low control reliance or because the amount and extensiveness of the evidence obtained is not sufficient, substantive tests are performed. Substantive tests include analytical procedures, detailed tests of transactions as well as detailed tests of balances (Sirikulvadhana, 2002)

2.5.2. Information System Auditing and Process

As more and more accounting and business systems were automated, it became more and more evident that the field of auditing had to change. As the systems being audited increased their use of technology, new techniques for evaluating them were required. As the systems being audited increased their use of technology, new techniques for evaluating them were required. This part focuses on computer or information systems (IS) auditing (Hall, 2004). Information technology Audit (IT) is the process of collecting and evaluating evidence to determine whether a computer system has been designed to maintain data integrity, safeguard assets, allows organizational goals to be achieved effectively, and uses resources efficiently (Helms and Mancino, 1998).

According to Carroll(2006) IT audit is define as the examination of an information system and surrounding procedures to express an opinion as to whether or not the data involved in processing ,from the initiation of the transactions to its inclusion in financial statements are fairly represented at specific date ,to ensure completeness, accuracy, validity, and timeliness of data and transactions and to scrutinize the controls implemented to mitigate identified risks as well as to provide assurance on the safeguarding of organizational assets and resources.

2.6. Types of Audit Approaches Used to Test Internal Controls in an computer based Accounting Environment

This section discusses the following approaches to auditing information systems: auditing around the computer, auditing through the computer with computer assisted audit techniques (CAATs), and auditing with the computer using generalized audit.

Auditing around the Computer: This is also known as "the audit without the computer". Under this approach the input and output are examined, but the detailed processing within the computer is ignored (Hall, 2001; Porter et al., 1996). According to (Hollander et al, 1996) auditing around the computer is the auditor avoids the computer and one advantage of this approach is the low level of technical knowledge that is required to audit without the computer.

Cosserat (2000) indicated certain demerit of this approach are that the capabilities of the computer are not used and possible cost savings in audit time and effort are not realized .In spite, of this it do not allow auditors to detect programme errors that do not show up in the computer reports (Cosserat, 2000). So that, such an approach may have been acceptable in the past when the computer was simply functioning and where the reconciliation of input to output was relatively easy (Al-Fehaid, 2003).

Auditing through the computer; according to (APPENDIX 9A, Understanding Information Systems and Technology for Risk and Control Assessment software (GAS)) this approach is refers to an actual evaluation of the computer's hardware and software to determine the reliability of operations that cannot be viewed by the human eye. Auditing through has become more common because IT-based information

systems often have significant built-in control procedures, and ignoring these would be ignoring important features of internal.

Auditing through the computer can also mean using computer-assisted audit techniques (CAATs). CAATs refer to the following audit techniques: Tests of general IT controls: e.g., using test data to check access procedures to the programs and data.; Compliance tests of IT application controls; e.g., using test data or an embedded audit program (continuous auditing) to test the functioning of programmed control procedures; Tests of details of transactions and balances; e.g., the use of auditor-created or auditor tested software to verify all (or a sample) of the transaction processing in a system. Analytical review procedures e.g., using audit software to identify unusual fluctuations in amount or volume of transactions. (APPENDIX 9A "Understanding Information Systems and Technology for Risk and Control Assessment software (GAS)").

Auditing with the computer; involves using general audit software (GAS) to perform various audit tests and analytical procedures and to prepare audit file documentation. Though some of the GAS techniques might also be viewed as types of CAATs, for study purposes we will discuss them separately (APPENDIX 9A, Understanding Information Systems and Technology for Risk and Control Assessment software (GAS)).

2.7. Types of Auditors

These are the independent individuals who perform the audit. They are classified into three groups: external auditors (also called auditors), internal auditors and government auditors (Auditing and Assurance Standard (AAS), 2003).

2.7.1. External Auditing versus Internal Auditing

Many of the same tasks are often carried out by external auditors and by individuals who are employees of the client. These employees who are involved in audit-related activities are called internal auditors. Although employed by the client firm, many

duties can be conducted with a reasonable level of objectivity if the internal auditors report to the audit committee of the board of trustees, and not to the controller, who is responsible for the accounting system. Rather than representing the interests of external stakeholders, they serve the best interests of the client organization itself (Hall, 2004).

2.8. Types of Audit Risk

Audit risk (AR) is the risk that the auditor may unknowingly fail to appropriately modify his or her opinion on financial statements that are materially misstated. Audit risk is the product of the following interrelated factors:

Inherent Risk (IR) - the risk that a financial statement assertion is susceptible to a material misstatement, assuming there are no related controls. The assessment of inherent risk is made primarily in the planning phase of the audit and it requires the consideration of matters that may have a pervasive effect on assertions for all or many accounts, and matters that may pertain only to assertions for specific accounts (Cosserat, 2000). So that, auditors should consider factors that have an effect on the occurrence of errors or misstatements. These factors can be classified into two. These are:

1. Factors affecting the likelihood of errors or misstatements occurring in the financial statements in general (termed entity level factors in SAS 300); and
2. Factors affecting the likelihood of errors or misstatements occurring in specific account balances or classes of transactions (Standard on Internal Audit (SIA) no4

SAS 300 (ABP, 1998) listed several factors that affect inherent risk at entity wide level such as the integrity of directors and management; management experience and knowledge ;changes in management during the period; unusual pressure on directors or management; the nature of the entity's business; factors affecting the industry in which the entity operates the degree of judgment involved during account balances; the susceptibility of assets to loss or misappropriation; the quality of the accounting

systems; the completion of unusual and complex transactions; transactions not subject to ordinary processing.

According to Donnel (2005), Audit risk: is the risk that the auditor may unknowingly fail to appropriately modify his or her opinion on financial statements that are materially misstated. Audit risk is the product of the following interrelated factors:
Inherent Risk (IR) = the risk that a financial statement assertion is susceptible to a material misstatement, assuming there are no related controls

Control Risk (CR) = the risk that the entity's internal control structure or procedures will not prevent or detect, in a timely manner, a material misstatement which could occur in a financial statement assertion Detection Risk (DR) = the risk that the auditor will not detect a material misstatement that exists in a financial statement assertion.

The inherent risks and control risks in an IT environment may have both a pervasive effect and an account-specific effect on the likelihood of material misstatements, as follows: The risks may result from deficiencies in pervasive IT activities such as program development and maintenance, system software support, operations, physical IT security and control over access to special privilege utility programs. These deficiencies would tend to have a pervasive impact on all application systems that are processed on the IT system and the risks may increase the potential for errors or fraudulent activities in specific applications, in specific databases or master files, or in specific processing activities. For example, errors are not uncommon in systems that perform complex logic or calculations, or that must deal with many different exception conditions. Systems that control cash disbursements or other liquid assets are susceptible to fraudulent actions by users or by IT personnel (According to Standard on Internal Audit (SIA) 14 no.4).

Control Risk (CR) - the risk that the entity's internal control structure or procedures will not prevent or detect, in a timely manner, a material misstatement which could occur

in a financial statement assertion The control risk is high because the internal controls are poor then all the necessary audit evidence will have to be obtained through conducting substantive procedures (Manson, 1997). Some of the factors that may affect the consideration of control risk include business planning and monitoring of performance, management attitudes and actions regarding financial reporting, the internal audit function, personal policies and procedures, and the effectiveness of the accounting system (Cosserat, 2000). Auditors can influence control risk, unlike inherent risk, by recommending improvements in internal controls but this influence is more likely to affect future periods; it is also subject to the extent that the entity's management implements the auditors' suggestions (Al-Fehaid, 2003).

Detection Risk (DR) - the risk that the auditor will not detect a material misstatement that exists in a financial statement assertion (Eilifsen and Messier, 2000).This risk is unlike inherent and control risk because the actual level of detection risk is dependent on the auditor's work in (Gill et al., 2001; Cosserat, 2000):- app ropriate planning, direction, supervision and review; the varying nature, timing and extent of audit procedures; effectively performing audit procedures and evaluating their results. Form the above information one can understand that, the level of detection risk is handy by the auditors, thus, they should take steps to reduce detection risk to the level it is economically feasible to do so (Porter et al., 1996). Lastly, SAS 300 stated that the auditor should always perform some substantive procedures whatever the assessed level of inherent and control risk.

2.9. Audit risk model

SAS No. 47 (AICPA 1983) provides the conceptual frame for the audit risk model, and its concepts permeate Generally Accepted Auditing Standards (GAAS) (POB 2000). The auditor applies the audit risk model during the planning phase of the audit by making judgments concerning client risks and the scope of audit tests. The relationship between the audit risk components is expressed in the audit risk model as follows: AR =

IR x CR x DR, with each risk level assessed by the auditor as a percentage of one (Brazel, 2004).

In relation to audit risk components, it is worth mentioning that the auditor may express each component of audit risk in quantitative terms (e.g. percentages) or qualitative terms (e.g. low, medium and high.

The model is generally applied in practice as follows: AR is first set by the partner in charge of the audit engagement at an acceptably low level (e.g., 5%). Next, IR and CR are assessed via the auditor's knowledge of client operations, testing of internal controls, and prior history with the client, etc. Finally, given the assessed levels of IR and CR, the scope of planned substantive procedures (i.e., the nature, timing, and extent of substantive testing procedures), or DR, is adjusted by the auditor to obtain the desired level of AR (DR = AR / (IR x CR)). Therefore, as IR and CR increase or decrease the auditor is expected to compensate with substantive procedures that are greater or lesser in scope (Brazel, 2004).

2.10. Assessment of Risk

In accordance with ISA 400, "Risk Assessments and Internal Control," the auditor should make an assessment of inherent and control risks for material financial statement assertions. The inherent risks and control risks in a Computer information system (CIS) environment may have both a pervasive effect and an account-specific effect on the likelihood of material misstatements, as follows:

- The risks may result from deficiencies in pervasive CIS activities such as program development and maintenance, systems software support, operations, physical CIS security, and control over access to special privilege utility programs. These deficiencies would tend to have a pervasive impact on all application systems that are processed on the computer (International Standard on Auditing (ISA) 401, Auditing in a Computer Information Systems Environment, 2004).

- The risks may increase the potential for errors or fraudulent activities in specific applications, in specific data bases or master files, or in specific processing activities. For example, errors are not uncommon in systems that perform complex logic or calculations, or that must deal with many different exception conditions. Systems that control cash disbursements or other liquid assets are susceptible to fraudulent actions by users or by CIS personnel (ISA 400, 2004).

As new CIS technologies emerge, they are frequently employed by clients to build increasingly complex computer systems that may include micro-to mainframe links, distributed data bases, end-user processing, and business management systems that feed information directly into the accounting systems. Such systems increase the overall sophistication of CIS and the complexity of the specific applications that they affect. As a result, they may increase risk and require further consideration (Auditing in a Computer Information Systems Environment (SLAuS) no. 11).

2.11. Auditing Standards Related to the computer based Accounting Environment

The following part review different audit standard issued related to the adopting of the computerized information system and identifies certain impact of the new environment on the audit work.

The introduction of computerized accounting systems changed the way by which accounting data are processed and maintained. Although the overall objective and scope of audit function did not change as a result of this adopting, the techniques and skills required for implementing auditing in such an environment changed (Hall, 2001). This condition result certain question about the quality of assurance that can be forwarded by auditors for the different users of financial statements in this emerging environment. As a result, various professional bodies take certain measure to respond

such a requirement through issuing standards and guidelines applying specifically to auditing in a computerized accounting environment.

For instance, the Auditing Practices Committee in the UK issued the first guideline *"Auditing in a computer environment"* in 1984 and, in the same year, the Auditing Standards Board in the USA issued their first standard "The Effects of Computer Processing on the Examination of Financial Statements"(Al-Fehaid, 2003).

Furthermore, Sri Lanka Auditing Standard (SLAuS) is to establish standards and provide guidance on procedures to be followed when an audit is conducted in a computerized information systems (CIS) environment. Also International Standard on Auditing 401, " Auditing in a Computerized Information Systems Environment" issued in (1997). The key points included in this section of the standards can be summarized as follows:

- The auditor should consider how a computer information system (CIS) environment, and in particular general controls and application controls in a computerized information systems (CIS) environment affects the audit.
- The auditor should have sufficient knowledge of the CIS to plan, direct, supervise and review the work performed. The auditor should consider whether specialized CIS skills are needed in an audit.

Accordingly, when auditors evaluate the impact of using IT-based accounting systems by the organization on the financial statements, they should take into consideration the following: the volume of transactions is such that users would find it difficult to identify and correct errors in processing; the computer automatically generates material transactions or entries directly to another application; the computer performs complicated computations of financial information and/or automatically generates material transactions or entries that cannot be (or are not) validated independently; transactions are exchanged electronically with other organizations (as in electronic

data interchange (EDI) systems) without manual review for propriety or reasonableness"(Statement of Auditing Standards no. 310, 2004).

When the CIS are significant, the auditor should also obtain an understanding of the CIS environment and whether it may influence the assessment of inherent and control risks (Auditing in a Computer Information Systems Environment", issued by the Auditing and Assurance Standards Board of the Institute of Chartered Accountants of India, 2002).The nature of the risks and the internal control characteristics in CIS environments include the following:

Lack of transaction trails: - Some CIS are designed so that a complete transaction trail that is useful for audit purposes might exist for only a short period of time or only in computer readable form. Where a complex application system performs a large number of processing steps, there may not be a complete trail. Accordingly, errors embedded in an application's program logic may be difficult to detect on a timely basis by manual (user) procedures (International Standard on Auditing no.401, 1997).

Uniform processing of transactions;- Computer processing uniformly processes like transactions with the same processing instructions. Thus, the clerical errors ordinarily associated with manual processing are virtually eliminated. Conversely, programming errors (or other systematic errors in hardware or software) will ordinarily result in all transactions being processed incorrectly (Statement of Auditing Standards no. 310, 2004).

Lack of segregation of functions;-Many control procedures that would ordinarily be performed by separate individuals in manual systems may be concentrated in CIS. Thus, an individual who has access to computer programs, processing or data may be in a position to perform incompatible functions (Sri Lanka Auditing Standard (SLAuS11)).

Potential for errors and irregularities:-The potential for human error in the development, maintenance and execution of CIS may be greater than in manual systems, partially because of the level of detail inherent in these activities. Also, the potential for individuals to gain unauthorized access to data or to alter data without visible evidence may be greater in CIS than in manual systems (Standard on internal audit internal audit in an information technology environment, 2009). In addition, decreased human involvement in handling transactions processed by CIS can reduce the potential for observing errors and irregularities. Errors or irregularities occurring during the design or modification of application programs or systems software can remain undetected for long periods of time (Statement of auditing standards no.300, 2004).

Initiation or execution of transactions: - CIS may include the capability to initiate or cause the execution of certain types of transactions, automatically. The authorization of these transactions or procedures may not be documented in the same way as those in a manual system, and management's authorization of these transactions may be implicit in its acceptance of the design of the CIS and subsequent modification (Auditing in a Computer Information Systems Environment", issued by the Auditing and Assurance Standards Board of the Institute of Chartered Accountants of India, 2002).

Dependence of other controls over computer processing; -Computer processing may produce reports and other output that are used in performing manual control procedures. The effectiveness of these manual control procedures can be dependent on the effectiveness of controls over the completeness and accuracy of computer processing. In turn, the effectiveness and consistent operation of transaction processing controls in computer applications is often dependent on the effectiveness of general CIS controls (International Standard on Auditing 401, 1997).

Both the risks and the controls introduced as a result of these characteristics of CIS have a potential impact on the auditor's assessment of risk, and the nature, timing and extent of audit procedures (Sri Lanka Auditing Standard No.11).

According to Standard on internal audit (sia) 14 (2009) Internal audit in an information technology environment may change the internal control systems employed by the entity. Accordingly, an IT environment may affect: the procedures followed by the internal auditor in obtaining a sufficient understanding of the processes, systems and internal control system; and the auditor's review of the entity's risk management and continuity systems.

The International Standard on Auditing 401- Auditing in Computer Information Systems Environment- shows that auditing processes for both internal auditors and external auditors have been significantly changed. Factors that result these changes include: the globalization of business; advances in technology; demands for value-added audits; the organizational structure of the client's computerized information systems (CIS) activities; the extent of concentration or distribution of computer processing throughout the organization; particularly as they may affect segregation of duties; and the availability of data source documents. So that, the auditor must have enough knowledge of the information system to plan, direct, supervise and review the work performed.

Furthermore ,Standard on internal audit (sia) 14 (2009) Internal audit in an information technology indicated that the internal auditors should consider the below facto while evaluating the reliability of the internal control systems:-ensure that authorized, correct and complete data is made available for processing; provide for timely detection and correction of errors; ensure that in case of interruption in the working of the IT environment due to power, mechanical or processing failures, the system restarts without distorting the completion of the entries and records; ensure the

accuracy and completeness of output; provide adequate data security against fire and other calamities, wrong processing, frauds etc; prevent unauthorized amendments to the programs; and provide for safe custody of source code of application software and data files.

The Auditing and Assurance Standard (AAS) 29,(2003) "Auditing in a Computer Information Systems Environment" issued by the Council of the Institute of Chartered Accountants of India enumerated those factor affect the audit risk that include lack of transaction trails; uniform processing of transactions; dependence of other controls over computer processing; lack of segregation of functions; potential for the use of computer-assisted audit techniques and potential for errors and irregularities. Accordingly, the risks and the controls introduced as a result of these characteristics of computer information systems have a potential impact on the auditor's assessment of risk, and the nature, timing and extent of audit procedures.

2.12. Empirical Review

About decade ago has seen tremendous growth in the use of IT by organizations. Most business organizations have computerized their accounting information systems. Elliott (1994) and Bell et al. (1998) have said that accounting systems are now so well-controlled that very few risk occur in routine transaction processing. This results from having control procedures that were formerly completed by manual now processed by computer programs. However, information technology does not eliminate all problems such as misstatements are still likely to occur where people interact with the computerized accounting systems sometimes referred to as the boundary of the information system).

The IT-based accounting systems will also not eliminate misstatements that involve judgment on the part of the client personnel or management (e.g., estimates). Houghton and Fogarty (1991) found very few routine misstatements in their study, and

many of the detected misstatements were caused by non-routine processing. However, they did not address the effect of information technology per se. Bell et al. (1998) examined the effect of computerization of accounting systems on the incidence and magnitude of misstatements.

They tested certain factors related to computerized accounting information system that cause audit risks or misstatement. Bell et al. (1998) identified that incorrect manual computations, the recording of exchange documents, incorrect application of internal controls, and inadequate internal controls are more likely to be sources of problems when accounting systems are computerized.

Al-Fehaid (2003) identified certain Potential risks that are related to auditing in a computerized accounting information system environment. These are depicted as follows;- inadequate security, data integrity , visibility of audit Trail , possible reduction in internal controls, lack of Skilled Auditors, the audit firm's financial cost concern, lack of client's staff training in IT, the weaknesses the client's internal control systems, IT related Fraud, and unsuitable audit approach.

William (2009) in his study identified six factors that increase inherent risks were assessed by the auditors. These inherent risks include: - the presence of material, complex accounting estimates; accounts required adjustments in prior period; significant and/or unusual related party transactions; considerable manual intervention required in capturing, processing, and/or summarizing data.

According to (Davis 2001) reliance of electronic evidence affects audit risk levels. Auditors may not be able to adequately reduce detection risk by performing substantive testing. The auditors may have to conduct additional tests to reduce overall audit risk to an acceptable level. Auditors must consider the ease of altering electronic

evidence. Alterations to paper documents are often easy to detect, but alterations to electronic evidence may be more difficult.

Risks of unauthorized evidence alteration may be mitigated by examining the electronic transaction audit trail that identifies the date, time, original terminal and originating user of each transaction (Davis 2001).Furthermore, availability of electronic evidence may also be a concern. Since the content of the electronic files are constantly altered through processing, evidence may exist only at certain point of time and backup files may not exist. Computer accounting fraud, error and abuse are problems that affect practically every organization across many dimensions. There are many types of fraud involving different levels of management. These are;-.it is difficult to estimate in financial terms the losses to business caused by fraud as most of the time, frauds are unreported or under reported; there is no single straightforward test for fraud investigations to show in every case that a fraud had been committed; and complex procedures to detect Computer accounting fraud and error (Senthilvelmurugan and Periyanayagam, 2002).

Ariwa and Eseimokumoh (2008) in their study enumerated certain risks associated with the adopting computerized accounting information system in auditing under such system. These are: - incompetent in dealing with issues relating to the audit of CAIS; lack awareness of the issues, problems and risks associated with CAIS; disappearance of the audit trail; information technology related Fraud; financial losses due to internal and external CAIS security breaches; the application of an unsuitable audit approach (i.e. auditing around the computer), and possible reduction in internal control processes and procedures due to the introduction of CAIS in businesses.

IT Audit Monograph Series No. 1 indicated presence of controls in a computerized system is significant from the audit point of view as these systems may allow duplication of input or processing, conceal or make invisible some of the processes and

in some of the audited organizations where the computer systems are operated by outside contractors employing their own standards and controls, making these systems vulnerable to remote and unauthorized access.

Accordingly, the standard identified certain risk associated with audited in the IT-based accounting system such as -data loss due to file damage, data corruption (manipulation), fire, burglary, power failure (or fluctuations), viruses etc.; error in software can cause manifold damage as one transaction in a computer system may affect data everywhere; computer abuse like fraud, vengeance, negligent use etc. is a great potential danger and absence of audit trails make it difficult for an auditor to ensure efficient and effective functioning of a computerized system.

Computerized accounting information causes different factor that increases the fraud such as; embezzlement, understatement of liabilities, overstatement of expenses, missing documents, alterations to documents, excessive voids or credits and duplicate payments; lack of control environment, lack of physical safeguards, lack of segregation of duties, lack of proper documents and records and inadequate accounting system; transactions that occur at odd times and places with amounts that are too large or too small; and unusual irritability and suspiciousness (Senthilvelmurugan and Periyanayaga, 2002).

Auditors were sensitive to the competence of CAS and assessed control risk higher when provided with positive control testing evidence from a CAS with low (versus high) competence. In an AIS setting indicative of increased risk, auditors with higher AIS expertise assessed control risk as higher than those with lower expertise. Although auditors AIS expertise did not moderate the effect of CAS competence on their control risk assessments, expertise levels did moderate their reaction to CAS competence variation with respect to the planning of substantive tests(Brazel,2007).

James et al (2001) investigated, the effectiveness of the audit engagement may be significantly impaired if financial auditors fail to properly consider the level and nature of risks associated with different computer environments.

Zeng Ling-fang (2007) identified new auditing risks in computerized accounting system. These are:

1. In computerized accounting system, data are stored in computers, so the amending can leave no clues, which can't assure the integrality and authenticity of data and can bring risks for auditing supervision.
2. During the computer's working time, information will be lost because of the trouble of power shutting, crash, virus or hacker's invasion or others, which will bring about risks for auditing.
3. If the jobs of data maintenance, system management, datum input and checking are not independent from each other, it is easy to result in the failure of internal control.
4. The current evaluation system of accounting software puts more emphasis on whether the outcome is in accordance with the one in handwork accounting, but neglects the evaluation on internal control in the design procedure. It puts more emphasis on the component factors and the rationality of accounting methods, but neglects the save from damage of auditing clues. Furthermore, the evaluation outcome may differ from the opinion of auditors, which brings about more risks to the final auditing outcome.Other research finding indicates the relationship between experience, knowledge, and audit judgment. For instance, Bedard and Biggs (1991) investigated that more experienced auditors were better at identifying the existing error than less experienced auditors. Johnson et al. (1987) reported a direct relationship between industry experience and fraud detection.

According to Abu-Musa(2005) in designing audit procedures, the auditor should consider the significance of the risk; the materiality of misstatement; the characteristics of the class of transactions, account balance or disclosure involved; the nature of the specific controls used by the organization including the organization's use of IT; and whether the auditor expects to obtain audit evidence to determine if the organization's controls are effective in preventing, or detecting and correcting, material misstatements.

Computerized accounting information system have significant impact on auditing contents and scope-In the computerized accounting system, auditing contents include not only the ones in traditional accounting system, but also the ones as follows (Journal of Modern Accounting and Auditing,2007). Wright and Wright (2002) addressed industry experience led to greater accuracy in risk assessments and in identifying errors.

Joseph F. (2004) found that auditors possessing higher AIS expertise assessed both inherent and controls risks at higher levels and designed corresponding substantive tests that were greater in scope to mitigate those risks. For high accounting information system expertise auditors, both the quality of their risk assessments and the effectiveness of their scope of tests exceeded those of low AIS expertise auditors.

Wright, A. and S. Wright. (1996)", try to examine auditor risk judgments, specifically the assessment of inherent risk. Accordingly, he found four risk factors as high and low to determine their effects on auditor inherent risk assessments such as turnover of the controller, financing pressure, accounting system complexity, and quality of accounting personnel were important to auditors when providing inherent risk assessments, with the quality of accounting personnel having the most significant effect. As new CIS technologies emerge, they are frequently employed by organizations to build increasingly complex computer systems that may include micro-to-mainframe links,

distributed databases, end-user processing and business management systems that feed information directly into the accounting systems. Such systems increase the overall sophistication of CIS and the complexity of the specific applications that they may affect. As a result, CIS may increase risk and require further consideration. The auditor should obtain an understanding of the significance and complexity of the CIS activities and the availability of data for use in the audit (Rezaee, Z. & Reinstein, A., 1998).

Abu-Musa (2001) developed the following list of nineteen factors that related to adopting computerized accounting information system or IT-based accounting system; accidental entry of bad data by employees; intentional entry of bad data by employees; accidental destructions of data by employees; unauthorized access to the data and /or system by employees; unauthorized access to the data and /or system by outsider(hackers); employee sharing of password; natural disaster such as fire, flooding and loss of power; human –made disasters such fire, loss power; introduction(entry) of computer viruses to system; Suppression or destruction of output; Creation of factitious/incorrect output ; theft of data information; unauthorized copying of output; interception of data transmissions from remote location; unauthorized document visibility by displaying on monitors and printed on paper; printing and distribution information are directed to people who are not entitled to receive and sensitive documents are handled to non-security. Computerized Accounting Information System has the wide range of applications, on the one hand the adoption such system affect the audit risk.

According to (Lu- Ming,2005) the primary cause of the risk are: lack of audit trial, audit contents, great limitation of internal control, unsatisfactory nature accounting software, audit evidence of dynamic change and complexity of audit techniques. The implementation of computerized accounting will lead to an audit trial interrupt or even disappear (Dallas, 1999).The AICPA computer auditing subcommittee of the ASB

identified Eleven (11) key technologies that affect audit engagements such as intentional or unintentional modification; erroneous transactions that can result in material errors in the financial statements; disappearance of the paper trial; loss of proper controls and lack of awareness (Glenn and Mancino,1998).

Computer fraud and abuse can have a detrimental effect on an organization. Periodic surveys undertaken by organizations such as the NCC (National Computing Centre) and the Audit Commission indicate the following common instances of computer fraud and abuse: unauthorized disclosure of confidential information; unavailability of key IT systems; unauthorized destruction of software; unauthorized modification/destruction of data; theft of IT hardware and software and use of IT facilities for personal business (Barclay Simpson, 2007).

Bierstaker and Thibodeau, (2001) describe the error generation and detection process, and how misstatements occur as a result of inherent and control risk factors. For example, misstatements may occur due to inherent risks such as complex judgments (e.g., the state of obsolescence of a high technology product). Similarly, incompetent personnel who do not conduct control procedures properly are a control risk that can lead to an increased occurrence of misstatements.

If the design of the Computer system does not provide for adequate audit trail this should be brought out in audit review, highlighting control weaknesses or lack of controls in the system. Apart from errors that might creep into the system, there is a possibility of frauds, which might occur due to undetected control weaknesses (Chen Ling, 2007).

According to Elrhm and Mansour (2009), inadequate segregation of duties increases the risk of errors being made and remaining undetected; it also may lead to fraud and

the adoption of inappropriate working practices. Auditors need to evaluate audit risk and reliability of the received information (audit evidence), therefore it is important to know how the audited entity controls information systems. Information received by auditors is not primary; it is obtained after a complex process of data processing during which errors may occur. Errors may be made due to human factor, e.g., when entering data, due to programmers' errors etc. Errors may be random and intentional. Like any other assets, IS are vulnerable, e.g., they may be damaged or stolen (Methodological Recommendations for Information Systems Audit, 2006).

(Hall, 2004) identified many types of risk associated with IT, this includes loss of computer assets, erroneous record keeping, increased risk of fraud, competitive disadvantages if the wrong IT is selected, loss or theft of data, privacy violations and business disruption .The National Institute of Standards and Technology (1999) in USA issued its initial publication draft titled "Standards for Security Categorization of Federal Information and Information Systems". This publication establishes three potential levels of risk (low, moderate, and high) for each of the stated security objectives (confidentiality, integrity, and availability) relevant to securing computerized information systems. The proposed levels of risk are more heavily weighted toward the impact of risk on the security of CAIS and the potential magnitude of harm that the loss of confidentiality, integrity, or availability would have on agency operations (including mission, functions, image or reputation), agency assets, or individuals (data privacy).

Hannaford (1995) shows certain computer related crime such as computer-related fraud; computer forgery; damage to computer data or programs; unauthorized access; unauthorized interception; unauthorized reproduction of a protected computer program and unauthorized reproduction of topography. An Ernst and Young survey showed that security incidents can cost companies between 17 and 28 millions of dollars for each occurrence. Another survey made during 13 years with the help of 522 computer security practitioners in U.S. showed that virus incidents occurred most

frequently (at 49% of the respondents' organizations). The second-most frequently occurred incidents were insider abuse of networks 44% followed by theft of laptops and other mobile de-vices 42% (Suduc et al, 2010).

The widely usage of information technology (IT) in organizations affects the financial audit. This technology rich environment can significantly impact how auditors meet the audit objectives; internal control and, in turn, affects how auditors obtain their understanding of internal control and assess control risk (Pathak, and Hall, 2002). GAO/AIMD-98-175 has issued several reports that can be used as models for reporting computer-related weaknesses that affect the work of the auditors. These include information systems weakness; computer control weaknesses increase risk of fraud, misuse, and improper disclosure; computer security pervasive, serious weaknesses increase risk of unauthorized access to sensitive data, sabotage, and malicious or mischievous acts.

According to (Fricke, 2010) computer crimes take various forms, including: unauthorized access to stored data; sabotage of computer facilities; theft of computer hardware and software; unauthorized use of computer facilities for personal use; fraudulent modification or use of data. According to Suduc et al (2010), organizations today must address four main types of IT risks: security risks, availability risks, performance risks and compliance risks. The security risks represent the unauthorized access to information: data leakage, data privacy, fraud, and endpoint security. The security risks include also broad external threats, such as viruses, as well as more targeted attacks upon specific applications, specific users, and specific information.

2.13. Theoretical Frame Work

A theoretical framework is a conceptual model of how one theorizes the relationships among the several factors that have been identified as important to the problem. The theoretical framework discusses the interrelationships among the variables that are deemed to be integral to the dynamics of the situation being investigated (Dawson, 2002). This definition on can understand that a theoretical framework might be considered by a researcher for three main purposes: to identify the different variables or factors relevant to the study; to develop hypotheses or questions and to enhance the understanding of the situation under study. The important of this part to discusses the factors that affect audit risk under computerized accounting information system environment.

2.13.1. Audit risks and Internal Controls in the IT Environment

Audit risk; is the risk that the auditor gives an inappropriate audit opinion when financial statement is materially misstated. These are; Acceptable audit risk: Audit risk is the probability that auditor will unintentionally render inappropriate opinion on client's financial statements. Acceptable audit risk, therefore, is a measure of how willing the auditor is to accept that the financial statements may be materially misstated after the audit is completed (Arens and Loebbecke, 2000).

1. Inhere nt risk is the probability that there are material misstatements in financial statements. There are many risk factors that affect inherent risk including errors, fraud, etc .Auditors have to ensure that all risks are taken into account when considering the probability of inherent risk (Sirikulvadhana, 2002). Inherent risk-is the susceptibility of an account balance or class of transactions to misstatements in other balance or classes assuming that there were no related internal controls (Santos and Tribolet, 2004).

2. Control risk is the probability that a client's control system cannot prevent or detect errors. Normally, after defining inherent risks, controls that are able to detect or prevent such risks are identified. Then, auditors will assess whether the client's system has such controls and, if it has, how much they can rely on those controls. The more reliable controls, the lower the control risk. In other words, control risk represents auditor's reliance on client's control structure. Risk, in this case, is some level of uncertainty in performing audit work. Risks identified in the first two steps are gathered and assessed. The level of risks assessed in this step is directly lead to the audit strategy to be used. In short, the level of task is based on the level of risks. Therefore, the auditor must be careful not to understate or overstate the level of these risks (Sirikulvadhana, 2002).

3. Planned detection risk is the highest level of misstatement risk that the audit evidence cannot detect in each audit area. The auditors need to accumulate audit evidences until the level of misstatement risk is reduced to planned detection risk level. For example, if the planned detection risk is 0.05, then audit testing needs to be expanded until audit evidence obtained supports the assessment that there is only five percent misstatement risk left (Sirikulvadhana, 2000). For example, if the planned detection risk is 0.05, then audit testing needs to be expanded until audit evidence obtained supports the assessment that there is only five percent misstatement risk left (Sirikulvadhana, 2002). The use of CAIS involves with a number of new aspects affect the audit risk (Santos and Tribolet, 2004). However, the use of computerized information system entails new risks and challenges for auditors who audit an environment. They are brought in the following respect:

2.13.2.Data Accuracy and Integrity

The possibility that the data may become invalid is one the main concerns associated with computer based accounting system (Bierstaker and Thibodeau, 2001). The implementation of the system does not guarantee that the records and transactions

and processed more accurately. The audit difference (including accounting fraud and errors) are too many in computerized accounting systems. The most important sources of audit differences in IT environment are problems with data entry, internally developed software and applications, inappropriate computer processing, problems with personnel, inadequate internal controls and inaccurate application of internal controls. Moreover, defective separation and segregation of duties are the other reasons for fraud in a computer based accounting environment (Statement of Auditing Standards 310, 2004).

2.13.3. The Client's and Audit Firm Financial Cost Concern

The client's financial cost concern is likely to contribute to increasing the level of inherent risk in an IT-based accounting environment through the mediation of the unsuitability of the client's accounting software. One of the reasons behind the lack of competence of their staff who deal with IT-based accounting systems since the employment of skilled staff would be expensive. The issue of cost might lead clients to employ fewer skilled, or less-skilled, staff in IT-based accounting system (Ariwa, and Eseimokumoh, 2008).

2.13.4. Audit Trial

The ability to track down the audit trail in IT accounting environment is vulnerable by employing unsuitable accounting software and application. Proper accounting software should provide audit trail. Audit trail is a key factor in confirming the reliability of transactions in accounting systems (A. Hall, 2004). However, investigations conducted on the accounting systems in the IT-environment have revealed some deficiencies respect to audit trails. It should be mentioned that some concerns about the audit trail still exist even though the recent development in accounting systems and systems and software to remedy such deficiencies. In the IT environment, companies and their customers or suppliers use communication links to carry out business electronically (Watne and Turney, 1990).

A main concern for auditors facing in the system is the obvious attrition of controls to the lack of visible evidence. Since the system allows information to exceed the organizational boundaries easily and business functions in organizations may overlap as audit trail may become unclear or even lost (Information System Audit and Control Association (ISACA), 1998).

2.13.5. Internal Control Reduction

Systematic feature of operations in IT –environment is one reason why fraudulent and error activities within a computer based accounting system are greater than those founding manual environment. The greatest risks that may threat the internal controls existence in IT-environment, among the others, our like of segregations between duties, the possibility to access and change the data without visible evidence, and the fact that some transactions are systematically conducted and recorded without management authorization. Accordingly, lack of sufficient internal control systems in a system are committing fraud, error unauthorized transactions and other risk may are done easer then in a manual environment (GAO, 1999).

2.13.6. The Lack of Education in IT of the Client's Staffs

The lack of education in IT of the client's staff is one of the reasons behind the lack of competence of staff in dealing with IT-based accounting systems. The lack of education in IT of the client's staff is likely to contribute to increasing of level of inherent risk in an IT-based accounting environment through the mediation of the lack of competence of client's staff in dealing with such systems (Al-Fehaid, 2003). Using the auditing around the computer approach has implications when studying the level of detection risk in an IT-based accounting environment. This is because "the level of detection risk relates to

the auditors' substantive procedures (tests of details of transactions and balances and analytical procedures)" (APB, 1998).

2.13.7. Skilled Auditor

The lack of skilled auditors who are able to deal and understand the computerized accounting information system is the major concerns in IT auditing. The lack of competence has been historically relied auditors on specific expert's service in assessing the reliability of the systems. The poor education and training are expected to be the main reason behind the lack of skilled auditors in an IT auditing environment (Al-Fehaid, 2003).

If specialized skills are needed, the internal auditor should seek the assistance of a technical expert possessing such skills, who may either be the internal auditor's staff or an outside professional. If the use of such a professional is planned, the internal auditor should, in accordance with SIA16, "Using the Work of an Expert", obtain Standard on Internal Audit (SIA) (According to Standard on Internal Audit (SIA) 14 no.4).

This lack of competence of auditors is one of the reasons that might lead audit firms to use the auditing around the computer approach this may affect the level of detection risk in an IT-based accounting environment. Audit firms' financial cost concern is likely to contribute to increasing the level of detection risk in an IT-based accounting environment through the mediation of the lack of IT training for auditors, the lack of competence of their staff who audit IT-based accounting systems, and also the use of the auditing around the computer approach by audit firms to test the reliability of such systems (Ling-fang (2007).

The internal auditor should have sufficient knowledge of the information technology systems to plan, direct, supervise, control and review the work performed. The sufficiency of knowledge would depend on the nature and extent of the IT environment. The internal auditor should consider whether any specialized IT skills are needed in the conduct of the audit, for example, the operating knowledge of a specialized ERP system. Specialized skills may be needed, for example, to: a) Obtain sufficient understanding of the effect of the IT environment on systems, processes, and internal control and risk management systems; b) Design and perform appropriate tests of control and substantive procedures; and c) Determine the effect of the IT environment on assessment of overall audit risk (to Standard on Internal Audit (SIA) 14 no.4).

2.13.8. Internal Control in IT-Environment

Internal control systems or means all the policies and procedures adopted by the management of an entity to assist in achieving management objective of ensuring as far as particle, the orderly and efficient conduct of its business including adherence to management policies, that safeguarding of asset prevention and detection of fraud and error, the accuracy and completeness of the accounting records, and the timely preparation of reliable financial information (SAS# 3000, 2004). The auditors have to obtain a comprehensive knowledge of the client accounting system for evaluating the effectiveness of the internal controls regardless of type or system, whether it is a manual or a computerized accounting system (Chinese Version, 209). In a new accounting environment, there are two type of internal control; general (environmental) controls, and application control.

2.13.9. General Control

General controls are designed to control the entire new accounting environment including organizational controls, system development and maintains controls, access controls and backup and recovery control. Organizational controls are related to management philosophy, operating method and organizational structure controls factors (IT Audit Monograph Series No.1).

Furthermore, management in the new accounting environments should ensure that there are segregations between duties such as system design, programming and operations. This assurance can be obtained through adequate procedures and policies that are implementing by management over the activities of the entities. The development, or any modification for the system, are them to certain control which are related to the study, evaluation and verification new system, control over the system and programs changes ,and documentation procedures. The documentation procedure is essential for both auditors and management because it provides basis for management for examining and maintaining the systems, and training the user staff.

2.13.10 Application Controls

Application controls are those controls (manual and computerized) that relate to the transaction , standing data pertaining to a computer-based accounting system ; need to be ascertained, recorded and evaluated by the auditors as part of the process of determining the risk of material misstatement in the audit client's financial statements. It include Input controls-control activities designed to ensure that input is authorized, complete, accurate and timely are referred to as input controls. Processing controls –it exist to ensure that all data input is processed correctly and that data files are appropriately updated accurately in a timely manner. Output controls-it exists to ensure that all data is processed and that output distributed only to prescribed authorized users. Master file controls-its purpose is to ensure the ongoing integrity of

the standing data contained in the master files. These include: appropriate use of passwords, to restrict access to master file data; the establishment of adequate procedures over the amendment of data, and comprising appropriate segregation of duties, and authority to amend being restricted to appropriate responsible individuals (ACCA, 2011).

2.13.11 Conclusion and Knowledge Gap

The need for CAIS is becoming more necessary day after day, but it conveys the potential risk. Audit review for computerized accounting information system will be critical tools for auditors. The system initiates new dimensions for financial transaction. These dimensions need an infrastructure for auditing practices. The objective of the study is to investigate the impact of computerized accounting information system on audit risk. The study was employed both quantitative and qualitative (mixed) approaches in collecting of relevant data; in order to better understanding of the subject under study; to identify whether the extent of audit risk changed after the use of the system and give conclusions and recommendation based on the finding.

The review of related literature discloses the existence of various knowledge gaps in site of the impact of implementing computerized accounting information system on audit risk. The degree of adopting computerized accounting information system differs between developed and developing countries. The level of audit risk associated to utilizing of the system also varies among the countries. To sum up, the impact of the implementing IT-based accounting systems on the audit service and the potential risks that are associated with auditing in such an environment have been recognized by the literature relating to developed and developing countries. However, the impact of these risks on the level of audit risk in an IT-based accounting environment has not been identified. Accordingly, this study was attempts to fill this gap by investigating empirically the impact of the implementing of IT-based accounting systems on the level of audit risk in Ethiopia particularly Addis Ababa.

Chapter Three

3. Research Methodology

This chapter introduces the research methodology part of the thesis. Describe research philosophy .A discussion of survey questionnaire has been given and different elements of the practical part of the research has been presented. Explain the sample, data collection techniques and variables used in this study.

3.1. Research philosophy

Pragmatism is not committed to any one system of philosophy and reality Creswell (2003). This applies to mixed methods research in that assumption when they engage in their research. In similar way, mixed methods researchers look to many approaches to collecting and analyzing data rather than subscribing to only one thus, for the mixed methods researcher, pragmatism opens the door to multiple methods, different world views, and different assumptions, as well as to different forms of data collection and analysis in the mixed methods study. Hence, the study is pragmatists because it included both quantitative and qualitative (mixed) approaches. In addition the data gathering devices, analysis and interpretations of the study is indicating that the research is pragmatists' ideas. This research has the objective of assessing the impact of implementing computerized accounting information system on audit risk.

3.2. Research Method

The overall objective of the study to evaluate the impact of implementing computerized accounting information system on the level of audit risks in Addis Ababa. The researches designs are both descriptive and explanatory nature. Descriptive research is used to generate information on the phenomena of interest that already exists (Fink, 1995). Whereas explanatory research is concerned with the explanation of a condition or problem, usually in terms of cause-and-effect relationships (Churchill, 1995).

For the purpose of this research, it seems that a survey is most appropriate research strategy to achieve the objectives of the study. Survey gather data at particular point in time within the intention of describing the nature of the existing conditions can be compared or determining the relation ships that exist between specific events (Abiy et al, 2009). The major benefit of survey studies is that they provide information on large groups of people, with very little effort, and in a cost effective manner. Also surveys allow researchers to assess a wider variety of behaviors and other phenomena than can be studied in a typical naturalistic observation study (Marczyk et al, 2005).

The researcher expected that, the mixture of these two approaches were useful for bringing together the quantitative and qualitative (mixed) approaches .It is advisable as it gives more complex picture by drawing on the individual strength and weakness of each methods; as well as enabling discovery and verification; understanding and prediction; ,validity and reliability within the research design (Jarratt,1996).

3.3. Types of Data

The study used both primary and secondary data .Primary data included information obtained through self- administered questionnaires from practicing external auditors working in nine (9) private audit firms in Addis Ababa. Whereas secondary data includes journals article, book, etc.

3.4. Data Collection Instrument

This paper utilized the questionnaire as the main data collection instrument. The data has been collected through self-administered questionnaire. Some of these questionnaires are adopted from Al-Fehaid (2003) and Abu-Musa (2008). A questionnaire is a method for drawing out, recording, collecting information and is useful when the researcher wishes to gather large amount of factual and simplistic data that can be quantified and made into statistical evidence (Creswell, 2003).

A questionnaire has to be totally self-explanatory; the benefit of clear and simple statements cannot be overstated, since instructions and questions must be uniformly understood by a wide variety of respondents (Czaja and Blair, 1996). Within this approach, a combination of both close, and open ended and Likert scales questionnaire which self administer is found to be suitable methods of data collection for this research. In open-ended question participants are free to answer the question in any manner they choose. By contrast, a closed-ended question provides the participant with several answers from which to choose. It is differ in that it allows the respondent to formulate and record their answers in their own words. These are more qualitative and can produce detailed answers to complex problems (Abiy et al, 2009)

Likert scales used to look in to certain response patterns to see whether there is a problematic response set that emerges, as indicated by restricted variability in responses (Marczyk et al, 2005). For this study the researcher classified the interval scale in to six (6) such as very often, often, rarely, very rarely, and not at all. The use of self administered questionnaires has many advantages like time saving; cost wise; and it does not require as much skill to administer questionnaires as to conduct the interviews (Sekaran, 2000).

The study only used questionnaire as major data collection instrument for certain reasons like: the respondents are not positives' for other instrument because they have the ACCA examination; work load or busy during data collection period and the time given to conduct this study itself is not sufficient enough. The questionnaires have three major parts .Each part is designed in such way that measure the variables identified in the paper. The questionnaires are structured in simple manner so as to sense to the respondents. Each part of the questionnaire described as follows.

These are: Part one of the questionnaires designed to obtain general information about the participants in the survey and their firm computerized accounting system. Part two of the questionnaires are design to discover the respondent perceptions' of the significant or potential problems that might obstacle to them when an audit in a client's computerized accounting information system. The third and final parts of the questionnaires are requested the participant or respondents to rank the factors, which are identified in the very beginning according to the level of contribution to the audit risk.

3.5. Implementation of the Questionnaire

The questionnaire was sent to selected private audit firms through personal delivery method. In addition, they were indicate how long they needed to complete the questionnaire. Accordingly, most respondents asked for one to three weeks. After distributing the questionnaire personally to each representative of selected audit firms, the researcher checked with each audit firm representatives and asked them if they would accept and complete the questionnaire.

The survey response rate is that only 50 questionnaires were collected from the entire (63) questionnaires that were initially distributed. It results, a response rate of 79% from the overall (100%). So that, according to Remenyi et al., (1998), a response rate of 60% is seen to be exemplary. Whereas, Gillham (2000) advised that "a 30% return has to be seen as fairly satisfactory, and above 50% is good".

3.6. Sampling techniques and selection

The target populations are private audit firms in Addis Ababa which are fifty two (52) in number. Simple random selection -is used in choosing study participants from the population of interest in such a way that each member of the population has an equal probability of being selected to participate in the study (Marczyk et al, 2005). Accordingly, this study used both simple random sampling and stratification to provide equal chance for the whole selected group and reduce the bias to get necessary information from each study unit.

Nine private audit firms were selected based on their grade from each stratum. Their grade includes A, B and C. Then after three audit firms has been selected from each stratum (A, B, and C), in addition to their grades the size of audit firm was used during data analysis to make comparison among these firms. Since, there is no formal

classification of audit firms; based on their size in Ethiopia the study used the respondent opinion as an input to classify them in to size. Sample for questionnaires' was randomly selected seven (7), from each 63(sixty three) external auditors from the proposed private audit firm in Addis Ababa. The reasons behind choosing the study units from Addis Ababa are for cost and time saving; most auditors engaged in audit works with in the country are located in the targeted area.

3.7. Data Analysis and Presentation

Appropriate tools such as Excel and, descriptive statistics such as frequency, percentage, tables and graphs has been used to analysis the data concerning th e nature and type of data collected. Statistical analysis and interpretation has been applied to address the research problem.

3.8. Research Variables

The term "variable" was defined by Sekaran (1992,) as "anything that can take on differing or varying values". In addition, she claimed that there are four main types of variables that are used in research. Some of these are:-dependent variable which is the variable of primary interest to the research and independent variable which is one that influences the dependent variable in either a negative or a positive way is the major variables conceder in this study.

Based on, empirical review in related literature and previous researches the researcher indentified thirteen(13) independent variables those have major impact on audit risk due to implementing computerized accounting information system and one dependant variable –audit risk that includes inherent risk, control risk and detection risk. Those independent variables included:- Lack aw areness of the issues, problems and risks associated with CAIS; security breaches and virus; Information technology (IT) related fraud; Weaknesses in internal control systems in relation to CAIS; auditor

incompetence; the application of an unsuitable audit approach (i.e. auditing around the computer); the incompetence of client staffs' in dealing with issues relating to CAIS; Accidental entry of bad data by employees; the disappearance of the audit trail ;lack of client staff training in IT environment; audit financial cost concern and Lack of IT training for auditors

Chapter Four

4. Data Analysis and Research Finding

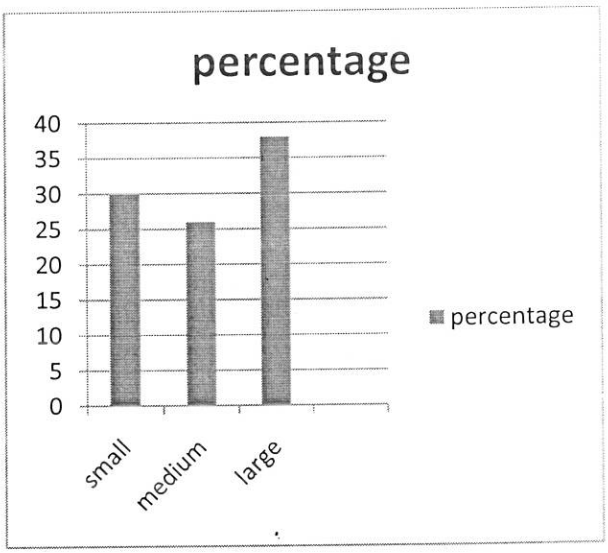
The data has been collected through self administered questionnaires. The collected data was analyzed using appropriate tools (excel) and descriptive statistics such as table, graph, frequency, and percentage based on the nature and type of data.

4.1. Firm Profile

Under this sub-section the respondents opinion have been analyzed concerning, firm size; accounting professionals; information system specialist; number of auditors trained in accounting software; auditor's experience; accounting system; major types computer-based accounting system; audit style and the reliability of their firm as well as clients' accounting software and estimated percentage of their client who adopted computer-based accounting system.

Table 1

The respondents' response on their firm size category		
Firm size	Frequency	Percentage
Small	14	28%
Medium	17	34%
Large	19	38%
Total	50	100%



(Figure1: respondents firm size category)

The respondents were asked to identify the size of their audit firms. As the representatives' of all audit firms indicate, there is the direct relationship between Grade and size of the audit firm. Accordingly, "A" grade represented large firm size;"B" indicate medium size and "C" similar with small firm size. The researcher asked this question for two purposes. These are: there is no formal classification of audit firms based on size in Ethiopia and it helps the researcher to compare and contrast the selected audit firms' one with other during data analysis and presentation. Accordingly, the above table and figure revealed that forty (28%) of the respondents were from small audit firm, while seventy (34%) of the respondents were from medium audit firm and ninety (38%) of the participants were from large audit firm.

Table2

Participants' responses on their firm's accounting professionals engaged in audit under a computer- based accounting information system environments		
Accounting professional	Frequency	Percentage
Secondary education plus experience	-	0%
Secondary education plus special training	-	0%
College diploma in accounting	20	26%
College diploma in related field	1	1.3%
First degree in accounting	34	44%
First degree in related field	3	3.9%
Second degree in accounting	7	9%
Second degree in related field	-	0%
Professional accountants CPA/ACCA	12	15.6%
Total	77	100%

The participants were asked this question to investigate the blend of their audit firms professional. Because, lacks of the above processionals have significant impact on audit

risk in auditing under computerized as well as manual accounting system. About (44%) of the respondents believed, that auditors or accountants in their audit firms were degree holder, while 15.6 % of the respondents observed that, accounting professionals in their firms were both Certified Public Accountants (CPA) and Association of Chartered Certified Accountant (ACCA) and 26% of the respondents indicated that college diploma in accounting.

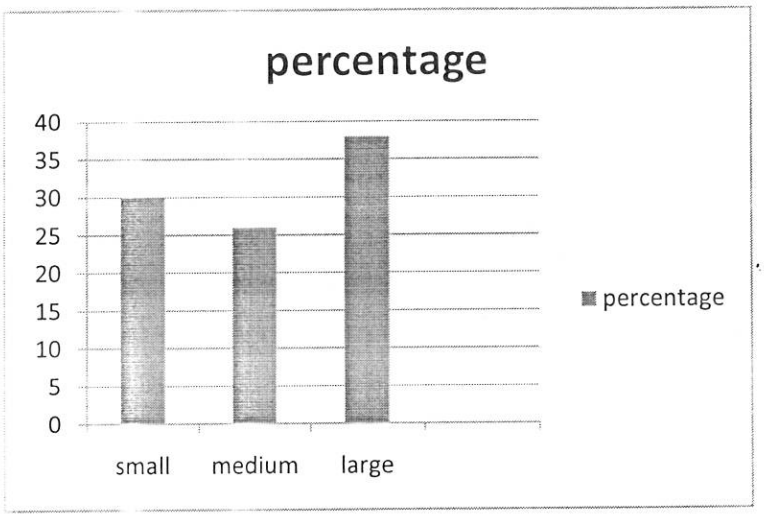
On the other hand, few of the representatives of these firms indicated that, their firm's accounting professional include college diploma in related field, first degree in related field and second degree in accounting. Lastly, none of participant indicated the existence of secondary education plus experience as well as special or short term training in their firm's in audit under IT-based accounting system environment. Furthermore, the researcher observed that, most the auditors in these audit firms are t holder degree and diploma in accounting respectively.

Table 3

The respondents' responses on information system specialists in their firms		
Response	Frequency	Percentage
1-5	29	58%
6-10	9	18%
11-15	4	8%
16-20	0	0%
Not at all	8	16%
Total	50	100%

The above table tells that, twenty nine (58%) of the participants expressed believed that, their audit firms have an information system specialists between one to five

persons approximately, While nine (18%) of the respondents from the entire audit firm size revealed that their audit firms have an information system specialists between six to ten persons approximately and Only (8%) of the audit firms have information system specialist between eleven to fifteen persons. On the other hand, none of the respondents give his/her opinion on the existence information system specialist between range of sixteen and twenty. Furthermore, eight (16%) of respondents indicated that, private audit firms have no information system specialist at all. As respondents indicated, one can understand that, there is lack of information system specialist in audit under IT-based accounting information system environment .This might be due to the audit firm financial cost concern ,according to (Al-Fehaid,2003 and Abu-Musa,2006) and others researchers in review of related literature.



(Figure2: Number of accounting professional takes accounting software).

The researcher was asked the number of firms' accounting professionals trained in accounting related software since, the research paper is focuses on audit firms that have audited CAIS environment. So, it is vital to identify those auditors and accountants took accounting software. For the reason that, lack of such qualification might rise the risk in audited under such environments as investigated by previous studies likes ,Abu - Musa,2008,Al-Fehiad,2003,Eriwa and Eshumhouin, 2008) in their studies.

As figure 2 shows nineteen (38%) of the respondents form all audit firms size point out that some of accountants and auditor audited a computer based accounting environment have trained in accounting software, while fifteen (30%) of the respondents revealed that all most all of an accountants were took the software and 26% of the respondents observed that all of these professional were took the accounting software. In one hand, merely (6%) of the respondents disclosed that none of these accountants and auditors dealt in computerized accounting information system environment took the accounting software's in their firms'.

Table 4:

The respondents' response on their experience		
Response	Frequency	Percentage
Less than one	3	6%
1-4 year	21	42%
5-9 year	13	26%
10-14 years	5	10%
15-19 years	3	6%
Above 20 years	5	10%
Total	50	100%

The principal aim of asking this question is to see the experience of the respondents carry out audit in a computerized accounting information systems environment. Since lack of experience in such environments was the major sources of audit risk according to previous researches conducted in such environment.

Table above revealed that, three(6%) of the respondents have less than a year experience in their current position, where as twenty one (42%)of the participants have an experience between 1-4 years ; while 26% of the respondent have an

experience of between 5-9 years. five (10%) of the participants have experiences of 10 to 14 years. Again three (6%) of the respondents have an experience of between 15-19 years and only five (10%) of the participants have an experience above 20 years. As participants indicated, most of the respondents didn't have an available experience in performing audit under computerized accounting information system environment.

Table 5

The participant's responses on their audit firms accounting systems				
Firm size	Manual	Computerized	Both	Total
Small	1	5	8	14
Medium	-	7	10	17
Large	-	12	7	19
Total	1	24	25	50
Percentage	2%	48%	50%	100%

The respondents were asked to give an opinion on an extent by which their firm's accounting system is computerized and to observe if there is significant relationship between the size of audit firms and the level of computerized their accounting systems. Furthermore, it asked as result of objectives of the study that, the impact of computerized accounting system on the level audit risk.

As is apparent form the above table, five (36%) of representatives small audit firm indicated that, their firm accounting systems is only computerized, while eight (57%) of respondents from small audit firms disclosed that their firms' used both computerized and manual accounting system and only few (6%) of participants from this firm identified that, still their firm use manual accounting system. Furthermore, seven (41%) of respondents from medium firms observed that their firms adopted only computer -based accounting systems, while around sixteen (59%) of respondents from

this firm told that their firm used the combination of the two systems. According to opinion from representatives of these firms' the firms already stopped using of only paper based accounting systems. In case of large audit firms, about (63%) of participants from these firms indicated that their firms only used computerized accounting systems, where as seven (37%) of participants from these firm disclosed that their firm's adopted both manual and computerized accounting system. Whereas none of respondents give an opinion concerning use of only manual accounting systems by their firms. The result revealed that large audit firms were better than both small and medium audit firms in computerized their accounting systems, while medium firms were better than small firm. As an aggregate all most all of audit firms were CAIS. For example, 48% of respondents from entire firms indicated that their firms adopted computer-based accounting information systems, while 50% of the respondent indicated that their firm used both of accounting systems.

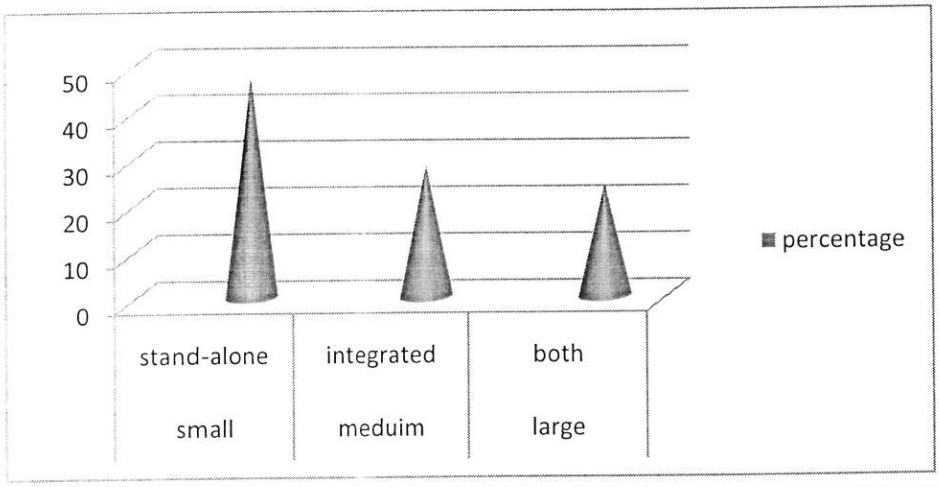
The respondents were asked to explore the major type of computer -based accounting system implemented by their clients. As table and figure3 below shows nine (64%) of respondents from small audit firms indicated that their clients were adopted stand-alone (simple) computer based accounting system, while few (14%) of representatives of these firm's observed that their client's were used complex (integrated) computer-based accounting systems and 21% of participants from small firms disclosed their client's were implemented both of the system. Around sixteen (59%) of representatives of medium firm's point out that their client's were used stand -alone computer -based accounting system ,where as 18% of respondents from these audit firms revealed that their client's were used fully- integrated accounting systems and 24% of their clients were used both of the systems.

on the other hand , 26% of participants from large audit firms explained that their client's were implemented stand -alone computerized accounting information system, while (47%) of respondents from their clients were used complex accounting system and 26% of respondents disclosed that their clients were implemented both simple and complex computer-accounting system.

Form this one can understand that, large and medium size audit firms were healthier than small firms' in using fully- integrated accounting system. The uses of these computerized accounting systems have a significant impact on audit risk unless the clients' staffs or auditors audited in such environment are not properly applying the systems. Twenty four (48%) of the participants form all firms size revealed that most of their clients use stand- alone, while fourteen (28%) of the respondents discovered that, their clients use fully- integrated computerized accounting system and twelve (24%) of the respondents believed that, their clients use both stand alone and complex IT -based accounting system.

Table 6:

The participants' responses on major types of their CAIS				
Firm size	Stand-alone	Fully integrated	Both	Total
Small	9	2	3	14
Medium	10	3	4	17
Large	5	9	5	19
Total	24	14	12	50
Percentage	48%	28%	24%	100%

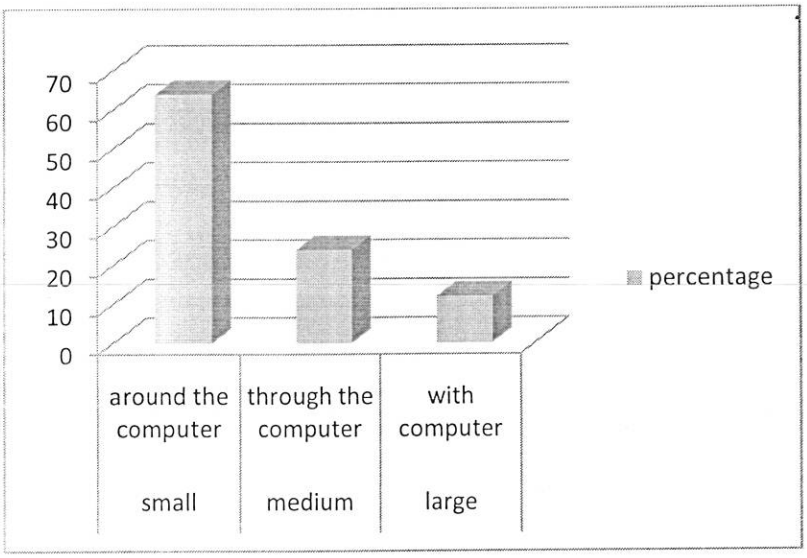


(Figure: 3 the participants' responses on major types of their CAIS)

The respondents were asked to discover the approach that they were used during audited in a computer- based accounting information system environment. As a result, most (64%) of the participants performing audit around the computer , while 24% of the respondents carryout audit through computer audit using CAAT and few (12%) of them audit applying audit with computer audit approach using general software.

The figure 4 bellow shows that, most (79%) of participant's of small firm carryout audit around computer. This may affect the audit risk significantly because the term itself identified that the internal software of the computer it not documented or audited by auditor, but the inputs to the computer are agreed to the expected out puts to the computer (ACCA paper F8, 2011), While large audit firms are better than the two firms in performing audit through the computer and with computer audit software which are play great role in decreases or increases audit risks in IT-based accounting system. For instance, auditing through the computer helps the auditor in actual evaluation of the computer's hardware and software to determine the reliability of operations that cannot be viewed by the human eye; often have significant built-in control procedures, and ignoring these would be ignoring important features of internal control and it mean using computer-assisted audit techniques (CAATs) *(Appendix 9A*, understanding

information systems and technology for Risk and Control Assessment number one). Where as auditing with the computer, involves using general audit software (GAS) to perform various audit tests and analytical procedures and to prepare audit file documentation as indicated in review of literature.

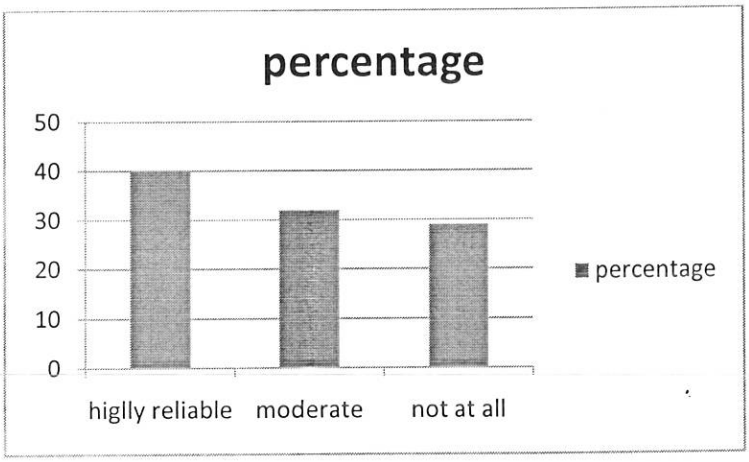


(Figure 4: the respondents responses based on their firms audit style)

The respondents were asked to point out the degree of reliability of their firms and clients accounting software. In addition to this, the researcher was asked the question because of the aim of the study. Unless the accounting software is not reliable and complete the level of audit risk is significantly increases as mentioned in review of related literature.

For instance, Al-Fehaid (2003) in his study identified certain factors that, increase audit risk associated with unreliability of the accounting software such as lack of knowledge and skill in dealing with the system; technical support or training their customer staff, lack of sufficient maintained threatens the security of software and the proportion of such software is rade-made accounting software. The result shows, 40% of respondents observed that, their firms and clients accounting software is highly reliable but 28% of the participants told that it is not reliable at all as result of knowledge and skill, lack awareness of such system and use of old computers were some factors

mentioned by them and 32% of the respondents indicated that the software moderately reliable.



(Figure5: the participant responses on the reliability of their firm and clients accounting software)

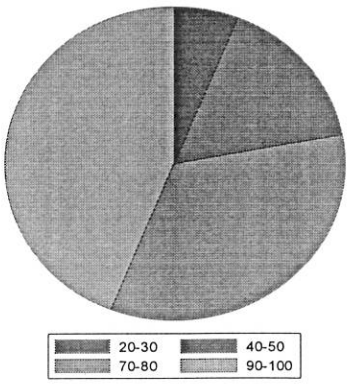
The representatives' audit firms were asked to identify whether the existing audit firms complete audit work under IT based accounting system for their client's accordingly. Furthermore; to know the number of their client's adopted computer-based accounting systems. Table below described that, 12% of the respondents indicated that their audit firm have clients between 1-50; while 18% of the respondents identified that their audit firm have clients between 1-100. On the other hand, 28% of the respondents indicated that their audit firms have clients between 101-100 and 151-200 respectively. As respondents opinion explained, six(12%) audit firm have clients above 200.So that, the study revealed that most of their customers used computer- based accounting systems in their business in Addis Ababa and the audit firm to some extents responsible for their clients as far as the opinion of the respondents.

Table 7:

The respondents response on the proportion of the audit clients that their firms have responsible for		
Proportion	Frequency	Percentage
1-50	6	12%
51-100	9	18%
101-150	14	28%
251-200	15	30%
More	6	12%
Total	50	100%

The respondents were requested to tell the estimated percentage of their client's who adopted a computerized accounting information system. Twenty two (22) participants were estimated that ,around 90% or all most all of their client's implemented this new systems, while seven thin(17) respondents estimated that just about 80% or most of their client's used IT- based accounting systems and eight(8) respondents estimated that approximately half(50%) of their clients used computerized AIS.

But three (3) participants estimated that around 30% of their clients have used IT-based accounting system as indicated in the following fig.6. As the participants responses most of business in Addis Ababa used computerized accounting information system. This support the objective of the study that said the impact of implementing computerized accounting system on the level of audit risks in businesses in Addis Ababa.



(Figure6: responses on an estimated percentage of their client who adopted computer-based account systems)

4.2. Problems related with client's computerized accounting Information system

Table 8: The respondent's responses whether the use of computer based accounting system by their clients affect the level of audit risks or not

Firms size	Alternatives		Total
	Yes	No	
Small	9	5	14
Medium	14	3	17
Large	18	1	19
Total	41	9	50

In this question the researcher attempted to identify whether the use of this system by clients affects or not the audit risks level. Eighteen (95%) or all most all of respondents from large firms size discovered that the adoption of computerized accounting information system by their clients affects the level of audit risk. Also majority (82%) of representative of medium audit firm disclosed that the utilization of a systems by their clients significantly affect the level of audit risk. Furthermore, 64% of participants

from small firm indicated that an implementation of IT-based accounting system by their clients affect the level of audit risk. In other hand, merely representatives of all audit firms observed that the use of computer -based accounting systems by their client's didn't affected an audit risk. However, forty one (82%) of the respondents from all firms size disclosed that the adopting of IT-based accounting systems by their clients affects audit risk, while nine(18%) of representatives of the entire audit firm revealed that applying of these systems by clients didn't affected an audit risks.

Form the above table one can understand that the use of computer –based accounting systems can be significantly affect an audit risk due to several factors associated with adopting the systems. The representative of audit firms who said that adopting of computerized accounting information system by clients in their business , influence an audit risk were request questions number two of the second part to disclose certain impacts of this system on the level of audit risks.

Accordingly, twelve(29%) out of forty one participants said adoption of IT- based accounting systems affects audit risk were listed certain impacts associated with implementing a system such as wrong entry of data by client staff's; lack of knowledge and skill related to a system; lack of awareness problems associated with the system and weak in documentation were some of the factors significantly affect the level of audit risk in such environment, while twenty (49%) of these respondents disclosed that loss of data due to absence of back –up- data; inaccuracy and in completeness of testing data using audit software , complexity of a system; lack of segregation of duties; abnormal balance or misstatements and lack of understanding relationship between inputs and output in such environment. In one hand, nine(22%)of the respondents described other factors that influence audit risk relate to using computer-based accounting systems like posting and coding problems, reduction of internal control ;loss of audit trail; security break ; management override, use of old computer , audit around computer and alteration of data by management were the significant impacts of IT- based accounting system as shown in the following table.

Table 9:

The participants' responses on the impacts of computerized accounting information system on audit risk level		
Responses	Frequency	Percentage
➢ Wrong entry of data by client staff's ➢ Lack of knowledge and skill in such environment ➢ Lack of awareness of the problems associated wit a system ➢ Lack of documentation	12	29%
✓ Loss of data due to absence of back up data ✓ In accuracy and incompleteness of audit testing data in such environment ✓ Complexity of the system ✓ Lack of segregation of duties ✓ abnormal balance or misstatements and ✓ Lack of understanding relationship between inputs and output in such environment.	20	49%
⊥ Posting and coding problems and audit around computer ⊥ Reduction of internal control system ⊥ Loss of audit trail and Security breaches ⊥ Management override/alteration of data by management ⊥ Use of old computer	9	22%
Total	41	100%

Table 10: Respondents response; concerning whether audit risk changed after implementing IT -based accounting information systems.

Firms size	Alternative		Total
	Yes	No	
Small	12	2	14
Medium	13	4	17
Large	15	4	19
Total	40	10	50
Percentage	80%	20%	100%

The participants were asked this question to disclose whether audit risks considerable change after implementation of computer-based accounting system. Accordingly, 80% of representatives of all audit firms point out that an audit risk significantly change after adapting a systems, while 20% of the participants form entire audit firm indicated that the audit risk not significantly charge due utilizing an IT -based accounting systems. But the opinion of the participants differs from one firm to another. For instance, most (78%) of respondents from large audit firm believed that audit risk charged due to implementing computerized accounting information system, merely (21%) of them described that audit risk do not significantly altered. In other case representative of medium firm's discovered that audit risk considerably change as result of using computerized accounting information systems, while few of them indicated that audit risk not change due to implementing this new system.

Furthermore, majority (86%) of participants from small firm identified that audit risk altered for the reason that of adopting IT-based accounting systems, whereas only (14%) participants from these firm's showed that audit risk not change due to implementing such systems. As the respondents indicated audit risk considerable changed due implementing computerized accounting information systems by clients.

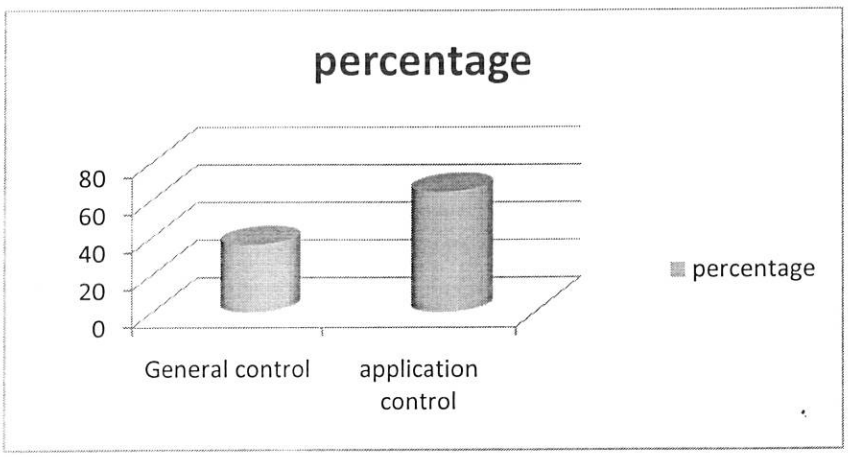
Table 11: The respondent answers on the influence of clients computerized accounting information system on the firm audit approach

Firms size	Alternative		Total
	Yes	No	
Small	9	5	14
Medium	15	2	17
Large	12	7	19
Total	36	14	50
Percent	72%	28%	100%

In this question, the representatives of the entire audit firms were requested to reveal whether the use of computerized accounting information system by their clients influence the firms audit approach. As shown in the above table the majority (72%) of representatives of all audit firm size disclosed that utilizations of computerized accounting information by their client's influence their audit approach, Whereas 28% of the participants opinion indicated that the adopting of computer- based accounting system by clients didn't not considerable alter the firm's audit approach. As compared to large and small audit firms the use of IT-based accounting system by clients are highly influenced audit approach of medium firm as (88%) of respondents form these firm disclosed.

The responses on control environments influenced due to implementing CAIS.

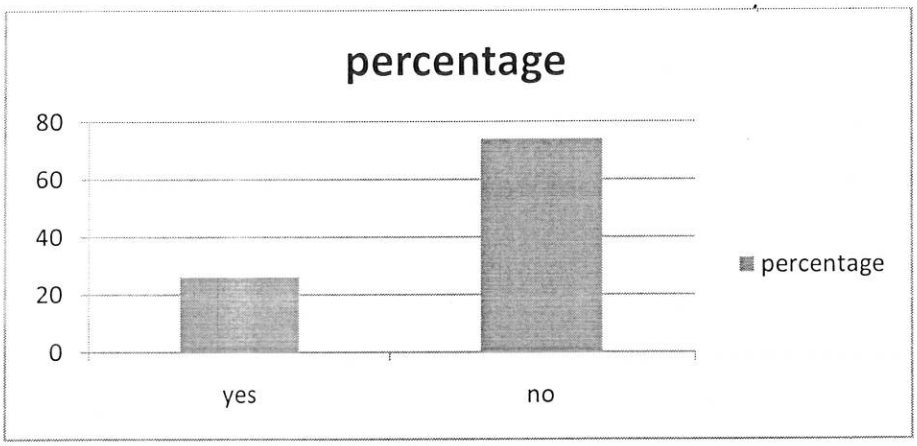
This question was asked to identify control environment which significantly altered as result of implementing IT- based accounting systems by clients. As figure8 shows most (64%) of the respondents revealed that application controls considerable affected due to adopting CAIS, while merely (30%) of the respondents observed that general controls were significantly suffered due to using computer- based accounting system by their clients.



(Figure: 7 the respondents responses on control environments)

Responses for whether the external auditors were depend on the client's staff during audit in CAIS.

From the below figure 9 one can understand that the external auditors were independents of clients staff when audit under the computer -based accounting system. For instance, thirty seven (74%) of the respondents form all firms size indicated that the external auditors were not depend on the clients staff during audited in environment, where as threaten(26%) of the respondents revealed that the external auditors were relies on the clients staff when audited under the computer-based accounting systems.



(Figure 8: Responses on where the external auditors were depends on the client's staff)

Those respondents said the external auditors were depends on the clients staff's during audited in a computer-based accounting systems were asked question eleven to determine this dependents have significant impacts on the auditors independents.

Table 12 whether their reliance alter independence of the auditors

Responses	Frequency	Percentage
Yes	7	14%
No	43	86%
Total	50	100%

As the above table indicates, majority (86%) of the respondents observed that the relies of external auditors on client staff's in audited under the IT- based accounting system were not significantly affects auditors independent; whereas few (14%) of the representatives of all audit firm size indicated that the dependents of external auditors on the clients staff's was affect the auditors independent during audited in a computer -based accounting environment. Form the table one can understand that the audit risks are not significantly affected due to dependent of external auditors on client's staff when performing audit in a CAIS environment in Addis Ababa.

4.2: Major Impacts of Computerized Accounting Information Systems on Audit Risk

The purpose of this part is to assess the major impacts of computerized accounting information systems on audit risk in Addis Ababa and the relative materiality of each factor. And the participants were requested to indicate the frequency and occurrence of audit risk due to factors or variables related to implementing the system. These factors includes: Security breaches and virus; IT-related fraud; lack of awareness of issue, problems and risk associated with the system; unsuitable audit approach ;incompetence of the clients staffs; accidental entry of bad data by employees; lack of clients staffs; audit firm financial cost concern; lack of IT- training for auditors;

weakness of clients internal control; disappearance of audit trial; auditors incompetence and lack of segregation of duties in IT-based accounting system environment. Finally, the respondent's opinion on the occurrence and impacts of these variables on audit risk were summarized in following table in terms of frequency and percentage.

Table 13: Major impacts of computerized accounting information systems on audit risk

Independent Variables	Alternatives					
	Very often	Often	Rarely	Very rarely	Not at all	Total
Security breaches and virus	4 8%	12 24%	10 20%	- 0%	24 48%	50 100%
IT related fraud	- 0%	10 20%	14 28%	11 22%	15 30%	50 100%
Lack of awareness of issue , and problems associated with the system	20 40%	16 32%	10 20%	3 6%	1 2%	50 100%
Un suitable audit approach	5 10%	21 42%	19 38%	- 0%	5 10%	50 100%
Incompetence of client staff	22 44%	15 30%	11 22%	2 4%	- 0%	50 100%
Accidental entry of bad data by employees	3 6%	10 20%	21 42%	7 14%	9 18%	50 100%
Lack of clients staffs training in IT -based	24	8	12	1	5	50

accounting system	46%	16%	26%	2%	10%	100%
The audit firms final cost concern	17 34%	3 6%	4 8%	7 14%	19 38%	50 100%
Weakness of the clients internal control system	7 14%	21 42%	15 30%	- %	7 14%	50 100%
Lack of IT training for auditors	24 48%	12 24%	10 20%	- %	4 8%	50 100%
Disappearance of audit trial	9 18%	23 46%	14 28	- 0%	4 8%	50 100%
Auditors in competence	5 10%	16 32%	14 28%	3 6%	12 24%	50 100%
Lack of segregations of duties	14 28%	25 50%	8 16%	-	3 6%	50 100%

To make simple and understandable for the users researcher derived new table form the above table by bringing the percentage of "very often" and "often" together which is referred "Very often". Furthermore, the other two percentages of "Rarely" and "very rarely" were summed up together to reflect the term "Rarely" and finally the alternative "not at all" remain as it is. As table indicates all factors were play a major role in increasing the audit risk in IT-based accounting environments, as the participants from all audit firms were disclosed. It is sat in descending order.

Table 14: summary of table for clarification purpose

Independent Variables	Alternatives			
	Very often	Rarely	Not at all	Total
Lack of segregations of duties	78%	16%	6%	100%
Incompetence of client staff's	74%	26%	0%	100%
Lack of awareness of issues, problems and risk associated with the systems	72%	26%	2%	100%
Lack of IT training for auditors	72%	20%	8%	100%
Disappearance of the audit trail	64%	28%	8%	100%
Lack of clients staffs training in IT environment	62%	28%	10%	100%
Weakness of clients internal control systems	56%	30%	14%	100%
Unsuitable audit approach	52%	38%	10%	100%
Auditors incompetence	42 %	28%	30%	100%
The audit firms finance cost concern	40%	22%	38%	100%
Security breaches and virus	32%	20%	48%	100%
Accidental entry of bad data by employees	26%	56%	18%	100%
IT related fraud	20%	50%	30%	100%

4.3. Analysis for Independent Variables Based on the above table

4.3.1. Lack of Segregations of Duties in Audit firms and their Client in Computer-Based Accounting Environment

The participants were requested to reveal the occurrence and the impact of lack of segregations of duties on the level of audit risk in computerized accounting information systems environment. The results revealed that al most all (78%) of the respondents believed that audit risk take place very often because of lack of segregation of duties, merely (16%) of the respondents observed that audit risk occurred rarely due to lack of segregations of duties, while few (6%) of the participants believed that lack of segregations of duties never resulted audit risk in IT-based accounting system environment. It's observed that majority of the respondents indicated that lack of segregations of duties in IT-based accounting system is the potential sources of audit risk in Addis Ababa.

4.3.2. Incompetence of Client's Staffs in IT-Based Accounting System

To explore the participants' comments regarding the occurrence of incompetence of client's staffs, the participants were asked to disclose the frequency and its impacts on audit risk. Accordingly, majority (74%) of the respondents indicated that audit risk faced very often because of incompetence of the client's staffs in such environment, 26% of the participants believed that this factors occurred rarely as a result of incompetence of client's staffs, while none of the respondents indicated that audit risk never happened due to incompetence of the client's staffs at all in audit under computerized accounting information system environment. The above table shows

that, al most of the respondents observed that incompetence of client's staffs in IT-based accounting system is a significant sources of audit risk.

4.3.3. Lack of Awareness of the Issue, Problems and Risk Associated With the System

To understand the participants' responses concerning lack of the issues, problems and risks associated with the system and its impacts on audit risk ,the respondents were asked to reveal the frequency and its influence on the level of audit risk in audit under the computerized accounting information systems environments. As the respondents comments indicated lack of awareness of the issue, problem and risk related to such system is considerable altered audit risk in IT-based accounting system environment.

Furthermore, 72% of the respondent indicated that this factor is occurred very often, while 26% of the respondents revealed that audit risk occurred rarely as results of the awareness of issue, problem and risk associated with the system. In one hand, few (2%) of the respondents believed that it is not occurred at all in audit under IT-based accounting system in Addis Ababa. As the respondent's opinion explained lack of awareness issues, problems and risk associated with the system is the major factors that, influence audit risks in Addis Ababa.

4.3.4. Lack of IT Training for Auditors in IT-Based Accounting System Environment

To make out the respondents perception regarding the frequency and the impact of lack of IT training for an auditors on audit risk in their firm's the, participants were asked this question. Accordingly, majority (72%) them indicated that, audit risk occurred very often due to lack of IT training for auditors in audit under the IT-based accounting system environment, while 20% of the respondents indicated that, audit

risks occurred rarely in audit under the computer-based accounting system environment as result of absence of IT related training for auditors and only 8% of the respondents revealed that ,audit risk did not occurred due to lack of IT-related training for an auditors. As the respondent's comments lack of IT-related training for auditors is the potential sources of audit risks in carry out audit under IT-based accounting system environment in Addis Ababa.

4.3.5. Disappearance of Audit trial in IT-Based Accounting System Environment

The participants were requested this question to identify the occurrence and impacts of disappearance of audit trial on the level of audit risk in their clients adopted IT-base accounting system. Accordingly, about (64%) of the respondents revealed that audit risk occurred very often due to disappearance of audit trial in audit under IT-based accounting system environment, while merely (28%) of the respondents disclosed that audit risk happened rarely due to disappearance of audit risk in a such environment. In one hand, (8%) of the respondents indicated that audit risk never occurred because of absence of audit trial. The respondents' opinion revealed that disappearance of audit trial in audit under computerized accounting information system is a significant source of audit risk in Addis Ababa.

4.3.6. Lack of client's Staffs Training in IT-Based Accounting System

The participants were asked to reveal their opinion concerning the occurrence and influence of lack of client's staffs training in IT on audit risk in audit under IT-based accounting system. About 62% of the respondents indicated that, audit risk happened very often due to lack of client's staffs training related to IT, whereas 28% of the respondents revealed that audit risk occurred rarely in their clients due to absence of

client's staffs training in IT-based accounting system and few (10%) of the respondents shown that audit risk did not occurred in their clients due to lack of IT training for client's staffs. Insight of the respondent's opinion, lack of client's staffs training in IT-based accounting systems is the major sources of audit risks in such environment.

4.3.7. Weakness of client's Internal Control in IT-Based Accounting System Environment

The respondents were requested this question to tell the frequency of audit risk due to weakness of client's internal control in computerized accounting system and its impacts on the audit risks in such environment. It is observed that merely 56% of the respondents indicted that, audit risk occurred very often, while 30% of the respondents believed that audit risk happened rarely as a result of weakness of client's internal control in IT-based accounting system environment. Further more, 14% of the respondents believed that, weakness of client's internal control did not cause audit risk in such environment. As the participants indicated weakness of client's internal control in IT-based accounting system is the major sources of audit risks in their client's.

4.3.8. Unsuitable Audit Approach in Computerized Accounting System Environment

The participants were asked this question to identify the occurrence and the impacts of applying unsuitable audit approach on audit risk in performing audit under this new atmosphere. The above table shown around half 52 percent of the respondents observed that audit risk occurred very often due to inappropriateness of audit approach during carryout audit in IT-based accounting environment, whereas 38 percent of the participant believed that audit risk arise as a result of applying unsuitable audit approach and just 10 percent of the participants point out that adopting of inappropriate audit approach is did not cause audit risk in audit under the

computer based accounting system. The result shows that use of unsuitable audit approach in IT-based accounting system is the significant causes of audit risk in Addis Ababa.

4.3.9. The Audit Firms Financial Cost concern in Computer-Based Accounting System

To know the participants view regarding the impacts and frequency of audit firm financial cost concern on the level of audit risks in an IT-based accounting system the researcher was asked this question. The results explain that 40 percent of the respondents point out that the audit risk take place very often because of the audit firm financial cost concern, while 22 percent of the respondents observed that the audit risk arise rarely as result of audit firms financial cost concern, whereas merely 38% of the participants point out that the audit risk did not occurred due to audit firms financial cost concern in their firms during audit under the IT-based accounting system environment in Addis Ababa. As the respondents explain the audit firms financial cost concern is one of the factor that affect audit risks in computer-based accounting system environment in Addis Ababa.

4.3.10. Auditors' Incompetence in a Computerized Accounting Information system

The respondents were asked to point out the occurrence and the impacts of auditors' incompetence on audit risk in audit under IT-based accounting system environment. The result show that 42 percent of the respondents expressed belief that audit risk happened very often a result of auditors in competence in computerized accounting system, while 28 percent of the participant shown that audit risk happened rarely as result of incompetence of auditors in such environment. However, (30%) of the participants believed that audit risk did not take at all because of this factor 'CAIS.

The study revealed that incompetence of auditors in computerized accounting information system is the sources of audit risk to some extent.

4.3.11. Security Breaches and Virus in Computerized Accounting Information System

The participants were asked to point out the impacts and the frequency of security breaches and virus on audit risks in IT-based accounting information system. So that, about 32% of the respondents observed that audit risk occurred very often as results of security breaches and virus, while 20% of respondents expressed that audit risk happened rarely because of security breaches and computer related virus. In other hand, merely around half (48%) of the respondents believed that audit risk did not occurred due to this factor in IT-based accounting system environment. As responded by the participants security breaches and virus were not the significant sources of audit risk in computerized accounting information system environment in Addis Ababa.

4.3.12. Accidental Entry of Bad Data by Employees of the clients in IT-Based Accounting Environments

To assess the impacts and the frequency of accidental entry of bad data by employees of the clients, on audit risk the respondents were asked this question. The table above indicated that just 26 percent of the respondents observed that the audit risk is occurred very often due to this factor, where as 56 percent of the respondents shown that it happened rarely due to accidental entry of bad data by employees of the clients and only 18% of the participants revealed that audit risk didn't occurred as result of accidental entry of bad data by employees in dealing with computerized accounting information systems environment. The result point out that, accidental entry of bad data by employees of the client's in IT-based accounting information system is not the major sources of audit risk in Addis Ababa.

4.3.13. IT-Related Fraud in Accounting Information System Environment

The result revealed that about 20 percent of the respondents indicated that audit risk occurred very often due to IT-related fraud, where as half (50%) of the respondents observed that audit risk happened rarely as a results of computer related fraud and only 30% of the respondents disclosed that audit risk didn't occurred at all due to computer related fraud in audit under the IT –based accounting system environment. As indicates by the participants' computer related fraud is not the potential sources of audit risk in IT-based accounting information system environment in Addis Ababa.

Chapter Five

5. Summary of Finding, Conclusion and Recommendation

5.1. Summary of Finding

Several shocks of computerized accounting information system on audit risk was expanded based on previous studies (for instance, Ariwa and Eseimokumoh, 2008; Abdullah Muhammad Al-Fehaid, 2003; Abu-Musa, 2005) and other crucial literatures in this research paper. Furthermore, some of these factors were recommended and included to be explored for the first time in Addis Ababa. The study discovered that, a little bit opposing to the review of related literature that concerning under state problems, which related with performing audit function under CAIS environment in the study area. For instance, security breaches and virus, unauthorized access to data and/ system by outside hackers, natural disasters ,interception of data transmission from remote location(Abu-Musa,2001,Zing ling Fing,2007,Dallas,1999).IT related fraud Al-Fehaid,2003,Abu-Musa,2005,Brendard and Biggs,1991,Senthivelmurugan ,2002).

It is worth mentioning that, this paper is also different in the sense that it indicates the following findings associating to the significant problems/risks related with auditing in IT-based accounting system in Addis Ababa. Posting and coding problem, use of old computer and lack of understanding the relation between in put and out put.

The findings of this study significantly similar with risk indentified in preliminaries study in review of related literature that associating with auditing in computerized accounting information systems environment. Accordingly the major result of this paper depicted as follows. These are; majority of the representatives of all private audit firm selected for the study indicated that, most of their clients were adopted Computerized Accounting Information Systems in their businesses even though the use

of the system in Addis Ababa is in its infancy. So that, this result maintains the researchers' confidence concerning the importance to look into the utilization of computerized accounting information systems by their clients and its impacts on the level of audit risk in Addis Ababa.

Most of the audit firms in Addis Ababa were used audit around the computer during audited under computer –based accounting environment. This approach alter audit risk significantly because the term itself indicate that internal software of the computer is not documented or audited by the auditor, but the input into the computer are agreed to the expected outputs to the computer; the actual computer files and programs are not tested and where errors are found it difficult or even impossible to determine why those errors have occurred.

Most of private audit firm and their client's in Addis Ababa used both computerized and paper based accounting system. Furthermore, majority of the client's were implement stand –alone or simple accounting systems in their business, where as merely few of them adopted integrated (complex) computerized accounting system.

There is shortage of information systems specialists and auditors qualified in accounting and audit software in these audit firms which has potential impacts on level of audit risk because lack of these thing might be alter for example, detection risks, inherent risk and control risk according to previous researches in the review literature.

Audit risks considerably changed due to problem associated with adopting Computerized Accounting Information system in their business .For example, lack of back up data , lack of computer related training for both auditors and client's staffs; 'lack of documentation; management overrides or alteration of data by management, unsuitable audit approaches, lack of knowledge and skill related to audit software, complexity of the systems ;firms and client financial cost concern; lack of segregation of duties; absence of implementing advanced audit software; lack of awareness of the

issue, problems and risk associated with the system; weakness of clients' internal control systems; and disappearance of audit trial are the major problems that result arising of audit risk in such environment.

5.2. Conclusion

Based on the research findings in chapter four, concerning the audit firm profile and the objective as well as the major research question the researcher forwarded the following conclusions.

On Audit firm profile

There is direct relationship between the firm size and grade as indicate in data analysis and presentation .For example, firms that have high (A) grade are also large in size "B" grade are medium size and "C" are small in size. In addition to this, large and medium audit firms are better than small in having qualified and experienced accounting professional and information specialist. In using new accounting as well as audit software and performing audit function in computerized accounting information system environment. On the other hand, it can be explained that, most of the client's in Addis Ababa were adopted computerized accounting information system.

On the problems, risks and factors associated with the audit firm's clients' in computerized accounting systems and its impacts on audit risk in Addis Ababa.

It was stated in Chapter one that, the major question that needs to be answered is, whether the level of audit risk has altered after implementing Computerized accounting information system by clients of audit firms in Addis Ababa. Based on the research findings that have been discussed in chapter four, it can be concluded that the implementation of computer-based accounting systems by clients in Addis Ababa has contributed to raising the audit risk. This can be explained on the one hand, by the existence of a number of risks, problems and issues in the clients' IT-based accounting

environment, such as the unsuitability of clients' accounting software; the lack of competence of clients' staff in dealing with IT-based accounting systems; the weaknesses of clients' internal control systems in such an environment; lack of back up data; wrong entry of data by client staffs'; lack of awareness of problems associated with the system; complexity of the system; lack of segregation of duties in clients' business; lack of understanding the relationship between input and out put in such environment; and reduction of clients' internal control systems in computerized accounting system environment.

On the other hand, there exist certain factors related to audit firms that influenced audit risk in such new environment. For example, unqualified to audit in a computerized accounting environment, particularly, in applying an inappropriate audit approach(audit around the computer) for evaluating the reliability of IT-based accounting systems together with a lack of competence of auditors in auditing such systems; audit firm financial cost concern and lack of IT training for auditor in such environment. Accordingly, this condition indicates that the possibility of audit risk in such an environment is high to certain extent.

5.3. Recommendation

Based on research findings and conclusion, the researcher forwarded the following suggestions:

- It is preferable that parties in IT-based accounting system implement advanced audit and accounting software to such as CAAT and GAS to minimize audit risk that results from applying unsuitable and unreliable audit approach.
- The effective way to invest to the staff who audit under computerized accounting information system in the form of training is better than focusing on financial cost.
- Audit firms and their clients are responsible to allocate activities among their staffs to eradicate or minimize audit risk that is due to lack of segregation of duties.

- It is important for the parties in CAIS to apply new audit style such as audit through and with computer to react to problems associated with auditing around the computer.
- To overcome the drawbacks of each method, it is suitable for those responsible bodies to adopt both integrated and stand alone computerized accounting information system
- The right way for practitioners who audit in IT-based accounting system environment are paying due attention on those factors significantly alters the audit risk. For example, lack of their client staff training; incompetency of client staff; reduction client internal control system; lack of awareness of the problems and risk associated with sing the system.
- The better way for researchers who are willing to conduct research in CAIS is to investigate and evaluate other factor that can alter audit risk associated with adopting computerized accounting information system.
- Finally, parties in IT-based accounting system has to try their best to reduce variables that contributed to audit risk such as lack of segregation of duties, incompetence of client staff, lack of documentation, loss of data due to absence of backup data, complexity of the system, audit around the computer, lack of IT training for auditor, disappearance of audit trails, audit firm financial cost concern, accidental entry of bad data by employee, weakness of client internal control system and unsuitable audit approach.

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Appendix 1

Questionnaires

The study seeks to determine from practicing Auditors how they deal with computerized accounting information system and how the system affects the audit process. Responses have been handled in the strictest confidence and no comments have been attributed to individuals or firms.

Part 1. General information

The main aim of this part is to gather general information about the nature of your IT-based accounting systems.

1. In which category is your firms included?

   A. Small B. Medium C. Large

2. How many accounting professional have taken accounting related computer application, for example, Peachtree.....?

3. How many information system specialists are in your firm?

   A.1-5 B.6-10 C.11-15 D.16-20 E. More

4. How many years of experience do you have at your current position? _____

5. Your firms accounting system is?

   A. Only manual B. computerized C. Both

6. What types of IT-based accounting systems do your clients have?

   A. Stand-alone accounting systems (Simple)

   B. Fully integrated IT-based accounting systems or databases (Complex)

   C. Both of them

7. Is your organization's typical style to audit primarily?

   A. around the computer B. through the computer C. with the computer

8. To what extent do you believe that accounting software is reliable to your firm and client? ----------.

9. What is the proportion of the audit clients that your firm is responsible for?

A. 1-50 B.51-100 C.101-150 D.151-200 E. More

10. In relation to your response to question number 7, please give an estimate percentage of your clients who have computerized accounting information systems--------

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Part 2: Problems related with Clients computerized accounting information system.

1. Has the use of IT-based accounting information system in client that you audit affected the level of audit risk?

A. Yes B. No

If your answer is yes, answer question number 2

2. In your opinion what are the impact of computerized accounting information system on the level of audit risks?

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3. Has audit risk considerably changed after implementing IT-based accounting information system?

A. Yes B. No

4. Has the use of IT-based accounting systems by clients influenced your firm's audit approach?

A. Yes B. No

5. Which control environment was affected due to implementing CAIS?

A. General control B. Application control

6. Could external auditors can rely on the client's staff when they audit computer based accounting systems?

A. Yes B. No

If your answer is yes answer question number 7

7. Do you think this reliance affect or might have the auditor's independence?

A. Yes B. No

Part 3. Assessment of the impact of computerized Accounting Information Systems

The purpose of this part is to investigate the main impact of computerized accounting information system on audit risk in the Addis Ababa, and the relative materiality of each factor. Please, indicate the frequencies of each factor that affect audit risk. Put (V) sign for your choice

Potential problem associated with IT-based accounting system that alter audit risk	Alternatives				
	Very often	often	Rarely	Very rarely	Not at all
Security breaches					
IT Related Fraud					
Lack awareness of the problems and risks associated with the system					
Unsuitable audit approach					
Incompetence of client staffs'					
Accidental entry of bad data by employees					
Lack of client's staff training in IT					
The audit firm's financial cost concern					
The weaknesses the client's internal control systems					
Lack of IT training for auditors					
Disappearance of the audit trail					
Auditor in competence					
Lack of segregations of duties					