

MIDLANDS STATE UNIVERSITY



FACULTY OF COMMERCE
DEPARTMENT OF ACCOUNTING

THE EFFECTS OF COMPUTER ASSISTED AUDITING TECHNIQUES AND
TOOLS (CAATTs) ON PERFORMANCE AND EFFECTIVENESS OF INTERNAL
AUDITS

A CASE STUDY OF
NATIONAL OIL INFRASTRUCTURE COMPANY OF ZIMBABWE PRIVATE LTD
BY

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LIST OF ABBREVIATIONS (ACRONYMS)

CAATs	Computer Assisted Audit Techniques
IAD	Internal Audit Department
CAE	Chief Audit Executive
NOIC	National Oil Infrastructure Company
IAS	International Accounting Standards
ISA	International Standards on Auditing
ITS	Information Technology Systems
IS	Information Systems
GAAS	Generally Accepted Audit Standards
ISQC	International standard on quality control

ABSTRACT

This research report sets out to understand the effects of computer technology on the effectiveness of internal audits using a case study of NOIC Zimbabwe

The main objectives of the study were to establish the relationship the applications of computer technology as well as the relationship between computer technology and the effectiveness of audit internal audits. The researcher used descriptive and analytical research designs and the sample size was 20 respondents and the data was collected by use of questionnaire method. Secondary sources were also used.

The study revealed that the majority of the internal auditors used computer applications (CAATs) in auditing and that if individuals who effectively understand these applications are involved in auditing, effective audit reports would be produced reflecting a true and fair view of the statements.

This implies that more efforts should be attributed to computer technology because it influences the effectiveness of internal audits to a large extent as compared to other factors.

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CHAPTER 1

1.1 BACKGROUND OF THE STUDY

Auditors are now moving to audit the information technology/ information systems (IT/IS) used in business operations therefore, integrating IT in audit, that is Computer-Assisted-Auditing Techniques and Tools (CAATTs) to enhance the auditors' competitiveness and effectiveness of audit services. CAATs allow IT audit work to be performed efficiently, effectively and reduce audit time (IFAC, 2011). Though there is improvement in CAATTs usage over time, where 67% of the internal auditors increase the use of CAATTs (Mahzan&Lymer, 2009), some auditors perceive that advanced technologies are less important in audit work (Ismail &Abidin, 2009). The aforementioned studies, however, focused the effects and adoption of computerized audit from external auditor's perception and it appears that the several issues on IT and internal audit still have to be addressed. National Oil infrastructure Company of Zimbabwe (NOIC) has an internal audit department which performs periodic audits in the organisation and has not been spared from the CAATTs adoption dilemma.

The traditional method of auditing that was used by NOIC allowed auditors to build conclusions based upon a limited sample of a population, rather than an examination of all available or a large sample of data. The use of small samples diminishes the validity of audit conclusions. Management realized that they conducted thousands or perhaps millions of transactions a year and the auditor only sampled a handful. The auditor will then state that they conducted the sample based upon generally accepted audit standards (GAAS) and that their sample was statistically valid. A well designed CAATTs audit will not be a sample, but rather a complete review of all transactions. Using CAATTs the

auditor will extract every transaction the business unit performed during the period reviewed. (NOIC CAATs adoption proposal 2012)

Internal audit inspection work was done subject to quality control procedures which included a peer review process at staff level and a final review of findings by independent non-executives who approved the issue of all reports. NOIC Internal Audit quality report, 2013 revealed that internal auditors resisted the adoption of electronic audit software. The department adopted audit software, which has faced serious resistance from other internal auditors of the company which led to sub-optimal performance in the form of surpassing the cost and time budgets and ultimately the quality of the audit as auditors struggled to meet the time schedules. (NOIC Internal Audit quality report, 2013)

Table 1.1. Analysis of Internal audits time budgets for 2012/13

Internal client	Budgeted hours		Actual hours		Variance in hours		Remarks	Remarks
	2013	2012	2013	2012	2013	2012	2013	2012
HQ HR department	48	48	40	48	8	0	Acceptable	acceptable
Msasa depot	84	84	122	72	(38)	12	Requires significant improvement	acceptable
Feruka depot	72	72	98	72	(26)	0	Requires significant improvement	acceptable
Beitbridge depot	60	60	60	60	0	0	Acceptable	acceptable
HQ finance department	72	72	101	96	(29)	(24)	Requires significant improvement	Requires significant improvement

Source: Internal audit quality report 2012/13

The assessment of audits in 2013 shows 60% of all audits surpassed their time budgets as compared to 20% in 2012. This was particularly influenced by the use CAATs that were adopted by the internal audit department in 2013 in sited in the quality report. Only two

of the five audits were done within their time budgets namely head office HR department and Beitbridge depot audits in 2013, a development which the auditors attributed to the manual systems used in the departments which they said are more understandable and easy to use. Three of the audits in 2013 were assessed as requiring significant improvements which compares with one in year 2012.

In addition there was a series of complains from the client departments , for example Msasa depot had to incur unnecessary overtime worth \$1280 on clerical and IT staff who were always present to assist auditors where ever possible as the auditors lacked knowledge about the new accounting system. (NOIC Internal Audit quality report to the Board and Audit committee, October 31; 2013)

International standard on quality control (ISQC) 16 requires that firms take further action where the results of their internal monitoring processes indicate that an audit opinion may be inappropriate or that procedures were omitted during the performance. In the same way the author proposes to consider further action to be taken on those audits that have been assessed as requiring significant improvements to which some NOIC internal auditors are blaming the CAATTs adoption so as to improve the quality of the internal audits in future.

1.2 STATEMENT OF THE PROBLEM

While some internal auditors recognized the ability of CAATTs to improve audit performance and effectiveness, some believe CAATTs do not bring the full benefits. There is therefore a gap to identify the effects of CAATTs and investigate if they really

affect internal audit performance and effectiveness so as to formulate strategies to minimise negative effects if there are any and maximise the benefits of CAATTs.

1.3 RESEARCH OBJECTIVES

In order to investigate the research topic, the researcher was guided by the following objectives:

- a) To establish the roles of CAATs in auditing.
- b) To investigate the factors that influences the decision to adopt CAATTs?
- c) To identify changes the factors which influence the effectiveness of audits other than technology?
- d) To establish the effectiveness audits before and after adoption of CAATTs.

1.4 RESEARCH QUESTIONS

This study was guided by the following questions:

- a) What are the roles of technology applications used by auditors?
- b) What are the factors that influence the decision to adopt CAATTs?
- c) What are the factors which influence the effectiveness of audits other than technology?
- d) What are the effects of adoption of CAATTs on audit effectiveness?

1.5 DELIMITATION OF THE STUDY

This study is limited to NOIC Zimbabwe Internal audit department in Harare and the clients. It specifically investigates effects of the adoption of CAATS on the performance and quality of internal audits. The study covers the period January 2012 to December 2013.

1.6 LIMITATIONS

1.6.1 Primary Research Limitations

Primary Data is essential Data gathered from direct inquiries, the author's research will make use of questionnaires and interviews to relevant people within the organisation. One of the problems of gathering information from first hand sources is to gain access to people who can help to provide relevant information. The author will take advantage of his good relations with NOIC staff during his internship at the company to be able to access relevant people.

Furthermore, the research will be conducted into the problems exhibited by the organisation, it is most probable that it is against the employees' perceived interest to either admit a problem exists at all, and even if they do, they may be inclined not to admit the severity of the problem as it may jeopardize their employments. But I will persuade and convince them how this study is of importance to them. As many people involved with the organisation that may be able to assist in compiling primary research are suspicious. When being approached for information about options and problems within the organisation, it is not always a successful strategy simply to assure them of complete confidentiality.

The author decided especially in view of his good relations NOIC officials and their personal contacts to focus on primary research as being the most likely avenue to produce valid results.

The author will undertake a wide range of review of other secondary sources that are available that concern issues specified in the research topic. In addition to research from internet sources at NOIC, the author find that more information can be drawn from internet links also so as to produce valid results.

1.6.2 Financial Resources

The author will have to travel to Harare to conduct interviews with NOIC relevant people. The author will try to get as much information as possible during the only visit that he will make to Harare and try to organise the interview by phone before travelling. Buying a personal piece of laptop may also be out of reach for the author. The author will rent one during the research which is charged reasonably less than the original buying price.

1.7 Conclusion

The author is convinced that the results of this research will go a long way to assist the management of NOIC on whether to adopt a new electronic audit system or not after taking into account the pros and cons of CAATs. In order to achieve the intended objectives, the author wishes to work in good cooperation with NOIC staff during the research

1.8 Definition of terms

Information Technology- Information technology refers to the acquisition, processing, storage and dissemination of vocal, pictorial, textural and numeric information.

Information Systems-the technology infrastructure and applications together with the data and information that may be recorded, stored, processed shared, retrieved or transmitted to them.

Information Technology Infrastructure-the hardware and software components and their interconnections required to support the applications.

Accounting Procedure- this relates to the manner I which an organization manages or processes its transactions.

Information Technology based accounting procedures-these are methods of processing transactions that rely on the use of computers and other accounting software. Their functioning is dependent upon information technology.

Computer Aided Techniques (CATS) - these are processes that are used to aid in the accounting or general management of a business organization that cannot operate solely without computers or information systems. For the proper functioning of these they have to be complemented by information technology.

Specific Purpose Accounting Software-this is an accounting software package i.e. designed to deal mainly with a specific organization an example of a specific purpose accounting software is pastel.

Multi-Purpose accounting software- this is an accounting software package that serves more than one accounting purpose e.g. flexi cube software which is used by most banks in Zimbabwe.

Resources-encompass existing information technology and ongoing expenditures on information systems ,related facilities and personnel as well as any additional investments proposed within an IT plan.

System Control Audit Review Function- a type of embedded auditing technique which involves reviewing the system and control functions

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Under this chapter, the researcher was able to analyze and give critical reviews on issues that have been explored and studied both theoretically and empirically on literature that existed on computer audit with much emphasis on Computer Assisted Audit Techniques (CAATs), audit effectiveness, and the relationship between computer technology and audit quality.

2.1 Roles of Computer Assisted Auditing Techniques (CAATs)

Generally, CAATs are defined as techniques utilised in conducting auditing procedures that use of the computer as an audit tool (Debrecey et al., 2009). According to (Lin and Wang; 2011), CAATs refer to “various tools, technologies, and software that help auditors to conduct control and confirmation tests, analysis and verification of financial statement data, and continuous monitoring and auditing”. The main types of CAATs discussed in the literature, in addition to GAS are test data, integrated test facilities, embedded audit modules and parallel simulation. A GAS is the most common software used by auditors and is a set of packaged software that allows auditors to interrogate a variety of databases, software applications and other sources and then to analyse and test the extracted or live data (Debrecey et al., 2005b; Sayana, 2003). GAS provides data extraction routines for many computer environments, and its functionality comprises data investigation, statistical tools and sampling techniques. In addition, GAS can perform tests on missing sequences, statistical analysis and calculations (Debrecey et al., 2005a;

Sayana, 2003). GAS can assist auditors in detecting misstatements in financial statements and achieving the general audit objectives of validity, completeness, ownership, valuation, accuracy, classification and disclosure of the system outputs Ahmi and Kent (2013).

Examples of GAS include Audit Command Language (ACL), Interactive Data Extraction and Analysis (IDEA) (Arens and Loebbecke, 2000; Braun and Davis, 2003; Lin and Wang, 2011; Romney and Steinbart, 2009), Focaudit (Lin and Wang, 2011), Panaudit Plus (Debreceeny et al., 2005b), AutoAudit, and ProAudit Advisor (Lungu and Vatuui, 2007). These packages contain general modules to read existing computer files and to sophisticatedly manipulate data to perform audit tasks. GAS packages have user-friendly interfaces which capture users' audit requirements and transform them into programme code, which is done by interrogating the clients' file systems or databases and carrying out the required programme steps (Debreceeny et al., 2005b; Sayana, 2003).

2.1.1 Sample selection

CAATs programs can select samples of records from a population of transaction files. CAATs are used to enhance both audit effectiveness and efficiency and to help auditors to overcome the challenges of rapid advances in client IT usage (Curtis and Payne, 2009; Janvrin, Bierstaker and Lowe, 2008a). For example, CAATs may automatically execute audit tests which had previously been manual in nature, reducing audit hours for the task, making it possible to test the entire population rather than a sample, and thus greatly increasing the reliability of conclusions based on that test (AICPA, 2006) Some programs can calculate and select a sample that meet desired statistical confidence level, thus

enabling the auditors to select sample that that meet certain criteria and test 100 percent of the population (Braun and Davis; 2009)

However, the studies of use of CAATs by one audit firm revealed that use of 100 percent sample may constitute a number insignificant and immaterial transactions which consume valuable time (T. Tshalibe; 2011). According to (NOIC QMS Audit report; 2011) the use of a 100 percent population was viewed by some internal auditors as time wasting, which was brought about by the adoption CAATs.

2.1.2 Retrieval and analysis of data

More firms use electronic work papers (Winograd et al; 2009) although CAATs can be defined to include any use of technology to assist in completion of an audit, CAATs are employed to audit computer applications and to extract and analyse data (Braun and Davis; 2009). CAATs can assist auditors in conducting control and compliance tests, the analysis and verification of financial statements data, and in CA (Lin and Wang, 2011). Lin and Wang (2011) point out that auditors can become more independent by using CAATs in financial auditing, and less reliant on information and financial personnel. CAATs enable auditors to shorten the auditing hours required, and achieve better cost effectiveness. SAS No.94 states that auditors should use CAATs when testing automated controls in certain types of IT environment (Cerullo and Cerullo, 2003).

Computers therefore provide speedy processing of relevant data in a more advanced manner using arrays that extend over several years and screen displays and specific conditions can be keyed in giving an instant adjustment to the screen thus saving time and facilitate the auditor to compare and reference anticipated results (J.F Rudd; 2010). Audit

standards also suggest that auditors use CAATs to check accuracy of electronic files and perform selected procedures such as the aging accounts receivables (AICPA; 2011)

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CAATs assist internal auditors in their search for irregularities in data files, to help internal accounting departments with more detailed analysis and to support the forensic accountant with extrapolating large amounts of data for further analysis and fraud detection (James Bourke, 2010). CAATs include fraud detection whereby auditors can identify unexpected patterns in data that may indicate fraud (Strand et al 2005); CAATs also enable auditors to carry out analytical tests by evaluating the plausible relationships among both financial and non-financial data to assess whether account balances appear reasonable (Vuchnich, 2008), examples include ratio and trend; and CAATs allow for continuous monitoring, which is an ongoing process for acquiring, analyzing, and reporting on business data to identify and respond to operational business risks (Bierstaker, Burnaby and Thibodeau, 2011). However, as point out by Vendrzyk and Bagranoff, (2009), “the culture of public accounting may create impediments to the adoption of new technologies by audit teams”.

However another author argued that it is the audit skill of determining what to be analysed and tested compelled with the knowledge of business and the implications, which makes the software do the audit work (Debrucency et al; 2009). It was noted in his study that CAATs were not used regularly in audit work but rather auditors tend to use them for special audit investigation only. The role of CAATs in analytical reviews has not yet been explored in the internal audit function of NOIC Zimbabwe, which provides the researcher an opportunity to explore the gap.

2.1.3 Data matching and Job satisfaction

The auditor can use CAATs to perform test packs and similar test runs on client's system using the client's software and files. The client's system is susceptible to investigations by interrogating software such that client's files (depreciated assets, overdue debts, unmatched supplier invoices) can be extracted for audit purposes by means of specific questions put to the computer when loaded with relevant data files (B.Jenkins; 2012)

Interrogations were found to be used to compare data on two or more files. This function provides an efficient way to relate information used by several systems and useful in complex accounting systems. The comparison of two master files from the same system at different dates provide good evidence for testing of transactions or system updates (Braun and Davis; 2009). Users of CAATs find happiness work while they use CAATs and thus enjoy what they are doing. Clients appreciate the use of CAATs too and are most likely to accept the results of the audits (J.M Court; 2009). Available literature about NOIC Zimbabwe has not explored the use of CAATs for interrogation purposes, which the author seeks to establish.

2.2 Factors which influence the adoption of CAATs

Previously, accounting researches have used information frameworks to predict adoption of CAATs (i.e Walsh and White; 2009, Benard et al; 2008). This research uses the Unified theory of Acceptance and Use of Technology (UTAUT) by (Venkatesh et al; 2009), which incorporates elements of several information theories that predict usage including the Technology Acceptance model (Davis; 2005) and the social cognitive theory (Compaecu and Huggins; 2008). Furthermore the UTAUT has been shown to

explain 70 per cent of variance in the intention to use technology outperforming each of the previous studies mentioned before (Venkateshet at; 2009)

2.2.1 Performance expectancy

Performance expectancy can be defined as the extent to which an individual believes that using the system will aid in achieving gains in job performance (Venkatesh; 2009) auditors may believe that using CAATs will assist them in meeting their audit time budget since CAATs reduce the number of hours spent conducting test of controls and substantive testing thereby improving efficiency. CAATs might enhance their audit productivity, the quality of work, if they believe that the audit technique fits well within their audit engagement (Saygili; 2010). There are other aspects that firms need to consider besides looking at individual employee factor. Technological, organizational and external environment of firms are important factors which may influence CAATTs investment decision. TOE framework (Tornatzky& Fleischer, 2010) addresses these fundamental aspects. Technological context refers to technology characteristics and availability for firm. In the case of CAATTs adoption, audit firm has to really know the characteristics of CAATTs such as technology cost-benefit and risk before it is going to be adopted. Nevertheless, the decision whether or not to use CAATTs is determined not merely by firm perception of the technology characteristic, but also whether the technology fits with the audit task that needs to be performed. As suggested by Delone and McLean (2009), “Researchers must also consider the nature, extent, quality and appropriateness of the system use”. Although a technology may be perceived as being useful and advanced, if it does not fit with audit task requirements, organization may not

adopt the technology. As for CAATTs adoption, the CAATTs must fit with the audit firm's tasks in performing audit. The public auditing environment is seen as a unique setting of IT/IS acceptance decision because the decision is done on each of audit work (Curtis & Payne, 2009).

Furthermore, intention to use a system would explain user's actual system usage. This intention has been found to be a driving factor toward individual's actual behaviour as deliberated in the Theory of Reasoned Action (Taylor & Todd, 210). The effects of gender, age, experience and voluntariness of use have also been found significantly associated with the eight previous models and have been validated as the moderating factors affecting the adoption factors in UTAUT. Venkatesh, Thong and Xu (2012) developed a new UTAUT2, extending UTAUT with the inclusion of hedonic motivation, price value and habit as the predictors of behaviour intention to use a technology

The researcher seeks to establish whether the performance expectancy theory can explain non adoption of CAATs by some NOIC internal auditors.

2.2.2 Effort expectancy

Effort expectancy can be defined as the extent of ease associated with the use of the system (Venkatesh et al; 2009).The complexity and ease of new technological system usage might have negative influence to the adoption of new audit technology by auditors. As a result, information systems auditor must be equipped with relevant training to ensure that they don't experience any difficulties regarding the use and adoption of Computer Aided Audit Techniques within their audit engagements (Aguolu, 2009).

Auditsoftware.net (2011) also highlighted that other than the actual features available

within Computer Aided Audit Techniques, the most important factor to the adoption of this audit technique is the ease of use. Another author revealed that organisational line managers respond more positively to problems and opportunities that are quantified (Nielsen, 2010).

2.2.3 Social influence

These constructs contains the explicit and implicity notion that the individuals' behaviour is influenced by the way in which they believe others will view them as a result of having used the technology (Venkatesh et al; 2009). Curtis and Payne (2009) case study of Big four audit firms revealed that communications of software usage by firm's partners have the ability to influence individual employee on new audit technology implementation. The auditors have a tendency to use new audit technology when they know that the firm's managing partner is supporting the technology usage in the firm. Besides, firm's longer-term financial plan and longer evaluation periods of audit technology also affects auditors' decision whether or not to use an audit technology. Interestingly, the study found that individual characteristic such as risk-seeking auditors are more likely to implement new technology irrespective of firm budget pressure. On the other hand, low risk preference auditor would decide to use audit technology when there are high budget pressures (Curtis and Payne; 2009). Social influence factor, however, was not included as the affecting reason because the studied CAATTs adoption was voluntary in practice. It is argued that if CAATTs are mandatory in organization, then social influence would impact on CAATTs adoption. Yet, the study has to be validated with more comprehensive empirical quantitative analysis due to its low data response and small

number of internal auditor population covered (Curtis and Payne; 2009)The researcher seeks to establish if social factor played a role in the decision to adopt CAATs by NOIC internal auditors.

2.2.4 Facilitating factors

These refer to the degree to which an individual believes that an organised technical infrastructure exist to support use of the CAATs (Venkatesh et al; 2009). Organizational context describes the organization measures such as decision making structure and communication process by top management and organization size. It could also reflect the organization's human resource and IS capabilities, organizational IT infrastructure, organization working culture and readiness towards adopting new IT innovation. Lastly, in environmental context, TOE holds that organization has to deal with its surrounding environment, such as client, competitors in industry, regulatory bodies' obligations and external pressure. As audit firms provide assurance services to its client, they are tied to audit engagement and the pressure of budgeted working hours after the client engagement is signed (Curtis & Payne, 2008).

There are other aspects that firms need to consider besides looking at individual employee factor. Technological, organizational and external environment of firms are important factors which may influence CAATTs investment decision. TOE framework (Tornatzky& Fleischer, 2010) addresses these fundamental aspects. Technological context refers to technology characteristics and availability for firm. In the case of CAATTs adoption, audit firm has to really know the characteristics of CAATTs such as technology cost-benefit and risk before it is going to be adopted. Nevertheless, the

decision whether or not to use CAATTs is determined not merely by firm perception of the technology characteristic, but also whether the technology fits with the audit task that needs to be performed. As suggested by Delone and McLean (2003), “Researchers must also consider the nature, extent, quality and appropriateness of the system use”. Although a technology may be perceived as being useful and advanced, if it does not fit with audit task requirements, organization may not adopt the technology. As for CAATTs adoption, the CAATTs must fit with the audit firm’s tasks in performing audit. The public auditing environment is seen as a unique setting of IT/IS acceptance decision because the decision is done on each of audit work (Curtis & Payne, 2009).

UTAUT and TOE frameworks would best reflect audit firms’ decision makers (owner/manager and/or supervisor) in deciding on CAATTs adoption and usage. With the integration of technology, organization and environment constructs in TOE, and UTAUT’s constructs of performance expectancy, effort expectancy, social influence and facilitating conditions, it is believed that the factors influencing audit firm decision to invest in CAATTs is much more clear-cut.

2.3 Auditing Effectiveness

Auditing effectiveness is defined as the number and scope of deficiencies corrected following the auditing process. Auditing is effective if it meets the intended outcome it is supposed to bring about (Sawyer; 2009) states that the auditors’ job is not done until defects are corrected and remain corrected (Sawyer; 2009)

Perhaps a key to being able to meet the requirements of improved efficiency and increased effectiveness lies with the promise of continuous auditing. Continuous auditing

can be described as “a comprehensive electronic audit process that enables auditors to provide some degree of assurance on continuous information simultaneously with, or shortly after, the disclosure of the information” (Rezaee et al., 2009). Given the constant desire for timely and reliable information, implementation of continuous auditing techniques combined with more frequent reporting can reap benefits to the financial markets which rely on this information. Furthermore, given the markets’ tendencies to react to strategically released earnings announcements in advance of audited financial results, continuous auditing may help to curb reported abuses by enabling detection of problems as they occur rather than at the end of a reporting period.

However, in order to be able to execute continuous auditing, it seems clear that auditors will not only have to increase their conceptual abilities in defining the techniques that are the foundation of the continuous auditing process but also their technical skills in implementing these techniques. A likely path that audit managers could use to bridge the gap between the current technological skills of an auditor and the skills that would be needed in a continuous audit is to increase the usage and understanding of computer assisted audit tools and techniques especially generalized audit software.

For the audit firms to be effective, they have to follow International Standards on Auditing (ISA) which are administered and regulated through an independent body, the Institute of Certified Public Accountants since it’s the one which ensures that all auditors are effective in their operations.

2.3 Factors which influence Audit effectiveness other than Technology

Audit effectiveness is subject to many direct and indirect influences. While some may place more emphasis on the direct influences of audit effectiveness, perspective alone is not sufficient to address the question of whether audit quality has been achieved in the broader context (Van Gansberghe: 2009). The author seeks to establish the direct and indirect influences on audit effectiveness of NOIC internal audits.

2.3.1. Competence of Internal Audit Department (IAD)

Staff competence is a key element in effective internal audit activity (IIA, 2006). Standard-setters consistently highlight the importance of internal auditors who possess the knowledge, skills, and other competencies necessary to undertake internal audit duties and responsibilities (ISPPIA). Furthermore, competencies have been identified as an indicator of reliance on internal audit work by external auditors (Al-Twaijry et al., 2004).

Prior studies focused on the need for personnel to be appropriately qualified to achieve a high level of IAE. Ali et al. (2007) and Ahmad et al. (2009) examined the significance of internal auditing in the Malaysian public sector and found that a lack of qualified staff in terms of training, experience, and knowledge about internal auditing negatively affected the role of the internal audit and suggested training as an important requirement for improving internal audit work.

In the South African public sector, Schyf (2009) identified a number of obstacles affecting internal audit performance, including a lack of internal audit competencies. Similar results were obtained in other studies in developing countries. For example, studies of internal audit quality in the Sudanese public sector (Brierley et al., 2009,

Brierley et al., 2003 and Gwilliam and El-Nafabi, 2008) identified a lack of qualified staff as one of the factors limiting internal audit function. Other studies have noted that a lack of qualified staff weakened internal audits in the Ethiopian public sector (e.g., Mihret and Yismaw, 2009, Mulugeta, 2008 and Wolderupheal, 2008). These studies suggested that the internal audit staff lacked adequate educational qualifications and that insufficient continuous professional training was available to enable them to upgrade their skills.

In the Saudi environment, Al-Twajjry et al. (2009) argued that staff should have the required education to conduct the full range of audits. Referring to external audits, the GAB, 2008 and GAB, 2010 identified a lack of qualified staff as one of the main problems underlying the significant number of errors and irregularities that occur within audited organizations.

2.3.2. Size of Internal Audit Department (IAD)

The internal audit function needs to be equipped with sufficient resources to carry out its responsibilities appropriately. ISPPIA, in the Resource Management Standard, requires the Chief Audit Executive (CAE) to ensure that internal audit resources are appropriate and sufficient and that they are used effectively. It is the responsibility of the audit staff to bring any lack of resources to the attention of senior management (ISPPIA, Standards 2030 and 2230). Appropriate numbers of internal auditors should be employed (Practice Advisory 2030-1: Resource Management), and training should be on-going to assure continued professional competence.

Previous studies suggest that the quality of internal audit work is likely higher when there is a sufficient number of staff. For example, in Malaysian state and local government

bodies, Ali et al. (2009) noted that the ‘severest problem’ facing internal auditing was a shortage of qualified staff. Another study conducted by Ahmad et al. (2009) reported that ‘the small number of internal auditors’ was ranked by questionnaire respondents as the chief issue hindering the success of the internal audit function in Malaysian public sector organizations. They suggested that with strong support from management, IADs would have adequate staffing and sufficient resources, enabling the staff to carry out their responsibilities successfully.

Other studies suggest a link between a sufficient number of staff and the ability of an IAD to perform its duties (Mihret and Woldeyohannis, 2008 and Mulugeta, 2008 (Ethiopia); Brierley et al., 2001, Brierley et al., 2003, Gwilliam and El-Nafabi, 2002 and Obeid, 2010 (Sudan)). For instance, Brierley et al. (2003) found that IADs were significantly understaffed in the Sudanese public sector, limiting the staff's ability to execute their duties.

2.3.4. Management support for internal audit

The IIA definition of internal auditing embodies issues such as good governance, which partly relies on the professionalism of management to ensure a rigorous internal audit function. In recognition of this issue, senior management have accorded increased importance to the audit function and changed their expectations of internal auditing (Carcello et al., 2005). With the support of top management, internal auditors can obtain sufficient resources to execute their duties and responsibilities, and the IAD can hire qualified staff and provide continuous training and development (Alzeban and Sawan, 2013 and Cohen and Sayag, 2010). Furthermore, ISPPA highlights the importance of

CAE reporting to senior management any scope or budgetary limitation that impedes its performance.

The manner in which senior management demonstrate their support likely provides an important signal of the role and value of internal auditing throughout the organization. This support in turn empowers the IAD to execute its duties and fulfill its responsibilities. ISPPIA highlights the importance of the relationship between internal auditing and senior management and how management can support internal auditing. Senior management should be involved in the internal audit plan, and its input should be considered by the CAE (ISPPIA, Standard 2010.A1). The IAD is required to provide senior management with sufficient, reliable, and relevant reports about the work performed, conclusions reached, and recommendations made. The standard states that “[t]he Chief Audit Executive must report periodically to senior management and the board on the internal audit activity's purpose, authority, responsibility, and performance relative to its plan” (ISPPIA, Standard 2060).

Previous studies cite support from top management as critical to the success of internal audit function. Ahmad et al. (2009) found that management support was the second most important determinant of IAE within the Malaysian public sector, after sufficiency of the auditing staff. They indicated that with support from management, internal audit recommendations would likely be implemented and the internal audit would be well-resourced in terms of number of staff and budget. Reporting on the Ethiopian public sector, Mihret and Yismaw (2009) found the absence of management support negatively affected the internal audit function by creating a poor attitude towards that function by

auditees, who perceived it as unimportant because it appeared not to be high on the agenda of senior management. Van Gansberghe (2010) focused on internal auditing in the public sector in four countries: Kenya, Uganda, Malawi, and Ethiopia. Their results indicated that to be effective, internal audits need management's acceptance and appreciation of the contribution and value that internal auditing can add to organizations.

Baltci and Yilmaz (2009) note that Internal audit efficiency would be enhanced by giving the department the right to allocate its overall budget. Without such empowerment, senior management might reduce resourcing when it feels threatened. Management support might also be lacking if management fails to implement the recommendations of the internal audit; such indifference could greatly reduce the effectiveness of the function (Van Gansberghe, 2009). Implementation of internal audit recommendations is considered a strong indicator of effectiveness (Van Gansberghe, 2009).

2.3.5. Independence of internal audit

Auditor independence has long been seen as a key driver of the auditor role. Although emphasis has historically been on external audit independence, professional bodies and standard-setters have placed increasing weight on the need for independence and objectivity despite the fact that internal auditors are normally employees of the organization. The independence and objectivity of the IAD has been identified as a key element of its effectiveness (CIPFA, 2003). Worldwide professional standards and guidance of ISPPA and the IIA Practice Advisory suggest that appropriate independence and objectivity can be gained by reporting to levels within the organization that allow the IAD to perform its responsibilities free from interference; avoiding conflict of interests;

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

Previous research suggests that lack of independence is an obstacle to satisfactory internal audit performance in a number of developing countries. In Sudan, Brierley et al. (2009) suggest that internal audit should report to the highest level within the organization to ensure that corrective action is taken to implement internal audit recommendations. In the South African public sector, Schyf (2010) noted lack of independence of internal audit as an issue facing the internal audit function in that country. In particular, he identified concerns regarding lines of communication and levels of reporting and their implications for independence. Other studies in developing countries highlighting lack of independence of the internal audit function and raising concerns as to how this lack of independence has affected IAD strength include those of Brierley et al. (2003) (Sudan), Mulugeta (2009) and Ahmad et al. (2009).

2.4 The effects of CAATTS on audits effectiveness

2.4.1 Improves efficiency and decreases the audit risk

If individuals who understand the nature of transactions are involved in performing data entry online, the data entry process is less prone to errors than when it is performed by individuals who are not familiar with the nature of the transactions. According to Lucy (2009), it is clear that organizations that have adopted the application of computer

technology have improved performance by the auditing department. Systems and Process Assurance (SPA) makes use of Computer-Assisted Audit Techniques (CAATs) which provide a means of accessing large amounts of data in a format that can provide transparency not attainable through other auditing procedures. The use of CAATs increases audit effectiveness improves efficiency and decreases the audit risk (Lucy; 2009)

With the use of a specialized software tool, can provide organizations with a unique and powerful combination of data access, analysis and integrated reporting. Using the specialized software tool our experts can access and compare enterprise data, flat files or relational databases, spreadsheets, report files, on PCs or servers, allowing the source data to remain intact for complete data quality and integrity. In light of the increasing demand on auditors to make the audit more effective and efficient, the use of most prominent computer assisted audit tools and techniques (CAATTs) by auditors can increase audit efficiency and effectiveness (Braun et al.,2010)

Requests for special printouts for audit purposes, these indicate reliability only in relation to the specific tests conducted and it would be dangerous to rely upon them as valid for processing which take place at any other time hence the need for periodic visits often on an ad –hoc basis for purposes of making tests. Test packs which are somewhat similar to tests on printouts should be conducted intermittently throughout the period under audit, otherwise it will be impossible for the auditor to draw valid conclusions concerning the functioning of programs and programmed controls during the period as a whole. (Pany K. Whittington O.R; 2009)

However there is risk of loss of audit trail due to creation of say batch totals which give no breakdowns for checking purposes or for cross referencing to original documentation .The original documentation may have been re-sorted for another purpose as a result of which the locating of specific items is rendered impracticable, it is therefore essential for the auditor to be present while processing is taking place if he wishes to effectively audit the procedures in question.(Pany K. Whittington O.R; 2009)

2.4.2 Relate to the client more efficiently

As the use of Computers spreads throughout the business community they should also become instrumental in the performance of audit work on the records and accounts which arise as a product on those machines. Auditors who thus have access to PCs can relate to the client more efficiently as they will be able to meet the needs of specific client circumstances resulting in immediate benefits of cost minimization. (J.M Court 2009)

However, In a non-computerized environment the records may be audited by vouching and checking the visible entries made at the very interface between the authorized and valid originating documents on the one hand and the books of account on the other .In computerized environments the recording counterpart takes place within the machine and no equivalent record is left for subsequent individual verification .For this reason the auditor is forced to shift the target of his tests and to concentrate his efforts on Quality control over every stage in the creation of the input, The systems development controls responsible for ensuring that the programs function correctly , The administrative controls which are designed to ensure that the correct programs are always used that staff observe designated job divisions that hardware and files are physically secure and

adequately supported by reconstruction and standby facilities. The auditing profession came to the realization that all audit tests that are done through the machine can at best provide indirect affirmation on program functioning though auditors view them as inferior to tests in which the accounting entries may be scrutinized in their totality. (Pany K. Whittington O.R; 2009)

2.4.3 Client files can be extracted for audit purposes easily

When auditors are auditing in computer environments they can either use the client's machines or where the auditor uses their own machines to aid in the performance of the audit. When the auditor is using the client's machine he can perform test packs and similar test runs on the clients system using the client's software and files. When auditing using test runs on the clients system the auditor benefits in that the clients system will be susceptible to investigation by interrogation software, the benefit resultant from this is that the features of the client files i.e. depreciated assets, overdue debtors, obsolete stock, unmatched suppliers invoices can be extracted for audit purposes by means of specific questions put to the computer when loaded with the relevant data files. (B. Jenkins; 2012)

However Marx et al1 ;2009 illustrated that the changes in Information Technology have impacted on the manner of auditing (process) and not on the objectives of performing audit. (PanyK ., Whittington O.R3 ;2009) highlight that the auditor will face three major problems when auditing in computer environments. The first being that the various user departments lose their recording autonomy under conventional systems production records are in the production department, sales records are in the sales departments, accounting records are in the accounting department, stock records are in the Stores

department etc. while under computerized departments all these records are stored in the Data processing departments and the staff in the Data Processing department or Information Technology department tend to be well versed with the computers than with the company.

Another problem resulting from the computerization of systems is that computer hardware and records are vulnerable to atmospheric /environmental conditions, electrical and magnetic interference, accidental damage or destruction and human manipulation (PanyK and Whittington O.R3 ;2009)The files that store all the information i.e. the accounting records are in the form of densely packed magnetic media and so their contents cannot be identified visually.

Auditors also face the problem of the lack of visible processing trail which is lost during the process of computer processing which is itself governed by programs whose reliability can be inferred only indirectly as opposed to being capable of direct observation while functioning. As a result of the problems highlighted above which relate mainly to control activities the implications to the auditor of the client using a computerized system can be summarized below

In order to execute the audit appropriately technical knowledge and practical experience on the part of audit staff are an essential accompaniment to the planning and execution of all audit procedures, computer knowledge can be imparted to staff on the audit team through various ways from books, courses, on the job training and by appointing specialist computer technicians on the audit team to assist in the audit.

(Williams, B.C .Spaul, BJ;2009)The documentation on the audit files must reflect the nature of the audit .Standard Questionnaires and checklists must be accordingly redrafted and the current files redrafted and the current files contain a record of all the clients Data processing documentation , details of major controls included in the programs ,flow diagrams of systems, the auditor should therefore ensure that all the necessary data and evidence that has been gathered from the audit process is properly documented in a manner that will allow future auditors or external parties i.e. those who are not part of the audit team to understand the documented information.

In order to minimize the threats involved, the timing of audit tests in a computer environment should be different. (Pany K. Whittington O.R; 2009) suggests that the auditor requires a totally revised approach to the timing of audit tests .Under circumstances where a complete and permanent record of all transactions, assets and liabilities is available at all times, audit tests on the records can therefore be carried out at any convenient stage though there has to be a mutual agreement between the auditors and the client. When auditing in computer environments contemporary testing is appropriate rather than historical as contemporary is up to date with any changes occurring to the system at any point in time .Contemporary testing in computerized environments by auditors can be done through the following ways;

2.6 Conclusion.

It is clear from the literature that in organizations, computer technology is related to audit effectiveness. Many authors have argued that using computer assisted audit tools and

techniques is likely to improve audit effectiveness if the personnel involved in auditing are equipped with the necessary skills.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This section centers on the methodology of the study, that is, research design to be used on the study, population under study, research instruments, data collection procedures, analysis, interpretation and presentation of the data. Nachmias, (2011), defines methodology as a theory and exploration of how research should continue.

3.1 Research method

Qualitative and quantitative methods have been employed in the collection of data for the purpose of the research. Qualitative methods used involve the use of a questionnaire which encompasses a Likkert scale to obtain information on how regular the investment policy is reviewed at NSSA. Qualitative methods were favoured because they gave precise solutions which are relevant to the study. The quantitative were also employed to give interviewees the capability to express their views freely and this was facilitated by use of an interview.

3.1.1 Descriptive Research

Bouma and Ling, (2009), state that descriptive research as statistical research describing data and characteristics of a population or phenomenon being studied. It provide responses to questions such as who, what, where, when and how as they are related to the study. Data collected is often quantitative. To collect data the researcher used questionnaires and interview. This is because questionnaires provide exact answers

showing the opinion of a person. An interview was also favored because author could also draw some conclusion from the way a person was talking thus it is more effective.

Population

According to Zikmund (2013) a population is the set of people from which a target population can then be drawn.

3.2 Target Population

According to Zikmund, (2011), a target population is the population of interest in a particular research study; the population from which samples are to be drawn. In this case, the population under study is NOIC Zimbabwe Audit department and finance department. Out of a total population of 10 managers in the company, the author targeted 4, in the finance department there are 15 accountants and the author chose 5, and 4 were chosen from 10 audit clerks and 7 from 10 auditors making a sample size of 20 from a population of 45 employees. These chosen respondents have knowledge about the CAATs being use in internal audit work of NOIC Zimbabwe.

3.3 Sampling Methods

Chambers and Skinner, (2003), define sampling as the processes of selecting units from a population of interest so that by studying the sample the researcher may fairly generalise the results back to the population from which they were chosen. Author used stratified sampling to group the sample into 4 strata namely audit clerks, accountants and internal auditors which were of interest to the researcher. Information obtained from each stratum contained minimal variation because of homogeneity in the stratum.

Stratified sampling was used in this research because it ensures an equal representation of each of the identified segments or strata. Each stratum was studied separately. Stratified sampling is more efficient because for the same sample size each important segment of the population was better represented and more valuable differentiated information.

Author also used judgemental sampling in asking interview questions. The motive behind judgemental sampling was to get the best information from employees with experience in the field of investment and strategic management. The merit of judgemental sampling is that it ensures optimization of time and resources since information sought from such respondents was more relevant to the subject under study.

3.3.3 Sampling Frame

Wagenheim (2010) defines a sample frame as a wide-ranging list of the entire members or units of the population from which each unit is selected and it should be free from error. A perfect sampling frame contains each unit only once. The sampling frame for this study consisted of NOIC managers, accountants and internal audit staff.

3.3.5 Sample Size

According to Crouch (2010), a sample is a controlled number taken from a large set in order to test and analyse on the assumption that the sample taken can act as a descriptive of the entire population. Therefore, in the research study, a sample size is the actual number of respondents who took part in the contribution of required information such as the interviewees or those who took part in the completion of questionnaires as designed by the researcher. Luck and Rubin (2011), states that a proper sample scope should be at

least 5% of the overall population. Hair et al (2002), also agree to the contention stipulating that in the research field a sample size is measured as large if and only if it is more than 5% of the population under study.

Table 3.1 sample selection

Respondents	Population	Sample size selected	Sample size %
Managers	10	4	20
Audit clerks	10	4	20
Accountants	15	5	25
Internal auditors	10	7	35

3.4 Data Sources

The researcher gathered data from both primary and secondary sources.

3.4.1 Primary Data

Author used primary data because it provides first-hand information through the use of questionnaires and interviews from respondents. Likkert scale questionnaire was used to collect the required data because it provides the extent to which a fact is true thus gives a direct answer required for the purpose of study. It has a high chance of getting a correct answer from an employee because where he does not know he can always indicate. In addition, an interview was also conducted to source the data, this is also important because from body language author drew views of the respondent easily.

3.4.2 Secondary Data

Secondary data which is sometimes referred to as desk research; data is also used to get the facts or data about the problem from previous research. For the purpose of this research, secondary data was collected from Finance and Accounting journals, research papers, newsletters of the company, Annual financial statements, internal audit reports and the internet. Desk research also helped the researcher to gather information on the company's historical records in as far as CAATs adoption and use is concerned.

3.5 Research Instruments

3.5.1 Interview

Kumar, Aaker and Day (2012), state that during personal interviews, the interviewer interviews the respondent in person and there was direct conduct between the two. Nine respondents were interviewed, and unstructured questions were asked by the interviewer. Unstructured questions are open-ended questions which respondents have a flexibility to answer them in their own words. The interview took 10 to 15 minutes per respondent. Interviews were conducted NOIC head office on the 16th of September, 2014. This process took a day. An interview allowed the researcher to collect more relevant data through listening and observing therefore, permits more complex questions to be asked.

3.5.2 Questionnaire

Since the research is also descriptive in nature, Likkert scale questionnaire was used to collect the required data because it provides the extent to which a fact is true thus gives a direct answer required for the purpose of study providing closed ended questions was most applicable. Collis and Hussey (1997) defined a questionnaire as a formal list of questions used to petition information from respondents. For this research, the researcher

used structured and unstructured questions to gather data. Structured or closed questions were meant to save the respondents' time and get definite and precise answers. In this case, questionnaires issued to respondents which they were asked to complete in the absence of the researcher. The completed questionnaires were collected after a week to allow ample time for respondents to complete the questions.

3.6 Validity and Reliability of Findings

To ensure validity of data to be collected, the researcher relies with academic supervisor's revision of the instrument before it is distributed to the targeted population. As such, questions to be included in the research instruments were analysed to ensure relevant data was collected with respect to the objectives of the study and the topic.

3.7 Data Analysis and Presentation Tools

Collected data from questionnaires and interviews was sorted or grouped according to the samples. The researcher undertook a process of data preparation which is the conversion of gathered data into usable information. The research findings (raw data) were first edited for errors. After the completion of editing and coding, data was then entered into the computer for subsequent analysis. Collected data was analyzed using Microsoft Excel and frequency tables were also used to comprehend the data.

3.8 Summary

This section focuses on the description of how the research was conducted. It covers the methods, tool and strategies used to gather the relevant data. Thus, it shows the research design, population and sampling procedures, data collection instruments and procedures used in conducting the research, as well as data presentation and analysis.

CHAPTER FOUR

PRESENTATION AND DISCUSSION OF FINDINGS

4.0 Introduction

This chapter presents the findings of the study and their presentation. The interpretations and deductions were made on the basis of tabular and diagrammatic representations presented.

4.1 Response and success rates

Table 4.1 Questionnaire and interview success rate

	Target respondents	Successful	Success rate
Questionnaires	20	20	100%
Interviews	5	5	100 %
Non-return	nil	nil	0%

All the questionnaires that were dispatched (20) were responded to, representing a success rate of 100 percent as depicted by Table 4.1 above which is valid and reliable as supported by Dalene, (2009) who argues that response rate should be more than fifty percent.

4.2 Characteristics of the respondents

The respondents were classified under five different categories to establish whether there was fair representation of the sample and to judge whether the respondents provided reliable data.

4.2.1 Characteristics according to positions of respondents

The data from respondents of the audit firms were collected, analyzed and presented to the following positions of the respondents as shown in the table 4.2below;

Table 4.2 Positions of respondents

Position	Frequency	Percentage (%)
Managers	4	20
Audit clerks	4	20
Accountants	5	25
Auditors	7	35
TOTAL	20	100

Source: Primary Data

The results in the table indicate that the highest proportion of respondents were Auditors 35% followed by Accountants with 25% and the least were audit clerks and Managers with each having 20%.

4.2.3 Characteristics According to Age

The study sought to establish the age composition of respondents employed in the audit firms and the findings are presented in the table 4.4 below;

Table 4.4 Age Composition of Respondents

Categories(Age)	Frequency	Percentage (%)
20 – 30	5	25
31 – 40	11	55
41 – 50	2	10
Above 50	2	10
TOTAL	20	100

Source: Primary Data

The most dominant age group in the table above was in the age bracket of 31 – 40 years of age constituting 55%, followed by age bracket of 20 – 30, with 25% and the age brackets of

41 – 50 and those above 50 years have the least respondents each consisting of 10%. This implies that most of the respondents were in the age bracket of 31 – 40, at such age, one is already a graduate and knowledgeable about the topic under study.

4.2.4 Characteristics According to Education Background

The respondents were asked to show their highest level of education attained and the findings revealed are shown in the table 4.5 below;

Table 1.5 Education Background of Respondents

Education Level	Frequency	Percentage (%)
Tertiary	1	5
University	12	60
Post Graduate	2	10
Professional	5	25
TOTAL	20	100

Source: Primary Data

From the above table, most respondents were Degree holders who represented 60% of the total respondents. This was followed by Professional qualification with 25%, Post Graduate with 10% and the least are tertiary institutions with 5% of the total respondents. So majority of the respondents in the sample were university graduates followed by professionals. It therefore implies that most of the respondents had knowledge in the research and were able to understand the instruments used and therefore, were able to give their perception on the study variables. It also further, implied that the data collected could be relied upon as it was from highly educated respondents.

4.2.5 Characteristics According to Time Respondents had worked the internal audit department

The respondents were asked how long they have worked with the internal audit department and the table below shows the summary of the responses.

Table 4.6 Period of employment with the audit firms

Period	Frequency	Percentage (%)
Less than 1 year	2	10
1 – 2 years	5	25
3 – 5 years	9	45
Above 5 years	4	20
TOTAL	20	100

Source: Primary Data

From the table 4.6 above, table out of 20 respondents, 45% have worked with the audit department for a period of 3-5 years, 25% have worked for a period of 1-2 years, 20% have worked for a period above 5 years and 10% for a period less than 1 year. This therefore implies that the audit department has a steady and fairly labor turnover.

4.2.6 Characteristics according to marital status of the respondents

The respondents were asked to state their nature of marital status and the table below reveals the findings from the study.

Table 4.7 Marital Status of the Respondents

Response	Frequency	Percentage (%)
Married	14	70
Single	6	30
TOTAL	20	100

Source: Primary data

The table 4.7 shows that the majority of the respondents were married forming 70% and minority 30% is still single. The implication is that most of the respondents are married and are good at taking responsibly. The job entails making decisions and therefore the married are best suited than single people.

4.3 Responds to Adoption of Computer technology by NOIC

	Agree	Strongly Agree	Disagree	Strongly Disagree	Not sure
The internal audit department uses CAATs in completion of its audit work	15	0	5	0	0

The information gathered revealed that 75% of the respondents agree that they use CAATs in the computation of audit work in an effort to improve the quality of their audit work and 25% of the respondents have not used CAATs before. Those who use CAATs identified the following applications used in the computation of audit work:

4.3.1 Package programs

These programs were found to be designed to perform data processing functions that is reading computer files, selecting information, performing calculations, creating data files and printing reports in a pre-specified format.

4.3.2 Pastel Accounting software package

This accounting package was found to perform quick audit of accounts, and quick link of customers, suppliers, items sold through a zoom screen and an on line help to ease break down in case of a systems failure.

4.3.3 Test data

Test data techniques were found used in conducting audit procedure by entering data for example a sample of transactions are put into a client's computer system and comparing the results obtained with predetermined results. Test data were used to test specific control in computer programs such as on line password and data access controls.

The test controls were used in the computerized systems of clients and it also helped to check the accuracy of input processing and output of data for computerized systems of clients.

4.3.4 Team asset software program

This software program was found to use the lotus program which is used to copy information into the file. The software methodology is used with the aid of Microsoft word and excel. The software program is quick and saves time although it was found to be expensive as regards training, purchasing of other related equipment and high maintenance costs.

4.3.5 Audit system

This was a new system to the researcher and was found to produce more effective and efficient audits, user friendly and impressive to big audit elements and potential clients as it was in line with the development of information technology.

The following are some of the CAATs that have been used to improve the quality of their audit work.

4.3.6 Test desk

Real data is simulated by dummy transactions (test data) that ideally include every possible type of condition. The list of simulated transactions should test for both valid and invalid conditions. The use of a test desk by an auditor is similar to controlled testing done by the systems analyst.

4.3.7 Tagging and tracing

With application of tagging and tracing routines in the programming logic any transactions and related data can be traced through the system that is used in the accounts. As each

processing step is performed, the interaction of the selected transaction with other data related tests is displayed. Control and selection of tagged transactions can be specified by the auditor through a terminal in his or her office. These transactions are processed as normal transactions by the programming logic. This technique if installed in programming logic while the programs are being developed requires relatively little extra time and cost and provides powerful techniques to obtain a comprehensive transaction trail.

4.3.8 Integrated test facility

This involves the establishment of a fictitious entity such as customer, department, division, employee in the data base of the system against which test transactions unknown to the systems personnel can be processed as if they were regular line transactions. This approach integrates permanent test data into the system and permits the auditor to monitor continuously the performance of the system.

Table 4.4 Possession of computer skills

	Agree	Strongly Agree	Disagree	Strongly Disagree	Not sure
All employees have computer skills	0	0	20	0	0

The findings of the study reveal that all respondents (100%) disagree that all employees have computer skills that enable them to use computers to achieve the desired outcomes.

However all agree that some employees have computer skills which can enable them to use computers. All respondents who use computers reveal that they are first trained in computer assisted audit techniques (CAATs) so as to produce effective audits.

4.4 Roles of Computer Assisted Audit Techniques (CAATs)

All respondents that use CAATs agree that CAATs have improved the standards of the internal audit function and identified the following roles CAATs plays;

4.4.1 Search and retrieve

The auditor can have the program scan large files and retrieve specified data segments that have audit significance for instance it can search depositors accounts for unusual charges.

This finding agrees with the findings of (James Bourne; 2010) that CAATs assist auditors in their search for irregularities in data files.

4.4.2 Perform basic calculations

The audit programs perform the arithmetic operations of additions, subtraction, multiplication and division. It also performs the logical operations of less than, greater than or equal to.

4.4.3 Selection of samples

The program can select a sample of records from a file population. Stratified sampling can be specified based upon upper or lower limits. Some programs can calculate and select a sample to meet desired statistical confidence level. This is in line with the (Braun Davis; 2009) role of CAATs that some programs can calculate and select samples that meet certain criteria.

4.4.4 Storage

Better storage of facilities such as information and data related issues were ascertained by the researcher as well as increased reduction in the cost of production.

4.4.5 Job satisfaction

The workers themselves were found to be happier with their work while using CAATs and hence enjoyed what they were doing. The researcher also noticed that the existing clients were appreciative and therefore were more likely to appreciate fees and see the value of the use audit work done based on improved quality.

4.4.6 Data matching

Interrogations were found to be used to compare data on two or more files. This function provides an efficient way to relate information used by several application systems and is particularly useful in complex accounting systems. The comparison of two master files from the same system at different dates was found to provide good audit evidence for testing of transaction or updates to the system. The finding agrees with B. Jerkins 2012 that CAATs can perform test packs and similar test runs by interrogating software such that files like unmatched supplier invoices can be extracted and audited.

4.4.7 Sequence Checking

The research also revealed that CAATs are used to identify where an expected complete sequence of data has missing items. In addition, duplicated data such as same purchase invoice paid twice could be checked for. They could also re-sequence data in a more useful order.

4.5 Problems affecting computer technology in internal audit

The respondents revealed that a number of problems lead to failure of computer technology to have a positive impact on the effectiveness of the internal audit function. These problems are presented in the table 4.9 below;

Table 4.9 Problems affecting computer technology

Problems	Frequency	Percentage (%)
Expensive to acquire and maintain	4	30

Lack of computer skills	2	10
Break down of the system	3	20
Lack of technical support	3	20
Unauthorized interruption	3	20
TOTAL	15	100

Source: Primary Data

From the above table 4.8, the audit personnel who use computers in auditing are mainly faced with the problem of high costs to purchase and maintain computers with 30% of the hindrances to computer technology, followed by break down of the system, lack of technical and unauthorized interruption with each having 20% and least is the lack of computer skills with 10%.

This reveals that despite all the advantages associated with the use of computer technology in auditing, NOIC finds it difficult to raise funds to purchase the required computers and related programs and software. In addition even if they have managed to purchase them, NOIC finds it expensive to employ technicians to repair and maintain.

4.6 Effects of computer technology on the performance of internal audit

The researcher was then able to determine after obtaining the benefits derived from the use of CAATs whether those using CAATs had an impact on the effectiveness of the internal audits in terms of quality of audit work and speed rate. Quality of audit work is evaluated in terms of their accuracy. The table 4.9 below reveals the responses from the respondents.

Table 4.9 Effects of computer technology on the performance of internal audits

Performance indicator	Frequency	Percentage (%)
Quality of audit work	9	60
Speed rate	6	40
Total	15	100

Source: Primary Data

From the above table, the respondents agree that the use of computers in auditing contributes to the Quality of audit work with 60%, Speed rate with 40% This implied that using computers in auditing is likely to improve the quality of audit work in terms their accuracy and reliability of the produced financial statements.

4.7 Factors which influence the effectiveness of internal audits other than CAATs

Respondents from different audit personnel identified the following factors which influence the effectiveness of audits besides the use of CAATs in auditing;

1. Employment of half-baked auditors and accountants who are not fully equipped with the required skills to audit and come up with effective audit reports.
2. Unethical code of conduct of some auditors and accountants who accept to take bribes in order to change their opinion on what financial statements truly reveal.

3. Lack of proper documentation of transactions of some clients departments. Some client departments conduct business and receive revenues plus paying expenses without following the necessary procedures and documents and this in turn makes the work of auditors difficult to trace the origin of the items in the financial statements.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter is the final one in this report and it summarizes the major findings, make conclusions and recommendations based on the study objectives. The suggestion for further research is also covered.

Summary of chapters

Chapter one outlined the research problem describing the how adoption of CAATs have affected the effectiveness of internal audits at NOIC. It cited the indications of escalating CAATs related costs during the period of the research. The chapter also outlined the main research question, sub-research questions and sub-research objectives. Lastly, the chapter outlined justification of the study, delimitation of the study, limitation of the study and definition of terms and abbreviations.

Chapter two was prompted by the need to review the use of CAATS by auditors, the roles that CAATs play in the audit work and the factors that influence the adoption of CAATs by other auditors. Literature by major authors like Braun and Davis, J.M Court, Venkatesh and Curtis and Payne was used to seek a more in-depth knowledge CAATs as applied in auditing.

Chapter three covered the research methodology. This research was largely a descriptive case study as it involved an in-depth examination of CAATs use at NOIC Zimbabwe. The sample of the research was selected from CAATs stakeholders groups in the company namely managers, auditors and accountants. In an effort to solicit information for the research, the researcher employed questionnaires, conducted selected interviews and analysed the

company's' financial statements and secondary data sources like policy manuals, monthly magazines and annual audit reports. A sample size of twenty was used for questionnaires.

In chapter four, the research findings from chapter three were presented for analysis. The questionnaires were 100%. The findings were presented question by question under the broad headings in the subresearch questions. Tables were used to presented data.

5.1 Summary of Major Findings

The study was conducted on the effect of CAATs on the performance and effectiveness of internal audits the discussions of the major findings are presented as follows;

5.1.1 Findings on Applications of Computer Technology used in auditing

It was discovered that the internal audit personnel used the applications of computer assisted audit techniques and these included, Test data, integrated test facility, Team asset software program, Test desk, Tagging and tracing, and Pastel accounting software program.

5.1.2 Findings on the Effectiveness of internal audit function

It was discovered that using computers in auditing lead to the effectiveness of audit function in terms of; improving the quality of audit work and accelerating the speed of delivery of audit reports.

5.1.3 Findings on the effects of computer technology on effectiveness of the audit function.

The findings from the research revealed that computer technology indeed improves the effectiveness of the internal audit function as all the respondents agreed that the CAATs have positively affected the performance of internal audits.

5.2 Conclusions to the study

As revealed by the findings of the study, it can be concluded that many audit personnel had adopted the use of computer assisted audit techniques (CAATs) whose major goals of increasing the quality of audit work, speed rate and generally improve the performance of auditors have been achieved. Otherwise those audit personnel that still use manual system expressed their willingness to adopt the use of CAATs but highlighted the shortage of resources to fund the project as the major constraint to them.

5.3 Recommendations

After a detailed study on the applications of computer technology in auditing, and how it affects the audit work, the researcher identified a few issues on how the systems could be made more effective and contribute more on the general performance of the audit function.

5.3.1 Encourage refresher courses

It is important that the users of the system should be given regular refresher courses so that they are up dated on the changes in the computer world. This will enable them not to be left behind and that they will continue to improve their skills in as far as the usage of computers is concerned.

5.3.2 Install the most appropriate software

The most appropriate software that is easily understood by all workers of the organization should be installed so that they achieve the desired results of producing effective audits.

5.3.3 Have technical support

The audit function should have competent technical support staff on site to handle any related matters that can arise within the computer system. This will ensure that breakdowns are handled expeditiously and that the system is maintained to the required standard to enable it function all the time it is planned to.

5.3.4 Have power backup to minimize on power shortage

There is need to have a strong power backup to protect the system against power failures and a standby generator to ensure that power cuts do not interrupt the usage of the computer system.

5.4 Areas for further research

The study should not be an end in itself. The study should provide a way forward towards research in other areas such as further research to establish the effect of computer technology on other variables such as marketing, finance, and human resource.

Appendix 1:

Questionnaire for Research Project

Dear Sir/Madam,

My name is James Sunhwa a student of Midlands State University conducting an academic research study on the Effect of CAATs on the performance and effectiveness of internal audit function of NOIC Zimbabwe. The research is aimed at partial fulfillment of the award of a Degree of Bachelor of Commerce Accounting Honors'. You have been considered to be one of the respondents.

Please kindly spare a few minutes to answer the following questions in a manner you deem appropriate and these responses will be treated with utmost confidentiality.

Your cooperation is highly appreciated.

Demographic Characteristics

Please tick in the box provided.

Gender

Male Female

Age group

20-30 years 31-40 years 41-50 years above 51 years

Education background

Tertiary University Post graduate Professional

How long have you worked with the audit function?

Less than 1 year 1-3 years 3-5 years above 5 years

Position of respondents

Manager audit clerk Accountant Auditor

1. Adoption of Computer technology by NOIC

	Agree	Strongly Agree	Disagree	Strongly Disagree	Not sure
The internal audit department uses CAATs in completion of its audit work					
All employees have computer skills					
The company offers training in relation to adaptation of CAATs					

2. Factors influencing the adoption of CAATs by NOIC

	Agree	Strongly Agree	Disagree	Strongly Disagree	Not sure
Performance expectancy					
Effort expectancy					
Social influences					
Facilitating factors					

3. Effectiveness of the audits

	Agree	Strongly Agree	Disagree	Strongly Disagree	Not sure
CAATs improve the standards of the audit function					
The department produces accurate audit work					
The department conducts thorough investigations to produce effective audits					

4. Factors influencing the effectiveness of audits.

	Agree	Strongly Agree	Disagree	Strongly Disagree	Not sure
Competence of internal audit Staff					
Size of the internal audit department					
Management support for internal audit					
Independence of internal audit					

5. In your own opinion and view, how can computer technology be improved to achieve audit effectiveness in the internal audit function?

.....
.....
.....

6. What are the other factors which influence the effectiveness of internal audit function?

.....
.....
.....

7. What problems are associated with the use of computer technology by the internal audit function?

.....
.....
.....

Thank you.

APPENDIX 2

Interview guide

1. Does the internal audit department use CAATs in the computation of audit work?
2. Are some individuals in the audit department still using manual system in auditing?
3. Do all employees have computer skills?
4. Does the company offer training in relation to adaptation of CAATs?
5. Have the adoption of CAATs improved the standards of the audit function?
6. Does the internal department produce audit work in time?
7. Does the internal audit department produce accurate audit work?
8. Is the effectiveness of internal audit work affected by computer technology?
9. In your own opinion and view, how can computer technology be improved to achieve audit effectiveness in the internal audit function?
10. What are the other factors which influence the effectiveness of internal audit function?
11. What problems are associated with the use of computer technology by the internal audit function?

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