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AN ANALYSIS ON THE IMPACT OF TECHNOLOGY ON EXTERNAL AAUDIT

BY

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APPROVAL FORM

The undersigned certify that they have read the dissertation and have approved its submission for marking after confirming that it conforms to the departmental requirements of Bindura University of Science Education. The project is entitled, **An analysis on the impact of technology on external audit**, submitted by student B182911 in partial fulfillment of the requirements of Bachelor of Accountancy honours degree at Bindura University of Science Education.

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ABSTRACT

The revolutionization of technology in the society has resulted in organizations adjusting their strategies so that they suit the IT environment. The nature of technology that now exists in the work environment means that external auditors are forced to incorporate technology in their assurance services so that they can gather sufficient audit evidence. The major objective of the research was to shed more light on the topic by assessing the implications of technology on external audit. The researcher made use of probability sampling technique. The sample size consisted of 12 audit firms that are listed on the PAAB in Zimbabwe and the data was collected by use of questionnaire method. The findings of the study indicated that External auditors have adopted the use of audit technologies, data analytics in particular which has resulted in improved efficiency and effectiveness measured in the way information technology assists in saving time and reduced costs. In addition to that overall productivity has increased due to the implementation of information technology. CAATs and emerging technologies have been transforming the audit industry. The study also found that the traditional external audit no longer serves its purpose in the way an audit is supposed to. The research concluded that the technological environment that now exists requires auditors to shift from using traditional audit methods and incorporate technology in their audits.

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ACRONYMS

BD – Big Data.

BDA – Big Data Analytics.

CAATs –Computer Assisted Audit Techniques.

DA – Data Analytics

ERP - Enterprise Resource Planning.

GAS – Generally Accepted Software.

IT – Information Technology.

RPA - Robotic Process Automation.

UTAUT – Unified Theory of Acceptance and Use of Technology.

CHAPTER 1

INTRODUCTION

1.0 Introduction

This chapter gives an overview on the nature of the study. It looks at the background of the study which has given rise to the problem study and has thus sparked interest to investigate more on the topic by the researchers. The study shall stress on how the technology trends that have become common in the industry are impacting external audit process and functions. The chapter will also outline the objectives of the study this will help enlighten all the relevant parties on what the researcher is trying to achieve.

Financial statements are used by stakeholders to make both financial and non-financial decisions. Edward, Harrison, and Zyglidopoulos (2018) defined stakeholder's as an individual or group that has a direct interest in any decision or activity of an organization. They extent beyond present and potential shareholders, they may include employees of the firm, banks, government bodies and the society at large. According to Turley (2019) auditors should ensure that their services are relevant and that they communicate with stakeholders in ways that meet their expectations. The users of financial statements rely on the auditors' opinion so that they make informed decisions.

Financial statements should be prepared and presented fairly thus, statement of Comprehensive income, cash flow, statement of financial position, changes in equity and auditor's review. These sets of financial statements enable auditors to form an audit opinion. The process involves gathering and corroborating audit evidence. Traditionally auditors have to visit audit clients and inspect physical files. Due to technological changes impacting the clients and firms as well as external factors such Covid 19 impact brought about changes in the way of doing business. Companies have to rely on technology by automating their systems for example Enterprise Resource Planning(ERP), Internet of Things and Big Data just to mention a few. In the same way that businesses are changing how business is done,

auditors are also automating so as to match their processes as stated by Doutts, Ide and Lindsay (2019). Audit as a profession has to adapt to these changes hence the need for us to analyse the impact of technology on auditors

The traditional way of gathering audit evidence was sampling a few of the available sources but now with how technology is changing the auditors are being forced to keep up with the change so as to enhance the quality of their reports.

Computers and networks have already taken over the business world and it is now impossible to separate audit as a profession and technology. It is imperative that we analyse how information technology systems are changing the game in the world of auditors.

1.1 Background to the problem

Whatman (2021) highlighted on how Manual systems of recording transactions are being eliminated and systems are automated for example the integration between the payroll system with the accounting platform. Therefore globally companies are moving with technology in order to keep up with the changing times. Auditors have to rely on these automated systems in order to gather sufficient audit evidence for issuing their opinion. According to ICAEW, (2017) technology is changing the way data is analysed there is a greater inclinement to knowing your data thus focusing more on data management than knowing the audit client. Transformation of technology in the accounting field which began as early as the 2000s and has fuelled the development of technologies which support the external audit market, Mohan (2020).

During attachment period, the student observed that the company had already shifted from a manual accounting system to the use of accounting packages (PASTEL). However when external auditors came in for the end of year audit they preferred to use traditional methods of conducting an audit . The traditional methods of auditing posed great challenges in file retrieving as requested by auditors in addition to that minimal computer assisted audit techniques(CAATS) were used since the audit process was highly manual based. Considering the volume of transactions the auditor had the risk of issuing wrong opinions due to client's failure to provide information on time. Proper handling of records and maintaining them is essential to ensure completeness of audit work when it comes to traditional methods of auditing.

A lot of companies if not all have since automated their systems and therefore auditors are expected to use CAATS to analyse the financial statements, test controls and perform substantive tests. According to MBG, (2019) CAATs improve audit productivity, efficiency and it also assists in completing routine tasks at a much faster rate. Alsharairi and Alhosban (2019) suggested that the use of computers and audit tools aids the external auditors to validate the data that they would have received in terms of it being licensed and translated into computer language. In addition to that there are other technological advancements which are impacting the audit profession the likes of big data analytics, blockchain and artificial intelligence Lindsay, Doutt and Ide (2019). The rate at which technology is advancing in the audit industry can be frightening, in as much as companies are provided with opportunities to produce quality audit reports the advancements also pose their own set of threats.

The research aims to evaluate the impact of information technology on the external audit function in an organization. Information technology and information systems have changed the way business is conducted and this has a direct effect on audit activities. Auditors have not lagged behind when it comes to these technologies in addition to that they should also be in a position to understand accounting software being used by the client. The study also stresses on evaluating techniques now available that are supposed to be aiding in delivering an effective audit.

1.2 Statement of the problem

The presence of the current technologically advanced work environment due to global automation of systems has resulted in the evolution of information technology in the audit industry. The automation of accounting procedures has resulted in more complex transactions that require external auditors to embrace audit technologies. Some external auditors have recognized the abilities of audit softwares and technologies however some are still lagging behind. The research aims to assess the impact of technology and softwares that has been adopted by external auditors in order to audit a client's computerized environment.

1.3 Research objectives

1. Establish the importance of information technology on external audit.

2. Explain the limitations of information technology in the audit industry

3. Establish if there is any value enhancement brought about by the use of CAATs

1.4 Research questions

1. What is the role of technology on external audit?

2. To what extent have information technology systems enhanced external auditing activities?

3. How far is the use of CAAT affecting external audit?

1.5. Assumptions

◆ Every audit firm is aware of information technology

◆ Auditing firms chosen will continue to operate in the foreseeable future

◆ Financial resources will be adequate to meet all expenses

◆ Respondents will be forth coming in provision of accurate and relevant data, reflecting truly on their respective firms

◆ Time stipulated for the research will be enough for the research

◆ Selected individuals will answer questionnaires and interviews frankly and on time in orders to allow the researcher to adhere to her timetable

1.6 hypothesis

H0. External audit and information technology have a positive relationship

H1.External audit and information technology have a negative relationship

1.7 Significance of the study

◆ **To the researcher** - it is in partial fulfilment of the bachelor of commerce honours degree at Bindura University of Science Education. The research equipped the researcher with enough knowledge concerning the relationship between technology and external auditor. In addition to that the researcher being someone who intends to join the industry, this research imparted knowledge on the implications of technological trends on the audit process therefore the researcher will be able to adjust to the continuous improvements with regards to the audit profession.

◆ **To the firms** - to evaluate the changes being brought about by information technology systems in the audit profession. The study will assist the firms when it comes to evaluating the implications brought about by the use of information systems in carrying out their audit work. The research will add to the vast pool of knowledge of the audit firms with regards to how systems like artificial intelligence amongst others can help the firms to derive maximum benefit from using them.

◆ **To the university**- the research findings if approved can be used by other students as resources in their areas of study.

1.8 Limitations of the study
  ◆ Limited time to collect data from the firm
  ◆ Deterred access to crucial information due to confidentiality policies
  ◆ Financial constraints

1.9 Delimitations of the study

The research focused on the implications of information technology on external audit only therefore the findings may not be applied to the internal audit function. In addition to that the study is restricted to companies in Harare due to financial constraints.

1.10 Definition of terms

Computer Assisted Audit Techniques (CAATS) –refers to an auditing method that uses computer software to analyse business data so as to enhance the efficiency and effectiveness of an audit. MBG corporate services (2019).

Information Technology- defined as any combination of computer software used in connection with the operations of the business.it includes how information is obtained, stored, processed and distributed. Slyter (2019).

Audit Trends- refers to the general direction in which the audit profession is developing. The change towards automation and artificial intelligence. Kpmg (2018).

1.11 Chapter Summary

The researcher highlighted the ground work of the study. The chapter also dealt with objectives, assumptions, limitations and delimitations of the study. This way the researcher is fully convinced that the research findings will further enhance audit activities and will go a long way in assisting audit firms in delivering an effective audit.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter aims to give the researcher an insight on what has been written before on the implications of information technology systems on external audit so as to enhance the research study. It involves theoretical and empirical literature in the areas of specific interest. This chapter is guided by the research objectives, and the areas of interest will be on computer assisted audit techniques (CAATs) backed by other new technologies in the industry such as big data, and data analytics.

2.1 THEORATICAL LITERATURE REVIEW

2.1.1 Information technology

Information technology when used in the business context refers to the use of computer systems and networks to create, process, store and to distribute all forms of electronic data. Taylor (2009) defined information technology as the process by which information is acquired, stored and shared by means of computing and telecommunications enabled by the use of microelectronics. IT has redefined the way people work, communicate and even networking ,Widen (2018).In order to remain competent in this modern era most companies have adapted to the use of technology systems in the quest to achieve their organizational goals and objectives. Considering the rate at which technological advancements are being introduced auditors are faced with a situation by which they have to adapt accordingly.

2.2 Changes in accounting and audit due to the introduction of information technology.

The accounting process involved a tedious book keeping process of compiling and computing data. Every transaction had to be copied into every other ledger. There was a high risk of errors and omissions. The advent of computers has resulted in developments in accounting software and applications. Drew (2014) found that advances in accounting like cloud

computing could maximize productivity, security and expansion of businesses. Information technology has increased the volume of transactions that can be processed in just one financial period. The use of robotic process automation (RPA) will simplify the accounting process in addition to that errors are also minimized, according to study undertaken by Tucker (2017) RPA improves efficiency and accuracy at a much lower cost. The accounting procedure has also changed due to the implementation of technologies such as block chain and artificial intelligence. The revolutionizing of accounting software is enabling automation and making continuous and real time accounting possible, Accountants (2018).

Liu, Xu and Wu (2019) discussed the importance of blockchain tool as it has the potential to do away with manual journal entries and reconciliations. As technology shifts the focus in the accounting field it also changes the role of auditors. Kay (2019) discussed how artificial intelligence will not only be used in accounting but will be required to improve audits as well. RPA is also changing audits considering how it is used to gather data, review trial balances and in developing an audit strategy. Overall technology has managed to change the accounting procedures and audit process as a whole.

The influence of IT on external audit was already an issue from as early as the 1960s. Davis (1968) highlighted that from an audit point of view it would be incorrect to vie the computer as a tool that was just used to solve figures. The use of technology devices such as computers would introduce new control measures and change the fabric of traditional audit methods. This shows that auditors have to keep up not only for them to provide quality audit services and to remain competitive but they have to do it for the profession itself so that it maintains its relevance, Bowman and Deniston (2017).

2.3 External audit

The external audit profession has existed from as early as the 19th century it has evolved over the decades. The highlight of the Enron scandal of 2001 brought to light the weaknesss that the external audit process had already started to face.. The issue had to be addressed and change was inevitable as the main responsibility of an external audit is to give assurance to stakeholders. Changes in stakeholder needs and development of economies have also spearheaded developments in the auditing profession, Al Hamrani Al Shamsi (2018).

An external audit is an objective independent analysis of a company's financial records by an independent body so as to verify if the financial records reflect a true and fair view of the business financial position ElBorno (2019). Arens, Elder and Beasley (2012) defined an audit as the process of gathering and evaluating the evidence about financial records so as to determine and report the degree to which the information responds to the established criteria. Porter, Simon and Hatherly (2015), states that the external auditor is tasked with the duty to express an audit opinion on whether the financial statements of an organization reflect a true and fair view and if they have been prepared in accordance with the acceptable reporting framework after critically examining them. Porter et al (2015) states that an external audit is an audit performed by firms that are not in any way linked to the organization that they will be auditing so that parties that will use the audited financial statements can obtain reasonably assured. This means that for it to be a proper audit there should be verifiable information which will then enable the auditor to express an opinion

Every audit firm has got the liberty to develop its own methods and audit framework however there are general guidelines to be followed. The steps of the audit process requires the auditor to begin by planning for the audit together with assessing the preliminarily risks that maybe associated with the organization. The auditor has to go and assess areas of high material risk, identify risks when it comes to the internal control systems, audit the controls and performing substantive procedures then finally processing the information and communicating, Deloitte (2019).

An external audit has to be effective and efficient.Veerankutty Ramayah and Azman Ali, (2018) reported that when used effectively audit technologies have the power to improve overall audit effectiveness and quality of the audit opinion that will be issued. Computers are an element of IT which brings up the issue of auditing in a computerised environment.

Audit approach in a computerized work environment take up three main forms which are auditing around the computer, auditing with the computer and auditing through the computer. These three approaches to auditing within a computerised environment will be explained below,

2.3.1 Auditing around the computer
This audit approach will require the auditor to regard the computer as a processing medium and audits the outputs that is the generated output whilst making reference to the source

documents. If the output of the generated printout is in alignment with the source documents then the auditor will be satisfied that the data is accurate.

The auditor is required to establish if the transaction was properly captured and that a proper audit trail exists before deciding to audit around the computer, Puttick (2009). Printouts produced by the computer must be sufficiently detailed to enable the auditor to trace transactions from source documents. Auditing around the computer gives the auditor the choice to apply a combined or substantive approach.

2.3.2 Auditing with the computer

The auditor uses the computer as a tool in performing audit tasks and procedures. The computer will be used to examine files and calculate variances. Auditing with the computer will include using the computer to generate audit programs and financial statements. This is current way of conducting an audit, auditors make use of automated devices to evaluate processes, softwares and the process requires access to external sources, Byrnes *et al* (2012).

2.3.3 Auditing through the computer

The auditor has to obtain reasonable assurance that the computer programs have not undergone any unauthorized alterations. The auditor has to be satisfied that only authorized and accurate transactions were recorded for the period under review. This approach is concerned with the effectiveness of the internal control system of the client. The audit approach that is to be used in a computerised environment should be in accordance with the stipulated requirements of ISA 420.

2.4 The role played by technology on external audit

Technology will not be able to replace human judgment and professional skepticism when it comes to auditing however it can certainly enable a lot more. Information technology can enhance the audit process in the sense that risk detection becomes more advanced as compared to the traditional procedures. Technological tools being used in the industry by external auditors enables them to 100% test the client's data, more so the use of such tools will help in completing time consuming tasks at a much higher rate. No company operates without the use of accounting information systems in this technology era and this has resulted in information technology in audit as well.

External auditors are tasked with the duties and responsibilities of conducting tests of control and substantive tests with regards to examining a client's internal control system and financial statements respectively. CAATS are used by the auditor to facilitate their work.

The use of computers in the audit industry as an element of information technology assists with the documentation and execution of audit work. Instead of moving around with a lot of paperwork they are able to document flowcharts, draft memos and compile their reports. In addition to that since most businesses are now operating in a computerized environment, the external auditor has got the option to run tests on the client's computers system in order to investigate the effectiveness and efficiency of the internal control system. According to Diaz and Loraas (2010) running the test on the client's computer gives the auditor a platform to completely test client's data

Companies all over are handling large volumes of data in all forms of sources be it pictures recordings or even texts. All that amounts to sources that will be used by the auditor in gathering audit evidence. The shift in focus that is being brought about by new technology will result in timely accessibility of relevant data; various data analytical tools are also being used so as to arrive at more meaningful conclusions. The researcher will evaluate new technologies in the audit industry, the likes of big data, artificial intelligence, continuous audit and GAS as an element of CAAT.

2.4.1Big data

Big data has been defined as a large volume of data set which is very complex to store and analyse. It is characterised by massive volume, high velocity of the data, large variety of data and uncertain veracity of data. Big data offers a platform for improvement for the external audit, with BDA there is a shift away from focusing on causation to focusing on correlation. There is a paradigm shift from the traditional audit process of sampling a small clean data set to using all the data. Alles and Gray (2016) mentioned how the developments of systems like Enterprise Resource Planning (ERP) were able to integrate different databases into one. This resulted in more efficient and sophisticated data techniques which are now referred to as big data.

Big data includes financial and non-financial data, the data itself can be structured or unstructured. A study by Tang *et al* (2017) found that BD is just raw data which can be of value if matched by programming softwares and analytical tools. Cao, Chychyla and Stewart

(2015) defined big data analytics as the process of inspecting, transforming and modelling big data so as to discover and communicate meaningful information so as to aid in decision making.

BDA is used in an audit process to examine transactions, balances and disclosures in relation to financial statements. It is also used to assess management assertions and to verify their accuracy .BDA creates an opportunity to add more value to an audit thereby increasing the credibility of auditors, IBR (2018). In addition to that it can also be used to detect false positives. Krahel and Titera (2015) states that BDA can identify anomalies at a much faster rate and is able to apply a system of prioritization.

Prior studies show how many internal auditors have moved along with BDA. External auditors have two main reasons to embrace these technologies, which would be external pressure and opportunities, Appelbaum (2016).

2.4.2 Data analytics

Minkin (2018) defined data analytics as the process of transforming raw data into intelligence so as to drive business performance. The current IT environment that businesses are operating has got a lot of implications on external audit. Data analytics has been found to be beneficial to external auditors in their audit process. Audit effectiveness and efficiency is enhanced as DA can be used to critically evaluate a larger data population. According to Sirios and Savoska (2017) it is a form of continuous audit testing that results in a more timely relevant report. It also supports a dynamic identification of trends, fluctuations and correlations so that the auditor can be able to identify high areas of risk. The auditor can also provide better services as DA allows them to get a better insight into the control environment of the client.

2.4.3 CAATS

Computer assisted auditing techniques are used when auditing in a computerised environment, the computer is used an audit tool. Computer Assisted Audit Techniques refer to the various tools, technologies and Softwares that assist auditors in conducting control, confirmation tests and analysing financial information data , Lin and Wang (2011). The assistance of CAATS helps the auditor to gather sufficient audit evidence which enables the external auditor to express his opinion. CAATS are implemented through imbedded techniques and using audit software.

Embedded techniques are test facilities of data in a client's system that allows the auditor to examine the internal control system of a company. An embedded system replicates files and records and allows the auditor to test data on the client's transaction. Audit software on the other hand allows the auditor to verify the effectiveness of a client's accounting software

Generally accepted software (GAS) is the one common software that auditors have adopted, it refers to a set of embalmed software that allows the external auditor to examine databases, software applications and other sources. GAS provides data extraction routines for many computerised environment, data investigation and sampling techniques. GAS is also used to perform tests on missing information and calculations as well.

CAATs programmes are used to select samples from a population of transaction, with the use of CAATs audit tests can be executed automatically. Time being invested for the task will be reduced which makes it possible to test the entire population which increases the reliability of opinions issued. It is argued that GAS helps auditors in identifying misstatements with regards to financial statements and achieving general audit objectives of validity, completeness, valuation, accuracy and disclosure.

The elements of GAS include Focaudit, interactive data extraction and analysis, audit command language, Auto audit and proAudit advisor Ahmi and Kent (2013). All these packages contain Softwares that are able to read files on a computer as well as to manipulate the data to carry out audit tasks. GAS packages have the ability to capture users audit requirements and process them into an audit code. The process entails investigating the clients system and carrying out the required audit steps.

Client files such as depreciated assets, overdue debts and unmatched supplier invoices can be retrieved using the company's computer. In addition to that the auditor can also use CAATs to carry out analytical tests to evaluate the relationship between financial and non-financial data so as to establish the reasonableness of account balances. The system requires two or more files to be compared the comparison of two master files provides a platform of verifying transactions and provide reliable audit evidence.

Prior studies show that GAS has existed for a long period of time in the industry however external auditors do not use them as much as they should considering how much accounting transactions are now computerised in this technological era. Research findings show that less

than 50% of external auditors in developing countries use GAS. This shows the extent to which external auditors are lagging behind, to support this notion the study by Chan and Varsahelyi (2011) found that the traditional method of auditing which is highly labour intensive and manual in nature is no longer feasible in this real time economy.

2.5 Value enhancement brought about by information technology on external audit

The implementation of emerging technologies mentioned above into the audit process could result in the audit being more effective and efficient in terms of cost and quality. Some of the key benefits brought about by the use of technology can be discussed below,

Analysis of large data sets

The use of computers aided by CAATs allows the auditor to test 100 percent of the population which then provides a higher level of assurance. ISA 200 clearly discusses the inherent limitations of a traditional audit procedure. Auditors had to use sampling techniques which has a high risk of financial statements not being free from material misstatement. Items which would not have been selected to be part of the sample could contain material misstatements. Big data also enables auditors to perform effective audits due to the fact that is able to analyse real time transactions. The use of CAATs makes it possible to analyse large volumes of data including data which was previously overlooked and inaccessible.

Accuracy

The use of RPA has the potential to reduce human error when compiling and analysing data. Zhang (2019) highlighted how automation could perform mundane tasks more efficiently. Automation of tasks in the audit process will result in efficiency and when combined with the review of the auditor the assurance given thereafter will be more reliable, Zhang (2019).

Reducing time spent on tasks

The traditional methods of analysing data require auditors to fully invest their time. The processes are long and time consuming. If auditors are to spend a lot of time doing these tasks it increases the costs associated with their audits. According to Alles (2015) it is possible to reduce the time spent on audit tasks by implementing big data analytics.

Focus is on high risk areas

According to a study undertaken by Kend and Nyugen (2020), technology enables auditors to focus more on areas of high risk which are more complex. Mundane and repetitive tasks of the audit process can be automated thus giving the auditor ample time to focus on important areas.

Assisting in fraud detection

Fraud detection maybe a secondary objective of the audit however the auditor is required to maintain professional skepticism and the use of big data analytics will assist in that area. Since technology allows both financial and non-financial data to be analysed. Big data analytics and the use of artificial intelligence highlight areas of suspicion, Dagiliene and Kloviene (2019).

The use of these emerging technologies seem to be adding value to the quality of the audits as evidenced by the key benefits resulting from the shift of how the audits were traditionally conducted . The final interpretation of data always lies with the auditor as no tool can ever replace professional judgement

2.6 Limitations of information technology in the industry

For years auditors have always been using structured data, the idea of accessing both structured and unstructured data could result in the auditors not being able to separate relevant and irrelevant data. Krahel et al (2015) also reported on how IT could also result in information overload. In such a case auditors will not be able to follow up on every other error that they would have uncovered. Analysing such volumes of data tends to be overwhelming and tiring.

The issue of loss of audit trail is another limitation in the industry. The use of computers will lead to a loss of any components of visual audit trails. In addition to that data in a computer can be modified without leaving any material effect. It would take years to discover if the data had been tampered with considering how even the ordinary person now has so much know how of how to manipulate these systems, Nashat and Kamil (2017). With the traditional methods any alteration of data would leave a mark therefore during an audit this would trigger the auditor to investigate more on the matter in question.

IT provides a platform for many fraudulent activities to take place. A person can single handedly defraud the company thus even making it difficult for auditors to uncover the activity. With the manual system a person will need the help of others to complete the fraudulent activity and that will be easy to uncover because there is always a weak link.

Operating in a computerised environment exposes data to errors and omissions. As the information is circulated from one department to another the data entry clerks may unintentionally omit some of the information. Auditors will now be tasked with ensuring that the data they intend to work with is free from omissions and errors. Errors and omissions will pose a great risk to the auditor as no visible audit will be available.

2.7 Factors influencing the adoption of information technology by external auditors
The introduction of computers in the accounting field somehow forces auditors to keep up with technological advances. The auditors are encouraged to switch from manual audit procedures to computer assisted audit techniques. Despite the alarming rate at which technology is advancing prior studies show that there is a relatively low adoption of CAATs by external auditors. Mansousr (2016) reported on how a lot of auditors are under the impression that CAATs are difficult to use especially GAS in particular. A lot of models have been developed in order to assess user's behaviour in acceptance of IT. This study focuses on the Unified theory of Acceptance and Use of Technology (UTAUT) as a technology acceptance model. This study will focus on audit technology acceptance factors by external auditors. The model was developed by Venkatesh, Thong and Xu (2016). The theory explains the determinants that influence the acceptance of technology which are performance expectancy, effort expectancy, social influence and facilitating conditions.

Performance expectancy

Performance expectancy refers to the level that an individual is convinced that making use of information technology will make his work easier, Venkatesh *et al* (2016). Auditors will have to find audit technologies or tools to be assisting in saving time by means of automating routine tasks, identifying anomalies and assisting them to query the technological environment of the client. It is predicted that if an auditor is to gain by using the software then this automatically increases the auditor's intention to use the software in the audit process. Information technology and audit softwares have been found to be transforming the

audit profession by means of increasing productivity and improving the quality of work. Saygili (2010) argues that Auditors will want to implement audit tools if they are confident that implementation of audit softwares in their procedures will help them achieve the results they want and the technologies fit in well with their engagement. Having taken performance expectancy into account a firm has to consider other factors which may include the external environment in which the firm is operating in, the firm itself and the goals that it has to achieve it is also required that a firm assesses the software and the technologies and ascertain if it will be of value to the organization. All those factors have to be addressed before an investment decision in audit technologies is made. The current and emerging technology have to be in alignment with the audit task requirements. Audit firms may not adopt the technology if it does not work for them the way the firms expect. Curtis and Payne (2014) reports that auditors have to assess if the audit softwares are in alignment with the work process of performing an audit before the audit technology can be adopted. In addition to that the environment in which public accountants work in is different and unique because adoption of technology is not a onetime process for them they have to contemplate and debate at each and every stage of their audit work

The driving force of intention to use the software contributes towards the behaviour an individual will portray with regards to acceptance of technology. A study by Mansour (2016) revealed that performance expectancy affects the intention of CAAT adoption in audit. Other factors such as gender, age, experience and willingness to use audit softwares have been found to be the moderating factors influencing the adoption factors explained by the UTAUT model

Effort expectancy

Effort expectancy is defined as the degree to which the software or the audit application is supposed to be easy to use Venkatesh *et al* (2016).The complexity and ease of use associated with the audit technology affects adoption by the external auditors. If the auditors find that the software is easy to use then they tend to want to use the software in their audit process, however if they perceive the technology to be complex the auditor will not want to implement the new technology. As a result, difficult in use of information technology and ease of new audit technologies have the ability to negatively or positively influence the adoption of new audit technology by external auditors. Curtis and Payne (2014) reported that

there is a direct link between performance expectancy and effort expectancy. If the auditor is gaining from the use of the software then they will perceive the software to be easy to use.

Social influence

Social influence is defined by the model as the extent to which a person feels that people important to him or she believes that he or she should be using the tool Venkatesh *et al* (2016). A study by Curtis and Payne (2014) reported that social influence greatly affects the intention to use audit softwares. If there is support from firm managers or the public to adopt the use of audit technologies then the auditor is like to implement the new technology. Support from external people like clients and regulators can also influence the adoption of audit softwares. However if there is no internal or external influence this can negatively impact the intention and motivation to accept and use computer assisted audit technique and other technologies. Additionally if a firm has got long term financial plans and longer evaluation periods then this also affects auditor's decision to implement the technology or not. However prior studies show that there is a difference in opinion when it comes to social influence as an important factor in determining the adoption of technology in the audit profession. According to Bierstaker *et al* (2014) social influence does not necessarily impact the intention to use CAATs. It is argued that implementation of softwares such as GAS is not mandatory for firms rather it is a choice. Therefore social influence would only be important if implementation was mandatory.

Facilitating factors

Facilitating factors refers to the extent to which an individual perceives that the organization has got the technical infrastructure and is in support of use of CAATs and other emerging audit technologies, Damer, Al Znaimat and Almansou (2021). Support facilities such as hardware, knowledge, and software are readily available regarding the use technology in audit then the auditor will be more inclined to the use of audit technologies.

Adoption of technology by audit firms is not only influenced by individual employee factors, there are other elements that firms need to take into accounts. Factors like the technology itself, organizational and external environment of firms are important factors which may determine or influence the decision to invest and adopt these emerging audit technologies. The TOE framework was established so that it could address these essential factors, Tornatzky and Fleischer (2010). Embracing of emerging audit technologies requires audit

firm to fully understand and comprehend the characteristics of audit technologies such as technology cost-benefit and risk before they can decide on the adoption of such technology.

The decision to embrace technology in the audit industry does not depend merely on technology acceptance models the technology has to be in alignment with the audit task that has to be completed otherwise it will not hold any value. Research undertaken by Delone and McLean (2003), notes that in determining the adoption of technology for audit purposes the nature, quality and appropriateness of the system has to be considered. The technology may have been assessed and its usefulness established however if it does not meet the requirements of the audit process and the tasks to be completed then the firm will have no choice but to reject the system.

2.8 EMPIRICAL LITERATURE REVIEW

2.8.1 An analysis into the implications of information technology on the internal audit function. The case of Bulawayo city council.

A research carried out by Mugiya (2014) on the implication of information technology on the internal audit function of Bulawayo city council. The study found that a lot of companies were moving away from keeping large files of information to a paperless environment. The audit department has to keep up with the technological advancements in order to deliver quality services. In addition to that traditional methods of conducting an audit will no longer be applicable considering the advancement of technology in the environments that they will be working in hence the need to implement computer assisted audit techniques(CAATs). The research also discussed about how the implementation of technology in the audit industry will result in effective and efficient audits. The researcher also concluded that non-performance of IT audits made it difficult for internal auditors to investigate the control system of the company.

2.8.2 The impact of data analytics on the efficiency and effectiveness of external audit

Loggerenberg Izel (2020) carried out a research on the impact of data analytics on the efficiency and effectiveness of external audit. The results found that the daily work

environments of organization are becoming more digitalized and incorporating data analytics into an audit is now essential. The researcher found that data analytics as one of the technological advancements in audit greatly improved efficiency and effectiveness. Data analytics and digital advancements have been found to be transforming the audit work environment. The study also found that data analytics will have to replace traditional audit procedures otherwise there would be a lot of audit failures. The researcher also concluded that with the way technology is moving at a fast rate it is now virtually impossible to perform an effective audit without the use of data analytics.

2.8.3 The impact of the use of computer technology and auditing software on the efficiency of external auditors in Jordan.

Mohammed Alsharairi and Atallah Ahmad Alhosban (2019), highlight the results of their research on the impact of use of computer technology and auditing software on the efficiency of external auditors in Jordan. The authors found that the use of audit softwares and tools helps the auditor to issue a more credible audit opinion on the financial statements. The external auditor is able to review electronic through the electronic audit programmes, the programmes would have been designed to carry out external audit functions. The softwares help the external auditor to review financial statements from outside the client being audited. This has got a positive impact on the efficiency and effectiveness of external audit.

2.8.4 The impact of technology on the auditing profession.

Al –Qudah, Bani Ahmed and Al Fawaerah (2013) investigated on the implications of technology on the auditing profession. The study showed that use of information technology by both internal and external auditors assisted them on audit planning, risk assessment and evaluation of internal controls. Additionally the presence of computers and tools was found to be of great assistance to auditors as it helped them to reasonably confirm data received by means of translating the data received for audit purposes to computer language. The researchers concluded that the revolutionising of information technology increased audit efficiency and effectiveness and ultimately reduced audit costs.

2.8.5 The role of accounting information systems in enhancing the quality of external audit procedures.

Samara, Mohammad Nashat Almasiria, Rana Airout, Abeer Sadat and Talal Jrairah (2021), carried out a study on the role of accounting information systems (IAS) in enhancing the quality of external audit procedures. The study provided an insight on how accounting information systems is being used to improve audit effectiveness and efficiency. However the study also found that there is slower adoption of accounting information systems by auditors. The study concluded that professional auditing regulators had to take up the responsibility of organizing workshops so that auditors can familiarize themselves with technologies and softwares being used in the auditing of computerised accounting systems.

2.8.6 The implications, applications and benefits of emerging technologies in audit.

Carpenter and McGregor (2020) carried out a research on the implications, applications and emerging technologies in audit. The study focused on key benefits that audit firms could derive from the implementation of technology. They found that there was improved fraud detection as there is potential to analyse both financial and non-financial data in addition to that being able to 100 percent of the clients data enhances the assurance they will give. The study concluded that shifting away from manual processes enables the auditor to express a higher degree of assurance. The risk of not testing data that may contain material misstatements will also be reduced. Audit technology improves audit effectiveness and efficiency.

2.8.7 Effects of computer assisted auditing techniques and auditing tools on auditing activities.

Wadesango and Nyakurera (2020) investigated on the effects of computer assisted auditing techniques and auditing tools on auditing activities. The results found that CAATs are used to automate audit tasks and to electronically analyse data. The computerized environments that auditors work with no longer require the use of manual audit processes. The study went on further to analyse how far the audit firms in Zimbabwe had adopted emerging technologies like block chain and big data. The results revealed that adoption of such emerging technologies in Zimbabwe was still at an infant stage. The researchers concluded that auditors need to be

fully equipped in terms of expertise and technical capabilities when auditing in a computerised environments. This means adoption of CAATs which will be able to enhance external audit activities.

2.8.8 The impact of information technology on the auditing profession.

Kamil Ali and Nashat Majeed (2017) carried out a study on the impact of information technology on the auditing profession. The study findings revealed that information technology contributes to the development of the audit profession and in reducing some of the challenges that auditors face when auditing a computerised environment. Electronic data processing and electronic audit aids in reducing audit risk and in addition to that information technology audit methods help to increase size of the audit sample. The study also highlighted on how computerised environments have led to the non-existence of audit trails and how auditors will have to up game their game in order to uncover fraudulent activities. The study concluded that there is a high degree of increased efficiency in the industry which can be accounted for by the implementation of information technology.

2.9 Gap Analysis

A lot of researches have been undertaken concerning the implications of information technology on audit. Most of these researches were conducted outside Zimbabwe and the level of information technology there is at much advanced stage as compared to local companies here in Zimbabwe. Prior researches were more focused on the implications of information technology on internal audit. Information technology keeps evolving on a daily basis as organizations try to look for ways to make their work easier and efficient, auditors have to keep up with these technological advancements for them to be able to properly audit financial statements.

However this research was carried out in Zimbabwe to find out the impact of information technology on external audit. Zimbabwe is still a developing country therefore the level of information technology advancement and adoption does not match that of developed countries. This research seeks to address the existing gap between the current year and researches that were done in prior years.

2.10 Chapter summary

In this chapter the researcher reviewed theoretical and empirical literature on the relationship between information technology and audit, which is information in textbooks, journals and other authenticated sources. Literature review showed how computer technology impacts audit effectiveness. The next chapter will focus on the research methodology of the study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter will focus on the methods of collecting data for this particular study. Areas covered will include the research design to be used for the study, population under study, research tools and the way in which data will be presented and analysed.

3.1 Research design

Research design is defined as a detailed plan that is adopted in order to guide the research towards achieving its objectives. Sileyew (2019) defined research design as an appropriate framework for a study which involves choosing and approach that will be able to provide relevant data for the study in question. For the purpose of the study exploratory research was adopted to assess the positive and negative implications of information technology on external audit function. The exploratory research design will be able to provide valid data as it considers both primary and secondary data.

3.2 Population and sample design

Population refers to a set of people from which the target population can then be selected. Momoh (2021) defined a study population as a pool of individuals from which a statistical sample for the research is to be drawn. The population size was selected by obtaining a list of firms registered with the PAAB in Zimbabwe, 12 audit firms were chosen. The selection was based on the assumption that the firms would have clients that have a large data set such that the firm would most likely use audit technologies. The researcher will target audit, tax, advisory and book keeping departments as the respondents in the different audit firms that constituted the population size. The population size for the research study is shown by the table below.

Table 3.1 *population size*

Respondents	Sample size selected

Audit department	12
Tax department	12
Advisory department	12
Business support department(HR,IT, Finance and Administration)	12
Book keeping department	12

3.2.1 Sampling techniques

Sampling technique refers to the process of selecting individual from an entire population so that they may be used in making statistical conclusions. Bhardwaj (2019) defined sampling as a procedure of nominating individuals from a large group set for a certain research. This research adopted the probability sampling method. Simple random sampling enables the researcher to choose individuals for research purposes at random therefore each element of the population has an equal opportunity of being selected. This sampling technique will be able to improve the reliability of the data set as it is meant to be unbiased.

3.3 Data collection

For the purposes of this research data was collected using primary and secondary sources.

3.3.1 Primary data

Data collected by the researcher on first hand basis is referred to as primary data. The researcher made use of questionnaires and interviews. A five point Likert scale questionnaire was used as it can indicate the extent to which a notion is true thereby giving a direct answer. Primary data will compliment secondary sources of data so as to aid the researcher in evaluating the reliability and effectiveness of data that would have been gathered. In addition to that the

use of an interview will enable the researcher to pick up important body language from respondents.

3.3.2 Secondary data

Secondary data refers to data that is readily available for use. it is sometimes referred to as desk research. Secondary data is data that was already collected foe a certain purpose which may be used for other research purposes, secondary data (2017). Secondary data was collected from accredited journals, research papers, and audit firms reports. Secondary sources of data assisted the researcher in gathering data regarding the implications of audit technologies like CAATs, data analytics and big data.

3.3.3 Advantages

Secondary data was an inexpensive method of gathering data as it was collected at zero cost. More so, it was less time consuming and the researcher was able to utilize current information. Secondary sources of data facilitated this research as all the sources enabled the researcher to get a clear picture of the problem under study and to draw conclusions basing on data acquired.

3.3.4 Disadvantages

Most of the information was researched for countries out of Zimbabwe and this took most of the researcher's time. The researcher had to thoroughly look for relevant data in journals as the data in the reports was for other studies and was by no means directly collected for this study.

3.4 Research instruments.

Research instruments refer to tools that were used in the collection of data for this research. The following tools were used in respect of the target population.

3.4.1 Questionnaires

A questionnaire refers to a set of standardized questions that are used to gather statistical useful information on the specific research problem, Pahwa (2021). The questionnaire can include both structured and unstructured questions. Questionnaires which were both structured and unstructured were distributed to respondents. A structured question will leave blank spaces for respondents to fill in their answers whilst an unstructured question is close ended.

The researcher used a five point Likert scale system in conjunction with the questionnaire. Respondents were required to specify their level of agreement by showing if they agree, strongly agree, disagree, and strongly disagree or if they were unsure.

3.4.2 Justification of using questionnaires

Questionnaires made sure that the researcher could be on the same boat with the respondents as it was some sort of a guide towards her line of thinking. The close ended questions were easier to analyse as the responses were direct. Unstructured questions gave the respondents the flexibility to express their opinion at their own convenient times. The cost of administering the questionnaire to the target population was generally low. However some of the respondents were not willing to take part in answering the questions despite having been assured that the results were confidential and to be used strictly for academic purposes.

3.5 Reliability

Reliability of a measure is the extent to which information is not biased. McLeod (2013), states that reliability indicates the stability and consistency of the measuring tools that are used to assess a concept. For the purpose of this study reliability will be ensured by using the test and retest approach.

3.6 Validity

Validity is defined as the extent to which instruments truly measure the concepts that they are supposed to measure, Bruce (2018). To ensure validity of the data collected the researcher

relied on the revision of the instruments by the academic supervisor before they were distributed to the target population. The questions that made up the questionnaire as a research instrument were evaluated and revised by the supervisor to ensure that data collected was relevant was in alignment with the research objectives of the study as well as the topic.

3.7 Data presentation and analysis

Data collected was analysed and presented in a more meaningful way. Data collected from interviews and questionnaires was sorted using the samples. The data was further assigned a code so that it could be entered into the computer for further analysis. For the purpose of this research the data was processed and analysed using the Statistical Package for Social Science (SPSS) so as to come up with percentages and frequencies. The package was also used to test and establish the relationship between variables.

3.8 Ethical considerations

In order to ensure that ethical requirements were maintained during the course of the study. The researcher obtained an introductory letter from the secretary of accounting students department to permit the commencement of this research. The letter was presented to the organizations and respondents under study. All information obtained was used strictly for academic purposes only and confidentiality was maintained.

3.9 Chapter summary

This chapter focused on the research design, population and sample size of the study. The section also outlined tools and methods that were used to collect relevant data. Data presentation and analysis procedures were also highlighted. The next chapter will focus on analysis of data, presentation and discussion of the results of the study.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION.

4.0 Introduction

This chapter presents the results of data collected using research tools mentioned in the previous chapter. The statistical package (SPSS) was used to descriptively analyse data collected by means of frequencies and cross tabulation. All findings were presented by means of generating frequencies, mean, percentages, maximum and minimum and standard deviations shown in tables.

4.1 Response rate of target population

The researcher considered a sample size of 60 respondents. Out of the 60 questionnaires that were distributed 40 were returned. This gives a successful response rate of 66.67%. the average response rate is 33% in a survey research, Lindemann(2021). This means that the response rate for this study is equally good to represent the available data.

4.2 Demographic data

Background information of respondents included gender, age, position held in the organization, size of the firm, and the number of years the respondents had worked with the audit function. These are important parameters that can have an impact on any matter under observation and were discussed in the study as follows.

4.2.0 Age

Table 4.1: age of respondents.

		Frequency	Percent	Valid Percent	Cumulative Percent
	20 - 30 years	8	20.0	20.0	20.0
Valid	31 – 40 years	15	37.5	37.5	57.5
	41 – 50 years	13	32.5	32.5	90.0

| | 51 years and above | 4 | 10.0 | 10.0 | 100.0 |
| | Total | 40 | 100.0 | 100.0 | |

Source; Primary data (2022)

The above frequency analysis of age of respondents shows that the majority of the respondents were in the age group of 31- 40 years. This constitutes the youth population which are more eager to embrace audit technologies.

4.2.1 Gender

Table 4.2: gender of respondents

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
	Male	25	62.5	62.5	62.5
Valid	Female	15	37.5	37.5	100.0
	Total	40	100.0	100.0	

Source; Primary data (2022)

The table specifies that there were more male respondents as compared to females given that males respondents were 25 and females were 15. Both genders were considered for the purposes of this study.

4.2.3 Position held by respondents in the organization.

Table 4.3: position held by respondents in the organization

	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	Business support Departments	8	20.0	20.0	20.0
	Tax Department	6	15.0	15.0	35.0
	Book keeping	9	22.5	22.5	57.5
	Advisory Department	6	15.0	15.0	72.5
	Audit Department	11	27.5	27.5	100.0
	Total	40	100.0	100.0	

Source; Primary data (2022)

The above table indicates that 27.5% of the respondents were from the audit department, 22.5% from book keeping, and 20% from business support departments the other 30% was from both the tax department and the advisory departments. This shows that most of the data was gathered from the audit department itself which has people who are well versed with the subject matter.

4.2.4 Size of the firm

Table 4.4: size of audit firm

size of audit firm

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Large	19	47.5	47.5	47.5
	Medium	13	32.5	32.5	80.0
	Small	8	20.0	20.0	100.0
	Total	40	100.0	100.0	

Source; Primary data (2022)

The above table shows the classification of audit firm according to size. Majority of the respondents were from large firms as indicated by a response rate of 47.5% followed by a 32.5% from medium sized firms while 20% was from small firms.

Table 4.5: number of year's respondents had worked with the audit function

audit function

		Frequency	Percent	Valid Percent	Cumulative Percent
	0 – 2 years	5	12.5	12.5	12.5
	3– 5 years	9	22.5	22.5	35.0
Valid	6 – 10 years	10	25.0	25.0	60.0
	10 years and above	16	40.0	40.0	100.0
	Total	40	100.0	100.0	

Source; Primary data (2022)

The table above shows that a large number of respondents had worked with the audit function for a period of more than 10 years. Therefore it can be concluded that they have had extensive experience as far as the external audit environment is concerned.

4.3 ANALYSIS OF RESEARCH FINDINGS BASED ON THE RESEARCH OBJECTIVES.

This section of the research presents the results of data collected. The results are presented in line with research questions that guided the study.

4.3.0 Descriptive statistics on the role played by technology on external audit.

Table 4. 6: Descriptive Statistics on the role played by technology on external audit

	N	Minimum	Maximum	Mean	Std. Deviation
The firm has incorporated audit softwares in their external audit activities.	40	1.00	5.00	2.1500	1.35021
technology has improved the quality of audit delivery	40	1.00	4.00	1.8500	.92126
IT has resulted in alteration to audit procedures.	40	1.00	4.00	1.8500	.92126

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	N	Minimum	Maximum	Mean	Std. Deviation
Benefits of incorporating IT in external audits outweigh the limitations	40	1.00	5.00	2.2750	1.39574
IT contributes to operational and audit effectiveness and efficiency	40	1.00	4.00	1.9500	1.06096
Technology has made it possible to carry out full population examinations	40	1.00	5.00	2.3500	1.33109
The use of audit technologies has helped to reduce the rate at which material misstatements and errors of calculations are made.	40	1.00	5.00	3.9000	1.19400
Correction of errors is easy due to use of IT	40	1.00	4.00	1.9250	1.07148
The use of audit software and systems to track financial records has eased the auditors' work.	40	1.00	5.00	2.2250	1.25038
Valid N (listwise)	40				

Source; Primary data (2022)

4.3.0.0 The firm has incorporated audit software in their external audit activities.

The researcher established that firms embraced the use of audit softwares in carrying out their work. Respondents to this question agreed with a mean of 2.1500 and the variance in their responses was shown by standard deviation of 1.35021

4.3.0.1 IT has improved the quality of audit delivery.

A mean of 1.8500 shows that respondents were positive that information technology had improved the quality of external audit delivery in their respective firms. There was a difference of opinion to this statement as shown by a minimal standard deviation of 0.92126.

4.3.0.2 IT has resulted in alteration to audit procedures.

Majority of the respondents agreed with a mean of 1.8500 and a standard deviation of 0.92126 showing a variance in responses given.

4.3.0.3 Benefits of incorporating IT in external audits outweigh the limitations.

The respondents appreciated the benefits they were getting from the implementation of technology in their line of work. This is supported by a mean of 2.2750 and a variance in responses given shown by a standard deviation of 1.39574.

4.3.0.4 IT contributes to operational and audit effectiveness and efficiency.

The researcher intended to establish if the use of information technology had enhanced operational efficiency in any way. Majority of the respondents agreed with a mean of 1.9500 and a standard deviation of 1.33109

4.3.0.5 The use of audit technologies has helped to reduce the rate at which material misstatements and errors of calculations are made.

Majority of the respondents did not agree with the statement that use of information technology had reduced the rate at which material misstatements is made. The respondents disagreed with a mean of 3.9000 and there was also a significant variance in responses shown by a standard deviation of 1.19400

4.3.0.6 Correction of errors is easy due to use of IT.

The researcher intended to find out if correction of errors had become easy due to use of audit technologies. Respondents agreed with a mean of 1.9250 and a standard deviation of 1.07148

4.3.0.7 The use of audit software and systems to track financial records has eased the auditors' work.

The researcher found that auditors who use audit softwares and systems found work to be easier for them. This is supported by respondents that agreed with a mean of 2.2250 and a significant variation in responses of 1.250538

4.3.0.8 Technology has made it possible to carry out full population examinations

The table shows a mean of 2.3500 meaning that majority of the respondents were positive that information technology facilitated full population examinations. A standard deviation of 1.33109 shows a variance in answers.

4.3.1 Descriptive statistics on the limitations of IT in the audit industry.

Table 4. 7: descriptive statistics on the limitations of IT in the audit industry.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Loss of audit trail	40	1.00	5.00	2.4500	1.50128
Information overload due to technologies like big data	40	1.00	5.00	2.2750	1.17642
Difficulties in observing errors or uncovering fraudulent activities.	40	1.00	5.00	3.5750	1.15220
Lack of segregation of duties as far the internal control system is concerned	40	1.00	5.00	3.6750	1.16327
Accidental and intentional data omissions	40	1.00	5.00	3.6250	1.21291
Process oriented rather than results oriented	40	1.00	5.00	2.3250	1.42122
Complexity of audit technologies	40	1.00	5.00	2.2500	1.31559
There is no professional integration with the audit technologies	40	1.00	5.00	2.3000	1.26491
Non-existence of visible audit evidence	40	1.00	5.00	3.7250	1.21924
Valid N (listwise)	40				

Source; Primary data (2022)

4.3.1.0 Loss of audit trail.

Majority of the respondents agreed to the fact that paperless audit trails is a limitation faced in the audit industry. Respondents agreed with a mean of 2.4500 and a standard deviation of 1.20128.

4.3.1.1 Information overload due to technologies like big data.

In the quest to find out if accounting and audit technologies had taken a toll on external auditors in terms of information overload. The researcher found that respondents agreed to this with a mean of s2.2750, respondents also had different opinion regarding this as evidenced by a standard deviation of 1.17642

4.3.1.2 Difficulties in observing errors or uncovering fraudulent activities.

Respondents disagree to this question with a mean of 3.5750 and a standard deviation of 1.15220. Therefore the researcher concluded that the use of information technology has not been a hindrance in uncovering fraudulent activities.

4.3.1.3 Lack of segregation of duties as far the internal control system is concerned.

The researcher intended to assess weather external auditors were facing a challenge of inadequate internal controls when audit a computerised environment. The respondents disagreed with a mean of 3.6750 and a variance is responses shown by a standard deviation of 1.16327.

4.3.1.4 Accidental and intentional data omissions.

Respondents disagreed to this statement with a mean of 3.6250 and a standard deviation of 1.21291. The researcher concluded that external audit function is not facing any challenge of data omissions when using audit softwares and technologies.

4.3.1.5 Process oriented rather than results oriented.

Majority of the respondents agreed that if an accounting system is process oriented that results then it is challenge for auditors. Respondents agreed with a mean of 2.3250 and a standard deviation of 1.42122 showing a variance in responses.

4.3.1.6 Complexity of audit technologies.

Respondents to this question agreed that audit technologies are by no means easy. They agreed with a mean of 2.2500 and a standard deviation of 1.31559.

4.3.1.7 There is no professional integration with the audit technologies.

The results in the above table show that respondents agreed that the audit industry is face with a limitation of lack of professional integration with audit technologies with a mean of 2.3000 and a standard deviation of 1.26491.

4.3.1.8 Non-existence of visible audit evidence.

Respondents agree that in a computerized environment auditors have to deal with non-existences of visible audit evidence with a mean of 3.7250 and a standard deviation of 1.21924.

4.3.2 Descriptive statistics on value enhanced to the external audit function due to use of CAATs.

Table 4. 8: descriptive statistics on value enhancement due to the use of CAATs

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
The external audit department makes use of CAATs when carrying out their work	40	1.00	5.00	2.4500	1.25983
Use of CAATS by the external audit department makes their work easier.	40	1.00	5.00	2.0500	.95943
Audit risk has generally been reduced by the use of CAATs.	40	1.00	5.00	1.7500	1.14914
CAAT improves the efficiency and effectiveness of external audit procedures	40	1.00	5.00	1.8750	.96576
CAATs help the external auditor to audit various types of businesses efficiently	40	1.00	5.00	2.4500	1.17561
Use of CAATs provides accurate information	40	1.00	5.00	2.3750	1.05460
Implementation of CAATs has reduced errors in the audit process	40	1.00	4.00	1.7000	.68687
CAATs assist have generally increased firms productivity	40	1.00	5.00	2.1250	1.04237
Valid N (listwise)	40				

Source Primary data (2022)

4.3.2.0 The external audit department makes use of CAATs when carrying out their work.

The respondents agree to the use of CAATs by the external audit department with a mean of 2.4500 and a standard deviation of 1.25983 which means that there was a variance in responses given

4.3.2.1 Use of CAATS by the external audit department makes their work easier.

External auditors have found their work to be much easier as evidenced by respondents agreeing with a mean of 2.0500 and a minimal variance in responses shown by a standard deviation of 0.95943.

4.3.2.2 Audit risk has generally been reduced by the use of CAATs.

Audit risk has generally reduced due to the use of CAATs because respondents to this question agreed with a mean of 1.7500 and a standard deviation of 1.14914

4.3.2.3 CAAT improves the efficiency and effectiveness of external audit procedures.

Majority of the respondents were of the opinion that CAATs had improved efficiency of external procedures. Respondents agreed to this sentiment with a mean of 1.8750 a standard deviation of 0.96576 shows that there was minimal variation in responses given.

4.3.2.4 CAATs help the external auditor to audit various types of businesses efficiently.

The respondents agreed to the statement that CAATs help external auditors to audit different types of businesses with a mean of 2.4500 and a standard deviation of 1.171561

4.3.2.5 Use of CAATs provides accurate information.

Extraction of financial information using CAATs is accurate as respondents agreed with a mean of 2.3750 and respondents had different views shown by a standard deviation of 1.05460

4.3.2.6 Implementation of CAATs has reduced errors in the audit process.

Respondents agree that implementation of CAATs has reduced the rate at which errors are made in the audit process with a mean of 1.700 and a minimal standard deviation of 0.68687.

4.3.2.7 CAATs assist have generally increased firms productivity.

The researcher intended to find out if elimination of routine tasks had somehow increased firm's productivity. Respondents to this question agreed with a mean of 2.1250 and a standard deviation of 1.04237.

4.3.3.0 Implications of technology on external audit process.

The researcher asked open ended questions with the aim to get deeper insight on the extent to which technology had changed external audit function. The findings revealed that the introduction of technology in conducting external audits had assisted auditors that had to deal with complex computerised environments in addition to that it saves the auditors time by elimination of routine tasks. Respondents also highlighted on how technology had managed to change the audit process in particular the move from traditional methods of conducting an

audit on just a sample of transactions to being able to test the whole population. However some respondents to this question were of the opinion that information technology had proved to be complex for them which is limiting factor in their line of work. The results from this investigation are fully supported by the findings of Carpenter and McGregor (2020). The researchers found that incorporating technologies in the audit process results in benefits that can only be achieved by moving away from manual audit systems .benefits found include, reducing time spent on tasks, automation of mundane routine tasks and ability to audit large data sets.

4.3.3.1 Technologies being used by the firm in conducting external audits.

Majority of respondents to this question mentioned data analytics (IDEA, teammate, and GRC audit bond). The objective was to find out if audit firms were really using audit technologies as most respondents had strongly agreed that there was incorporation of audit softwares in the audit process. The findings can be supported by Loggerenberg (2020). The researcher found that the way business environments are digitalizing requires auditors to incorporate data analytics in their audits otherwise this could result in numerous audit failures. In addition to that data analytics was seen to improve audit efficiency and effectiveness. The researcher concluded that the revolutionizing of technology in all sectors of the economy means that is virtually impossible now to conduct an audit without the use of data analytics

4.3.3.2 Have audit firms embraced emerging audit technologies and reasons for not embracing them

Respondents to this question were sure that most firms had not embraced audit most of these emerging technologies. The motive of the researcher was to assess the extent to which audit firms in Zimbabwe were catching up with the rapid changes in audit technologies. There is a lot of literature on how emerging technologies like blockchain, artificial intelligence and big data have changed the game in the audit industry. Reasons for not embracing these emerging technologies included the following, professional standards have not been modified in order to match the level of technology advancement, time consuming and costly

4.4 CORERALTION ANALYSIS

Table 4. 9: correlation between the importance of IT and external audit

Correlations

		Importance of IT	External audit
Importance of IT	Pearson Correlation	1	.654**
	Sig. (2-tailed)		.000
	N	40	40
External audit	Pearson Correlation	.654**	1
	Sig. (2-tailed)	.000	
	N	40	40

**. Correlation is significant at the 0.01 level (2-tailed).

Source; Primary data (2022)

The table above shows the correlation analysis between the importance of technology and the external audit function. The results show that there is a high positive correlation of 0.654 at a 0.01 significance level. This indicates that embracing audit technologies would influence effective and efficient external audit delivery.

4.5 Regression Analysis.

The researcher investigated the relationship between predictor variables (value of CAATs, importance of IT, and limitations of IT) and the dependant variable which is external audit using regression analysis.

Table 4. 10: model summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.451a	.304	.246	.58341

Source; Primary data (2022)

The findings shown in the above table shows R squared which represents the co-efficient of determination was 0.304. Therefore it can be deduced that 30.4% of the changes in external

audit is due to the introduction and use of audit technology in the profession. The changes in external audit procedures could be accounted for by the mentioned predictor variables. The researcher also established that a positive relationship between information technology and external audit exists as shown by a correlation coefficient of 0.451

Showing complete model significance.

Table 4. 11: overall model significance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	5.347	3	1.782	5.236	.004[b]
	Residual	12.253	36	.340		
	Total	17.600	39			

Source; Primary data (2022)

The table above shows the significance of the complete regression model. The results indicate that the reported F statistic of 5.236 was by far greater than that of F critical. The reported p value 0.004 was also less than 0.05 which is the p critical. The findings suggest that the independent variables used by the researcher are good joint predictors.

Table 4.12: regression coefficients.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.471	1.315		1.119	.271
	Limitations of IT	.023	.204	.016	.111	.913
	Importance of IT	1.292	.335	.567	3.864	.000
	Value of CAATs	.269	.277	.138	.972	.337

Source; Primary data (2022)

The above regression coefficients table illustrates that holding the predictor variables at a constant zero would result in external audit standing at 1.471. This means that a unit increase in importance of IT would result in a change in external audit process as its p value is.000 which is less than 0.05. Limitations of IT are less significant in predicting the dependent variable. Value of CAATs in predicting external audit is significant by 0.037

4.6 DISCUSSION OF FINDINGS.

It is necessary to compare the current research finding with what other scholars found with regards to similar studies. This is done so that the researcher can find out if any new contribution to the area under study has been made. The section seeks to address findings in relation to the given research objectives and to provide answers as well.

The researcher investigated   the role being played by technology on external audit, the aim of this question was to bring out all of the major reasons why external auditors should be more inclined to use technologies in carrying out their work. According to the results, all respondents found information technology to be a factor that contributes to the improvement of external audit process and in delivering an efficient audit. The rate at which all sectors of the economy are becoming more and more digitalized requires audit firms to keep up with the change and implement technology in their work process otherwise it will result in audit failures. The results of this study can be supplemented by the findings of Carpenter and McGregor (2020) the researchers found that the use of current and emerging technologies resulted in major benefits in the industry that include, ability to analyse large data sets, improved accuracy as far as performing repetitive and rules based tasks is concerned.in addition to that they also found that technology allowed to focus on complex and high risk areas of the audit by automating mundane tasks. The researchers concluded that implementing technology into the audit is a key factor in enhancing audit effectiveness and efficiency.

The researcher went on to explore the limitations of information technology in the audit industry. The motive was to shed more light on how the revolution of information technology had become a challenge for auditors. Respondents agreed on how auditors were facing problems like loss of audit trails, lack of integrations with professional standards, complexity of audit technologies amongst others. The results were not surprising as use of electronic systems would mean less paper therefore the result will be loss of audit trails. In addition to that audit technology is by no means easy without training that is probably why most of the respondents agreed that audit technologies are complex. The findings can be supported by the findings of Kamil and Nashat (2017), the researchers found that in as much as technology works for the betterment of audit delivery the idea of computerised environments come with their own set of challenges that impact auditors, such challenges include disappearance of visual audit trails that are necessary to track financial operations. In addition to that technologically savvy individuals can manipulate the computer systems such that it becomes difficult but not impossible for auditors to discover fraudulent activities.

The researcher assessed how the use of CAATs had enhanced the external audit function. The researcher wanted to focus on CAATs since it had been existence for a longer period as compared to emerging technologies like blockchain and big data. The aim was to shed more light on how implementing CAATs could assist in delivering an efficient audit. The study revealed that more than 75% of the respondents were of the opinion that use of CAATs had enhanced external audit activities. The results were in line with the requirement to use CAATs when auditing a computerised environment. The findings were in line with a similar research undertaken by Wadesango and Nyakurera (2020), the researchers found that computer assisted audit techniques and tools were likely to improve the quality of audit effectiveness and efficiency if equipped with the necessary skills and expertise.

4.7 Chapter summary
This chapter focused on presentation of data from the research findings. Data was presented in the form of tables and descriptive statistics was used. Research findings complemented gas

that had not been addressed by previous researchers. Discussion and interpretation of research findings was in line with literature reviewed in chapter two of the study.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATION

5.0 Introductions.

This chapter outlines significant research findings, conclusions and the proposed recommendations. Summary of findings is in line with the research objectives of the study. The chapter also covers areas for future research.

5.1 summary of findings.

The study revealed out information technology has had an impact on the external audit function. Auditors have implemented technology in their audit process such that there has been a shift from manual procedures to the use of audit technologies. Audit firms in Zimbabwe have already incorporated audit technologies in their work. The revolutionization of information technology which has result in complex accounting transactions makes it impossible to stick to traditional methods of carrying out an audit. Technology plays a major role in improving the effectiveness and efficiency of an external audit.

The study also found that there are limitations of technology that have affected the audit industry. In as much as all other sectors of the company have adopted technology for various

reasons it has had a negative impact on auditors that will have to audit the company. The major issues were how technology had resulted in loss of audit trail, information overload which requires expertise as both financial and non-financial data can now be analysed in addition to that professional standards do not keep pace with changes in technology. However omission of data or inability to discover fraud is not part of the limitations being faced by external auditors.

The study also revealed that auditors were making use of CAATs in carrying out their work. The use of CAATs assists the auditor in reducing audit risk and also helps to query the clients internal control system for those clients operating in a computerized environment. Overall CAATs have enhanced external audit activities as evidenced by the increase in efficiency and effectiveness.

Furthermore the study also find out audit firms in Zimbabwe are lagging behind in the implementation of emerging technologies like block chain and big data. Data analytics is the one that most firms have adopted when it comes to other technologies adoption is still fairly low.

5.2 conclusions

The current technological environment in which all sectors of the economy are operating in has not only transformed the work place but it has also resulted in evolution of technology in the audit industry as well. External auditors have adopted the use of audit technologies as these technologies come with a lot of benefits such as improved efficiency and effectiveness measured in the way information technology assists in saving time and reduced costs. In addition to that overall productivity is increased by the implementation of information technology. CAATs and emerging technologies have been transforming the audit industry for quite some time now. It is evident that the traditional external audit no longer serves its purpose in the way an audit is supposed to. As technology emerged there was a necessary shift from traditional audit methods in favour of electronic audits.

Data analytics softwares as one of the emerging technologies which has already been adopted in Zimbabwe is used to analyse data for any type of audit be it to detect fraud or to identify anomalies, trends or patterns. However when it comes to the external audit environment in particular professional regulations have not evolved at the same pace as technology. In addition to that the move towards a paperless working environment has resulted in loss of audit trails which is of paramount importance when financial statements are being audited.

Information technology has greatly improved the efficiency and effectiveness of external audits. Moving forward many audit firms need to adopt the use of information technology. If auditors are equipped with the right skills and technical support computer assisted audit techniques go a long way in achievement of quality audit work. The research managed to establish the importance of information technology for external auditors.

5.3 Recommendations.

After a detailed study it is the aim of the researcher is to give solutions and suggestions to the problems related to the research study. The reason for coming up with recommendations is so that all parties that are in any way affected by the research problem can refer to the this as some sort of guideline. The following are the necessary recommendations outlined by the research so that the research problems can be addressed.

Audit firms must make sure that they keep pace with the changes in information technology. They should be eager to embrace current and emerging audit technologies so that the assurance that they give on the clients financial statements can be enhanced. Audit firms should continue to invest in information technology so that they can remain relevant in this computerised environment.

The researcher suggested the use of computer audit programmes that can directly interrogate magnetic files and print information specifically selected by the auditor, for example use of audit trail module. The software enables the auditor to track changes to a transaction and the

master file. The auditor will be able to track before and after values and the user who would have initiated the change. In addition to that the researcher suggests that the IASB should continuously make amendments to professional standards so that they keep up with changes in technology

Universities, audit firms and professional bodies should all work together so that use of CAATs and other audit technologies can begin when students are still at college so that by the time they join companies they are already familiar with the current technologies being used in the industry. By so doing the benefits that come with audit technology will be consistently adopted and external audit will remain relevant

Audit firms must continuously invest in other emerging technologies so that by the time other companies begin to use technologies like blockchain they are not found wanting. Emerging technologies come with a lot of benefits so audit firms must be more willing to embrace them in practice not just on paper.

5.4 Future Research.

The researcher suggests that a similar research be carried out as technology keeps changing. The focus should be on how technologies like data analytics are an important element when it comes to external audits. There are growing technology demands in the audit industry therefore future studies should be on how those concerns can be addressed in order to facilitate the adoption of technology in the auditing profession.

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APPENDIX A: QUESTIONNAIRE

BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF COMMERCE

DEPARTMENT OF ACCOUNTANCY

<u>Dear Respondent</u>

I am a Bindura University student studying towards attainment of a Bachelor of Accountancy Honours Degree. I am carrying out a research with the aim to assess the implications of Information Technology on external audit. The information gathered in the research will be only used for academic purposes and will be treated with the strict confidentiality.

Please do not write your name and respond to the questions as honestly as you can. Your cooperation will be greatly appreciated.

PART A: GENERAL INFORMATION

Please show response by Ticking in the box provided.

Gender

Male ☐ Female ☐

Age group

20 - 30 years ☐ 31 – 40 years ☐

41 – 50 years ☐ 51 years and above ☐

Position of respondent

Business support Departments ☐ Tax Department ☐

Book keeping ☐ . Advisory Department ☐

Audit Department ☐

How many years have you worked with the audit function?

0 – 2 years ☐ 3– 5 years ☐

6 – 10 years ☐   10 years and above ☐

What size is your audit firm

Large ☐   medium ☐

Small ☐

The questions below seek to understand your thoughts about the implications of IT in the audit industry.

KEY: 1 – Strongly agree, 2 – Agree, 3 – Not sure, 4 – Disagree, 5 – Strongly disagree

Please tick the appropriate answer.

Importance of Information Technology to the firm

DETAILS	1	2	3	4	5
The firm has incorporated audit software in their external audit activities.					
IT has improved the quality of audit delivery.					
The use of information technology has brought changes to audit procedures.					
The benefits that have accrued to the external audit department as a result of information technology outweigh the limitations.					
IT contributes to operational and audit effectiveness and efficiency					
Technology has made it possible to carry out full population examinations.					
The use of audit technologies has helped to reduce the rate at which material misstatements and errors of calculations are made.					
Correction of errors is easy due to use of IT					
Use of audit software and systems to track financial records has eased the auditors' work.					

The following are the significant limitations faced by external auditors operating in a computerized environment.

DETAILS	1	2	3	4	5
Loss of audit trail					
Information overload due to technologies like big data.					
Difficulties in observing errors or uncovering fraudulent activities.					
Lack of segregation of duties as far the internal control system is concerned.					
Accidental and intentional data omissions.					
Complexity of audit technologies					
Process oriented rather than results oriented					
There is no professional integration with the audit technologies					
Non-existence of visible audit evidence					

Do you believe that the use of CAATs on your audits has resulted in the following:s

DETAILS	1	2	3	4	5
The external audit department makes use of CAATs when carrying out their work.					
Use of CAATS by the external audit department makes their work easier.					
Audit risk has generally been reduced by the use of CAATs.					
CAAT improves the efficiency and effectiveness of external audit procedures.					
CAATs help the external auditor to audit various types of businesses efficiently.					
Use of CAATs provides accurate information					
Implementation of CAATs has reduced errors in the audit process.					
CAATs assist have generally increased firms productivity.					

SECTION B
Please provide your answers on the spaces provided

Describe in short, the implications of Information Technology on the external audit process?

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What are the technologies that the firm is using during external audits?

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Briefly explain in your own view if Audit firms are embracing emerging technologies in the audit industry. What could be the reasons for not embracing these technologies?

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